

Future Funding Summary report

November 2014



Ministry of **Transport**
TE MANATŪ WAKA

Ensuring our transport system
helps New Zealand thrive



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November 2014

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

Executive summary

Introduction

Transport is a necessary and integral part of the social and economic life of the country. It reduces the costs imposed by the physical separation of people from each other and goods from markets. However, it imposes costs of its own, taking up land and consuming other resources, creating noise, harmful emissions and excessive congestion. Public investment in transport is an efficient and effective way of getting the full benefits of transport while managing down the costs. The large scale and long-lived nature of the investment make it an important focus of study.

The land transport system has a book value of approximately \$60 billion. Central government invests \$3.4 billion each year in the land transport system through the National Land Transport Fund (NLTF). To this, local government contributes another \$1.4 billion each year. Together, this funding provides money to invest in regulating the system, maintaining the asset base, improving the level of service and evolving the network to meet changing demands on the system.

The Land Transport Management Act 2003 provides a clear framework to guide the development of a working consensus on the overall scale and focus of that investment:

- ▶ Parliament has hypothecated — committed — the revenue from fuel excise duty, road user charges, and motor vehicle registration and licensing as the primary source of funding for land transport. Other sources include rates funding and Crown appropriations as needed.
- ▶ The Ministry of Transport (the Ministry) advises government on the levels of financing and revenue required, forecast, and available to fund land transport investments, including the level of taxes on motor vehicle users.
- ▶ The government of the day uses the Government Policy Statement on Land Transport (GPS), produced at least every 3 years, to signal priorities.
- ▶ Local government works through Regional Transport Committees to identify local transport needs through Regional Land Transport Plans (RLTPs).
- ▶ The New Zealand Transport Agency (NZ Transport Agency) then uses the GPS and RLTPs to develop a National Land Transport Programme that directs funding towards the highest value projects. In doing so it takes into account both national and local requirements, investing up to a prudent level supported by the actual funding (revenue and authorised debt) it receives each year.

This is an elegant system that subtly balances a wide range of interests. It has also proved to be an effective system under which New Zealand has seen a significant reduction in road fatalities, a significant increase in capacity on the network, and a significant increase in public transport use.

However, this is a relatively new system, evolved from an existing set of tools, processes and behaviours, deployed just in time to have to deal with a recession and the Global Financial Crisis. It is, perhaps, understandable that full understanding and use of this system is yet to be achieved. Our initial experience is at a point where the performance of the system can be reviewed and improved.

Recognising this fact, and reflecting the importance of seeking continuous improvement in delivering public services, this project set out to explore the following key questions:

- ▶ What is the right framework to decide the right overall level of investment?
- ▶ What is the right approach to decide how much to invest in each category, for example local roads versus State highways, new infrastructure versus maintenance?
- ▶ What should land transport revenues cover and by what mechanism?
- ▶ What are the pros and cons of different approaches to the collection of revenues?

What is the right framework to decide the right overall level of investment?

One of the most important features of the Land Transport Management Act 2003 is that it does not try to guess or direct the priorities a government might want to follow. It sets out responsibilities, the tools to be used, and the good practices to be applied; however, the approach to determining the policy direction is left unconstrained. This provides a great deal of flexibility in what is a complex task. With complex systems, the temptation is to focus analysis only on the changes around the edges while accepting the ongoing cost of the established body of the system. This 'baseline funding' approach allows scarce analytical resources to be targeted to priority issues. However, it can lead to unnecessary growth in core costs, with over-investment in some things and, because funds are not being reprioritised to match changes in demand, under-investment in others.

Consequently, it is important that, periodically, the whole portfolio of investments is reviewed. The land transport system allows for this every 3 years through the GPS. Although this is largely a political question, the Ministry of Transport is responsible for providing advice to the Government on the overall size of the investment and the areas in which the investments should be made to achieve the Government's goals.

The work of this project considered different approaches to setting a funding band. Any preferred approach would need to collect evidence on both **affordability** and **need**. We concluded that we could seek improvements to current practice by:

- ▶ Improving our access to relevant data, in particular on **need**, such as:
 - ▶ Asset conditions and whole of life costs
 - ▶ Demand forecasts and system use and performance
 - ▶ Road and road service user willingness to pay.
- ▶ Improving our ability to analyse data, such as:
 - ▶ Using using network outcomes to define measures that inform the setting of service level expectations
 - ▶ using asset and demand data and benefit-cost calculations to identify investment and disinvestment options
 - ▶ using OECD, GDP, and other aggregate data to establish benchmarks for the total level of investment

- ▶ Constructing a framework to ensure systematic and repeatable integration of the improvements in data and analytical methods.

What should land transport revenues cover and by what mechanism?

The money collected from motorists is ring fenced for use on land transport and related activities.

Although the different laws that enable these revenues to be raised place no limits on what the funds can then be used for, hypothecating them to the road system creates an implicit social contract between motorists and freight operators on the one hand and the State's investors on the other.

This combination of hypothecation with flexible investment is a good approach. It ensures that investment in the system is not subject to the uncertainty of having to bid for money from a central pot each year or each term of government. At the same time it allows funding to be moved around to meet the highest priority needs of the network as a whole, putting every dollar to work as it comes in.

Under the Land Transport Management Act 2003, the range of legitimate items to fund extends beyond just those activities that generate the majority of the revenue for the system. Nevertheless, the project concluded that the following general principles are inferred from this 'social contract' for use of revenue hypothecated from road users.

- ▶ 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 also cover related services whose costs are caused by road use, such as the road enforcement aspect of police costs, safety programmes, and NZ Transport Agency overhead costs.
- ▶ The revenue should also 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 revenue should not be used for activities unrelated to road use.

How should we raise revenue for the land transport system?

The project considered whether the current tools would provide a sustainable source of revenue for investment in land transport given improvements in vehicle efficiency and forecasts for demand and levels of investment. The main conclusions drawn were:

- ▶ central government's revenue tools are able to cope with foreseeable changes probably for the next 10 to 15 years
- ▶ we need to identify the best indicators to monitor so that we keep sight of these changes.

However, this represents just one approach, with an emphasis on cash-flow objectives. Revenue systems can support other objectives in addition to or even instead of assuring predictable cash flows. For example, a funding system that emphasises the users paying a true price for the service they receive provides a proxy test of whether the level of investment is one the users of the service are willing to meet. It supports an objective of optimising the supply of and demand for transport infrastructure.

The work of this project considered these different objectives. It looked at different ways of assessing how well certain revenue tools fit better, or not, with certain objectives. It also considered the apparent terms of the implied social contract and the implications of hypothecating revenue raised through charging rather than through general taxation or levies. The main conclusions reached were:

- ▶ the fact that we can raise more revenue does not mean we should
- ▶ we have a window of opportunity to think carefully, not just about the next generation of central government revenue tools, but also the needs of local government and the role that pricing tools can play in bringing about the transport outcomes New Zealand wants.

What to do next?

The main findings of the project suggest a number of avenues for further work by the Ministry. Each of these speaks to an aspect of core business and core capability. Consequently, the issue is not whether to pursue these, but when and at what pace. The Ministry will be tackling this issue as it develops its work programme for 2015 and beyond.

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1 Purpose

1.1 The Ministry of Transport's strategic outcomes framework

The Ministry of Transport's strategic outcomes framework states that the high level objective of the Ministry is "to develop a transport system that maximises the economic and social benefits for New Zealand and minimises harm". The Ministry's Greatest Imaginable Challenge (GIC) is to "create the environment to double the value from transport initiatives".

To achieve this, the Ministry, as the government's key adviser on transport, provides advice that ensures the system is:

- ▶ Resilient — able to meet future needs and endures shocks
- ▶ Effective — moves people and freight where they need to go in a timely manner
- ▶ Efficient — delivers the right infrastructure and services to the right level at the best cost
- ▶ Safe and responsible — reduces the harms from transport

The land transport system is the single greatest generator and consumer of revenue in the transport sector. It touches the lives of every New Zealander, every day. As such, it is a critical area for ongoing attention if these outcomes are to be attained.

The facilitative approach suggested by the GIC is partly picked up in the Statement of Intent 2014–2018 (page 5):

The Ministry is focused on developing a transport system that maximises the economic and social benefits to New Zealand and minimises the harm that arises from the system. To do that, the Ministry needs a good base knowledge of the transport sector. It also needs to understand the future drivers for transport and their implications for government policy and investment decisions.

Like the GIC, economic and social benefits and harms are not restricted to a single narrow metric, and the Statement of Intent suggests that the Ministry must understand needs rather than set direction.

1.2 The 2013 Performance Improvement Framework review

In 2013 the Ministry was given the opportunity of being comprehensively reviewed using the Performance Improvement Framework. The review found that (page 7):

The Ministry is in the key position to survey and analyse the transport landscape and to participate in the conversations on, and give advice about, large scale strategic options and significant projects, funding streams and regulatory interventions. To do so it needs to establish its role clearly and set its high level goals and principles in place to guide what it will try to achieve and how.

It needs a strong programme of external engagement with myriad stakeholders so as to fully earn its place among the powerful and not so powerful interests in the sector, and establish the value it can add. It then needs to build on this engagement to promote and encourage the deep interaction, analysis, problem solving and decision making that will be needed to ensure the sector contributes strongly to economic growth and wellbeing.

The establishment of Strategy Director positions within the Ministry, and the commissioning of four (initial) strategy projects were direct responses to these findings.

1.3 Future Funding – a 2014 strategic project

Future Funding is one of three 2014 Ministry of Transport strategy projects considering issues in a changing world alongside projects on Future Demand and Economic Development and Transport.

The Future Funding project considered frameworks for determining the most appropriate level of investment in the land transport system and how to raise the revenue to fund it.

The central objectives of the project were to:

- ▶ think about what level of transport investment is appropriate and across what categories
- ▶ promote informed and critical thinking on land transport funding and revenue gathering
- ▶ identify principal considerations for raising revenue in uncertain futures
- ▶ identify a set of future options to further improve land transport funding across supply and demand management.

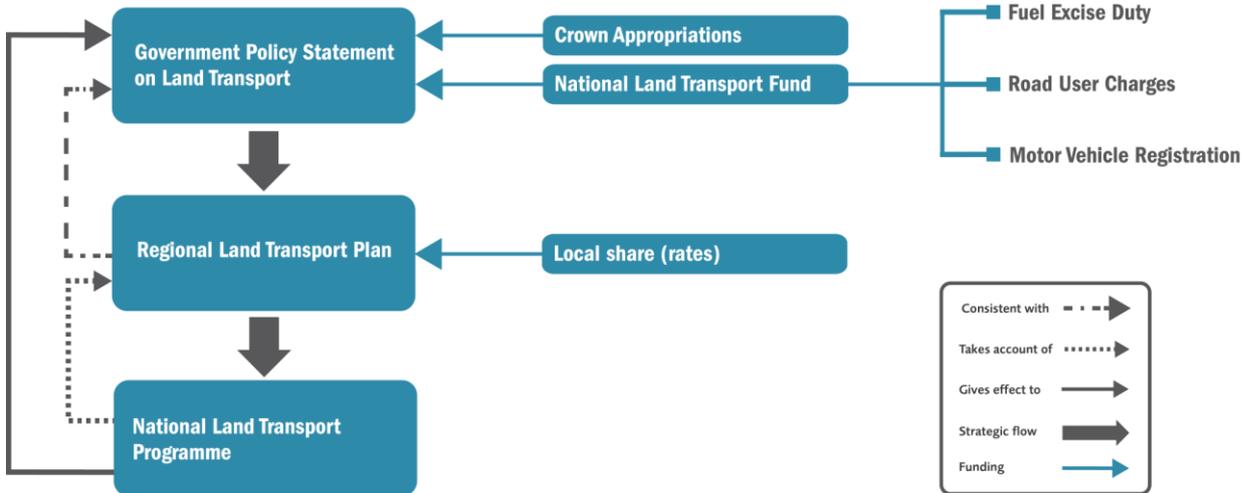
2 The approach

2.1 Current context

Investment in the land transport network is made under the framework set out in the Land Transport Management Act 2003 (the Act). Section 5 of the Act states that, for the purposes of the Act, land transport encompasses:

- ▶ transport on land by any means
- ▶ the infrastructure, goods and services facilitating that transport
- ▶ the infrastructure, goods and services (including education and enforcement), the primary purpose of which is to improve public safety for the kinds of transport described above
- ▶ coastal shipping (including transport by means of harbour ferries, or ferries or barges on rivers or lakes) and associated infrastructure.

Annex A provides a detailed discussion of the land transport funding and investment system, drawn from the Government Policy Statement on Land Transport (GPS) 2015. Figure 1 shows the main components of the investment decision-making process.

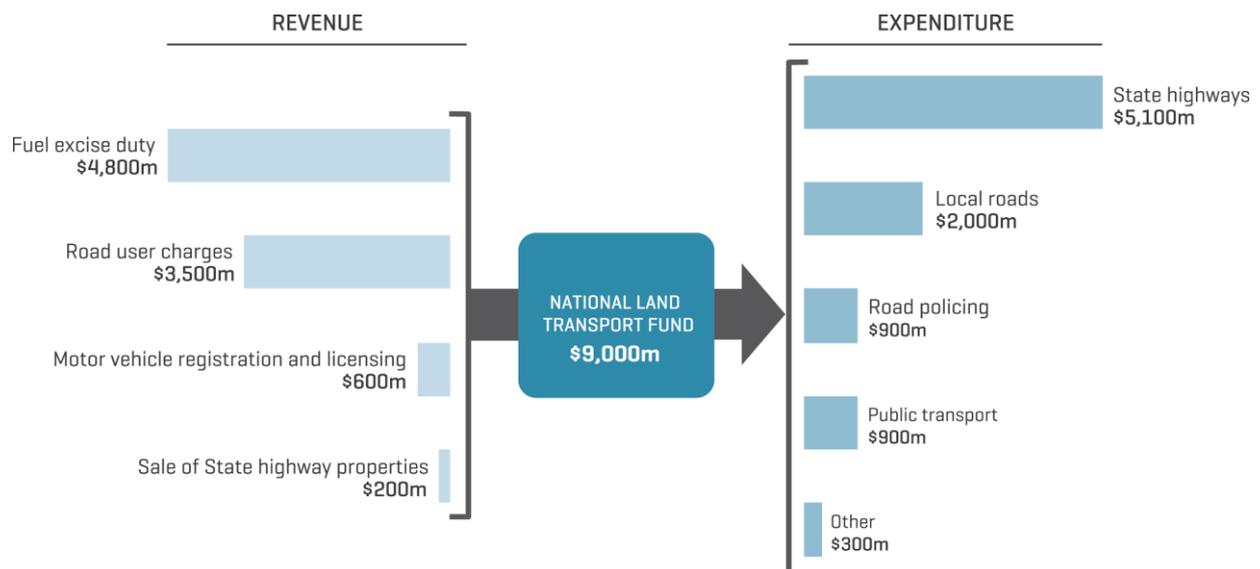


Source: Ministry of Transport 2014

Figure 1: Main components of the land transport investment decision-making process

The government of the day sets the overall strategic direction through the GPS. It decides the overall level of funding for the National Land Transport Fund (NLTF), and the general allocation of the NLTF to different classes of activity, for example State highway improvements, public transport subsidies, and administering the system. Local government looks to this direction when identifying local needs and preparing Regional Land Transport Plans (RLTPs). The NZ Transport Agency then draws from RLTPs to develop a National Land Transport Programme (NLTP) that gives effect to the GPS.

Figure 2 shows the main sources of revenue for the NLTF and the general distribution of investments under the current NLTP.



Source: Ministry of Transport 2014

Figure 2: Main land transport revenue and expenditure flows, for three years 2012/13 to 2014/15

The system provides for co-funding by central and local government, through the NLTF and local contributions respectively. Specific investment choices are made at arm's length by the NZ Transport Agency, the government's specialist procurer.

Before 2008 benefit-cost assessments (BCAs) were used as the primary way of prioritising investment. Returns on investment tended to vary between \$3 and \$4 per dollar invested. From 2008, this was supplemented with a process of giving weight to strategic factors. This approach enabled the system to reflect the government of the day's prerogative to determine high priority outcomes to target attention on.

For 2015 the NLTF amounts to investment per annum of \$3.4 billion in central government funding and another \$1.4 billion in local government funding. There is further government investment through annual Crown appropriations that target specific types of investment, which currently include provisions for rail, regional State highways, Auckland roading projects, and cycling. These are outside the NLTF and the government can specify the projects for investment. Local government also makes direct investments outside of this system.

2.2 Problem definition

The world is constantly changing and the future is uncertain. Consequently, funding decisions are challenging to make.

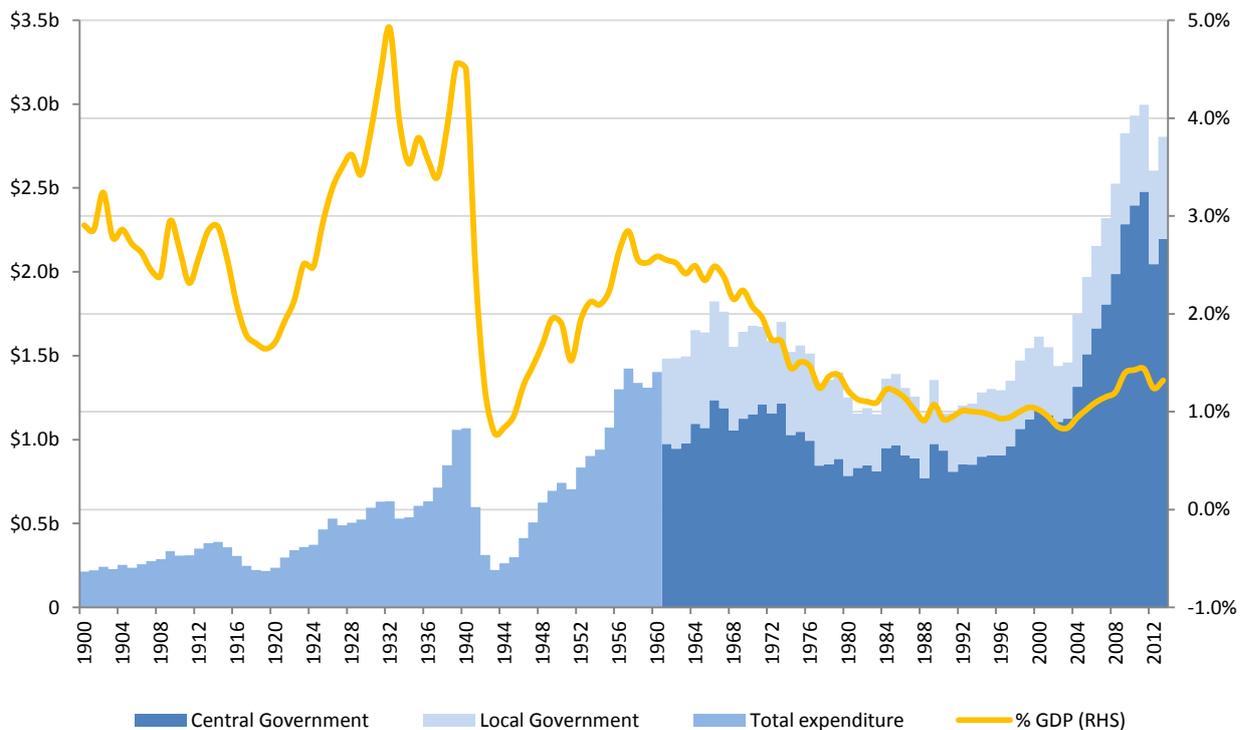
Many factors influence the land transport system, including:

- ▶ geography and demography
- ▶ the size, reach and condition of the existing network
- ▶ the composition and pace of economic growth
- ▶ how people want to use transport

- ▶ energy and other costs on households and businesses
- ▶ safety and environmental concerns
- ▶ the long life of the assets and costs of maintaining those assets
- ▶ vehicle fleet efficiency.

The rapid evolution and unpredictable uptake of new technologies, such as electric vehicles, and shifts in the transport choices of the system’s users, whether because of demand management or cultural changes, compound the uncertainty already inherent in this complex environment.

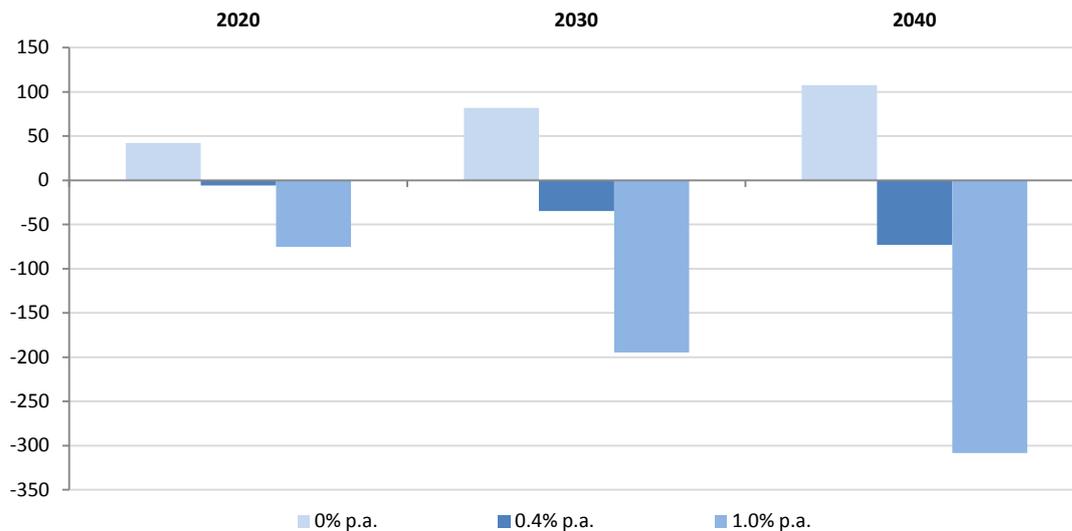
Figure 3 is illustrative of a number of issues to be contended with. It captures the effects of major stages in the development of New Zealand’s road network. It shows the fluctuations in investment over time and the accumulation of asset-related costs. It also shows that for over 100 years New Zealand’s investment in roads has been at or over one percent of GDP — the average level of investment across the OECD. To what extent does this represent a new country catching up, and to what extent might it be over-investment?



Sources: Official NZ Year Books, Ministry of Transport, NZTA, Statistics NZ. Council data for 1900–1914 and 1938–1945 is not available and has been interpolated

Figure 3: Nominal expenditure on roads 1900-2013, by general funding source, and as percentage of GDP

Figure 4 provides another example from the list. Developed from work commissioned as part of the Future Funding project, it shows the potential impact on revenue of the increasing uptake of more fuel-efficient vehicles.



Source: Ministry of Transport 2014

Figure 4: Difference in Fuel Excise Duty revenue from base case for different fuel efficiency scenarios (millions, Real \$2013)

Life-cycle asset management, which provides agreed levels of service at lowest cost, requires reliable funding flows that meet financing needs over the long run. The initial capital construction investment is only a small proportion of the asset life cycle costs. Transport infrastructure assets are long-lived and maintenance-intensive, especially in New Zealand because of our climate and geology, and the way we have built our roads.

Given the size of investment involved, and the high level of complexity, the Ministry cannot afford to take a reactive approach to land transport funding. The Ministry needs methodologies that adapt as New Zealand changes. These methodologies should be capable of understanding the right quantum of investment required for possible different futures (including understanding and managing need, and not just reacting to wants), and selecting those revenue approaches and tools that fit best to the objectives the system is trying to achieve.

2.3 The key questions for the project

Consistent with this broad conceptualisation of the problem, and as shown in Figure 5, the Future Funding project considered four questions relating to the two main themes of how much to invest and how to raise the money. Each theme would be considered at a high or macro level, and also at a more detailed or micro level.

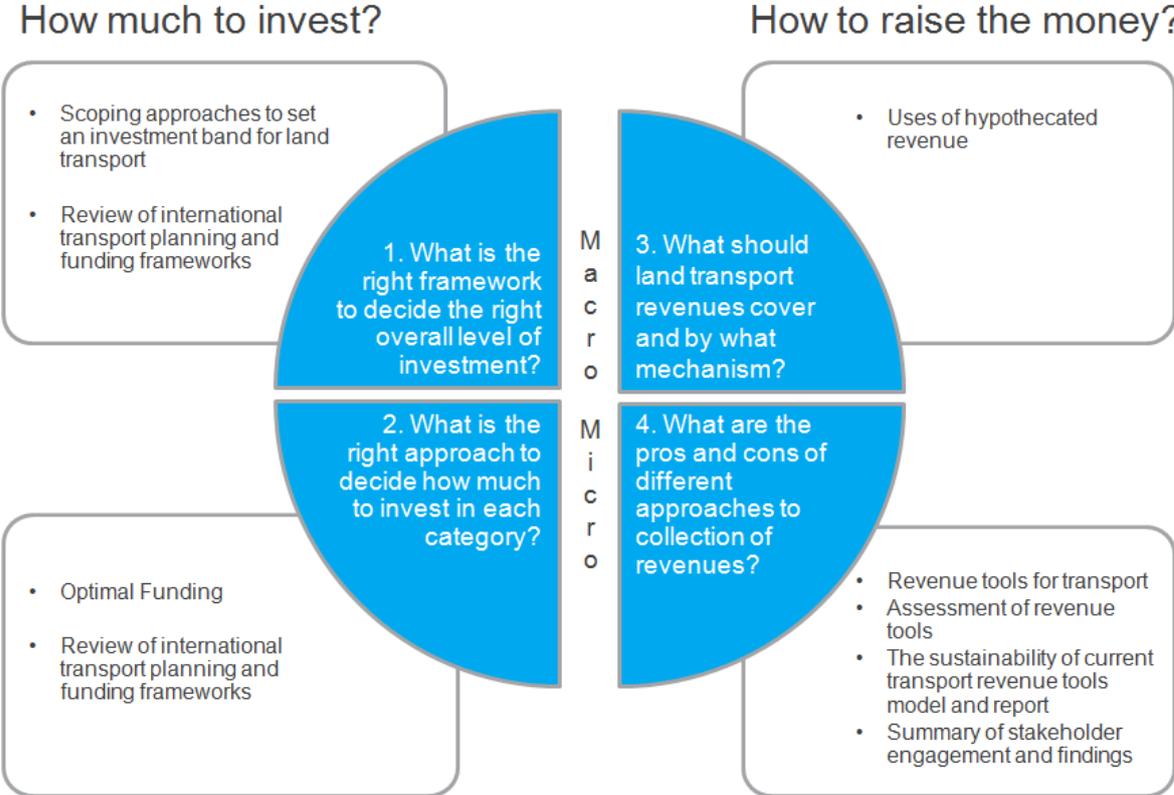


Figure 5: The four key questions considered by the Future Funding project

Each question led on to one or more lines of specific enquiry. The decision was made early on, however, that the complexity of the 'how much to invest' question meant the project should focus on identifying options to progress towards being able to answer the question. On the other hand, the 'how to raise the money' questions were more likely to lead immediately to answers.

3 How much to invest

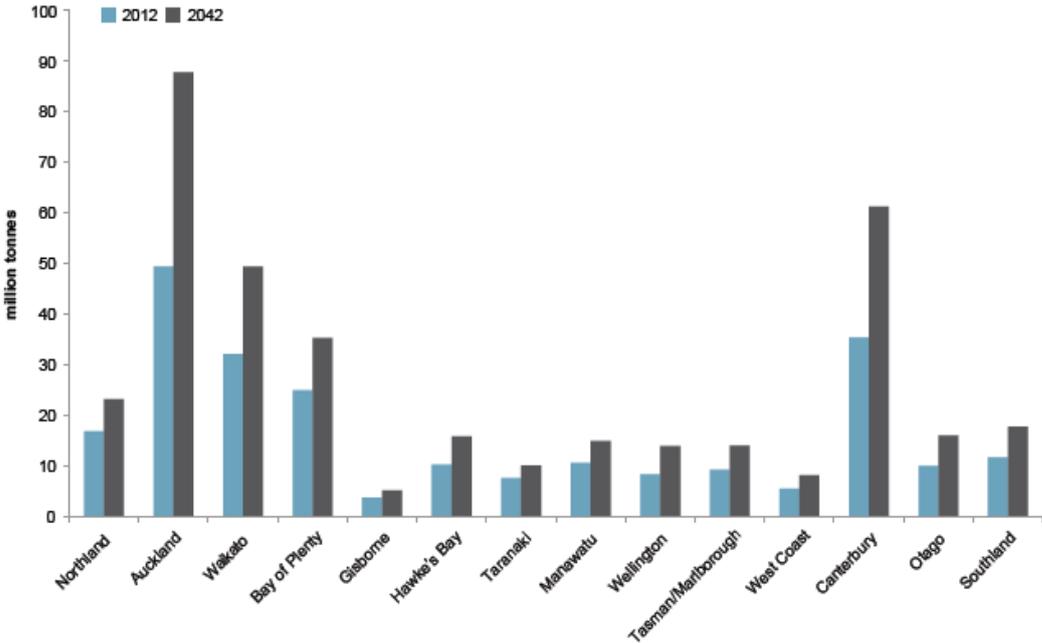
3.1 Refining the questions

New Zealand’s legislative framework for land transport investment does not specify how to determine the right level of investment, neither by activity nor in total. When it comes to funding and investment, the Land Transport Management Act 2003 is an administrative Act. It sets out rights and responsibilities for processes, but never attempts to pre-judge what the investment requirements might be.

Primary investment considerations for these processes are:

- ▶ What land transport infrastructure and services does New Zealand need?
- ▶ What land transport infrastructure and services can New Zealand afford?

The answer to the question of how much to invest must be derived from information provided by other, non-statutory, processes and systems. Traditionally, these have been seen as questions for political strategic processes and, therefore, not within the purview of public servants. However, the expectation is that the Ministry will provide the Government with advice on affordability and need from which the Government can make its decisions. There is a strong practical dimension to this challenge. Figure 6 is illustrative of the difficulty of assessing need. The overall quantity of freight being carried on the roads is expected to grow by 58 percent over the next 30 years, but the pressure will fall mainly on the upper North Island road network and Canterbury. In and of itself, however, this information is not a case for building more roads. Will changes in personal travel — the primary occupant of road space — release road capacity at critical choke points? Will the new demand continue to follow existing routes, or will the economic activity that creates it also redistribute it? Empirical analysis cannot give certain answers, but it can help identify the right things to watch to see emerging trends and needs earlier and more clearly.



Source: Ministry of Transport 2014

Figure 6: Projected changes in the regional freight task, 2012-2042

In land transport, the current system only came fully into effect in 2008 and it has been dealing with the consequences of a recession and the Global Financial Crisis ever since. The Ministry has produced three GPS since that time. Although the Ministry has used data such as spend relative to other countries and forecast for inflation to assess affordability of level of investments, it has limited data on need.

To contribute to answering these questions it is important that the Ministry considers:

- ▶ the data it needs
- ▶ the capability required to process it
- ▶ how to ensure consistency in the approach
- ▶ what overseas experience can offer to help do each of these things well.

3.2 The right data

Without market signals, the Ministry must interpret a range of data the best it can and allow the public, users and decision makers to signal their preferences in response to that analysis.

Any data applied to determining how much to invest in land transport should help do the following:

- ▶ in the first order of importance:
 - ▶ **assess real need** – recognise and reveal the nature of value of the benefits, where, when, how and to whom they accrue
 - ▶ **assess real affordability** – recognise and reveal full costs, where, when, how and on whom they fall.
- ▶ in the second order of importance:
 - ▶ **be reliable** – are accurate and use an understandable and robust methodology
 - ▶ **be responsive** – are able to adapt to a changing world and remain usable in different scenarios
 - ▶ **be timely** – are able to be applied in a reasonable timeframe if required to deal with ad-hoc funding decisions.

There are a number of data requirements. The project separated these requirements into three broad groups:

- ▶ macro data
- ▶ project-level data
- ▶ 'willingness to pay' information.

Annex B lists a number of different types of **macro data**. It provides an initial analysis of these against the assessment criteria discussed above. This initial analysis reveals that no single type of macro data is sufficient, on its own, to provide a comprehensive answer to the question of how much to invest.

Macro data does not have a tight definition for the purpose of this paper, but includes performance and use data collected by transport agencies, Statistics New Zealand and other agencies — for example on road usage, public transport patronage, and safety outcomes. These data can give us a reasonable

amount of information about the state and performance of the network (supply). They can also tell us a bit about demand. Congestion, for example, is excess demand for transport (either due to too low a price or not enough supply of road or public transport). However, these data do not tell us whether any identified excess demand can actually be met — whether there are projects that can satisfy the demand — or how much people are prepared to pay to have their demand met.

Project-level data includes information about projects currently being pursued, projects that have been delivered in the past, and projects that could yet be considered. Project-level data has the potential to tell us everything about supply. Alternatively, if the public or Ministers wished to achieve a different mix of outcomes than maximising net benefit, the data can be examined to see what kinds of projects would be approved if funding levels were increased or what kinds of projects would not be approved if funding levels were decreased. Different spending options are able to be tested and the types and size of benefits from these projects assessed. The most reliable source of this kind of data is the NZ Transport Agency's Transport Investment Online database, which includes data on projects, including by:

- ▶ activity (for example, State highway, public transport)
- ▶ sub-activity (for example, bridge replacements)
- ▶ region
- ▶ cost
- ▶ the NZ Transport Agency's assessment of strategic fit, effectiveness, efficiency
- ▶ the benefit-cost ratio of the project.

These data also come with some caveats, in particular:

- ▶ the lack of recording of the types and size of different benefits (for example, time saving, safety) achieved
- ▶ a lack of data on projects not submitted for political or strategic fit reasons.

Willingness to pay information is data generated from stated and revealed preference techniques to estimate demand in the absence of markets. Willingness to pay techniques generally estimate the willingness to pay of the public as it is currently constituted. As transport investment is typically long-lived, willingness to pay analysis needs to be complemented by more 'macro' analysis including changing demographics and industry composition.

Thus, the Future Funding project has observed:

- ▶ all three broad groups of data are needed to triangulate in on needs and affordability
- ▶ all three broad groups need further development to be fully useful
- ▶ complementarities between the groups suggest it is not a question of getting more of every type of data, but that a core set should be able to be identified.

3.3 The right analysis

The simplest analytical framework for optimal funding is one of demand and supply. Understanding the supply of transport involves understanding the state and performance of the network, and why it is that the network performs as it does. To understand demand, the Ministry needs to know what the public wants from the transport network.

Optimal funding, in a pure sense, is the point at which the marginal (additional) benefits of further spending on transport no longer exceed its costs. Although there are practical issues in applying this approach, a clear understanding of the range of benefits and costs being achieved across the transport investment programme, including on projects close the margin, is essential in forming a view about the optimal level of funding.

3.4 Constructing a practical framework

In public policy and in economics, government action is assessed using a framework of problem definition, objectives, and options.

- ▶ Problems are defined using established models like market or government failure.
- ▶ Objectives and criteria are detailed in a way that identifies the trade-offs between objectives, and how each should be weighted. Objectives are either derived from society's preferences — as best as they can be ascertained — or from the government of the day (which represents society and interprets what its preferences are). Whatever the source of the objectives, they should be transparent enough that the analysis can be replicated, and that people with different preferences can determine their own preferred option
- ▶ Options are identified and are assessed against how well they might address the problem and any other objectives.

Annex C presents an expanded procedural framework for arriving at an agreed statement of how much to invest, by activity and in total, based on the core framework elements set out above. The process represents an ideal approach: one unbound by resource constraints. These constraints do exist to the extent that the data gaps identified earlier need to be addressed, which in turn requires the evolution of existing business and data capture practices. These kinds of changes take time and money; however, it is not unreasonable to expect knowledge management systems to evolve to meet core business requirements once those have been clearly specified and mandated.

Even so, second-best processes that defer the development of less important aspects may be necessary for a period, with a goal of establishing a full framework in the medium- to long-term.

3.5 International approaches

Internationally, the question of how much to invest seems to be answered in as many different ways as there are nations. More information is available about the institutional structures and investment prioritisation systems than for the process of setting the overall amount of transport spending.

The Future Funding project examined the approaches taken in the United States of America (USA), Germany, France, Sweden and the Republic of Ireland.

- ▶ In the USA, multi-year federal legislation and state appropriations determine investment levels. Decisions are significantly influenced by political considerations supported by varying degrees of economic analysis by state and federal governments.
- ▶ In Germany, consistent methods of economic evaluation play a significant role in aiding decision making across all levels of government. However, political negotiation between the federal and state governments is also important.
- ▶ French policy is currently dominated by environmental sustainability legislation that drives a multi-criteria allocation process, although cost benefit analysis still plays an important role in the whole process.
- ▶ Sweden uses a consensus system largely driven at the municipal (local council) level.
- ▶ In the Republic of Ireland, planning and investment decisions are dominated by central government. A strong focus is placed on investment efficiency and monitoring outcomes as a result of considerable fiscal pressure arising from the Global Financial Crisis's impact on the country.

Overall, allocation decision rights tend to be held close to central government. However, the basis for those allocations varies widely, from a strongly analytical approach in Germany and the Republic of Ireland, to a more qualitative approach in the USA and France, and a consensus approach in Sweden.

The Ministry estimates that New Zealand spends 1.3 percent of GDP on road improvements while OECD countries average 1.0 percent. Of the five countries considered here, comparative data existed for the USA, France and Sweden, all of which spent a smaller proportion of GDP on roading. However, as the International Transport Forum's *Spending on Transport Infrastructure 1995-2011* report notes:

An investment level of 1% per GDP became a de facto political benchmark in Western European countries in the 1980s, though with no theoretical basis behind it. The investment needs for transport infrastructure depend on a number of factors, such as the quality and age of the existing infrastructure, geography of the country and transport-intensity of the country's productive sector, among other things. The fact that the share of GDP dedicated to transport infrastructure has tended to remain constant in many countries suggests that investment levels may be affected by factors other than real investment needs. Level of transport spending may be guided by historical budget levels, institutional budget allocation procedures or budgetary constraints taking into account also needs in the other sectors of the economy (for example, education, health care).

New Zealand's system to decide overall levels of investment is unique, as are the five overseas systems investigated to their host countries. However, two conclusions can be drawn.

- ▶ Features of New Zealand's approach are paralleled in other jurisdictions, suggesting that there might be opportunities to learn from overseas innovations and refine parts of our own system.
- ▶ All jurisdictions find it easier to specify their prioritisation processes for specific projects and, equally, find it easier not to be too specific on how to decide how much to do (or spend).

3.6 Summary and next steps

The Future Funding project re-confirmed that New Zealand is not unique in leaving the task of deciding how much to invest in land transport to political judgement. However, the project also observed that much of what is needed to form a technical perspective on how much to invest is empirically knowable.

That being said, there are significant data gaps. Much data is hard to access or has quality issues. The processes and practices to systematically apply that data to the question of how much to invest are substantively absent. These issues will take time, effort, and money to resolve.

The current system seems to be working relatively well. For example, road safety, network capacity, and public transport patronage have all been improving. Therefore, it is important that any steps taken to improve the ability to provide expert technical advice on the question of how much to invest are themselves value for money — that is, they deliver returns in improved investment that justify the costs.

The Ministry can seek improvements to current practice by:

- ▶ improving its access to relevant data, such as:
 - ▶ asset conditions and whole-of-life costs
 - ▶ demand forecasts and system use and performance
 - ▶ willingness to pay
- ▶ improving its ability to analyse data, such as:
 - ▶ using network outcomes to define measures that inform the setting of service level expectations
 - ▶ using asset and demand data and benefit-cost calculations to identify investment and disinvestment options
 - ▶ using OECD, GDP, and other aggregate data to establish benchmarks for the total level of investment
- ▶ further developing the framework in Annex C to ensure systematic and repeatable integration of the improvements in data and analytical method.

Before investing heavily in these changes the Ministry should also give consideration to:

- ▶ reviewing its data needs to identify the smallest set consistent with the most efficient uplift in capabilities
- ▶ further assessing which sources of new data will add the greatest value to its advice and prioritising any efforts to expand its data sources.

4 How to raise the money

4.1 Refining the questions

One of the goals for the Ministry is to develop a systematic basis to identify the most appropriate revenue tools to raise money for the land transport system. Revenue options need to be considered in the context of a changing world to ensure that the system is capable of adapting to economic, environmental, technological and social changes.

Some of the more significant challenges the revenue-gathering system is facing are listed below.

- ▶ Reliance on traditional excise duty as the key revenue tool to fund infrastructure is internationally recognised as potentially having limited longevity. Increasing real prices and vehicle fuel efficiency will curtail revenues, unless duty rates are increased to compensate.
- ▶ The willingness and ability of local government to fund its share of roading costs is under growing and sustained pressure, leading to increased debate about levels of service, the fairness of where national funds are allocated, and the potential and equity of alternative revenue sources.
- ▶ Distance-based charging also has possible long-term limitations because of the flattening of distance travelled by road, per person, as seen both in New Zealand and globally for highly motorised countries over the last 10 years.
- ▶ The projected changes in the incidence of travel — who travels, how much, where, when and why — are likely to make it harder to rely on the traditional suite of revenue tools while maintaining public confidence in the equity of the spread of investments funded through them.

In this context, the main lines of enquiry for the project were:

- ▶ to determine what was already known about the range of revenue tools available, in general, to the land transport system, and consolidate and organise the data already held
- ▶ identify the most suitable qualitative elements of a methodology for assessing the relevant merits of and issues with these revenue tools
- ▶ apply the methodology to inform recommendations on whether and how subsequent work might develop it further.

4.2 Revenue tools

A vast array of revenue tools is available for use by the land transport system. **Annex D** lists 33 tools identified over the course of the Future Funding project. Fourteen of these tools are currently in use, to a greater or lesser extent, in New Zealand.

The number expands even more once the different specific designs possible for each tool are taken into account. Therefore, the challenge was not identifying different ways of raising revenue, but deciding which ones to explore further. Ultimately, in a process related to identifying and experimenting with different revenue system objectives (see Section 4.4, below), a short-list of 10 current and potential revenue tools, for central or local government use, was identified for more detailed analysis:

- ▶ Motor vehicle registration and licensing*
- ▶ Fuel excise duty*

- ▶ Road user charges (distance and mass charging)*
- ▶ General rates**
- ▶ Targeted (or special) rates**
- ▶ Regional transport rate
- ▶ Universal network charging (all vehicles charged based on distance, mass, time and location)
- ▶ Urban charging (group of urban roads)
- ▶ General taxation*
- ▶ Charges on public car parks **

**Current central government tool*

*** Current local government tool*

Perhaps the most important observation at this stage, however, was the reaffirmation of the importance of understanding how much we want to invest. The fact that a revenue tool can be put into operation does not mean that it should be.

This question of whether to use a revenue tool depends largely on what the system is meant to achieve. It also depends on how the system is viewed.

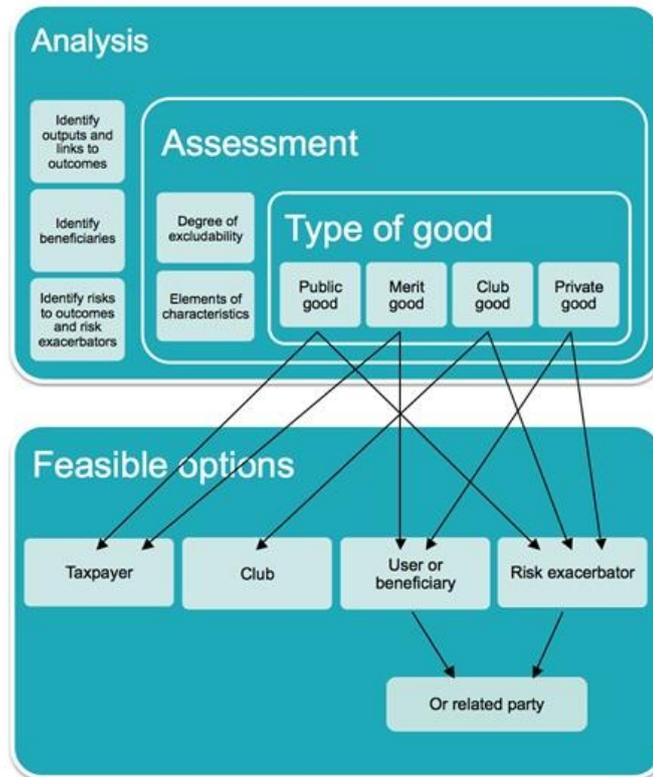
4.3 Revenue philosophies

The degree to which revenue is treated as an indirect tax or a charge (a direct tax) is largely a matter of public policy. The goods or services delivered under an indirect tax are not directly paid for by the beneficiary, whereas a charge (or direct tax) is used to deliver a good or service for those who have paid the charge. These two choices represent different ends of a continuum of approaches. To a great extent the choice is a philosophical one — a statement of how a government thinks the raising of revenue should relate to the purposes it is raised for.

As Figure 7 suggests, how you conceptualise the good or service determines how you conceptualise the beneficiary and, therefore, how you determine who should pay and by what means.

Identifying the type of good or service...

...in order to decide who should pay.



Source: Treasury Guidelines for Setting Charges in the Public Sector

Figure 7: Economic characteristics and who pays

The philosophy applied need not be consistent:

- ▶ land transport revenue in New Zealand is established in law as a tax, where the revenues can be spent on a wide spectrum of land transport activities
- ▶ the government policy set out in the current GPS is that the revenues should be treated more as a charge, with the revenue that is raised predominantly benefiting those who pay, and with only minor redistribution to social or environmental goods
- ▶ in terms of the characteristics of the revenue tools used, the system is a hybrid:
 - ▶ fuel excise duty is a tax
 - ▶ the road user charges (RUC) on light diesel vehicles and the NLTF component of Motor Vehicle Registration and Licensing fees are levies
 - ▶ RUC on heavy vehicles is partly a levy and partly a use-based charge against road-wear costs.

In this context, hypothecation adds a further consideration. In general, revenue is hypothecated as a practical way of providing revenue certainty. However, the revenue streams that have been hypothecated are transport taxes, levies and charges, while the tasks they are used for are predominantly road related. This implies a stronger relationship between the people paying the revenue and the purposes to which that revenue is put than is anticipated in legislation or, perhaps, intended by the choice of revenue tools — a 'social contract'.

An unanticipated consequence of hypothecation may be a gradual restriction in the scope of investments the revenue can reasonably be used for. General principles inferred from this 'social contract' 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 also cover related services whose costs are caused by road use, such as the road enforcement aspect of police costs, safety programmes, and NZ Transport Agency overhead costs
- ▶ the revenue should also 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 revenue should not be used for activities unrelated to road use.

As a worked example, developed over the course of the Future Funding project, **Annex E** illustrates the change in scope that results if these principles are applied, from:

- ▶ what **can** be funded under current legislation
- ▶ what the current system **actually** funds
- ▶ what **could** be funded if a user-pays charging approach was applied to existing revenues.

In conclusion, it is important to note that philosophical considerations are not merely esoteric. They shape the way the parts of the system tend to work or be used. Too much inconsistency between the settings in legislation, the revenue tools used, and the character of practical application, risks destabilising the system.

Ideally, these three elements should be brought into harmony around clearly stated objectives.

4.4 Revenue objectives

The project team produced a set of six possible objectives for the revenue system, matched to the Ministry's long-term outcomes for transport (**Annex F** provides expanded definitions for the six objectives):

- ▶ Revenue sustainability (effective)
- ▶ Collection costs (efficient)
- ▶ Distributional equity (responsible)
- ▶ Productive efficiency (efficient)
- ▶ Environmental sustainability (safe from harm and responsible)
- ▶ Accountability (efficient and resilient)

Discussions within the Future Funding project group, and with wider Ministry and external stakeholders, reinforced the complexity of agreeing clear objectives for the revenue system. Even once the list of broad objectives was agreed upon, precisely defining it proved equally contestable.

One question tested was whether different revenue tools contained built-in trade-offs between the objectives. Intuitively this should be the case, and Figure 8 is illustrative of the confirmation received through trial application of the objectives through a series of internal and external stakeholder workshops (**Annex G** refers).

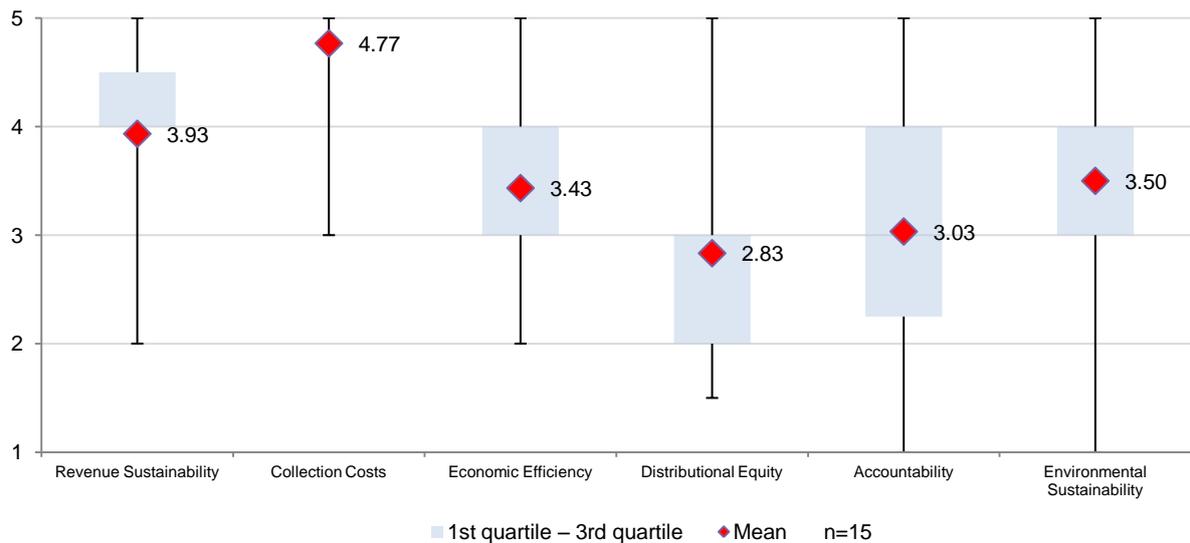


Figure 8: Example assessment of fuel excise duty against the objectives

Stakeholders were asked to assess each short-listed tool against each objective, using a five-point scale. A score of 3 meant the tool was seen as neutral in its impact on the objective, while a 5 was very positive and a 1 very negative. The small sample size means little meaning can be attached to the final result; however, the experiment successfully revealed both differentiation across objectives and the risk of significant respondent variations in view. In discussion with the participating stakeholders, this was attributed to:

- ▶ differences in interpretation of the objectives
- ▶ differences in conceptualisation or understanding of how the tool worked.

A second question was whether individual objectives would prove able to differentiate the various tools according to how well they did or did not promise to perform overall or when weighted to one goal. As is shown by the examples in Figures 9 and 10, this proved to be the case.

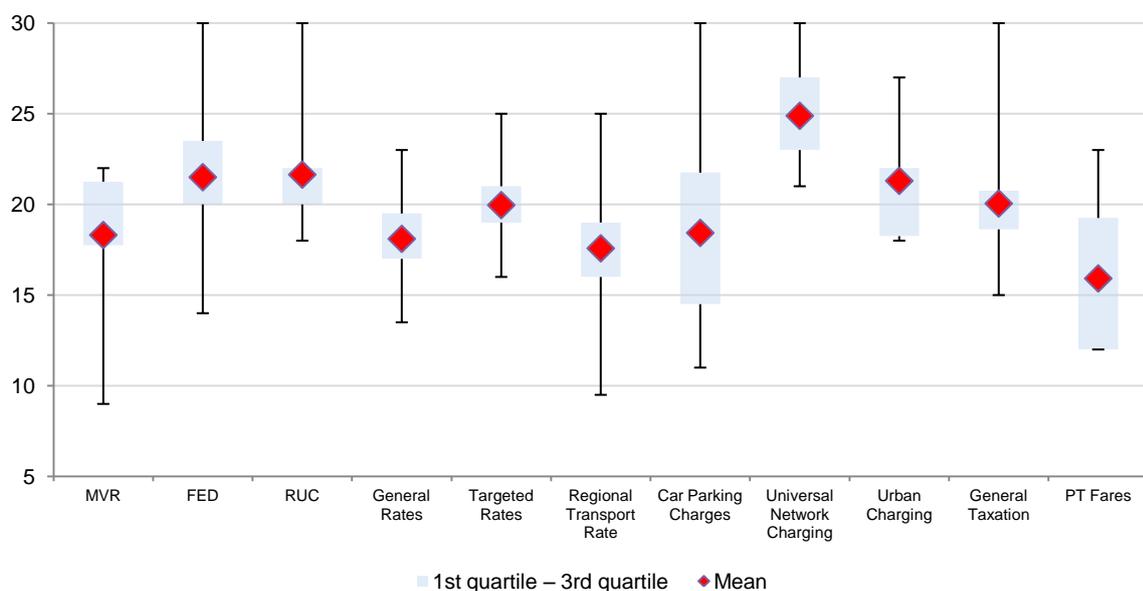


Figure 9: Example relative overall performance of short-listed tools against all objectives

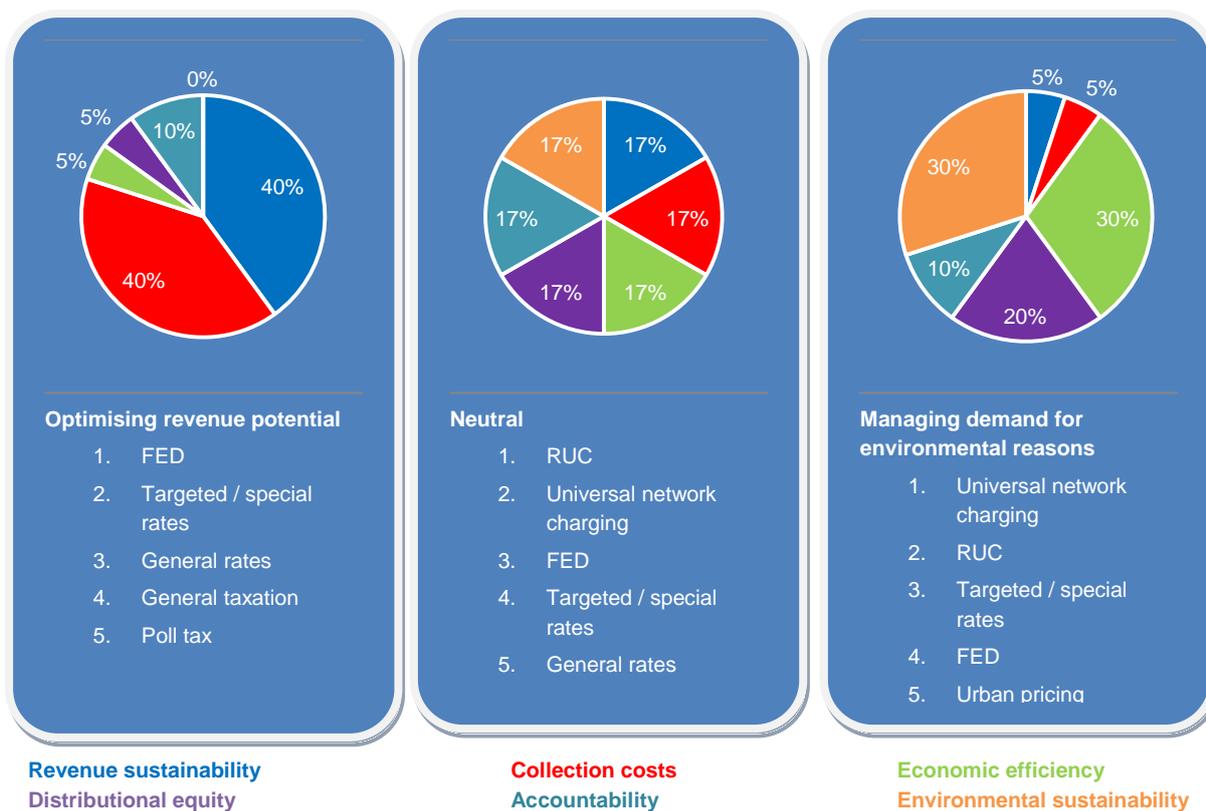


Figure 10: Example change in 'top five' tools according to objective

The final question was whether the degree of differentiation would allow a shorter-list of most promising revenue tools — in this case, a 'top-five' — to be identified based on changes to the weightings given to the objectives sought. Figure 10 provides indicative results from the stakeholder workshops showing, again, that the logical assumption that this would be the case does appear to hold true.

Figure 10 shows two indicative examples of possible variable weighting (optimising revenue potential and managing demand for environmental reasons). The results show that the top-ranked tools change with different weightings or emphasis on criteria, but there is also a core group of tools that consistently score highly.

Overall, the exercise showed that different groups of tools can be identified to meet different policy objectives. The methodology developed in this project could be used to identify a group of tools that might be useful for future policy goals. However, to use this methodology in future policy projects, further research is needed to both qualitatively and quantitatively describe the scenario and decide the weightings.

Further work would also need to be undertaken on quantitatively assessing the revenue tools. For any significant change in the way revenue is collected to fund the New Zealand transport system, the policy investigation will need to include a detailed benefit-cost analysis and financial analysis of the impacts on the public, transport users, and the Crown.

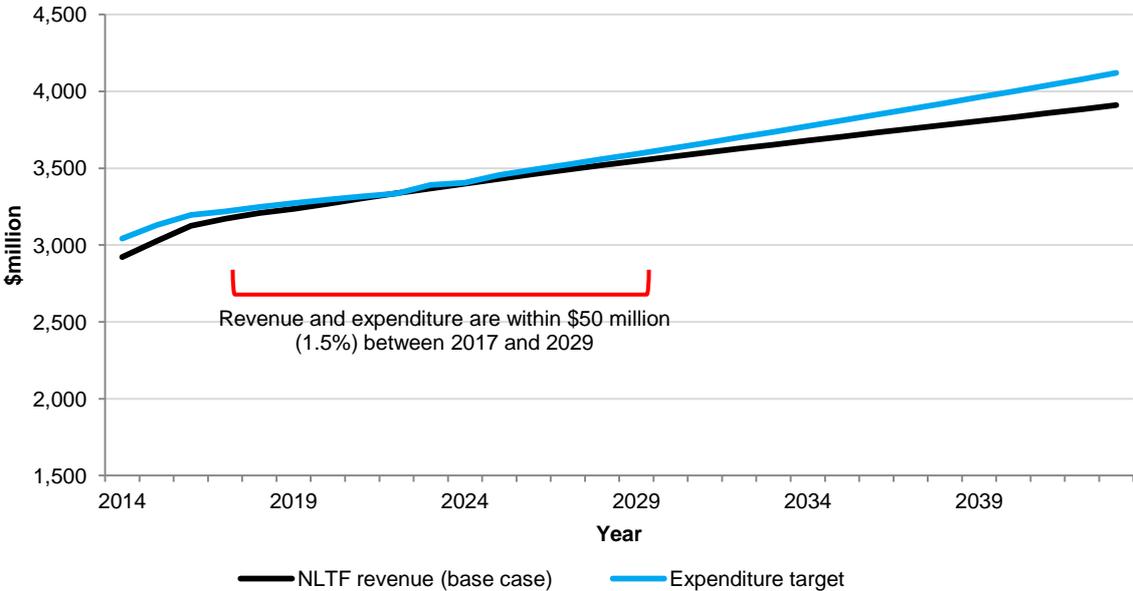
4.5 Revenue tool sustainability

A number of assumptions are made about the sustainability of different revenue tools. The question of sustainability itself is open to interpretation, carrying two main meanings:

- ▶ the ability to provide a reliable and useful stream of revenue
- ▶ the perceived ongoing legitimacy or equity of the revenue tool.

The issue of legitimacy was an inherent consideration within the earlier discussions of how much to invest, and the philosophy and objectives informing the selection of revenue tools. Therefore, the focus of this last main area of work was on the question of revenue flows.

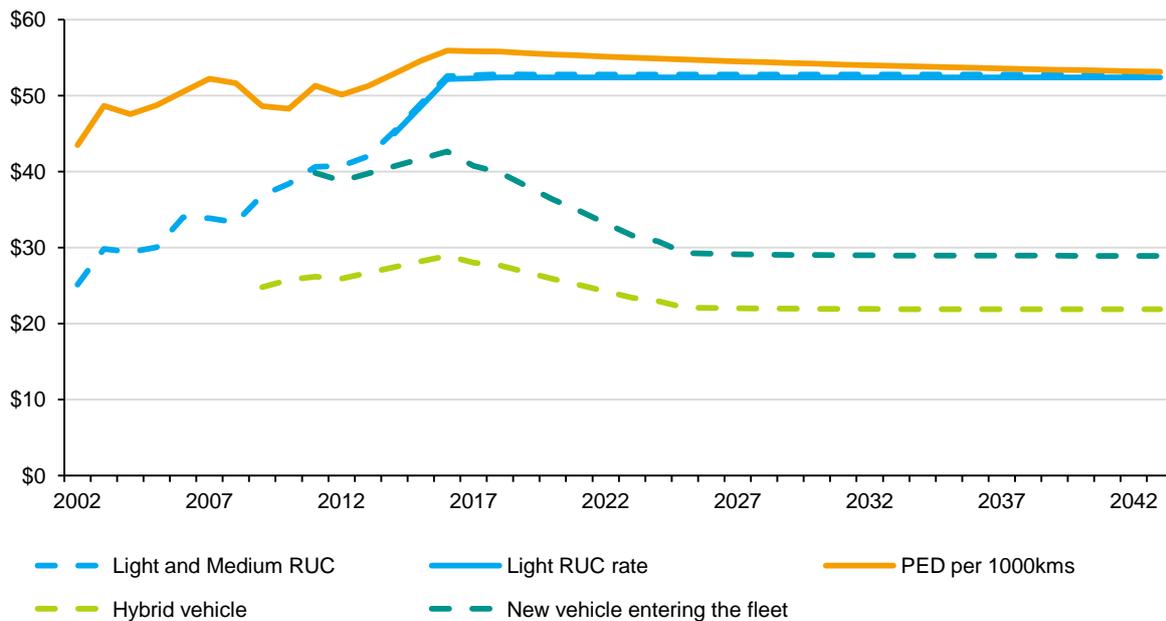
Recent work by the Ministry to evaluate and update its revenue forecasting model, in part to allow long-term projections to be run in addition to the official revenue forecasts, provided a basis for developing a model derived from experience with the existing revenue tools. As Figure 11 shows, the base case developed for this model suggests current revenue tools will provide strong revenue flows over the next 15 years.



Source: Ministry of Transport 2014

Figure 11: Projected revenue and expenditure 2014 to 2043

However, petrol excise duty revenue (PED: the main component of fuel excise duties and the largest transport revenue stream — 54 percent), depends on fuel consumption, which is affected by vehicle fuel efficiency. The current revenue forecasts assume continuation of modest improvements in the petrol fleet’s fuel efficiency. They are based on trends since 2008 of around 0.4 percent improvement in fleet fuel efficiency per year, and do not anticipate possible changes to this trend. Figure 12 illustrates where the revenue risk lies by vehicle type, based on current revenue settings.



Source: Ministry of Transport 2014

Figure 12: Net revenue per 1000km (real \$2013)

There is no forecast for the uptake of new vehicle types, such as hybrid vehicles, which pay PED but use around half as much fuel as the average car. Nor is there one for electric vehicles, which are currently exempt from RUC. Under the current policy settings, significant improvements in either efficiency or uptake of new vehicles could significantly erode revenues and increase the variation in contribution per kilometre for different vehicle types. The post 2008 period has seen soft economic growth where fleet fuel efficiency has improved at a faster rate than in previous periods. If fleet efficiency reverts to long-run trends as the economy strengthens then the impact on revenues may be more modest than forecast.

Existing revenue tools can be adjusted to respond to such changes to maintain revenues. Excise rates can be increased annually to offset improvements in fleet fuel efficiency, although this could be regressive as lower income groups would have less ability to upgrade to more fuel-efficient vehicles.

New technologies, such as hybrid, electric or alternative fuel vehicles, could be charged on a per-kilometre basis through RUC. RUC could also be recast to replace excise duties for petrol vehicles.

On the other hand, increasing the size and scope of light vehicle RUC increases the administrative and compliance costs for road users (2.8 percent of net revenue), and evasion burden on road users (6 percent of net revenue). Emerging technologies may provide more efficient and effective distance charging mechanisms that could reduce compliance and evasion costs when they become effective and affordable.

The alternative of moving all vehicles to fuel based taxes (for example, replacing RUC with diesel tax) was discounted at an early stage. This approach would impose significant refund costs on non-transport users of diesel, or require complex and costly systems of different coloured diesel for different purposes.

Overall, this investigation observed that:

- ▶ the main drivers of revenue uncertainty are known — behaviour, vehicle fleet composition and engine fuel efficiency
- ▶ forecasting tools are able to ‘see’ and take into account the main sources of uncertainty around the ongoing viability of existing central government revenue tools
- ▶ judgement is needed to moderate projections to take full account of the data on these drivers as the historical pattern is uncertain
- ▶ therefore, there is scope to develop systematic monitoring of these drivers at a greater level than is needed purely for modelling purposes, to ensure well informed moderation of the projections.

4.6 Summary and next steps

Overall, the investigation of the revenue tools has shown that the current revenue system is sustainable for around 15 years with expected revenue matching expected expenditure. But there are a number of factors we should track that might change this position.

The investigations provided insight into the relative attractiveness of different tools and the situations and circumstances in which employing them is an effective option.

As might be expected, the work has demonstrated that there is no perfect solution or a single revenue tool that will in itself meet all objectives for collection to fund the land transport system. Each tool has its own advantages, disadvantages and, in some cases, time and place for appropriate use. The framework developed in this project shows that a variety of new and existing options can provide a flexible yet stable source of revenue for the land transport system. It confirmed the view that different tools might suit different situations.

Further work for the Ministry could include:

- ▶ developing the model to accommodate additional scenarios and revenue tools, such as Universal Network Charging
- ▶ using the assessment of the tools and model to develop a timeframe for when changes in revenue gathering may be required
- ▶ using the model and assessment of tools to identify how different tools from the full long-list could apply in different scenarios; for example, a high fleet fuel efficiency scenario
- ▶ quantitative research on all possible long-list revenue tools where there is interest in developing them further for policy purposes.

5 Conclusions

5.1 Summary of findings

In summary, the Future Funding project has identified potential answers and/or raised further questions on each of the four questions raised at the outset of the project as follows.

Q1: What is the right framework to decide on the overall level of investment?

- ▶ Identified a number of characteristics needed in any process setting a strategic investment band.
- ▶ Examined a sample of overseas transport allocation frameworks.
- ▶ Identified and assessed approaches for determining the overall level of investment in transport.

Q2: What is the right approach to decide how much to invest in each category?

- ▶ Identified strengths and weaknesses in the current approach to allocating funding.
- ▶ Considered a range of standard frameworks that could be used.
- ▶ Outlined a framework and the inputs to that framework that may warrant further investigation.

Q3: What should land transport revenue cover and by what mechanism?

- ▶ Identified and described the characteristics of a sound transport revenue tool.
- ▶ Explored which activities should be funded under the current revenue system.
- ▶ Identified possible packages of revenue tools and verified that the methodology developed for individual tools is also valid for packages of tools.

Q4: What are the pros and cons of different approaches to the collection of revenues?

- ▶ Identified and described the current and potential toolkit of revenue tools.
- ▶ Developed a methodology for assessing the merits of each tool.
- ▶ Incorporated a weighting system that would enable testing of a range of possible futures.

5.2 Where to from here

As the summary of findings suggests, there are many things the Ministry can focus on to further develop the ideas canvassed through the Future Funding project.

Returning to the purpose of the Future Funding project, an important goal was to contribute to lifting the Ministry's ongoing capability to participate and lead strategic conversations. The list of useful things to look at is extensive, but not of equal importance. In some cases, certain of these tasks must be done before others can be begun.

Therefore, the first task for the Ministry is to compare the list of actions developed through this project with the opportunities and commitments already under way. The Ministry should then build them into the work programme in a way that supports ongoing delivery now, while building capability for the big decisions coming up tomorrow.

Annex A: Land transport funding and investment system

The Government Policy Statement on Land Transport (GPS) is issued by the Minister of Transport. The GPS sets out what the government wants land transport to achieve through investment in different types of activity (for example, roading, road policing and public transport). It must also set out how much funding will be provided and how this funding will be raised. Each GPS must cover a period of at least 10 years, and be reviewed every 3 years. Components of the government's investment strategy, such as the short- to medium-term results, cover up to 6 years. However, the Crown Investment Strategy, funding ranges, and overall investment must cover 10 years.

Regional Land Transport Plans (RLTPs) are prepared by Regional Transport Committees and, for Auckland, by Auckland Transport. They list all of the planned transport activities for a region for at least 10 years and are used to prioritise applications for government funding through the NZ Transport Agency. RLTPs must be issued every 6 years and reviewed every 3 years. Regional Transport Committees and Auckland Transport must ensure consistency with the GPS when preparing RLTPs.

The NZ Transport Agency must develop a National Land Transport Programme (NLTP) every 3 years to give effect to the GPS. The programme must draw from RLTPs, and sets out the specific activities that will be funded to address the transport objectives in the GPS.

The core approach to funding land transport is the use of hypothecated revenues 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 National Land Transport Fund (NLTF), 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). The timing of revenue receipts determines the ability to make payments. The system applying to the NLTP 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.

Together, hypothecation and pay-as-you-go form the foundation for land transport planning and funding. They define a relationship between transport network 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; funding will be available tomorrow when other needs become the priority
- ▶ wider government revenues will be used where wider benefits are sought.

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.

In addition to the government's primary funding sources, a significant contribution towards the costs of local roads and public transport is made through local government revenues. Each of these is established through and operated in accordance with the relevant statute.

It is also possible to access alternative funding through government financing through a grant or loan, or from private financing through public private partnerships. At some point, it may also prove practical and desirable to introduce alternative forms of revenue gathering, such as more sophisticated road pricing.

Any alternative funding 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 funding proposals also have implications for the government's broader fiscal strategy and will need to be considered within an all-of-government context, and 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 funding 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 pay-as-you-go approach
- ▶ optimising financial efficiency in the present management of the NLTF 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 of those who are responsible for doing so.

The NZ Transport Agency is required to match expenditure to the target expenditure set out in the GPS. However, it is also limited by law to spending no more than the available revenue in the NLTF. 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 Minister of Transport may vary the expenditure target if forecast revenues are higher than the maximum or lower than the minimum expenditure ranges in the GPS.

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, the Ministry and the NZ Transport Agency advise the Minister of Transport on the options for aligning expenditure and revenue.

Annex B: Example assessment of options for determining optimal funding

Options	Description	Need	Affordable	Reliable	Responsive	Timely
GDP led	Existing level of expenditure and historical escalation rates are used to inform investment decision making.	—	✓	✓	✓	✓
OECD led	OECD comparator bands for investment are developed using road expenditure per person and road expenditure as a proportion of GDP.	✓	—	✗	—	✓
Expenditure led	Provider assessment of system users' wants and planned expenditure are used to identify investment levels.	✗	✗	—	✗	✓
Benefit-Cost Analysis led	Minimum Benefit-Cost Ratio cut-offs within activity classes are used to inform maximum and minimum investment.	✓	—	—	—	✓
Stated preference led	Users' willingness to pay would be researched to supplement demand forecasting and BCA.	✓	—	✗	✓	✗
Capital value led	Upper and lower investment bands would be based on a rate of return from the capital value of the network.	✓	✗	✗	✗	✓
Indicator led	Investment bands would be calculated based on a combination of demand related variables, such as the number of vehicles.	✓	✗	—	✓	✓
Outcome led	Outcomes would be used to determine levels of investment needed to deliver those results.	✓	✗	—	✓	✓

Annex C: Outline of an evaluation framework

STEPS	EVIDENCE AND TOOLS USED
<p>Status quo</p> <p>Describe existing policy and spending settings (central and local government). Includes objectives sought by these settings.</p> <p>Analyse probable future policy settings (other than spending settings) such as the extent of road pricing.</p> <p>Establish preliminary view of state of the network.</p> <p>Test view with the NZ Transport Agency and other informed stakeholder groups who have specialist knowledge.</p> <p>Survey public and user groups on their views about the state of the network.</p> <p>Ministry finalises analysis of the state of the network.</p>	<p><u>Macro data</u></p> <ul style="list-style-type: none"> • The current state of assets: condition, capacity of the network, etc. • The performance of network: reliability, resilience, safety, etc. • Projected impact of the status quo on outcomes over time. • Transport demand response to other policy settings (eg, extent of road pricing). <p><u>Project-level data</u></p> <ul style="list-style-type: none"> • Projects currently underway. • Projects tagged for the medium term if policy settings are unchanged. • Outcomes these projects hope to achieve. • When benefits are expected to arrive. • Types of benefits delivered by projects. • ‘Committed’ spending. <p><u>Willingness to pay</u></p> <ul style="list-style-type: none"> • Implied willingness to pay of users (from current settings).
<p>Ministry publishes analysis and data.</p>	<p>Ministry begins user and public consultation. Focus on educating these groups so that they have sufficient information on which to form judgements about appropriateness of policy and spending settings.</p>
<p>Objectives</p> <p>Compose a set of objectives for transport investment. Identifies objectives that are in conflict/where trade-offs are required.</p>	<p><u>Willingness to pay</u></p> <ul style="list-style-type: none"> • Objectives users, the public, and government/Minister want to achieve; what condition and performance the network should be in.

<p>Consult with users, the public, and the Minister about the weighting of objectives. Given the transport system is not user pays, should also consider distribution of spending and equity.</p>	<ul style="list-style-type: none"> • Revealed preference techniques. • Intensive surveying/stated preference techniques. Using hypothetical choice sets: a list of hypothetical projects or packages, including different levels of spending, that achieve various objectives to differing degrees. • Metrics to measure the condition and performance of the network.
<p>Problem</p> <p>Revisit the status quo in light of objectives. What is the difference between the state and the performance of the network, and what users and the public want out of the state and the performance of the network. This is the problem. Develop preliminary view.</p> <p>Test view with the NZ Transport Agency, stakeholder groups with specialist knowledge.</p> <p>Survey public and user groups about whether the differences between the preferred state and performance of the network and the current state and performance of the network are accurate.</p> <p>Finalise analysis of the problems.</p>	<ul style="list-style-type: none"> • As it is difficult to be assured of reliable stated preference, data needs to be checked against project-level and indicator data for.
<p>Options</p> <p>Use objectives to develop preliminary assessment of what problems are the most important</p>	
<p>Develop preliminary options: levels of spending by activity, total amount of spending.</p>	<p><u>Willingness to pay</u></p> <ul style="list-style-type: none"> • State preference techniques to judge user and public preferred options.

Preliminary analysis of options.
Assessment of likely impacts against objectives.

Consult with users and public on options and analysis.

Consult with Minister.

Project-level data

- Unfunded projects.
- The types of projects needed to meet user needs.
- When benefits are expected to arrive.
- Types of benefits generated or lost if spending increased or decreased for different activities.
- Approximate amount of spending needed to achieve different mixes of outcomes.

Macro data

- Impact of spending levels on outcomes as suggested by econometric analysis.

Finalise preferred spending options.

Annex D: The long-list of revenue tools

[Revenue tools that are currently in use are shown in blue]

Vehicle based access charges

- ▶ Motor vehicle registration
- ▶ Motor vehicle registration based on fuel consumption
- ▶ Motor vehicle registration based on engine size
- ▶ Motor vehicle registration based on vehicle value
- ▶ Bicycle registration tax

Consumption

- ▶ Fuel excise duty
- ▶ Road user charges (distance and mass charging)
- ▶ Public transport fares (in combination with subsidies)
- ▶ Tolling of new roads (in combination with grant funding)
- ▶ Diesel tax
- ▶ Transport tax on alternative fuels

Spatial

- ▶ General rates
- ▶ Targeted (or special) rates
- ▶ Regional fuel tax
- ▶ Regional transport rate (for example, set centrally, collected locally)
- ▶ Regional income, GST or payroll tax
- ▶ Regional lotteries

Value capture

- ▶ Development contributions
- ▶ Financial contributions
- ▶ Revenue from assets (for example, asset sales or dividends)
- ▶ Advertising/concessions/leases/rents/naming rights
- ▶ Tax increment financing
- ▶ Sale of airspace / joint development

Road charging

- ▶ Universal network charging (ultimately all vehicles, full network)
- ▶ Urban charging (group of urban roads)
- ▶ Tolling existing roads (relates to a single corridor)
- ▶ HOT lanes on existing roads (relates to a single lane)

Other

- ▶ General taxation
- ▶ Charges on public car parks
- ▶ Carbon tax (fuel based)
- ▶ Charges on private car parks
- ▶ Poll tax
- ▶ Visitor and/or airport taxes

Annex E: Scope to fund certain activities

Activity	Can fund by current law	Currently fund in practice	Could fund under user pays
Car trip	✓ It is efficient to raise funds from car users for a national transport system.	✓ Most of the investment benefits car users so they contribute most to a national transport system.	✓ Car users should pay for their services and harms. They should not pay for other services.
Truck trip	✓ Trucks impose more costs than cars so should pay more toward the system.	✓ Trucks pay based on the costs imposed, but revenue is allocated like a tax.	✓ Truck users benefit from the road service and should pay for what they use and their harms.
Pedestrian trip	✓ Pedestrians are legally entitled to be on the road. Motorists have a duty to pay for the facilities needed to keep them safe from motor vehicles.	✓ Facilities are needed for pedestrians but they cannot be taxed except via proxies like rates. The main focus is on keeping them safe.	✓ Pedestrians are legally entitled to be on the road. Motorists have a duty to pay for the facilities needed to keep them safe from motor vehicles.
Cycle trip	✓ Cyclists are legally entitled to be on the road. Motorists have a duty to pay for the facilities needed to keep them safe from motor vehicles.	✓ Facilities are needed for cyclists but they cannot realistically be taxed except via proxies like rates. The main focus is on keeping them safe.	✓ Cyclists are legally entitled to be on the road. Motorists have a duty to pay for the facilities needed to keep them safe from motor vehicles.
Bus trip	✓ Bus trips are capable of providing access, choice, easing congestion and reducing emissions. Patronage would fall without subsidies.	✓ Motorists should pay where a bus trip keeps enough cars off the road to offset the congestion and emissions caused by the bus.	? Only where subsidised bus trips sufficiently offset congestion to provide material difference to road users.
Ferry trip	✓ Ferry trips are capable of providing access, choice, easing congestion and reducing emissions. Patronage would fall without subsidies.	✓ Cross subsidy makes additional corridor capacity available reducing congestion. Motorists should pay where an additional ferry trip keeps enough cars off the road to make a material difference to road service levels.	✗ Only if ferry passenger trips keep enough cars off the road to make a material difference to road service standards.
Rail passenger trip	✓ Passenger rail trips are capable of providing access, choice, easing congestion and reducing emissions. Patronage would fall without subsidies.	✓ Cross subsidy makes significant additional corridor capacity available reducing congestion. Motorists should pay where an additional rail passenger trip makes a material difference to road service levels.	✗ Only if it keeps enough cars off the road to make a material difference to road service standards.

Activity	Can fund by current law	Currently fund in practice	Could fund under user pays
Rail freight trip	<p>✓</p> <p>Rail freight trips are capable of providing choice, replacing trucks (perceived as noisy, dangerous and dirty) and reducing emissions. Rail freight volumes would increase with subsidies.</p>	<p>✗</p> <p>Rail is in competition with trucks and trucks should not be forced to subsidise a competitor. Emission and safety gains from removing trucks from the road are offset by higher service levels provided by trucks for many types of freight.</p>	<p>✗</p> <p>Rail is in competition with trucks and trucks should not be forced to subsidise a competitor. Emission and safety gains from removing trucks from the road are offset by higher service levels provided by trucks for many types of freight.</p>
Sea freight trip	<p>✓</p> <p>Sea freight trips are capable of providing choice, replacing trucks (perceived as noisy, dangerous and dirty) and reducing emissions. Sea freight would increase with subsidies.</p>	<p>✗</p> <p>As for rail freight.</p>	<p>✗</p> <p>As for rail freight.</p>
Road policing	<p>✓</p> <p>Road policing addresses one of the harms arising from trips by motor vehicles – crashes.</p>	<p>✓</p> <p>Road policing addresses one of the harms arising from trips by motor vehicles – crashes.</p>	<p>✓</p> <p>Road policing addresses one of the harms arising from trips by motor vehicles – crashes.</p>
Search & rescue	<p>✓</p> <p>Users of search and rescue also pay transport taxes and funds are needed for search and rescue.</p>	<p>✓</p> <p>Recreational boat users pay FED on petrol and should get some benefits.</p>	<p>✗</p>

Annex F: Criteria for assessing revenue tools

Criteria A: Revenue Sustainability (Effective)

Generates sufficient resources to meet national investment needs on a sustainable basis, including:

- ▶ enough revenue to make a material contribution to running the system
- ▶ is hard to avoid and easy to enforce
- ▶ copes with changing patterns of system use.

Criteria B: Collection costs (Efficient)

Has minimal set up and collection costs, including:

- ▶ low transaction cost to the public (for example, low compliance and operating costs)
- ▶ low transaction cost to the Crown (for example, low collection cost).

Criteria C: Economic efficiency (Efficient)

Encourage efficient investment in and use of the land transport system, including:

- ▶ positive impacts on user behaviour (for example, time and frequency of travel)
- ▶ positive impacts on provider behaviour (for example, form, location and timing of investment)
- ▶ addresses the internal costs of travel (for example, congestion).

Criteria D: Distributional Equity (Responsible)

Incorporate equity considerations, including:

- ▶ intergenerational equity
- ▶ across income groups
- ▶ geographically
- ▶ minimises costs on the non-transport sector (for example, manufacturing, farming)
- ▶ minimises privacy issues (for example, anonymous payments options for road pricing).

Criteria E: Accountability (Efficient/Resilient)

Has strong links between those who set the tax, those who spend the tax and those who pay, including:

- ▶ strong feedback loops between users and providers (for example, to encourage well informed decisions by both)
- ▶ encourages sound investment decisions by providers (for example, good project selection and execution)
- ▶ links taxation and representation (for example, an issue where beneficiaries do not pay)
- ▶ transparent cross subsidisation where necessary to advance equity or network goals.

Criteria F: Environmental Sustainability (Safe/Responsible)

Encourages recognition of the external cost of travel such as emissions and noise:

- ▶ positive impacts on user behaviour (for example, time and frequency of travel)
- ▶ positive impacts on provider behaviour (for example, form, location and timing of investment).

Annex G: Details of stakeholder workshops

Convenor: Doug Wilson, Strategy Director and Transportation Engineering Group Leader at the University of Auckland

Table 1: Workshop dates and locations

Date	Reference group	Location
18 June 2014	Internal	Ministry of Transport Wellington
29 July 2014	External	Ministry of Transport Wellington
27 August 2014	External	Auckland Policy Office

The external reference groups consisted of members from the following agencies attending in individual capacities as sector experts:

- ▶ The Treasury
- ▶ Ministry of Business, Innovation and Employment
- ▶ New Zealand Transport Agency
- ▶ Auckland Council
- ▶ Auckland Transport
- ▶ New Zealand Council for Infrastructure Development
- ▶ Auckland Alternative Transport Funding
- ▶ Road Transport Forum
- ▶ Automobile Association
- ▶ Local Government New Zealand
- ▶ Chair Cycle Aware Wellington
- ▶ University of Auckland.