NATIONAL INFRASTRUCTURE UNIT

Infrastructure 2012

National State of Infrastructure Report

A year on from the National Infrastructure Plan

National Infrastructure Advisory Board
& National Infrastructure Unit
November 2012

New Zealand Government

Located within The Treasury, the National Infrastructure Unit (the NIU) has the overall responsibility for the *National Infrastructure Plan* (the Plan), working with the various agencies responsible for the different infrastructure sectors and ensuring a coordinated work programme is in place to deliver the Plan's vision.

The NIU has a particular focus on the national perspective, looking across the different infrastructure sectors at the networks and interdependencies between them. The NIU recognises the critical role local government and businesses play in the Plan and has extensive networks throughout the infrastructure community. The majority of the work the NIU does is with the responsible agencies at the policy stage, focusing on the Plan's principles. The NIU leads a small number of items on the work programme, usually in conjunction with others, and typically where the issues cross infrastructure sectors and involve multiple agencies.

The NIU also supports the National Infrastructure Advisory Board and being located within The Treasury, provides advice to the Minister of Finance on spending and policy proposals. Further information on the NIU, the Plan and the work programme is available at: www.infrastructure.govt.nz

In putting this report together, the NIU acknowledges the contributions and support provided by our colleagues from The Treasury, National Infrastructure Advisory Board, Ministry of Transport, Ministry of Business Innovation and Employment, New Zealand Transport Agency, Department of Internal Affairs, Ministry of Primary Industries, Ministry for the Environment, Land Information New Zealand, Canterbury Earthquake Recovery Authority, Local Government New Zealand, INGENIUM, Society of Local Government Managers, BusinessNZ, NZ Council for Infrastructure Development, Transpower, Water New Zealand, Vector, WEL Networks, Z Energy, Telecom, Irrigation New Zealand and many other businesses.

ISBN: 978-0-478-39659-1 (Online)

http://www.infrastructure.govt.nz/plan/2011implementation/2012report
PURL: http://purl.oclc.org/nzt/i-1493

Contents

National State of Infrastructure Report and the Business Growth Agenda

Growth in New Zealand-based businesses creates jobs, spurs competition and increases our exports. Business confidence and growth will create sustainable high-paying jobs and boost our standard of living. Building a more competitive and productive economy for New Zealand is one of four key priorities the Prime Minister has laid out for this Government to achieve, via the Business Growth Agenda.

This Government believes that there are six key inputs that businesses need to succeed and grow. By focusing on these inputs, the Government will ensure businesses can lead economic growth.

Infrastructure underpins growth by providing the supporting networks demanded by a growing economy and it catalyses growth by creating new economic opportunities.

The quality of infrastructure shapes business investment decisions; it is an important factor in determining the location of economic activity and the kinds of activities or sectors that can develop.

As a country with a small, dispersed population, far from world markets, growth depends on raising the quality of this infrastructure so our businesses can connect at low cost with each other and with the rest of the world.

Given this key role that infrastructure plays in the economy, the Government is taking a more strategic approach to infrastructure planning and investment. The *2011 National Infrastructure Plan* (the Plan) seeks to provide common direction for how we plan, fund, build and use all economic and social infrastructure.

The Plan sets out a 20 year vision, which is directional but not directive, and a programme of work, led by the National Infrastructure Unit (the NIU) and involving a range of agencies, to progress this vision:

By 2030 New Zealand's infrastructure is resilient and coordinated and contributes to economic growth and increased quality of life.

The work programme includes the publication of an annual *National State of Infrastructure Report*, of which this is the first. This report includes material from the National Infrastructure Advisory Board – an independent board created to advise the Minister of Finance – and the NIU. It follows the first ministerial progress report from the Building Infrastructure workstream of the Business Growth Agenda, released on 1 November 2012.

Overview from the National Infrastructure Unit

Over a year after the release of the Plan, the challenges remain and there is still significant work to do. A new series of challenges is emerging, in part owing to the continued tight fiscal environment, but also driven from new knowledge and understanding developed over the past year.

New Zealand is a small player in the global economy, heavily dependent on the exports of primary products. The growth outlook for our major trading partners has deteriorated in recent months and risks associated with the Euro debt crisis have continued. The uncertain global outlook is reflected in the New Zealand economy registering only 2% growth in the year to 30 June 2012 and a moderate 2 – 3% forecast for the medium term. This increases the importance infrastructure plays as a platform for economic growth – especially considering 1% of this forecast growth is from the rebuild of Christchurch. With new capital spending in Budget 2012 just under $560 million over five years, compared to the $900 million previously forecast, infrastructure investment must be focussed on quality, not quantity.

This environment has affected all aspects of the infrastructure community: on the private sector competing in a global economy for scarce capital; on local government needing to replace and maintain ageing infrastructure amidst pressure to minimise rates increases; and on central government looking to return to budget surplus and facing a significant bill for the rebuild of Christchurch.

New Zealand has made significant progress over the past year, including an increased knowledge base around resilience, continued central government investment in key infrastructure projects and ongoing improvement of how the government plans and manages capital. Alongside, there have been new funding instruments through the Local Government Funding Agency and a significant amount of private investment, especially in the energy, telecommunications and water sectors.

Despite this progress, a common question from the business community over the past year has been whether we have sufficient understanding of future needs and the right financial/regulatory settings to incentivise the required investment.

This reflects the long lead-in time of many large infrastructure assets, the large scale of investment required and the evolving regulatory environment. This uncertainty is one of the factors that contributed to infrastructure being cited as the most problematic factor for doing business in New Zealand in the World Economic Forum's *2012/13 Global Competitiveness Report*.

A year on from 2011, we understand that to turn around this perception and deliver on the Plan's vision in the long term requires the infrastructure community to work together to strengthen our information base across three key areas:

1. Key drivers that will determine our future infrastructure needs – what are they telling us?
2. Our current stock and its performance – are we getting the best bang for our buck?
3. Our current response – are our funding paths and regulatory settings going to deliver what will be required?

There will be different perspectives, but having the debate and discussion in a coordinated way that looks across sectors will help us as a country to better understand the issues, the range of possible responses and when we need to make decisions. We will develop this over 2012/13 through a series of workshops that build on work already done by the infrastructure community.

Strengthening the information base

While there are still many outstanding questions, we have invested considerable effort over the past year into better understanding the levels and type of investment in each infrastructure sector and how these relate to each other to create our national network. With other infrastructure agencies, we are developing performance indicators to strengthen this information base, particularly in the energy, telecommunications and transport sectors. In local government, the newly-developed Transparency, Accountability and Financial Management reporting requirements will assist to create a more refined pool of information.

The Canterbury earthquakes have led to a wealth of new knowledge about building and infrastructure performance, the interdependencies across lifelines utilities and the requirement to restore levels of service. This new

knowledge is being applied across the country, with many regions reassessing the likely impacts of natural hazards. In some cases, most notably Wellington, this work raises serious questions around appetites for risk and the responsibilities of different parties.

Increase the robustness of investment analysis

Government must manage its own assets well and make robust investment decisions. The 2010 *Investment Statement* demonstrates how government agencies have continued a focus on better managing and planning how capital is used, although there is still a way to go. We have developed the first performance metrics for the cost of capital across some key social sectors and have completed a baseline measurement on asset management practices, which identifies areas to strengthen and feeds into a our future investment programme.

The Better Business Case (BBC) methodology introduced two years ago requires a more consistent, disciplined, transparent whole-of-life approach to decision-making for government capital investment. The BBC methodology has been picked up by a number of private sector companies, is being investigated by a number of tertiary education institutions and is starting to be used in the local government sector.

With Christchurch needing large-scale investment, this discipline is critical so a key achievement is the rollout of a disaster recovery version of BBC. Likewise, the Auckland region is seeking significant investment to deliver on the *Auckland Plan*, so robust investment analysis will be essential. Auckland's proposed transport projects are very expensive and central government needs confidence that these will address the longer-term issues facing our largest city, in particular traffic congestion post-2021.

We are working with the transport agencies to develop the debate around road pricing and demand management. Pricing is widely used in the energy sector, and to a limited extent in the water sector; the potential benefits of a comprehensive transport demand management strategy are maximising the use of existing infrastructure, deferring new capital investment or raising revenue.

Infrastructure only exists to provide a service and the scale of damage in Christchurch forced many service providers to be innovative and focus on how to deliver services in a different way. As an example, needing to restore the court services quickly, the Ministry of Justice quickly implemented centralised scheduling of facilities across multiple jurisdictions, and rapidly created new capacity for trials using portacoms on a site with a two year lease. This innovative thinking around how best to deliver services and use infrastructure has valuable lessons that can be applied across the country. Likewise, the approximately $1 billion education recovery and rebuild programme over the next 10 years provides opportunities for innovation in how education is delivered and schools are designed, built and used.

Improving the business environment and crowding in investment

The Government's infrastructure investment programme has continued, including work on the transmission grid, Ultra-Fast Broadband and Rural Broadband Initiative, Roads of National Significance, Auckland and Wellington commuter rail upgrades and the first allocations from the Irrigation Acceleration Fund. Further details of specific investments and highlights are included in the sector reports.

Significant investment or policy work underway includes: responses to the Royal Commission and other post-earthquake reviews; oil security – a long term solution for gas supply into Auckland and further north (the Ministry of Business, Innovation and Employment); the Canterbury rebuild (Canterbury Earthquake Recovery Agency); further exploration of possible Crown investment in irrigation (Ministry of Primary Industries), Better Local Government reforms (Department of Internal Affairs); and the next phase of the Resource Management Act 1991 reforms (Ministry for the Environment).

Delivering two Public Private Partnerships – Hobsonville Schools and Wiri Prison – has been a major achievement. The Hobsonville Primary School is on schedule and due to open in January 2013 with the secondary school a year later. More importantly, the programme has seen a change in thinking across the public sector and increased clarity on the outcomes and performance expected from new investment.

It is not clear that the current regulatory settings facilitate the level of investment needed to meet long-term infrastructure needs.

In part, this is because the regulatory regimes for the electricity and telecommunications sectors are still bedding in, while decisions are still to come on phase 2 of the Resource Management Act 1991 reforms for the water sector. The questions around the regulatory settings are reflected in the Preliminary Assessments under the *Best Practice Regulation Model*, released by The Treasury in August. We will monitor this and consider how the individual pieces of legislation operate as a whole, including interdependencies.

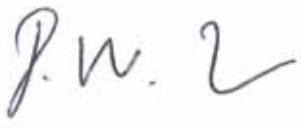
Evolution of National Infrastructure Plans

2010 EDITION	2011 EDITION		2014 EDITION
» An infrastructure stocktake. » Immediate priorities for investment.	» Outlines vision with a 20-year perspective. » Describes challenges and context for infrastructure development. » Establishes guiding principles for infrastructure investment and asset management.	**ACTION PLAN** Partnerships Government agencies Research Reporting	» Stronger performance measures and data to give visibility over the stock, state and progress of New Zealand's infrastructure. » More sophisticated analysis of demand, population, efficiency and growth.

In conclusion, we have made progress over the last year, including starting to improve our information base, and there are significant levels of investment underway or planned across the whole infrastructure community. We now have a clearer understanding of what is required to deliver on the Plan's long-term vision and believe that we have an exciting and challenging few years ahead as we plan an integrated platform of infrastructure for New Zealand's economic growth.

Finally, thank you for your ongoing commitment to the Plan and the vision we are trying to achieve. We appreciate your willingness to engage on the issues and your desire to work together with us.

Vicky Robertson
Deputy Chief Executive, the Treasury



David Taylor
Manager, National Infrastructure Unit

The context and key points of the 2011 National Infrastructure Plan

Infrastructure refers to the fixed, long-lived structures that facilitate the production of goods and services and underpin many aspects of quality of life. Infrastructure is made up of physical networks, principally transport, water, energy, communications and social assets.

Infrastructure context

- Infrastructure forms the backbone of all New Zealand communities, and every New Zealander needs a greater level of confidence about infrastructure provision, costs and service levels.
- Infrastructure is an important component of the Government's strategy for achieving economic growth – it provides the supporting networks demanded by a growing economy and it catalyses growth by creating new economic opportunities.
- Local government is a significant owner of transport, water and social infrastructure. The private sector plays a critical role as investors in economic infrastructure and providing skills and expertise in planning and design, construction and asset management.
- High-quality infrastructure attracts industry and business to New Zealand. A major focus of the Plan is on providing businesses with greater certainty and confidence about current and future infrastructure provision.
- Infrastructure assets are typically long-life, costly and can take many years to plan, commission, build and bring into service. Projecting the future demand for infrastructure is critical to ensuring that the right level of investment is made in the right infrastructure at the right time.
- Historically, investment in New Zealand's infrastructure has been lumpy with significant periods of under-investment.
- Inadequate supply of infrastructure was cited as the most problematic factor for doing business in New Zealand in the 2012-13 World Economic Forum *Global Competitiveness Report* with the overall quality of our infrastructure rated 47 out of 140 countries.

The NIU works with other government and private sector agencies to deliver the outcomes of the Plan, with the overall implementation approach a mixture of engagement and dialogue, developing partnerships, projects, research and reporting.

The Plan is a strategic, future-focused document that places infrastructure in the context of economic and population growth. It seeks to provide common direction for how we plan, fund, build and use all economic and social infrastructure. It covers the transport, telecommunications, energy, water and social infrastructure sectors.

VISION

By 2030 New Zealand's infrastructure is resilient and coordinated and contributes to economic growth and increased quality of life.

There are two outcomes the Government is looking to deliver through the Infrastructure Plan:

OUTCOMES

Better use of existing infrastructure

... Getting more from the current stock of infrastructure is about looking at how assets are used, identifying opportunities for improved management, finding better ways of managing demand and ensuring users' expectations are understood.

Better allocation of new investment

New Zealand needs to be smarter about investing in new infrastructure. The Government will prioritise investment where there are adequate returns and these are underpinned by robust analysis through a well understood and transparent process.

Key challenges identified in the Plan

1. Infrastructure investment is well analysed at the project level but there is insufficient consideration of how assets function as a network or address potential changes in demand.
2. New Zealand's infrastructure is vulnerable to outages, including through natural hazards, and we have insufficient knowledge of network resilience at a national level.
3. The volatile nature of infrastructure funding creates a lack of certainty and continuity for infrastructure providers. There is insufficient use of the tools available to generate revenue and manage demand.
4. The performance of infrastructure assets is not transparent. It is not always clear who is accountable for decisions.
5. The regulatory environment does not support long term infrastructure development and contributes to unnecessary costs and uncertainty.
6. Poor coordination between different infrastructure providers leads to suboptimal outcomes. Decisions over land use and infrastructure investment could be better integrated.

Guiding principles from the Plan

Investment Analysis

Investment is well analysed and takes sufficient account of potential changes in demand.

Resilience

National infrastructure networks are able to deal with significant disruption and changing circumstances.

Funding Mechanisms

Maintain a consistent and long term commitment to infrastructure funding and utilise a broad range of funding tools.

Accountability and Performance

It is clear who is making decisions, and on what basis, and what outcomes are being sought.

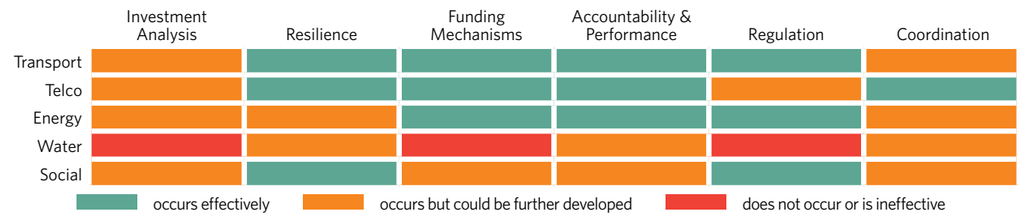
Regulation

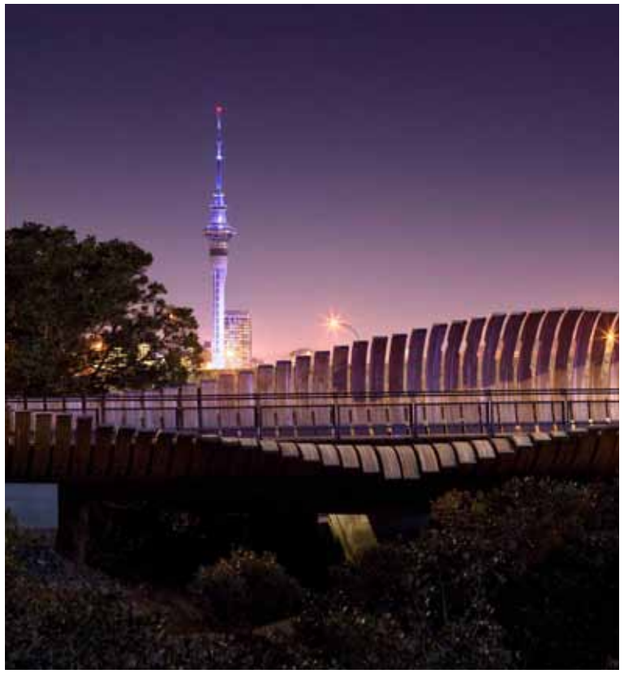
Regulation enables investment in infrastructure that is consistent with other principles, and reduces lead times and uncertainty.

Coordination

Infrastructure decisions are well coordinated across different providers and are integrated with decisions about land use.

Traffic lights assessments of each sector as they appeared in the 2011 Plan





Projecting demand for future infrastructure

Two of the key factors that influence the level of investment we can and should make in infrastructure are population and economic growth rates.

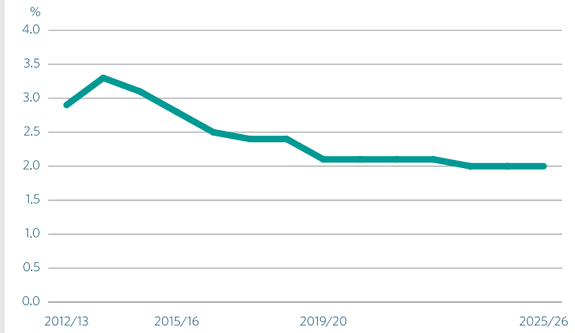
Population projections 2011 to 2031

While the overall New Zealand population is projected to increase by 16% between 2011 and 2031, this growth is uneven, posing a significant challenge for future infrastructure provision.

	2011	2031	% change
Combined regions of Auckland, Waikato and Bay of Plenty	2,184,200	2,736,300	25%
Combined regions of Gisborne, Southland and West Coast	174,200	165,100	-5%

Source: Statistics New Zealand

GDP projections



Source: the Treasury

Report on three-year action plan (2011 to 2014)

Action		Progress report
1. Central government will commit to developing and publishing a 10 year *Capital Intentions Plan* for infrastructure development to match the planning timeframe required of local government.	well advanced	Due for publication in 2013, the focus has been on the preparatory work including reviewing and modifying the data collection process, considering alignment with other related publications, and discussions with local government and the private sector. The aim is to widen the scope of the publication beyond just central government to provide a more comprehensive view of infrastructure intentions.
2. Increase understanding of and encourage debate on the use of demand management and pricing in infrastructure sectors.	just starting	NIU has made a good start on understanding the issues in the New Zealand context and the available evidence base, but specific deliverables or decisions are further away, reflecting the complexity of the topic and the range of stakeholders involved.
3. Improve access to information on current infrastructure performance to create certainty about when, where and how infrastructure development is occurring, including consideration of whole-of-life costs. **4.** Develop performance indicators for each sector on the stock, state and performance of central and local government infrastructure assets as well as for those managed by the private sector.	just starting	Research and work undertaken to look at available information sources and what indicators of performance are available, along with how other countries/regions have tried to measure performance. Building from this, a framework is being developed to measure our network of national infrastructure and evaluate progress against the outcomes of the Plan. Preliminary testing is in progress for the Transport and Energy sectors and related work is underway in the Social sector for the largest agencies.
5. Work with regions to develop more strategic infrastructure planning at a macro-regional level. Consider where adoption of spatial planning would produce optimum outcomes, particularly in metropolitan areas.	well advanced	Work on the various Auckland and Christchurch Plans have demonstrated a number of the benefits of a more strategic and macro-regional planning to infrastructure but have also been a big learning curve and identified the importance of co-ordination between and across central government and local government. The Ministry for the Environment is leading work to consider how spatial planning can better be built into the planning process. Significantly, a number of macro-regional plans are developing, especially in the Upper North Island, driven primarily by local authorities and the private sector.
6. Improve scenario modelling to more accurately project likely infrastructure investment requirements from the short to very long term.	just starting	Preliminary work completed, initial "mega-trends" and scenarios developed, based on work done by NZTA. Open workshops across the country are planned for later 2012/13 to discuss and seek input from the infrastructure community.
7. Use lessons from Christchurch to significantly enhance the resilience of our infrastructure network. This may include developing improved seismic design standards, reviewing organisation culture to improve performance in emergencies and identifying ways to quickly return services to full operational capacity.	well advanced	A number of reports and reviews are starting to come through from Christchurch showing exactly how different infrastructure components and materials performed. Analysis and discussion across agencies and infrastructure providers is underway as to the implications and delivering cost effective resilience. Evidence is emerging of a return to service focus being explored as part of these considerations. Providers and agencies are progressing work looking at the resilience of the major infrastructure sectors, including energy and the security of oil supply, given impetus by not only the Canterbury earthquakes but the Maui pipeline outage.
8. Explore alternative sources of funding and implement funding tools that can be used to manage the current portfolio more effectively.	not yet started	Related to the Demand Management action above (number 2), work has yet to start on this action but it has the same complexity and issues to be worked through. Auckland Council's 2012 discussion document exploring alternative funding options demonstrates the range and strength of opinions held.

well advanced just starting not yet started

Sector snapshots – developments and progress

Sector	Key developments since July 2011
Transport	» The *Government Policy Statement* on Land Transport Funding 2012/13 – 2021/22 set out a 10-year framework for roading and public transport investment. » Ongoing investment and progression of significant transport projects, including the Roads of National Significance, the 10-year KiwiRail Turnaround plan and urban commuter networks. » Streamlined consenting process (Waterview and Transmission Gully) increasing coordination and reducing uncertainty and regulatory compliance costs. » Increasing focus and coordination across transport modes with the upper North Island freight network and development of strategic freight networks. » Publication of National Airspace Policy, and continued work on associated National Airspace and Air Navigation Plan. International air transport network enhanced by new air services arrangements with China and Japan, with further negotiations planned in South America.
Telecommunications	» Ongoing investment in the roll out of the Ultra-Fast Broadband (UFB) and Rural Broadband Initiative (RBI), the structural separation of Telecom and establishment of open access deeds for RBI and UFB. » Started digital switchover and re-stacking of the 700MHz spectrum to free up the spectrum for opportunities from 4G.
Energy	» Strategic documents released: *New Zealand Energy Strategy 2011–2021* and the New *Zealand Energy Efficiency and Conservation Strategy 2011–2016*, setting the energy sector's direction and role of energy in the economy. » Upgrading the electricity transmission grid and addressing potential gas transmission capacity issues via the Gas Transmission Investment Programme.
Water	» Large-scale policy work programme (Fresh Start for Fresh Water) and resource management reforms. » 2012 long term plans clearly and separately identified the three urban water services and the production of financial forecasts in a consistent format allowing a better picture of local government planned expenditure and funding sources. » Development of non-financial performance indicators for local authorities to improve information collected on urban water infrastructure in the 2015 long term plans. » First allocations from the Irrigation Acceleration Fund.
Social	» Independent report assessing the asset management maturity of 13 Capital Intensive Agencies and initial steps to develop a framework of social asset performance reporting. » Stocktake of the Capital Asset Management regime to develop refinements. » Development and expansion of the BBC methodology and guidance.
Auckland	» Development of a regional spatial plan – the *Auckland Plan*, identifying long-term goals and vision. » Initial debate around alternative sources of funding. » Development of the first Unitary Plan making the link between land use and future infrastructure provision.
Christchurch	» Return to basic level of service. » Establishment of the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) alliance and programme office. » Establishment of the Christchurch City Development Unit and release of the *Christchurch Central Recovery Plan*.

The way forward

The Plan sets out a long-term vision and seeks to provide common direction for how we plan, fund, build and use economic and social infrastructure. To advance the Plan we must shift the focus beyond central government and better integrate the private sector, local government and iwi/Māori entities. The 2014 Plan must be based on better information and reflect stronger coordination and collaboration across the whole infrastructure community.

The Plan sets out a three-year action plan (reported on above), recognising that the challenges will take many years to resolve. Since the Plan was released, we have heard from the infrastructure community about the longer-term uncertainty and the need to ensure that the regulatory and financial settings are right to facilitate and incentivise the investment required for the long-term challenges. As an example, regular questions arise around whether as a country we:

- are investing in the right level and mix of transport infrastructure, noting the importance transport plays in our primary sector and getting exports to market
- are clear on the infrastructure requirements to meet our long term energy needs, including gas and liquid fuels, how this will be sourced, stored and distributed
- are resolving a recognised lack of investment in our transmission grid but in doing so are exposing similar problems in local lines and distribution companies, and
- can afford the large-scale renewal of water assets that are now 50 – 60 years old, especially in areas of declining population.

Building on this feedback, the NIU has a work programme over the next four years focused on the long-term picture of our national network of infrastructure to increase the certainty and confidence of the infrastructure community.

Government has a number of diverse roles across the spectrum of infrastructure types. In some areas, government acts as a regulator of contestable markets, while in others it acts as infrastructure funder and/or owner.

All things being equal, the government will favour the distributed decision-making power of private markets for the provision and ownership of infrastructure. Private providers subject to the disciplines of the product and capital markets are generally accepted as achieving greater efficiency and better outcomes. Government plays a supportive role in providing the legal framework for markets to operate efficiently so that providers can respond to changing preferences and allocate scarce resources over time.

Framework of the work programme for the next four years

	FOCUS	KEY QUESTIONS	WORK PROGRAMME (ACTION PLAN)
PRESSURE	**Future Infrastructure demands – drivers of demand**	» What are the future drivers of demand? » How consistent is this view across the sectors? » Where are the most significant forecast deficits and the relative priorities of these?	» Scenario modelling » Macro-regional planning » Resilience framework and issues
STATE	**Current state and performance of infrastructure**	» What quantity/volume of infrastructure do we have? » Where is it located? » What is the quality? » Does it deliver the appropriate level of resiliency? » What capacity do we have, how well is it utilised? » What is it costing? The price?	» Performance Indicators framework » Resilience framework and issues
RESPONSE	**Regulatory setting** **Funding arrangements**	» How is it funded? » Who should be making the investment? » Are the regulatory settings optimised to facilitate the required level of investment?	» Capital Intentions Plan » Demand management » Alternative sources of funding » Regulatory settings analysis

Any government needs to take care when considering direct investment, recognising that:

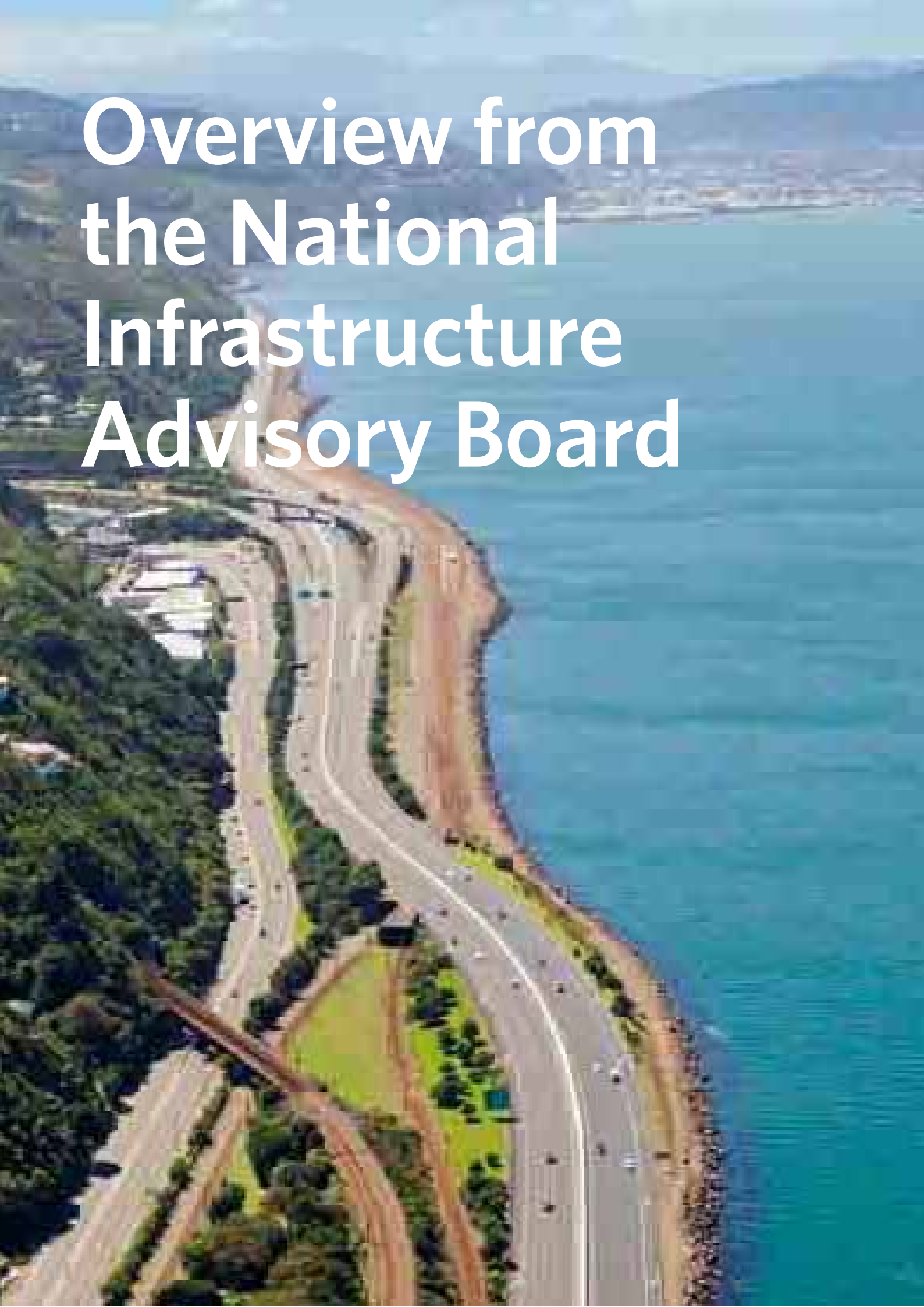
- the commercial disciplines and efficiencies that come from investors risking their own money to meet consumer demands are difficult to replicate in the public sector
- government investment can crowd out private investment and set precedents that reduce private sector willingness to invest. This sort of investment can divert scarce government resources from core infrastructure/public good services (eg, roads, schools, hospitals, etc), and
- government failure can occur where the costs of the "fix" outweigh the costs of the problem being addressed or where policy interventions affect incentives in unforeseen ways resulting in unintended consequences.

In certain circumstances, a government can play a direct role through intervening in a market, funding services or owning infrastructure. Government has such a role where:

- there is an unambiguous market failure (eg, where the private sector is unwilling to provide services). In some circumstances, the nature of the infrastructural goods and services are such that a private market cannot flourish (these circumstances are generally where the infrastructure has the characteristics of "public goods"), or
- distributional and equity objectives are demonstrably better achieved through in-kind provision than through income support or other targeted measures.

Given the downsides and risks of government provision, such interventions will be rare and any government should transparently set out why and when it is departing from favouring market provision. This approach is consistent with the overall purpose of the Plan to improve investment certainty for business.

Overview from the National Infrastructure Advisory Board



Overview from the National Infrastructure Advisory Board

One year on from the release of the Plan, there is little disagreement about the strategic direction it outlines and the outcomes that it is trying to achieve. As we stated in the Board's foreword to the Plan, "we believe it highlights where progress has been made in developing New Zealand's infrastructure and pinpoints areas where we must do better if economic growth is to be accelerated". What has changed, however, is the environment in which the Plan is operating.

In our role as conduit between infrastructure stakeholders and the Government, advising both the Minister of Finance and the NIU, the National Infrastructure Advisory Board is putting forward our thoughts on this changing environment and the key challenges. The infrastructure sector must work together to address these if we are to achieve our vision: "By 2030 New Zealand's infrastructure is resilient and coordinated and contributes to economic growth and increased quality of life."

Fiscal environment

The fiscal environment is tight and the government books are not forecast to return to surplus until 2014/15 at best. This tight fiscal environment creates a stronger imperative to ensure that decision-makers undertake robust investment analysis of all infrastructure funding proposals. We need open and transparent discussion of the funding available to manage expectations and promote collaboration across central government, local government and the private sector. The *Auckland Plan*, with its significant projected population growth, demand for infrastructure and programme of large unfunded projects, is an example of where this collaboration can be improved.

With over $108 billion of social infrastructure assets collectively owned by New Zealanders, it is natural for the Government to lead these discussions, recognising that effectively managing this demand can ensure that infrastructure investment is focused on where it can deliver the most benefits.

Funding

Identifying and implementing alternative sources of funding is also a critical part of the mix. Instead of government being the first place looked to for funding, we need to better encourage private investment, particularly by increasing certainty and thus reducing the risk for the private sector.

Feedback from key players in the energy and telecommunications sector provides an example of risk and uncertainty: the private sector does not believe that the regulatory environment supports long-term infrastructure investment. The same uncertainty is playing out in the water sector, increasing the importance of the decisions on further Resource Management Act 1991 reform due this coming year.

Resilience

Another year on from the Christchurch earthquakes, and a further 11,000 aftershocks, we now have a growing body of knowledge about the resilience of our infrastructure and the relationship between insurance and risk. This knowledge has the potential to fundamentally change what we invest in and how much it will cost, flowing into the rate of return that we can expect.

Resource mobility

We are also seeing an emerging risk around resource mobility. There are projected shortages of skilled labour in Christchurch and workers being recruited from overseas. There is a lack of work for some construction companies in the north. We need to better understand this risk and what can be done to overcome any barriers to the movement of resources.

Discussion

The Board has prepared the following series of short think pieces on a number of infrastructure topics to stimulate the debate and encourage collaboration amongst decision-makers, funders, providers and users.

We look forward to working closely with the Government as the implementation of the Plan continues and we see the strategic and policy work making a positive difference for the infrastructure sector on the ground.

Dr Rod Carr
Chair, on behalf of the
National Infrastructure Advisory Board

National Infrastructure Advisory Board

Consisting of members from the private sector and outside central government, the National Infrastructure Advisory Board was established to advise the NIU and the Minister of Finance.

The Board provides both the Minister and the NIU with advice and perspectives on infrastructure project appraisal, capital asset management issues and the development of the *National Infrastructure Plan.*

The current members of the Board are: Dr Rod Carr (Chair), Lindsay Crossen, Margaret Devlin, Kathryn Edmonds, Edward Guy, Dr Terrence Heiler, John Rae and Alex Sundakov. Dr Arthur Grimes has just left the Board, completing a three year term in June. Further information on the Board and profiles of the members is available at: www.infrastructure.govt.nz

Infrastructure developments around Water futures in the Canterbury Region

Since the Canterbury Water Management Strategy (CWMS) was adopted by the Canterbury Mayoral Forum in 2009 there has been a significant community input to develop water plans to meet the environmental, social, cultural and economic objectives of the Strategy. The CWMS is the first attempt at community-led water-based long-term regional planning. The economic objectives of the CWMS are focused on increasing the area of land irrigated in Canterbury (from 500,000 ha to 1,000,000 ha) by investment in water infrastructure – largely storage and distribution systems, improving the performance of the existing irrigated lands and making more from past infrastructure investments. This follows extensive growth in irrigated lands in Canterbury in recent times, most of it privately funded.

The recent growth has largely exhausted the smaller and easily completed schemes, meaning future development will need to be at a more difficult, ambitious and expensive scale. Any new schemes will need to sustainably advance the achievements of all of the objectives of the CWMS in parallel.

The CWMS process has identified major storage and distribution possibilities, and has undertaken strategic assessments as to how well they match the overall objectives of the CWMS. In some cases, pre-feasibility and feasibility studies have been completed by developers. In total, close to 400,000 ha of new irrigated land has been identified but challenging implementation issues remain.

Alongside the new developments has been the introduction of new technology across existing irrigation schemes – getting more from the sunk investments of previous generations. Farmer investments of more than $500 million have led to the conversion of on-farm flood irrigation systems to modern centre pivot irrigation.

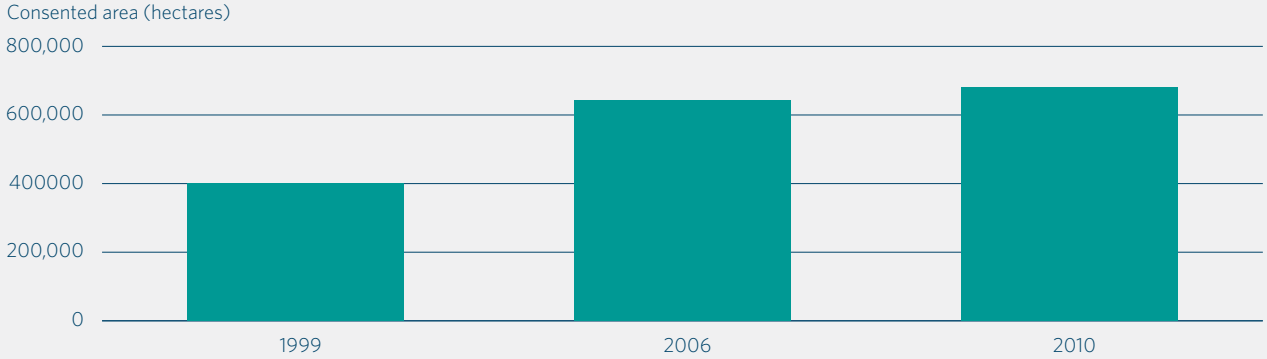
Water savings of up to 20% have resulted and additional lands are now being irrigated adjacent to the original scheme areas. Similarly, farmer initiated investments in converting inefficient open channel distribution systems to pressurised pipe supply are in progress at a cost of $300 million across 70,000 ha. The resultant water savings will allow additional lands to be irrigated. Pressurised pipe supply will also substantially reduce energy use and have reduced conversion costs considerably. These developments have been led by the private sector, and need to be supported by the CWMS.

Whilst the Canterbury experiment has made a good start, there are still many challenges to overcome to implement the Strategy. In particular, there is currently active debate amongst stakeholders about the likely impact of the recently notified Land and Water Regional Plan, on meeting the irrigated area targets in the CWMS

The CWMS however is an example of making progress through the effective co-ordination of stakeholders to deliver a clearly defined strategy that recognises the economic value of water to NZ Inc. Finding acceptable win-win solutions is still an issue to be dealt with. Considering that much has been written around the need for improvement across a number of areas in the urban water sector, and the CWMS is an example of what can be achieved, what is the impediment for adopting the same approach to the urban water sector?

Given the importance of water to NZ Inc, and experience with the CWMS to date, perhaps it is time to progress the debate on establishing an independent entity responsible for land and water matters - providing transparency and accountability to all stakeholders in the water sector. This function would cover pricing, service delivery and efficiency. It would liaise directly with the environmental and quality regulators to provide a sustainable water sector for NZ.

Change in hectares consented for irrigation, ECAN, 1999 – 2010



Report found at: http://www.mfe.govt.nz/publications/water/water-allocation-2009-10/index.html

Source: Aqualinc Research Ltd, 2010 report prepared for MfE

Proposed transport investment and planning for Auckland

The development of the first *Auckland Plan* just 24 months following the establishment of the new amalgamated Auckland Council is a remarkable achievement and should celebrated. The Auckland Plan sets out an ambitious shift to a more compact city supported by significant new investment in transport, especially public transport. But there are fundamental strategic problems relating to funding, and optimal alignment of transport investment and land use intensification that must be addressed if the objectives of the *Auckland Plan* are to be realised.

Auckland's transport system is undergoing the most significant capital investment in decades. Across road and rail, investment in the transport network is the highest it has been since construction of the original motorway system in the 1960s and 1970s. This investment is expected to produce a significant productivity dividend with a forecast reduction in congestion of around 14% by 2021, despite population growth of 22%.

Beyond 2021, the combined effects of population and economic growth mean that traffic congestion will increase once again.

To address this challenge the *Auckland Plan* proposes over $20 billion of new transport capital spending, including the City Rail Link, the Auckland Manukau Eastern Transport Initiative and the East West Link, an extension to the Northern Bus Way and an additional Waitemata Harbour crossing.

Given the cost and the forecast increase in congestion, despite this substantial investment there are fundamental questions over value for money and whether the right mix and timing of projects has been chosen to address forecast travel patterns. A priority for the Auckland Council, potential funders and infrastructure users is to reconsider the proposed projects and undertake the *strategic review* to determine whether individually, and as a package, they are the right projects to address the long-term transport challenges facing Auckland.

This view is consistent with the official Government response to the Auckland Council, released in July, which noted "... the Government also remains to be convinced that the programme as a whole represents the right mix of projects and will provide value for money. To improve the prospects for alignment on transport policy, the Government encourages the Council to review the proposed projects to ensure the transport strategy is optimised to address forecast congestion under the likely land use pattern".

Auckland Council's modelling shows that even with the proposed projects and supporting travel demand measures, such as increased parking costs, congestion is forecast to increase significantly from 2021, affecting the majority of trips on the Auckland network. A near threefold increase in public transport and walking and cycling trips will not be enough to offset the additional

demand for private vehicle travel as the population grows. Average travel speeds are forecast to drop by 18% in the peak period and 24% in the inter- peak period by 2041. Private vehicle travel, including business travel, will become more difficult as congestion becomes more prevalent throughout the working day. From 2021, travel time to key economic centres, including the city centre, airport and ports, is forecast to increase significantly, while potential productivity gains from a larger workforce are likely to be limited by the overall performance of the transport network.

The size of the proposed programme is a significant challenge, with the Auckland Plan estimating $10 to $15 billion in additional funding will be needed over the next 30 years to deliver the proposed transport programme.

Even if 50% of these costs were met by central government, Auckland Council has not identified how it would fund its share. If it is also to co-fund other planned road and rail improvements, the Auckland Council share increases to at least $15 billion. To provide a context for the size of this challenge, if this was to be funded by debt, the annual payments of principal and interest over 30 years would exceed $700 million – equivalent to a 50% increase in Auckland Council rates or up to 45 cents per litre regional petrol tax.

While the Council is considering a range of funding alternatives – including increases in development contributions, car park charges or airport departure taxes – these options would make a comparatively small contribution to meeting its share of funding, even when taken together.

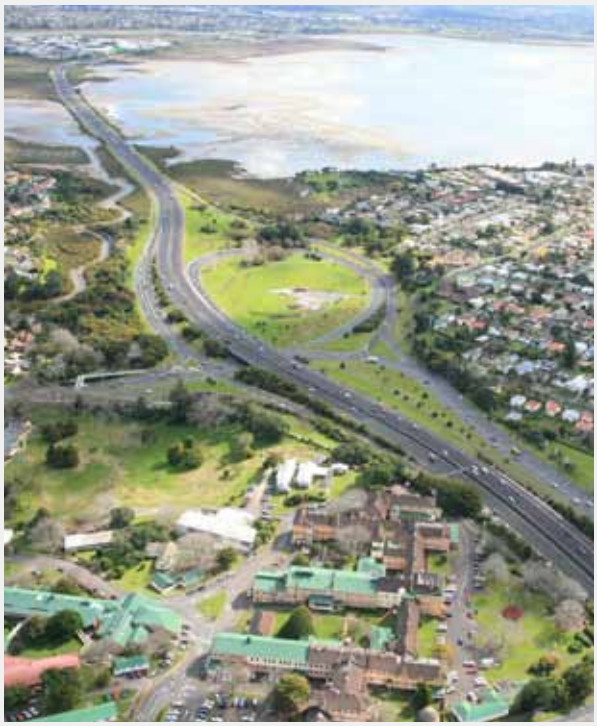
If the *Auckland Plan's* ambition level is reasonable, and the funders, New Zealand drivers and Auckland ratepayers and businesses, believe that the projected benefits of investment outweigh the cost, then it is clear that current road funding tools (central government Fuel Excise Duty and Road User Charges, and rates and other charges employed by Auckland City) will require substantial augmentation.

This strategic review needs to seek improved alignment between land use intensification and the proposed transport investment. For example, committed transport investment will improve accessibility in the west and along rail corridors, but workers and residents with limited access to rail, and those in the north, will see less transport investment to meet planned intensification, apart from city bound designated bus way corridors. Congestion can also be expected to worsen significantly throughout much of the city as more residents are compacted into urban areas without supporting transport linkages. In addition, heavy bus movements are projected into Wynyard Quarter and along Fanshawe Street while these areas are earmarked for traffic calming and greater pedestrian activity, and no major transport infrastructure investment is planned for one of the largest generators of transport trips into the city centre – the University of Auckland, apart from a railway station in Albert Street.

As well as the alignment of land use intensification and proposed transport investment, the strategic review needs to also focus on the critical elements of phasing and timing. Currently, the proposed projects designed to serve more distant suburbs expected to grow over the next 10 years, such as the Botany to Manukau bus way, are not scheduled for completion until the mid to late 2020s. In the city centre, immediate growth pressures are already apparent along the city waterfront, but the *Auckland Plan's* near-term transport investment, the City Rail Link, is planned for mid-city and beyond into areas exhibiting little foreseeable development attraction in comparison to the waterfront.

In conclusion, transport is a key enabler of economic growth and the right transport infrastructure is critical to ensuring that people and goods can continue to move efficiently in New Zealand's largest and fastest growing city – today, in 2021 and in 2041. Despite the many commendable achievements of the *Auckland Plan*, ensuring that transport investment is optimally integrated and appropriately priced to support population and economic growth needs when required, still requires further work and remains an urgent priority for the Auckland Council and infrastructure funders.

Economics and the role more targeted and comprehensive road pricing can play in managing demand



There is near consensus among economists that managing demand and optimising our transport networks through some form of more targeted road pricing should be part of the transport programme for Auckland, especially considering the forecast increase in congestion over the medium/long term. However, road users are deeply suspicious of road pricing, especially in the form of tolls and cordon fees, such as used in Singapore and London. In fact, managing demand on our roads using road pricing seems to be an issue with the widest gap between economists and the motoring public. This is despite the large scale of road pricing tools that we already have – Fuel Excise Duty (FED) and Road User Charges (RUC) – although these do not accurately reflect all the full costs imposed on road users. For example, motorists pay the same regardless of whether they travel at peak times or off-peak. Implementing a more comprehensive and detailed road pricing regime would have a number of key benefits.

On the other hand, public reaction to the general concept of targeted road pricing is usually negative, often coming from a fairness perspective. Cordon pricing in London has been seen as being very effective at pricing poorer people from the suburbs off the roads, while enabling richer central city dwellers to move around more freely. The high cost of bringing a car into the city may deprive lower-income people of important options, particularly when public transport does not provide the flexibility that a car can provide. A further concern is often a lack of trust that government will use the revenue raised for the purposes advised.

Considering this discord, it is often difficult to know where to start and how to progress the debate in a positive manner. Fundamentally, the challenge is to understand how the current network is being used and determine whether this use is as effective and efficient as it can be. Knowing this demand, and ensuring the network is being used as optimally as possible, provides clarity and robustness around what future investment will be required and when.

A key to shifting the debate forward may be in better and clearer communication of the need for future investment and the potential benefits of more targeted road pricing.

Potential benefits include:

- More efficient use of the existing infrastructure. Road demand is very uneven: traffic may be at a standstill during peak times but flow freely at other times; school holidays change peak times; and holiday weekends generate additional demands. At peak times each motorist's trip comes at a greater cost to society because of the congestion they unwittingly create for others. This means that without a way of charging for congestion, off-peak motorists are effectively subsidising peak-time motorists. Pricing incentives can help spread the traffic load more evenly between peak and off-peak periods with the overall effect of making the existing road infrastructure deliver a better service.
- Reducing or deferring the need for new spending. By reducing congestion at peak times, pricing can reduce the need for extra investment. Congestion charge revenue can be used to fund new transport infrastructure, reducing the need for revenue from other sources.
- Increased economic growth and welfare by reducing time stuck in jams and trip time uncertainty.

- Providing motorists with choices. For example, a popular innovation in the United States is to provide tolled lanes on motorways alongside free lanes (see sidebar). Most people accept peak-time congestion as a reasonable and inevitable aspect of living in big cities. However, there are times when being stuck in unpredictably crawling traffic can be very costly: for example, if you have to get to child care before the late pick-up fee is charged, or you have to catch a flight or need to get to an important appointment. Having the option of paying a toll at those times, but knowing that you will make it on time, significantly increases the value of the service provided by the road.

Just communicating these benefits is unlikely to be convincing so economists are going to need to work closely with policy-makers to implement more targeted road pricing in a way that overcomes both the practical difficulties and concerns held by road users, including:

- Equity considerations and wider impacts – some users of the transport network will have limited flexibility to change travel behaviour in response to a pricing signal. For some people the origin, timing and destination of trips will be relatively fixed and travellers will consequently have little option but to pay the charge.
- Overall network impact – there could be a negative impact on the overall transport network, particularly if traffic is diverted to other roads. This can be overcome by ensuring the pricing is comprehensive across the whole network; however, this is a much more difficult regime to implement.
- Credibility and trust – many people see demand management as either an ideological position or an excuse not to invest in the necessary infrastructure. Governments often accompany arguments in favour of demand management with acknowledgement that there must be alternative public transport, but such promises are often seen as not credible.

Road pricing schemes with a primary focus on tackling congestion are in place in London, Singapore and Stockholm. These cities have dense urban forms and highly developed public transport systems, with public transport accounting for the vast majority of all trips made.

By contrast, Norwegian cities have more dispersed urban forms and public transport mode shares that are more comparable with United States and Australasian cities. Norway has pursued toll rings pricing schemes with the key objective of raising a specified amount of revenue to fund a defined package of transport projects. While these schemes also have a positive impact on congestion, this is very much a secondary objective.

US cities (see Washington Beltway example) have generally provided additional lane capacity in the new infrastructure and then priced it to provide a better level of service than the adjacent congested current lanes.

Washington Beltway

The decision to incorporate dynamically tolled lanes into the Washington Beltway resulted from an entrepreneurial proposal where private investors came up with an idea of how an additional lane could be incorporated into an existing right of way, and were willing to pay for that investment out of the expected toll revenue.

The toll lanes are dynamically priced to ensure predictable travel times on the tolled lanes. Such dynamic tolls may rise during peak hours or during holiday events, but be very low during off-peak times. A motorist has the choice of travelling on the congested free lanes or paying the going rate to achieve a guaranteed travel time.

As a result, motorists using the Beltway (so far, only the part of the Beltway that passes through the state of Virginia, which has a well-articulated PPP policy) will have an improved service even if they use the existing free infrastructure, while the revenues from road pricing deliver additional infrastructure.

Gaining traction on urban road pricing will require a focus on what will work best in the New Zealand context. This is likely to include a comprehensive package of measures, including both pricing and non-pricing tools, innovations using new technologies and non-asset solutions. These innovations are all part of managing demand and optimising the existing network.

Road pricing generates vigorous debates – this discussion is worth having. It should be a long-term goal to move further towards a more comprehensive and targeted road pricing system, understanding that a key challenge is to close the gap in understanding and motives between economists, road users and decision-makers.

As always, the key question to ask at each step along the way will be whether the additional costs of the scheme will be outweighed by the benefits to the users of the transport system, particularly those who are paying.

Focus on Christchurch

The Plan was released soon after the catastrophic 22 February 2011 earthquake. With population and economic growth as two key drivers of infrastructure demand, the Plan recognised challenges in predicting the future size and make-up of Christchurch. The Plan also noted the opportunities ahead with the redesign and rebuild and the potential for innovative approaches to deliver infrastructure and quality of life.

Coordination

There are two dimensions to the recovery – the short term and the longer term. We must not lose sight of the longer term in dealing with the immediate pressures to fix infrastructure and accommodate businesses and residents displaced from the central city and red zones.

It is essential the plan for the longer term provides resilience, best use of investment and creates opportunities in providing infrastructure to support population and economic growth in Canterbury.

The recently published *Christchurch Central Recovery Plan* (CCRP) is widely acknowledged and is now driving the central city development. Work is rapidly proceeding on a Christchurch Transport Strategy which, with refocus of the Greater Christchurch Urban Growth Strategy, will provide direction for long term infrastructure. The CCRP provides clustering for justice, health and civic amenities to be developed. A blueprint for education has been promoted that embeds future delivery with school recovery and rebuild priorities. Coordination across all of these plans and strategies is critical, especially the integration of infrastructure with land use.

With such a significant infrastructure programme, the typical business as usual approach will not be sufficient – this creates a great opportunity for a bold new leadership approach and an integrated cooperative approach. The Stronger Christchurch Infrastructure Rebuild Team (SCIRT), which is accountable for operational prioritisation and programme implementation for the infrastructure rebuild, is an innovative initiative that provides a proactive resource for planning and construction.

Challenges and opportunities ahead

The Christchurch situation provides an opportunity to address future needs based on service rather than built assets, relating the service to future demand, spatial development and resilience. For this new view to be successful, it will require adventurous planning, focused collaborative governance and courage to explore different opportunities.

Time and public demands create a significant challenge in striking the right balance between recovery (operational prioritisation) and strategic infrastructure

need (the long-term economic value and service). The base level of information needed for long-term planning is only just emerging and it will take time to evaluate the opportunities and options. Geotechnical and land profile information is now available to guide land development, building foundations and storm water standards. Consultation and collaboration – also critical to ensure the right long term outcomes – need highly skilled and proactive project management over time.

There is a real opportunity among the challenge of funding resilience, betterment and long-term strategic provision. Central and local government – with insurance assistance – will fund most of the infrastructure rebuild and local government will be accountable for service levels. There is an opportunity for the provision of the assets to come from alternative models of ownership and funding, which require less government capital.

As an example of these challenges and opportunities, consider the following infrastructure sectors:

Telecommunications and energy

Resettlement will provide the opportunity to establish resilience, services and capacity levels for particular locations (eg, business and industrial areas). There is also the opportunity to deliver a well-integrated broadband rollout and strategically consider liquid fuel storage and distribution, gas reticulation and district energy schemes.

Transport

The distribution of population in Christchurch will change and the rebuild provides opportunity to provide an invigorated strategic direction for passenger transport, commercial routing (eg, port, airport, rural and industrial connections), light vehicle travel, cycling and walking, but these must be aligned with the new visions and strategies.

Wastewater and storm-water systems

Both suffered extensive damage owing to land movement, made worse by the very flat topography of Christchurch and its gravity-fed system. Reinstatement and future strategic provision are priority challenges facing the rebuild teams because capacity tolerances are marginal and topographical challenges are difficult to engineer through. A single wastewater treatment plant located on liquefiable land is a resilience risk. Urban developed land should not be flood prone and a longer-term and broader perspective to flood protection and management needs to be taken.

Environmental Infrastructure

Air and water discharge quality have historically been significant environmental issues for Christchurch. The rebuild provides a unique opportunity to incorporate initiatives that will deliver a quantum step change in improving this area.

Fundamentally, it is essential to move beyond the current focus on operational prioritisation and interdependencies. Infrastructure owners need to organise and collaborate to ensure that the primary objective is to reinstate infrastructure in a strategic way. They need to collectively consider factors such as spatial planning, enhancement opportunity, service resilience and future-proofing in order to achieve long-term economic, environmental and social outcomes.

Risk management, resilience and insurance

The Plan describes resilient infrastructure as being able to deal with significant disruption and changing circumstances. This recognises that resilience is not only about infrastructure that is able to withstand significant disruption but is also able to recover well. Buildings and lifelines that save lives are a priority, while the earthquakes also revealed the resilience of widely distributed but highly collaborative networks.

There are risks and high costs in over-investing in infrastructure as the principal way of building resilience beyond the level required to protect and preserve life. This over-investment includes over-engineering and over-building. Reactions to the recently announced changes to the building standards and how they are implemented, along with the varying approaches taken by local authorities, demonstrate this risk and the importance of careful consideration and robust analysis of the costs and benefits.

Resilience involves considering the location and concentration of infrastructure. Resilience is placed at risk when significant national infrastructure is overly-concentrated in specialised facilities in one location, or heavily concentrated in one region like the upper North Island. Resilience requires consideration of the ability to "fail over" to alternative sources of supply of lifeline services such as water supply, electricity, communications and transportation as a more cost-effective way of protecting life and facilitating recovery.

Assuming that there is appropriate life-preserving building codes and compliance, adequate investment in the infrastructure lifelines, a spread of critical infrastructure across the country and sufficient investment in social capability to respond to and mitigate the costs and losses from disruption, there is still the question of financial resilience. How much should we forgo current consumption to mitigate the financial consequences of future disruption? At one extreme it could be argued that this is a private matter where individuals determine the tradeoffs they are prepared to make, based on their own tolerances for risk and ability to absorb losses. To insure *what assets* at *what cost* against *what risks*?

Disclosing information about the relative risks can send a useful signal to both suppliers and buyers. Just as ratings indicating the probability of default can give investors guidance, simple disclosure of the likelihood and consequences of a disruption in supply can inform decision-makers about the relative value of the cost and risk in the short and medium term. Not all decision-makers would need to process the information to influence outcomes for all – buildings rated as fire traps or a communications provider rated as more likely to suffer supply interruptions will have incentives to make these tradeoffs and determine how much to invest.

One question we are facing now is the extent to which the government is and should be the insurer of last resort? There is a risk that an overly-anxious government may crowd out sources of capital that are more abundant and offer more efficient pricing. On the other hand, a lack of information, short term portfolio constraints, operational complexities and other reasons may cause mispricing of risk, under-insurance and excessive economic rents relative to underlying risks.

Global insurers and local providers experienced significant losses from seismic activity in Canterbury, more than was anticipated prior to the events. As a result of the Canterbury events, insurance cover has become more expensive and available on tighter terms than previously. This will affect New Zealand as a whole; not just Canterbury. New Zealand will have to carefully consider a range of strategies to promote resilience and to reduce the severity of expected costs and losses associated with natural disasters.

The Government should ensure that capital can flow freely into Canterbury and New Zealand more widely. On the other hand, a lack of information, short term portfolio constraints, operational complexities and other reasons may cause mispricing of risk, under-insurance and excessive economic rents relative to underlying risks. It is important that information about New Zealand risk and strategies taken to improve resilience and mitigate risk are available to local and global providers of capital.

We should think very carefully about the role planning, collaboration, connectedness, networks and dispersion can play in place of insurance in reducing the financial impact of the next inevitable natural disaster.

Some questions to continue the discussion could include:

- Should we invest in more than one submarine cable network for our fibre connection to the world?
- Should we ensure that we maintain and develop at least one deep water container port in each main island?
- Should we deliberately disperse central government capability in at least two major urban areas?
- Are we satisfied that the efficiency gains from large base hospitals adequately compensate for the reduced resilience of tertiary health service delivery?

Sector Reports

Transport

An agreed way forward on funding requirements for key projects will require agreement on their merits and the analysis used to prioritise these, as well as consideration of alternatives to the current Pay As You Go funding framework.

The year

The *Government Policy Statement* (GPS) on Land Transport Funding 2012/13 – 2021/22 was published in July 2011 to guide the New Zealand Transport Agency (NZTA) and local authorities with planning their transport expenditure. Some amendment to the GPS may be required to deal with the roading reinstatement expenditure in Christchurch, which is far larger than originally estimated.

Multiple long-term plans are underway or have been developed, especially in Auckland and Christchurch, identifying key questions for provision of future transport infrastructure and raising a number of challenges relating to prioritisation, sequencing and funding.

Government has continued its extensive investment in transport programmes, especially with the urban rail networks in Auckland and Wellington and the Roads of National Significance. 2011/12 was also the second year of the 10-year Turnaround Plan for KiwiRail with new locomotives and flat deck wagons entering service.

The uncertainty and compliance costs associated with the regulatory environment have been reduced for the largest projects, with Waterview and Transmission Gully both using the new board of enquiry process.

The earthquake-related damage to the roading infrastructure in Christchurch is severe and a focus has been on rebuilding. The NZTA's alliance contracting model was adapted to establish the SCIRT alliance to coordinate repairs of underground services as well as roading. This provides an opportunity to plan the longer-term intermodal transport network through the Greater Christchurch Transport Statement.

In aviation, the National Airspace Policy released in April 2012, and its related National Air Navigation Plan (in progress), will guide aviation infrastructure investment, particularly in updating technology, and allow operational safety improvements, helping make both domestic and international aviation more time and fuel-efficient, and more reliable.

The Ministry of Transport has led a detailed financial, operational and commercial viability analysis into the long-mooted potential inter-island ferry terminal at Clifford Bay.

Increased coordination is evident, both within and across central and local government, especially in the Auckland and Christchurch contexts and the continued development of the upper North Island freight network. This builds on work to identify the key strategic freight routes and better classify the roading network (State Highway Classification System and the piloting of a local road classification system) to better understand the core functions of each road and align planning and investment where most needed. The response to the Rena ship grounding also highlighted the strength of coordination between central and local government in the transport emergency management framework.

Highlights from the past year

- GPS 2012–22 published July 2011
- Purchase of 57 new electric trains for Auckland – $1.1 billion in the redevelopment and electrification of Auckland's metro rail network
- Matangi trains entering service in Wellington
- Victoria Park Tunnel opened March 2012
- Waterview Connection consenting process
- New Kopu bridge opened December 2011
- National Airspace Policy released April 2012
- Clifford Bay financial, operational and commercial viability analysis underway
- Rena oil spill cleanup and recovery led by Maritime NZ and Bay of Plenty Regional Council
- SCIRT – alliance model previously developed by NZTA – working on coordinated repairs of roading and underground services in Christchurch

Looking ahead

Recent closures of the Manawatu and Waioeka Gorges have highlighted the demanding environments that some of our key transport links traverse and the impact on productivity of workarounds. In the case of the Manawatu, alternative routes have been available, if not ideal, to deal with the closure of a key link. The closure of the Waioeka Gorge meant a diversion of several hours for traffic to Gisborne.

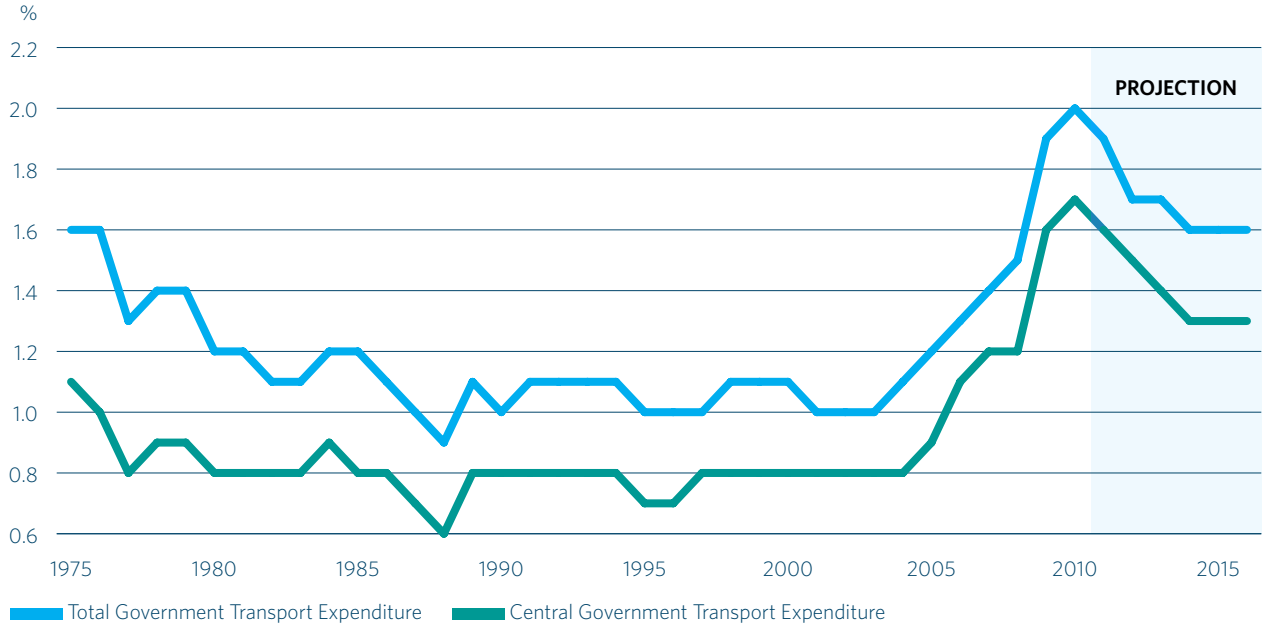
The Productivity Commission report on international freight found that productivity in New Zealand's freight sector is good, but has room for improvement. While costs have fallen over the past 20 years, productivity growth has slowed. Although commentators often query the large number of New Zealand ports with container capability, the indicators looked at by the Commission suggest that, while container productivity at New Zealand ports is below world best practice, it compares favourably with Australian ports. International shipping prices to and from New Zealand are notably higher than those to and from Australia, whereas New Zealand port costs are lower. The Commission recommended more use should be made of "facilitated discussion" models of cooperation in coordinating investment planning to minimise the risks of over-and-under-investment in additional capacity and capability at New Zealand ports. The Government is soon to release its response to the Commission's recommendations.

Regional Transport Committees have a key role in ensuring that regional programmes take account of intermodal connections, plans or opportunities for changes in use of sea and air ports and the transport implications of proposed changes in land use. Such integration is being pursued, particularly in the Auckland/Hamilton/Tauranga triangle and in the Canterbury rebuild.

A key factor in the Plan has been to balance the supply side interventions of providing new or improved transport links with optimising the use of the existing network, especially urban commuter and strategic freight routes.

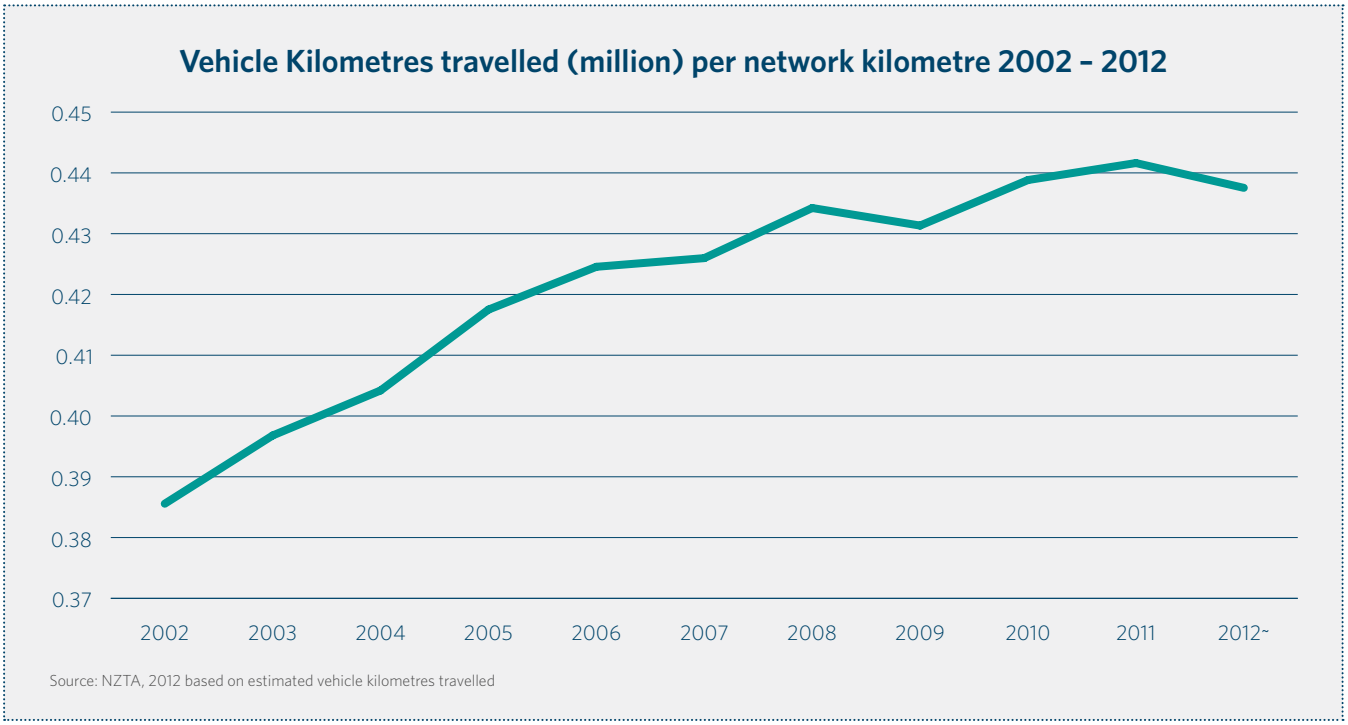
NZTA has developed investment analysis techniques to quantify direct and indirect benefits and used these to

Government Transport Expenditure as a percentage of Gross Domestic Product



Note: Includes, NLTF, Super Gold Card, KiwiRail Turnaround Plan expenditure, Metro Rail expenditure and other non-NLTF expenditure. Excludes costs associated with the purchase of KiwiRail.

Source: New Zealand Treasury, Ministry of Transport, New Zealand Transport Agency, Statistics New Zealand



Source: NZTA, 2012 based on estimated vehicle kilometres travelled

assess transport investments. It is now developing further improvements and extensions, including to determine the optimal timing of transport investments. An agreed way forward on funding requirements for key projects will require agreement on their merits and the analysis used to prioritise these, as well as consideration of alternatives to the current Pay As You Go funding framework. An acceptable long-term solution requires effective engagement with transport users and interest groups.

The numbers

Central and local government expenditure on land transport (road, rail and public transport) has increased markedly since the early 2000s after restricted spending since the 1980s. The stated justification for the increased spending has usually been that relatively low expenditure through the 1990s, combined with economic and population growth, had created a backlog of unmet need in transport infrastructure.

Capacity utilisation of the transport network has continued to grow. Vehicle kilometres travelled (VKT) per network kilometre (state highways and local roads) have grown by 17% since 2002, while the network has grown by 2%. Most of the growth in VKT and network length has been on local roads.

Telecommunications

The telecommunications sector has raised issues about the consistency of how the different infrastructure sectors are regulated, and the NIU will explore this further with the Commerce Commission and the Ministry of Business, Innovation and Employment (MBIE).

The year

The major focus across the sector has been the on-going deployment of the Ultra-Fast Broadband (UFB) and Rural Broadband Initiative (RBI), with the year one target for UFB being exceeded by more than 6,000 premises.

The structural separation of Telecom and development of open access deeds of understanding has been a major achievement, allowing Chorus to participate in UFB, putting in place a framework for open access over both networks, and resolving many of the previous competition concerns of an integrated Telecom.

There are a number of implementation issues arising from a move to new fibre technology that need to be resolved and the sector is steadily working through these, with support from government. This includes identifying and, if necessary, proposing policy solutions to issues that might affect the up-take and/or performance of UFB services. The work stream has two components:

1. issues that directly affect the end-user decision to purchase the UFB service, such as costs of home wiring upgrades or non-standard installations, and
2. routing, capacity and interconnection issues in the networks owned or leased by retail service providers to deliver services to UFB customers, including affordability of national long-distance transport services, interconnection (peering) and inefficient routing that would affect performance (such as New Zealand UFB traffic routed via United States peering points).

A National Cyber Security Policy Office was established on 1 July 2012. This office will provide coordinated and strategic policy advice to government on cyber-security threats, and will work closely with other government agencies and the National Cyber Security Centre. The National Cyber Security Centre has implemented and resourced a number of initiatives, including a Cyber Security Plan for government agencies and a partnership between the Government, NetSafe and industry to promote cyber awareness for individuals and small businesses.

The Government and industry have made significant progress on preparations for the reallocation of the 700 MHz "digital dividend" radio spectrum band to new uses. MBIE has commenced "restacking" digital television licences to clear the band and prepare it for reallocation. Industry consultation on the reallocation of the band was completed in November 2011, with submitters reinforcing the importance of the 700 MHz band for the provision of next generation mobile broadband services.

Highlights from the past year

- More than 76,000 schools, businesses, hospitals and households passed by the UFB network and 69,000 rural homes and businesses by RBI
- Approximately 1,700 kilometres of fibre laid throughout New Zealand
- UFB deployment started in 24 towns and cities
- All Local Fibre Companies/Chorus began deployment in UFB candidate areas
- Over 600 schools covered by the two initiatives including 10 of 57 remote rural schools
- Successful structural separation of Telecom
- Open access deeds for UFB and RBI
- Establishment of a National Cyber Security Policy Office
- Concluded contracts for RBI rural schools and remote schools
- Fifth upgrade of the Southern Cross Cable Networks with lit capacity increased to 2 Terabits per second by December 2012
- $365 million capital expenditure by Chorus from December 2011 – June 2012 with 80% related to broadband
- $100 million capital expenditure by TelstraClear on its network including: National backbone speed upgraded and tested to 100 gigabits per second and capability for another 10 gigabits per second of international traffic
- Closure of the legacy CDMA by Telecom freeing up spectrum for its XT network

Looking ahead

The coming year will see the continued rollout of UFB and RBI, including work to resolve impediments to the quality, capability and uptake of UFB services.

The Government will soon decide on the allocation parameters for the 700 MHz band, with a view to allocating it to commercial players in late 2012/early 2013. This will enable operators to begin network and business planning to facilitate the timely rollout of 4G mobile broadband services soon after switchover to digital television is completed in December 2013.

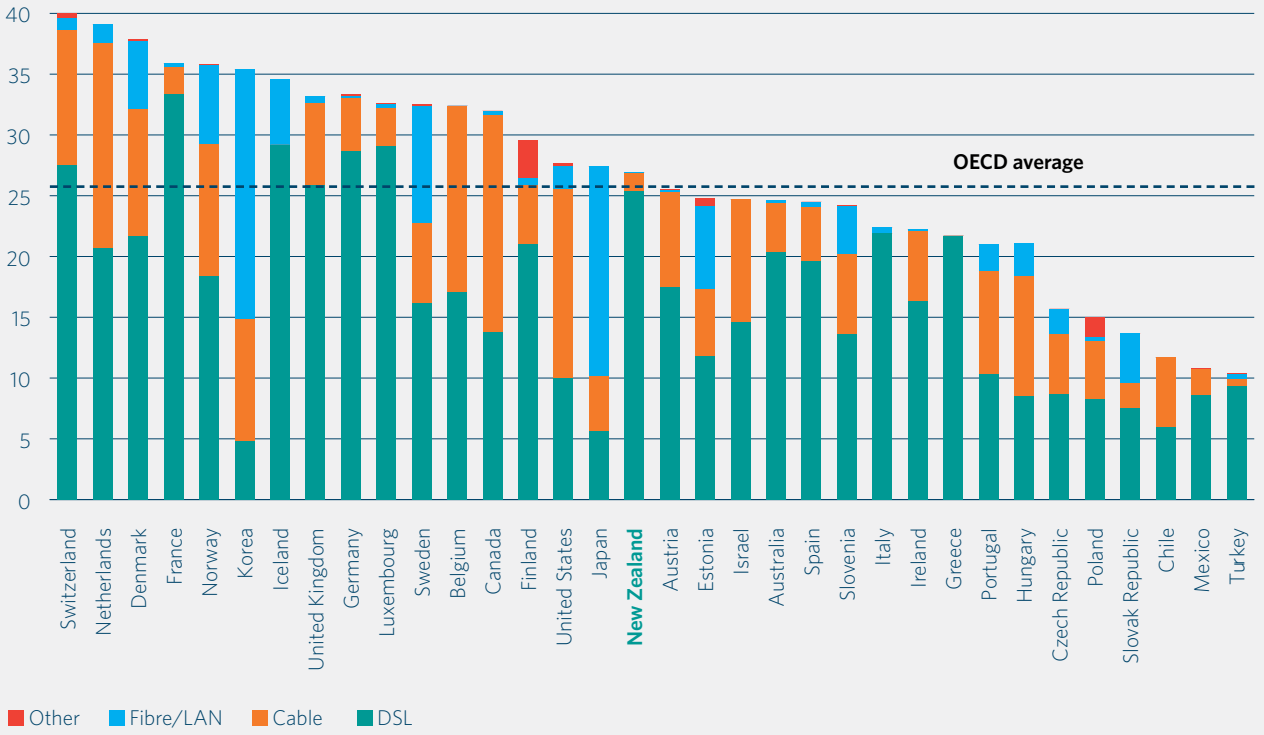
The Government will also commence two regulatory reviews to ensure current regulatory regimes provide the flexibility required for the fast moving technological world, including beginning reviews of the Radiocommunications Act 1989 and the Telecommunication Service Obligations required under the Telecommunication's Amendment Act 2011. The telecommunications sector has raised issues about the consistency of how the different infrastructure sectors are regulated, and the NIU will explore this further with the Commerce Commission and the MBIE.

The numbers

The number of New Zealand broadband subscribers per 100 inhabitants increased between 2006 and 2009, closing the gap with the OECD mean, and lifting New Zealand to 18th in the OECD. The level of uptake for faster forms of broadband, such as cable, was towards the bottom of the OECD. As at December 2011 for fixed (wired) broadband, New Zealand ranked 17th in the OECD, slightly above the OECD mean.

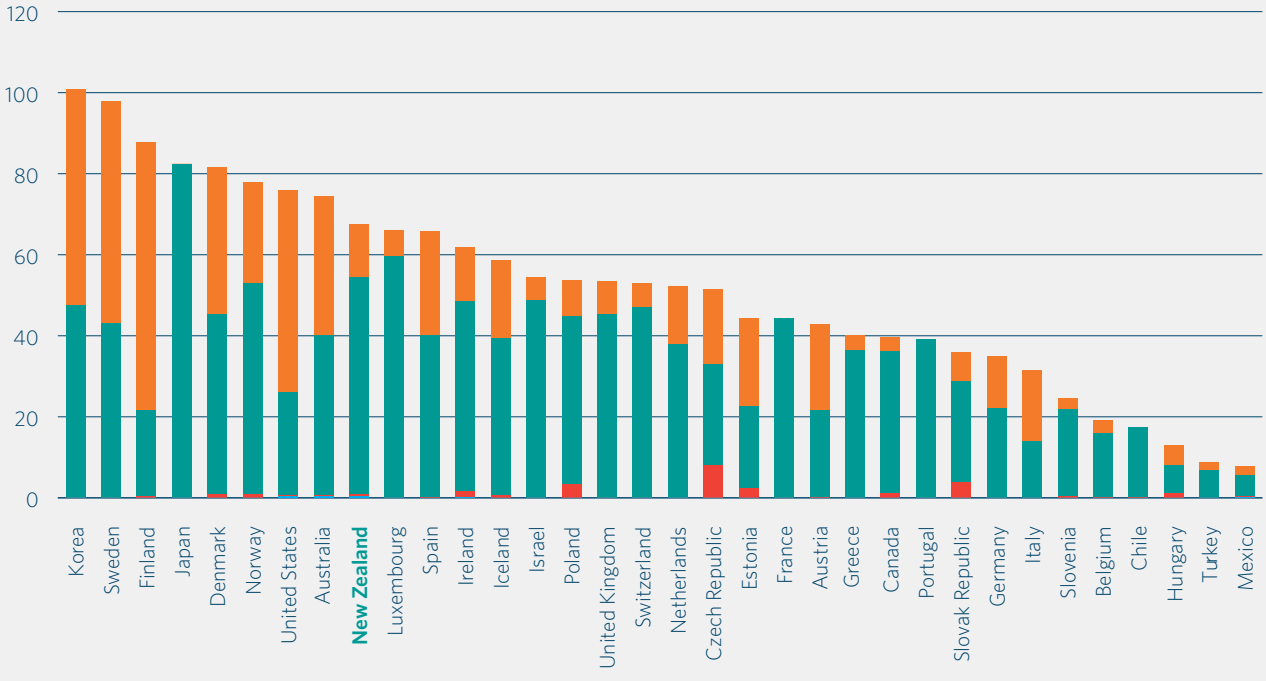
For wireless broadband, New Zealand ranked 9th in the OECD in December 2011 but with a significantly lower number of dedicated mobile data subscriptions than most countries above us.

OECD fixed (wired) broadband subscriptions per 100 inhabitants, by technology, December 2011



Source: OECD

OECD wireless broadband subscriptions per 100 inhabitants, by technology, December 2011



Note: Standard mobile broadband subscriptions may include dedicated mobile data subscriptions when breakdowns are not available.

Source: OECD

Energy

Challenges remain with realising the benefits of the improved electricity market and ensuring the appropriate regulatory settings to reduce uncertainty and enable investment in infrastructure.

The year

The *New Zealand Energy Strategy* and the *New Zealand Energy Efficiency and Conservation Strategy* were released in August 2011 to set the strategic direction for the energy sector and the role energy plays in the New Zealand economy. The *Energy Strategy* focuses on four priorities to support New Zealand to make the most of its energy potential: diverse resource development; environmental responsibility; efficient use of energy; and secure and affordable energy. The *Energy Efficiency and Conservation Strategy* contributes to the delivery of these priorities by guiding the use of energy efficient technology and practices, energy conservation and renewable sources of energy.

The upgrade of the electricity transmission grid continues with the North Island Grid Upgrade due to be completed this year. Other major projects are not far behind with the North Auckland and Northland Upgrade project and stage 1 of the High Voltage Direct Current (HVDC) pole 3 project, linking the North and South Islands, due for completion in 2013.

The Gas Industry Company is responding to industry concerns over the long-term outlook for gas transmission capacity availability, particularly in the Auckland and Northland regions. This work is supported and coordinated across the industry.

With the Electricity Authority now well established, electricity market arrangements continue to improve, with a number of priority changes to the market rules adopted

in late 2011 and due for implementation over the coming year. These initiatives are targeted at improving competition, reliability and efficiency in the market. These include demand-side bidding and forecasting, a regime to allow demand to be dispatched in a manner similar to generators, a stress testing regime that provides a disclosure mechanism for reporting on spot price risk exposure, substantially improved hedge market arrangements, a customer compensation scheme for when public conservation campaigns are required and new spot market pricing arrangements to improve incentives for investment in last-resort generation or demand-response capacity.

Significant changes were also made to distribution company arrangements to reduce barriers to competition among electricity retailers, and the *What's My Number?* campaign was introduced to encourage consumers to "shop around" for electricity to increase competitive pressure on electricity retailers.

The amount of recently built and consented generation plant indicates that there is sufficient investment occurring and planned in electricity generation plant to meet demand growth over the medium term. There are also positive signs for gas production with the announcement in January 2012 that Methanex would restart its second methanol production train at its Motonui plant, and a new gas fired thermal electricity generation plant is planned.

Resilience has been a key theme with the five-day Maui gas pipeline outage featuring in headlines in October 2011. Similarly, on 13 December 2011, the first activation of the automatic under-frequency load shedding (AUFLS) system since March 1996 demonstrated the ability of the electricity system to maintain its stability following a large and unexpected loss of generation. Both of these events affected consumers and triggered contingency systems, largely as intended, to cope with significant disturbances.

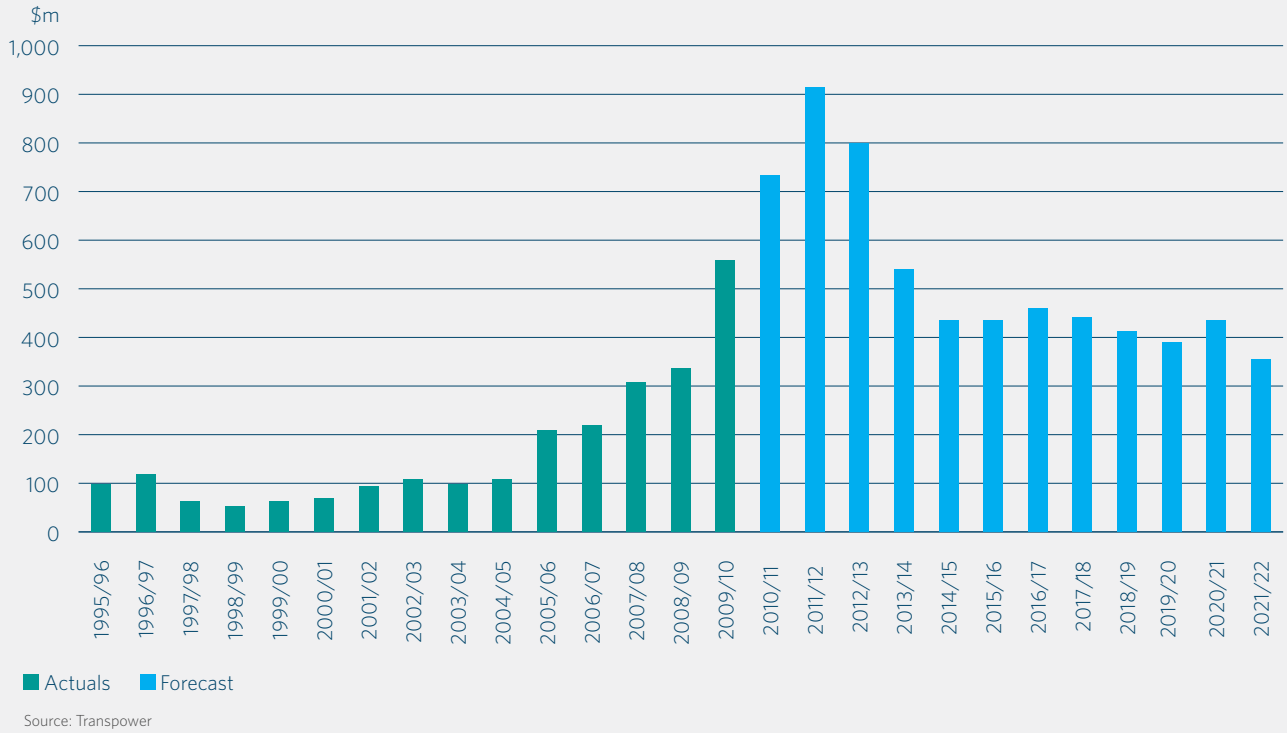
Record low inflows into the southern hydro lakes were experienced during late spring and early winter. Despite this, the market coped well and sufficient storage levels were maintained, suggesting that electricity security of supply is strong.

Looking ahead

Challenges remain with realising the benefits of the improved electricity market and ensuring the appropriate regulatory settings to reduce uncertainty and enable investment in infrastructure. The Government will continue to implement the priorities of the *Energy Strategy* and the *Energy Efficiency and Conservation Strategy*, including making progress towards 90% renewable electricity generation by 2025. Price quality regulation of gas distribution and gas transmission businesses, and the evolution of Commerce Commission processes for Transpower and electricity distribution businesses, will impact on how these businesses make decisions.

The challenge of providing an appropriate level of resilience has gained an increased profile, highlighted by the Maui gas pipeline outage, and activation of the AUFLS system. MBIE is reviewing oil security in New Zealand, including measures to improve domestic infrastructure disruption response capability and to contribute to international oil security.

Transpower capital expenditure (net sales) 1995/96 – 2021/22

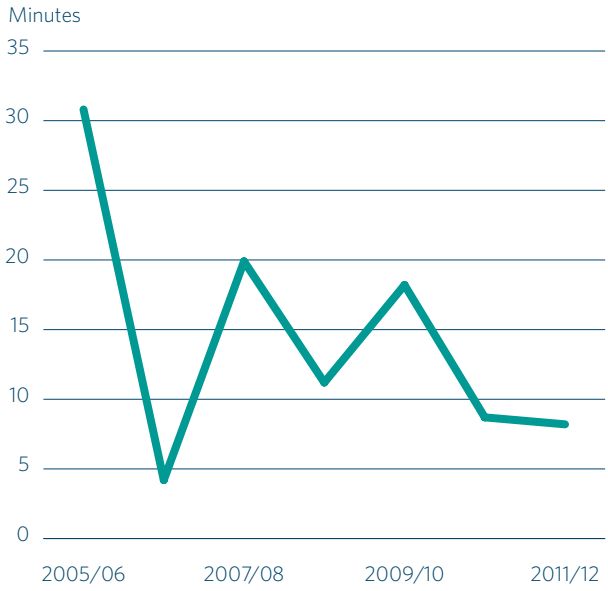


Source: Transpower

Highlights from the past year

- Release of the *New Zealand Energy Strategy (2011–2021)* and the *New Zealand Energy Efficiency and Conservation Strategy (2011–2016)*
- Decision by Refining NZ shareholders to proceed with a $365 million investment in a new Continuous Catalyst Regeneration Platformer
- Three major transmission grid projects underway:
  - North Island Grid Upgrade project – $824 million, due for completion this year
  - North Auckland and Northland Grid Upgrade (NAaN) project – $417 million, due for commissioning in 2013, and
  - HVDC Inter-island Link project – $672 million, due for completion in 2013
- The Electricity Authority developed the seven key initiatives for the electricity market
- Seventy-seven percent of electricity was generated from renewables in 2011
- The Electricity Authority's *What's My Number?* campaign resulted in a record number of customers changing electricity retailers in pursuit of the best deal
- Success of the Warm Up New Zealand: Heat Smart programme and the health benefits from retrofitting more than 164,000 homes with new insulation and/or clean heating
- Ongoing rollout of Smart metres – Vector Limited has rolled out 375,000 to date and expects 500,000 by the end of June 2013
- The Gas Transmission Investment Programme and measures to address short-term issues faced by large end users have begun to address gas transmission capacity issues
- Regulatory change bringing in a new critical gas contingency proved itself during the Maui pipeline outage of October 2011
- An increased number of consumers using the Electricity and Gas Complaints Commission indicating a greater awareness of the scheme and willingness to use it
- Meridian Energy has started construction on the $169 million Mill Creek wind farm. Located north west of Wellington, it is expected to produce 235 GWh per annum

Customer interruptions in significant* minutes 2005/06 – 2011/12



* Total minutes from events greater than one system minute.

Source: Transpower

The numbers

Over the last five years there has been significant investment in the national electricity grid. This is a turnaround from the preceding 10 years where capital expenditure barely covered depreciation. Capital expenditure has increased from $108 million in 2002/03 to $915 million in 2011/12. Planning discipline has also improved, with actual spending now much closer to planned spending in recent years.

Increased project work puts more stress on the grid with planned outages needed to commission new plant – these have increased by over 50% compared to 10 years ago. Notwithstanding the work to have projects commissioned, there is a decreasing trend in unplanned outages.

Water

This programme is intended to provide the decision-making frameworks critical to the planning and provision of long-life infrastructure and facilitating regional planning relating to water and land use.

The year

A large-scale work programme is underway, including the Fresh Start for Fresh Water (FSFW) programme and the second phase of resource management reforms (which includes consideration of the findings of the Urban, Infrastructure and Principles Technical Advisory Groups). This programme is intended to provide the decision-making frameworks critical to the planning and provision of long-life infrastructure and facilitating regional planning relating to water and land use.

Fundamental to this work is the collaborative approach being taken through the Land and Water Forum (LAWF). With 62 organisations involved, this approach seeks to generate consensus between key groups on major policy issues.

There has been continued progress on developing better information, both on actual water use (productive water) and the stock, state and performance of the water infrastructure (urban water). For the first time, all councils are producing 10-year long-term plans with the three urban water services (water supply, waste water and stormwater) clearly and separately identified. This also involves the production of financial forecasts in a consistent format that will allow the public to get a clear picture of planned expenditure and funding sources for renewal of existing urban infrastructure, or any increase in levels of service, or to cater for increased demand.

New non-financial performance measures for the three urban water services are being developed through the Department of Internal Affairs for local authorities to implement in the 2015 long-term plans.

Water suppliers are progressively required to comply with new provisions on the Health Act 1956. The *Annual Review of Drinking Water Quality in New Zealand 2010-11* reports excellent progress by large water suppliers in meeting the legislative requirements and complying with these standards. However, smaller water suppliers have greater difficulty in complying with these standards and significant capital investment may be required to upgrade smaller drinking water supplies over coming years. The Government recognises the difficulties some smaller water suppliers are facing and has instituted a subsidy scheme to assist small, disadvantaged communities to improve the quality of their drinking water.

The initial phase of the FSFW programme delivered the $35 million Irrigation Acceleration Fund and the $15 million FSFW New Initiatives Clean-Up Fund. The first allocations from these funds have been made. The *National Policy Statement for Freshwater Management 2011* is also expected to create a more certain regulatory environment over time, as councils implement explicit objectives and limits for both water takes (eg, for irrigation) and contaminant loadings (eg, for waste water and stormwater) in regional water plans.

Highlights from the past year

- National Policy Statement for Freshwater Management came into effect and the Implementation Guide released
- To date the Irrigation Acceleration Fund has allocated $13.5 million across 8 projects investigating the development of 150,000ha of new irrigation
- Establishment of a $15 million Fresh Start for Fresh Water New Initiatives Clean-Up Fund
- Release of the second Land and Water Forum Report – *Setting Limits for Water Quality and Quantity, and Freshwater Policy – and Plan-Making Through Collaboration*
- Completion of the joint Water NZ/NZ Council for Infrastructure Development water study

Water NZ and the NZ Council for Infrastructure Development commissioned a pilot study of the urban water industry, assessing 10 water authorities' performance against the principles established in the Plan. NIU has supported this study as an example of an industry taking ownership of the issues and seeking solutions in its own sector.

Looking ahead

The Government will continue working on the FSFW programme, with the LAWF's final report due later in 2012.

The performance measures work (which includes non-financial performance measures for the three urban waters) will be advanced through public consultation and also to analyse the information from the 2012 long-term plans to give a full overview of planned investment and funding of water services by local government.

An ongoing challenge is to provide more accurate and comprehensive forecasts for the renewal of the urban three waters infrastructure. Better information will increase our understanding of any long-term risks associated with the ability of small communities to continue to fund upgrades or improvements to their three waters' networks. This is particularly relevant for councils with multiple small schemes that do not comply (or may not in the future) with the NZ Drinking Water Standards or regional council discharge consents.

The Better Local Government reform programme will establish an expert advisory group to investigate the efficiency of local government infrastructure provision. Since providing the three waters services are a large part of this area, water services are expected to form a prominent part of that group's work.

With a number of potential irrigation projects being developed, the Ministry for Primary Industries will seek robust advice and analysis to ensure any Crown investment made will deliver the most benefits from a long-term regional and national perspective.

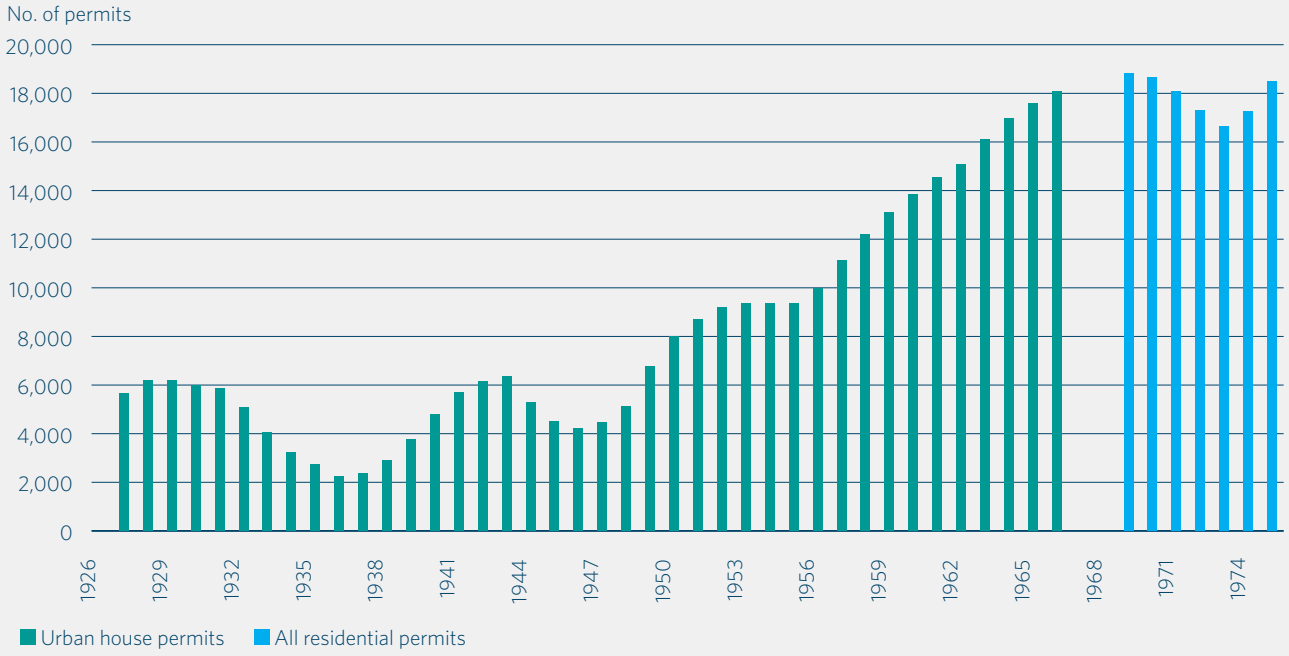
Coordination across a very diverse and wide range of interests, organisations and agencies will continue to be a key challenge and critical to providing long-term certainty to promote investment.

The numbers

A key challenge raised in the Plan related to urban water, and the "... extent to which there may be a 'hidden' long-term investment problem in the urban water sector. While the ten-year period for long-term plans has significantly improved performance targets, infrastructure 'gaps' could occur in the medium to long-term (20 to 50 years) or even further out."[1] This is related to the other key challenge identified of whether there

1 National Infrastructure Plan 2011, page 39.

Residential building permits-five year rolling average



Note: Data extracted from New Zealand yearbooks. Until 1965 the yearbooks distinguished between residential building permits in urban areas and others. From 1965 they recorded all residential building permits without distinguishing those issued in urban areas.

Source: Graph and concept developed by Keith Millar and initially published in Policy Quarterly (Volume 8, Issue 2, May 2012)

are sufficient resources in each local authority area or community to meet the cost of deferred maintenance on aging assets.

An indication of the scale or the timing of this hidden long term investment can be gained from looking at the timing of when the pipes went into the ground.

As shown in the graph above, there was a steady increase in residential building permits in the post-war period through to the mid-1960s. At this point, they levelled off at approximately 16,000–18,000 annually. Reticulated water assets have a book life of 60 – 100 years and it is now 60 years since the start of the post-war increase in building permits so councils are now starting to consider renewal issues. If the typical materials have proven to have a reliable life of 80 years, then arguably, we are 20 years away from the pressure of a large scale renewal programme, giving time for councils to plan for this.

Social

With over $108 billion of social assets owned by the taxpayer, compared to $550 million of new capital expenditure in Budget 2012, even a small improvement in getting better value from these assets has considerable benefit.

The year

As outlined in the *Supplement to the 2010 Investment Statement*, the government's focus has been on the strengthening the use of existing Crown capital and more actively reprioritising Crown capital to its highest value use.

With over $108 billion of social assets owned by the taxpayer, compared to $550 million of new capital expenditure in Budget 2012, even a small improvement in getting better value from these assets has considerable benefit. This value could come through sharper asset management practices, or innovation in how services are delivered to make better use of the infrastructure.

Asset management

The primary focus is on the 16 capital intensive agencies – the government agencies with the largest capital base, including the education, defence, health, and housing areas.

An independent report on asset management maturity was commissioned from GHD Ltd and completed earlier this year. This provided useful baseline data across 13 of the capital intensive agencies that together manage over $66 billion worth of physical assets and software. The report showed that all but one agency had a gap between current and target levels of asset management maturity. In particular, the gaps were the largest in the "enablers" area, which focuses on ensuring the agency has the people, processes and information systems capability to sustainably deliver requirements over time.

Innovation and service delivery

A number of agencies and sectors have implemented or are exploring new initiatives to improve the link between the services government wants to provide and the assets needed to deliver these. Some of these include:

- a nationwide review of the school property portfolio (comprising 2,400 schools with a replacement value of $19 billion). The review is being undertaken by Beca to provide advice that helps the government create a high performing service delivery model for managing school property
- the justice sector working together across departments to undertake a stock take of its asset base to assess which

assets are cost effective and fit for purpose to deliver on sector priorities now and into the future. This may identify surplus assets for possible disposal

- establishment of the Health Capital Investment Committee to develop a new centrally-led process for the national prioritisation and allocation of health capital funding. A sub-committee of the National Health Board, it will manage long-term capital and asset management plans that are driven by future service needs
- reviewing Housing New Zealand Corporation's (HNZC's) Asset Management Strategy and realigning the Crown's investment of $15.1 billion in state rental properties to meet demand where it is highest, and targeted to ensure those most vulnerable can be housed. This extensive work programme includes the August launch of 24 redevelopment projects (approximate cost of $45 million) across Auckland to build and refurbish at least 150 houses – some to be state rentals, and the rest for private ownership and other social housing providers.

At a system level, the Treasury has developed a performance reporting framework for social assets as a step towards identifying key performance areas and indicators. These are central to understanding how well assets are meeting their intended purpose and identify areas for improvement or further investigation.

Better allocation of new investment

Bringing greater discipline to investment decisions and supporting the better allocation of new investment, the BBC methodology continues to be applied to all large investment proposals. A revised version of the guidance material and documentation was released in August and training is being delivered in Auckland, Wellington and Christchurch on a monthly basis. A number of local authorities are also picking up the methodology and engaging in the training. A new *Better Capital Planning and Decision Making Guide* was also released; this shows how agencies can deliver better value for money through better capital planning practices. It also describes how the main government capital decision making and accountability processes fit together.

Looking ahead

The key focus for the next year will be to continue to bed in the new discipline around capital spending and use. There will also be a focus on aligning this with the new Better Public Services programme to ensure that infrastructure supports the delivery of services and achieving the government's key outcomes.

As identified in the GHD report, a key challenge will be for agencies to improve their asset management maturity, in particular, more emphasis on asset management planning aligned with the services the agency needs to deliver over the medium-term. Agencies also face a challenge in developing robust asset management plans, some for the first time. As the lead in this area, Treasury will focus on supporting agencies, expanding the BBC methodology in a cost effective way, rationalising the array of information collected and making more systemic use of this material. This work will support the capture of future capital intentions information for the first 10 year *Capital Intentions Plan* in 2013.

Highlights from the past year

- Baseline assessment completed of key capital intensive agencies asset management maturity
- Contract signed for first School Public Private Partnership – Hobsonville, with Primary School due to open January 2013
- Over 600 schools covered by UFB/RBI including 10 of 57 remote rural schools
- $1.4 million investment in new Early Childhood Education places in South Auckland
- Contract signed for new Public Private Partnership Prison at Wiri
- Redevelopment of Gisborne Court ($11 million) and approval to extend and improve Manukau Court ($41 million)
- New or refurbished Police stations – Ormiston Road ($10.2 million), Otahuhu ($8.6 million), Manurewa ($6 million), Pukekohe ($2 million), Rolleston ($1.6 million), Rotorua ($18 million) and Wanaka ($3 million).
- Opening of a new shared facility between Police and Child, Youth and Family in Whakatane
- HCNZ announcement of its major housing upgrade and planned increase of overall social housing in urban Auckland
- Foundation stone laid for construction of a new $65 million Whakatane public hospital
- New $3 million Elekta Synergy Linear Accelerator installed by Canterbury District Health Board
- Announcement of a $1 billion investment in an education recovery and renewal programme for Canterbury schools

The government is seeking new opportunities for innovative and new practices to better align infrastructure provision with service delivery; one example is the $1 billion education recovery and rebuild programme in Christchurch over the next 10 years. This provides opportunities for innovation in how schools are designed, built and used.

More strategically, Treasury will continue to drive a focus on better using the balance sheet and understanding the longer term costs of ownership and value of holding assets.

Following the successful contract close of the two pathfinder PPPs – Hobsonville schools and Wiri prison – the government will continue investigation and analysis on the range of projects that may suitable for PPPs. The projects currently being investigated or having been flagged for investigation include: Whole of Government Radio Network, Clifford Bay ferry port, Roads of National Significance (Transmission Gully and Waikato Expressway near Huntly), the Christchurch justice sector hub, and Middlemore Hospital.

The numbers

As the scale, sophistication and criticality of assets needed to deliver government services increases, it becomes increasingly important to have clear linkages from direction setting, through planning, decision-making, delivery activities and fit for purpose information sets. These factors enable managers to have a clear view of what is actually happening, the impact of their decisions and the justification for resources. This view is critical to achieving the outcomes of the Plan and the focus in the social sector of making better use of existing assets.

The methodology for the GHD review of asset management maturity was drawn from authoritative published material such as the NAMS International Infrastructure Management Manual 2011 (IIMM) which aligns with the internationally recognised PAS55. This gives scope for the reviews to be repeated at a later date to track progress and measure improvements.

The assessment methodology of the review probed into 17 attributes of asset management practice that span the asset life cycle. In the chart above, these are grouped into three main parts of the asset management process:

- understanding and defining requirements
- making decisions, and
- asset management enablers.

The results reveal a wide variation in maturity around these 17 asset management attributes. Across the 13 agencies, some of the largest gaps in capability are in asset management planning and asset information systems, which are key to enabling more mature practices.

Compared with the two other main asset management processes, weaker levels of maturity in the "enablers" process imply that:

- today's life-cycle decisions may not be as well informed by plans, information and analysis as they should be given the scale and complexity of assets under management, and/or
- most agencies need to invest more in their asset management capability (ie, enablers) in order to minimise future fiscal and service delivery risks or deliver cost effective services.

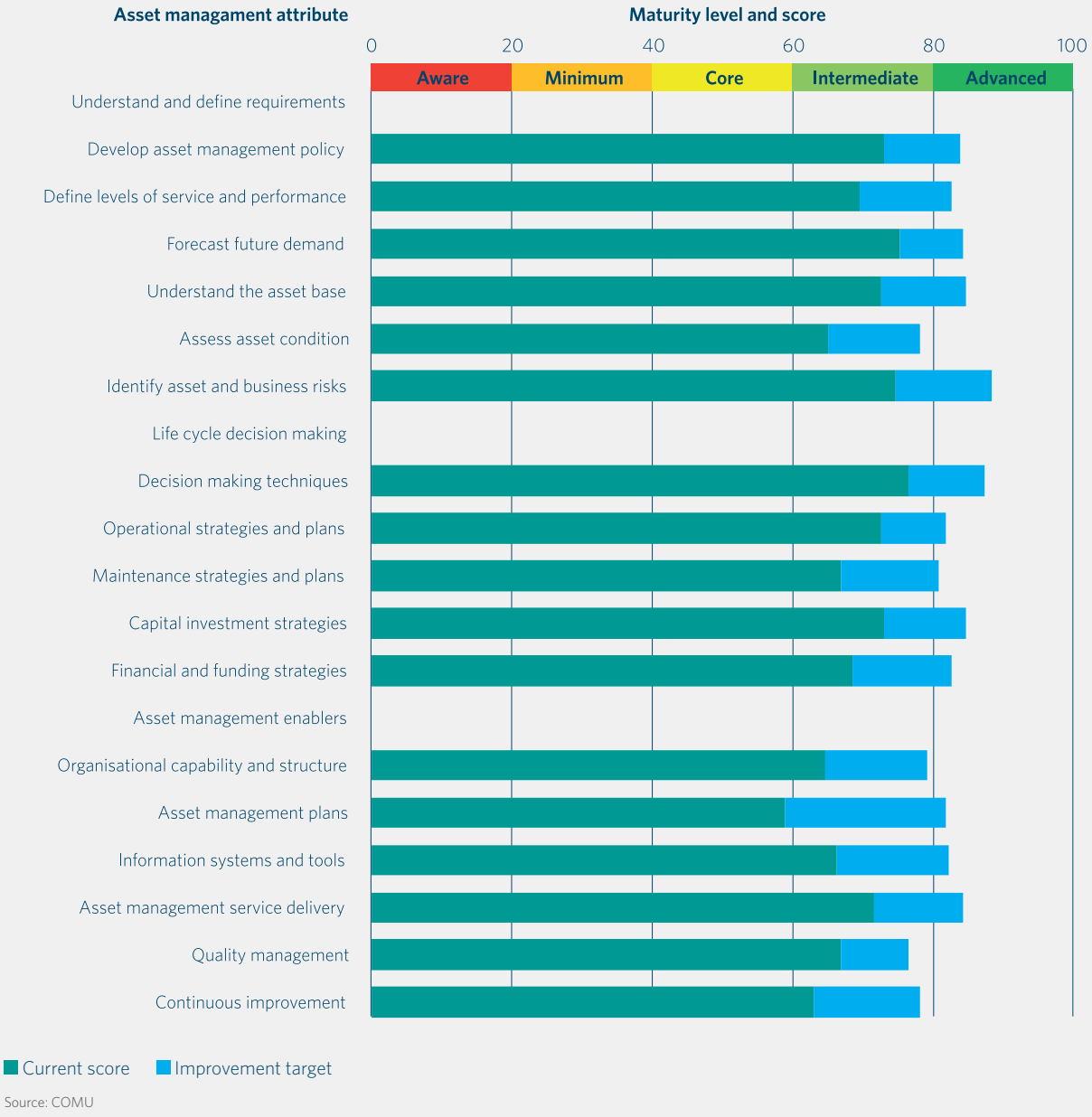
Practices have improved since 2009 when Treasury last asked agencies to make a self assessment, yet there is clearly scope for further improvement

As fiscal constraints bite deeper, agencies will face even tougher choices about where to invest or maintain capability. Without such investment, agencies (and government) will carry more risk to service failure or poorer quality decisions than would otherwise be the case.

The Treasury will be following up with agencies on their asset management improvement plans and increasing its monitoring activity around social assets; in particular, to develop performance metrics in consultation with agencies. There will also be more emphasis on the quality of long-term asset management plans relative to service delivery requirements and encouraging exemplar agencies to share their expertise.

Asset management maturity scores 2011 by attribute

(averages for current and appropriate level of maturity)



Source: COMU

Auckland

A priority for the next year is for the Auckland Council to work with central government to identify an approach that addresses congestion, is well integrated with the urban form and affordable housing objectives, and ensures the individual projects and wider programme are affordable and deliver the best value for money.

The year

The key focus for the year has been the Auckland Council's development of the first spatial plan to contribute to Auckland's social, economic, environmental and cultural wellbeing through a comprehensive and effective long-term (20- to 30-year) strategy for Auckland's growth and development. The *Auckland Plan* takes a long-term view and sets out a view of the requirements and location of critical infrastructure, services and investment. This recognises that the timing, location and future upgrading of critical infrastructure have a major bearing on where and when new communities can be established and whether existing communities can grow. The *Auckland Plan* looks to manage the transport system as a single network across Auckland and with strong inter-regional connections. A range of central government agencies have been working with Auckland Council to discuss the *Auckland Plan*'s implementation and implications for the future.

Councils across the upper North Island recently signed an agreement to co-operate on matters of shared interest, such as transport links, other forms of infrastructure, and land use planning, under the banner of the Upper North Island Strategic Alliance. Alongside this, NZTA has led the development of an upper North Island freight strategy, increasing coordination, understanding and planning for how to ensure the transport infrastructure best supports the movement of goods and freight.

Highlights from the past year

- $695 million invested in local roads and highways
- Purchase of 57 new electric trains for Auckland – $1.1 billion in the redevelopment and electrification of Auckland's metro rail network
- $272 million invested in other public transport services and infrastructure
- Victoria Park Tunnel opened March 2012
- Waterview consenting process
- $235 million invested in renewing and extending water and waste water infrastructure
- Major electricity investments underway – North Island grid upgrade, North Auckland and Northland grid upgrade
- Contract signed for first school Public Private Partnership – Hobsonville
- $1.4 million invested in new early childhood education places in South Auckland
- Contract signed for new Public Private Partnership Prison at Wiri
- Approval to extend and improve Manukau Court ($41 million)
- New or refurbished Police stations at Ormiston Road ($10.2 million), Otahuhu ($8.6 million), Manurewa ($6 million) and Pukekohe ($2 million)
- NCNZ's announcement of its major housing upgrade and planned increase of overall social housing in urban Auckland

Looking ahead

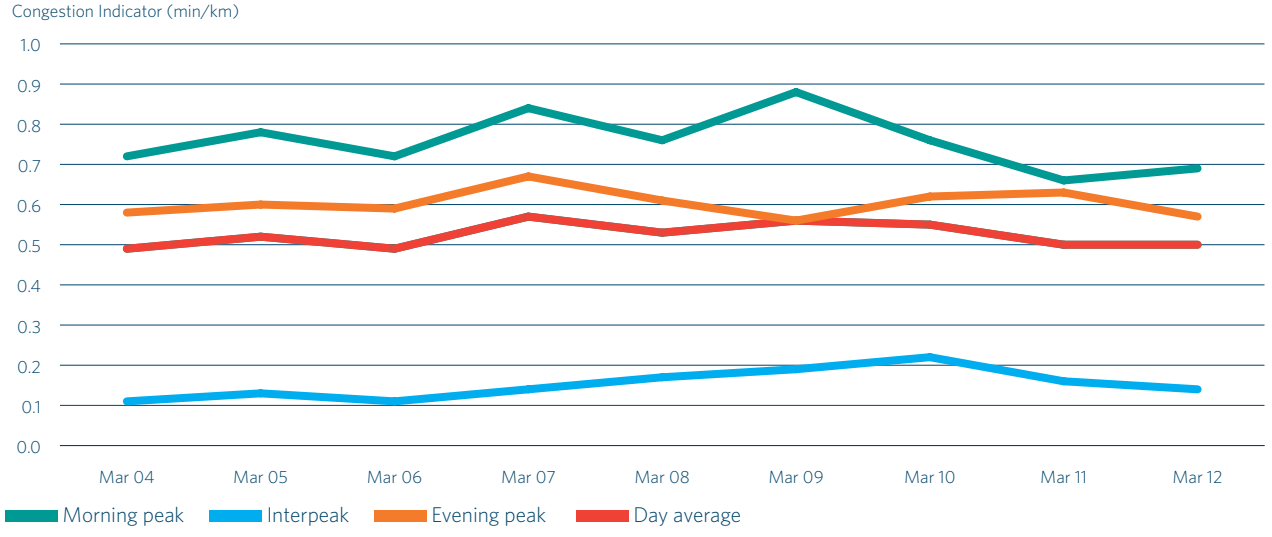
Although the *Auckland Plan* has been completed – a significant achievement in itself – the next phase of work is critical with the development of the Unitary Plan and the Long-Term Plan. The Unitary Plan is the principal means of applying the Resource Management Act 1991 and details how Auckland is designed and developed. The Long-Term Plan is the key funding tool, prioritising the funding to deliver the actions in the *Auckland Plan* on a staged basis. Ensuring that all three plans work together will require ongoing strengthening of coordination across and within central and local government, and aligning strategic goals at all levels.

It is not clear that the transport strategy in the *Auckland Plan* will effectively address the anticipated growth in demand for travel and associated congestion. Alongside this, the funding required to deliver the projects proposed in the *Auckland Plan* is substantial and will pose affordability challenges. While the *Auckland Plan* outlines the Auckland Council's aspiration, a priority for the next year is for the Council to work with central government to identify an approach that addresses congestion, is well integrated with the urban form and affordable housing objectives, and ensures the individual projects and wider programme are affordable and deliver the best value for money.

A challenge ahead for the Council is the sheer scale of the proposed work programme and to continue strengthening its capability to undertake the robust investment analysis and strategic alignment needed.

Congestion, in Auckland, as measured at a number of sample sites, continued to rise overall during the 2000s but now appears to be levelling out. The current analysis does not enable the effect of significant investments in the urban road and public transport networks in reducing congestion to be distinguished from the underlying effects of the economic downturn but future work may enable such effects to be separated. Other ways to measure network effectiveness in terms of average speed and traffic flow are also being investigated.

Comparison of Auckland Congestion Indicators 2004 – 2012



Source: Beca

Christchurch

The funding implications of the reinstatement and recovery places critical importance on robust investment analysis across the entire programme to ensure value for money for the Christchurch ratepayer and the New Zealand taxpayer.

The year

A major focus over the past year has been establishing the processes and mechanisms for the recovery and rebuild of Christchurch's horizontal infrastructure. The scale of damage has been substantial and it has been a notable achievement to return to basic levels of service across Christchurch (eg, having all but a limited number of red-zoned households connected to the wastewater system).

A stocktake of the damage to the infrastructure assets demonstrated the scale of damage and the need for a well coordinated and sequenced work programme over multiple years to complete the $2.5 billion rebuild.

The Christchurch City Council, NZTA and the Canterbury Earthquake Recovery Authority (CERA) (as a Client Governance Group) and five construction partners have established an alliance (SCIRT) to coordinate the repairs and rebuilding required. Currently, the monthly spend on the repairs and rebuild is approaching $40 million.

Alongside the physical work of the reinstatement, the SCIRT partners are investing in planning and asset design to enable considerable scaling up of construction. This will incorporate increased resilience to insure against the impact of future seismic activity, as much as is economically practicable.

The earthquakes had a significant impact across Christchurch's social infrastructure, especially the health, education and housing sectors. Through necessity, government agencies and service providers have developed innovative ways of delivering their services. These include: an online system allowing care records to be shared between health professionals; Recovery Canterbury, a support hub for business affected by the earthquakes; and centralised scheduling of facilities across different court jurisdictions, alongside rapidly creating new capacity for court trials using portacoms on a site with a two year lease. These and other innovations demonstrate ways that infrastructure can be used more effectively and efficiently now or in the future.

Looking ahead

As noted by the National Infrastructure Advisory Board earlier in this report, a fundamental challenge over the next year is to progress the recovery in a timely manner while ensuring the long-term strategic infrastructure need is properly assessed

Key facts and figures relating to infrastructure damage

895	kilometres of road required rebuilding
46%	of Christchurch urban roads required resealing
124	kilometres of water supply mains damaged
111	of Christchurch's 175 freshwater wells required repairing
300	kilometres of the sewer system damaged
8	sewer pumping stations needed replacement
150	retaining walls in Lyttelton needed repairing
12	kilometres of Avon River stopbanks weakened
9,000	rooms in hospitals damaged
635	rest home beds lost
106	inpatient beds closed at Christchurch Hospital
209	schools damaged
8	Police stations damaged

and options evaluated. Delivering on the various recovery plans, including the recently released *Christchurch Central Recovery Plan*, is a key part of this process and a priority.

The funding implications of the reinstatement and recovery places critical importance on robust investment analysis across the entire programme to ensure value for money for the Christchurch ratepayer and the New Zealand taxpayer. Use of BBC methodology will help facilitate this, both for individual projects and at the more strategic and long-term programme level. The BBC methodology also facilitates the opportunity to pick up some of the innovative lessons from Christchurch to make more efficient use of infrastructure elsewhere. The $1 billion education recovery and rebuild programme over the next 10 years is an example of this opportunity.

The scale of the rebuild programme creates significant logistical issues, so work must be well coordinated to maximise efficiencies and minimise disruption to the community. CERA is further developing monitoring, performance evaluation and feedback to increase these efficiencies. There will also be a focus on incorporating innovation into the design and planning to ensure maximum service standards. This requires enhanced communication and increasing the information available to the general public.

As well as taking the opportunity to increase the resilience of the infrastructure, there will be a focus on incorporating innovation into the design and planning to enhance the cost effectiveness and levels of service delivered.