

Bridging the Infrastructure Gap

Funding and financing for a resilient Aotearoa New Zealand

A REPORT BY **KALI MERCIER**





∨

“Infrastructure forms the backbone of a functioning society. From connectivity to migration to climate change, infrastructure touches every aspect of human life.”

United Nations Office for Project Services





Table of Contents

1

Executive Summary

6

Recommendations



12

CHAPTER 1. Understanding the infrastructure deficit

- Current investment in infrastructure is inadequate to meet the needs of challenging times ahead - 13
 - ▶ Decades of underinvestment - 17
 - ▶ Boom-bust investment and fluctuating political priorities - 18
 - ▶ Case study: Decades of indecision on the future of the Auckland Harbour Bridge - 21
 - ▶ A focus on new projects at the expense of maintenance - 23
 - ▶ A rapidly growing population - 24
 - ▶ Higher expectations, rapidly increasing costs, and some big future challenges - 30
- How does Aotearoa New Zealand compare internationally? - 32
- Budget and time overruns cost money - 36
- How can Aotearoa New Zealand reduce cost and time overruns? - 37
- The overall cost to build here is not significantly higher than elsewhere - 39
- Room for improvements in efficiency - 41
 - ▶ Delays caused by decision-making processes - 41
 - ▶ Improve public procurement capability - 42
- Save costs with good planning and a clear pipeline - 44
- Developing a clear pipeline will require bi-partisan support - 46
- Chapter 1 - Recommendations - 48

49

CHAPTER 2. How infrastructure is funded and financed in Aotearoa New Zealand

- Pay for it now, or later - but pay for it you must - 49
- Who builds infrastructure in Aotearoa New Zealand? - 52
- How infrastructure is currently funded and financed - 54
- Applying the fairness principles to infrastructure investment decisions - 55
- Options for central government to fund and finance infrastructure - 59
 - ▶ Taxation has several advantages as a funding option, but is unpopular - 59
 - ▶ Central government has scope to borrow more - 61
 - ▶ The government can also finance projects through private investment - 63
 - ▶ Case study: Asset recycling in Sydney's WestConnex motorway scheme - 65
 - ▶ Debt funding is not appropriate for all purposes - 67
- Options for local government to fund and finance infrastructure - 73
 - ▶ Local government faces historic cost pressures - 73
 - ▶ Local government has limited tools to respond - 75
 - ▶ Raising rates - a necessary evil? - 76

- ▶ Most local councils have headroom to borrow more to fund infrastructure - 77
- ▶ Borrowing under the infrastructure Funding and Financing Act 2020 - 83
- ▶ Case study: Moa Point sludge minimisation facility - 84
- Should more money be redistributed from central government to local government? - 85
 - ▶ Redistributing funds from central to local government could be the most straightforward way to increase the revenue of local councils - 89
- Other revenue-delivering options can support central and local government - 93
 - ▶ Attaching revenue to infrastructure provision means more infrastructure can be built - 93
 - ▶ Attaching revenue to infrastructure can lead to its more efficient use - 94
 - ▶ Options for increasing revenue include value capture and development contributions - 94
- Road tolls and congestion charging - 97
 - ▶ Road tolling is simple in concept - 97
 - ▶ Tolling can be complex to implement - 99
 - ▶ Congestion charging can bring other benefits - 101
 - ▶ Roads are funded in a variety of ways - which is best? - 102
- Volumetric charging as a way to fund water infrastructure - 104
 - ▶ Volumetric charging models must consider affordability and equity - 105
- Chapter 2 - Conclusion and recommendations - 107

114

CHAPTER 3. Public-private partnerships

- What are PPPs? - 114
- How do PPPs differ from more traditional procurement? - 117
- Performance of PPPs - what the research says - 118
 - ▶ Reducing cost and time overruns - certainty over construction costs - 119
 - ▶ Overall cost and value for money - 121
 - ▶ Whole-of-life quality, and better-maintained assets - 125
 - ▶ Risk allocation - 126
 - ▶ Innovation and best practice - 131
 - ▶ Can PPPs provide an off-balance sheet option? - 131
- PPPs in Aotearoa New Zealand - 132
 - ▶ Schools - 134
 - ▶ Prisons - 135
 - ▶ Roads - 136
- What type of projects are PPPs best suited to? - 138
- Opportunities for iwi to invest in PPPs - 139
- Progressive PPPs may be worth investigating - 140
- Traditional procurement processes should be improved - 141
- Improving government capability and increasing competition - 142
- Chapter 3 - Conclusion and recommendations - 143

148

CHAPTER 4.

City and regional deals: Bridging the gap between central and local government

- City deals are a collaborative approach to urban development and governance - 149
- City deal financing - public and private options - 150
 - ▶ Case study: Manchester. An example of a successful city deal - 151
- Advantages of the city deal concept in Aotearoa New Zealand - 153
 - ▶ City deals may support councils grappling with a lack of resources - 153
 - ▶ There is already precedent for city deals in Aotearoa New Zealand - 153
 - ▶ City deals can provide certainty and help address Aotearoa New Zealand's lack of steady infrastructure pipeline - 154
 - ▶ City deal successes can be realised relatively quickly - 154
- Challenges and lessons from international city deals - 156
 - ▶ Longer-term city deals struggle to survive short-term changes in government - 156
 - ▶ City deals have the potential to create inequality between and within regions - 156
 - ▶ Competitiveness can outdo collaboration - 157
 - ▶ Additional capacity is needed for oversight, monitoring, and evaluation - 157
- How would Aotearoa New Zealand need to adapt city deals to work here? - 158
 - ▶ Making city deals work in Aotearoa New Zealand's governance structure - 158
 - ▶ Finding the balance between collaboration and efficiency - 159
 - ▶ Where to start? And on what? - 159
- Chapter 4 - Conclusion and recommendations - 160

163

Report conclusions

165

References

About Mahi a Rongo / The Helen Clark Foundation



MAHI A RONGO | THE HELEN CLARK FOUNDATION IS AN INDEPENDENT PUBLIC POLICY THINK TANK BASED IN AUCKLAND, AT THE AUCKLAND UNIVERSITY OF TECHNOLOGY. IT IS FUNDED BY MEMBERS AND DONATIONS. WE ADVOCATE FOR IDEAS AND ENCOURAGE DEBATE; WE DO NOT CAMPAIGN FOR POLITICAL PARTIES OR CANDIDATES. LAUNCHED IN MARCH 2019, THE FOUNDATION ISSUES RESEARCH AND DISCUSSION PAPERS ON A BROAD RANGE OF ECONOMIC, SOCIAL, AND ENVIRONMENTAL ISSUES.

OUR PHILOSOPHY

New problems confront our society and our environment, both in Aotearoa New Zealand and internationally. Unacceptable levels of inequality persist. Women's interests remain underrepresented. Through new technology we are more connected than ever, yet loneliness is increasing, and civic engagement is declining. Environmental neglect continues despite greater awareness. We aim to address these issues in a manner consistent with the values of former New Zealand Prime Minister Helen Clark ONZ, who serves as our patron.

OUR PURPOSE

The Foundation publishes research that aims to contribute to a more just, sustainable, and peaceful society. Our goal is to gather, interpret, and communicate evidence in order to both diagnose the problems we face and propose new solutions to tackle them. We welcome your support. Please see our website www.helenclark.foundation for more information about getting involved.

\$ About WSP



AS ONE OF THE WORLD'S LEADING PROFESSIONAL SERVICES FIRMS, WSP PROVIDES STRATEGIC ADVISORY, PLANNING, DESIGN, ENGINEERING, AND ENVIRONMENTAL SOLUTIONS TO PUBLIC AND PRIVATE SECTOR ORGANISATIONS, AS WELL AS OFFERING PROJECT DELIVERY AND STRATEGIC ADVISORY SERVICES.

Our experts in Aotearoa New Zealand include advisory, planning, architecture, design, engineering, science, and environmental specialists. Leveraging our Future Ready® planning and design methodology, WSP use an evidence-based approach to help clients see the future more clearly so we can take meaningful action and design for it today. With 67,000 talented people globally, including 2,500 in Aotearoa New Zealand located across 35 regional offices, we are uniquely positioned to deliver future-ready solutions, wherever our clients need us. See our website at wsp.com/nz

He Mihi / Acknowledgements




Kali Mercier
Report author

This was a challenging topic, though endlessly interesting. Infrastructure is the backbone of our society, but most of us just take it for granted, presuming that our essential assets are built when they are needed and well cared for thereafter. Our short-term political system (and a host of funding pressures), however, means that is not always the case.

In researching this report I talked to a range of specialists in this topic, including financiers, investors, economists, central and local government officials, academics, engineers, and other infrastructure specialists. The following people and organisations took the time to pass on to me their passion for keeping the country ticking, and I am grateful for their many insights.

Our partners WSP in New Zealand - in particular, Vinny Minett and Campbell Gardiner - thank you for the many extra hours you put into this report. A big thanks also to Bridget McFlinn, Tamzin Linnell, Malcolm Pautz, Claire Edmondson, Grant Hodges, Rowan Dixon, Brigitte Hicks, Ian Liddell, Jeff Seider, Simon Mosbah, Scott Trommer, Sven-Åke Eriksson, Are Kristiansen, Roger Burra, Alistair Allen, Graeme Sharman, Rob Young, Christina Robertson, and the talented (and patient) WSP Creative Solutions team.

A big thank you also to Simon Randall from Local Government NZ, Geoff Cooper from the NZ Infrastructure Commission, Gareth Stiven from Kāinga Ora, Greg Carstens and Chris Allen from Hamilton City Council, Gillian Blythe from Water NZ, Professor John Tookey from the AUT School of Future Environments, Carrie Gage and James Paterson from ASB Bank, Karl Nicholson from ANZ Bank, the generous staff from



Westpac Bank, Will Goodwin from NZ Super Fund, Peter Wilson from NZIER, Patrick Reynolds, and from Infrastructure New Zealand, Nick Leggett, Michelle McCormick, and Martina Moroney. Ngā mihi ki a koutou katoa.

We also rely greatly on our partners at AUT for the support that allows us to continue this important work - ngā mihi nui.

Finally, thank you to my colleagues at Mahi a Rongo | The Helen Clark Foundation for the substantial support that was required to produce this report, particularly our Executive Director Murray Bruges, our Chair Peter Davis, and our Patron, the Rt Hon Helen Clark. Thanks also to Madeleine Collinge, Anita Perkins, and William Bisley for the care and effort you put into this project - I hope you enjoy seeing your thoughts and words reflected here.

Kali Mercier

WSP Fellow, and Deputy Director of the Helen Clark Foundation

26 June 2024

Glossary

TECHNICAL TERMS AND ACRONYMS

Asset renewals

A type of capital expenditure that involves replacing assets at the end of their life.

Benefit principle

The idea that services should be funded by those who most benefit from them.

City or regional deals

Formal contracts awarded by central government to local governments or other stakeholders, to support a range of initiatives.

Crown Infrastructure Partners Limited

Originally established to manage the Government's \$1.7 billion investment in ultra-fast broadband infrastructure. Has since been given additional responsibilities to help identify and implement commercial models for growth in other types of infrastructure, including water and roading.

Financing infrastructure

Refers to the methods used to cover upfront costs for investment. Projects might be financed by issuing bonds, or through the use of private finance, for example.

Funding infrastructure

Refers to who pays - in other words, taxpayers, ratepayers, and people who pay fees or tolls for the use of the infrastructure.

Horizontal equity

A tax principle that citizens with the same characteristics (those who live in the same area, for example) should pay the same for services.

Horizontal infrastructure

Includes transport, electricity and gas, water and waste, and telecommunications (i.e. assets that go along the ground or under it).



IFFA 2020

The Infrastructure Funding and Financing Act 2020 introduced a new funding and financing model for infrastructure for housing and urban development. The Act enables projects to be delivered off council balance sheets, and allows councils to apply targeted rates to pay for these.

Infrastructure New Zealand (INZ)

An infrastructure membership organisation which aims to advance best practice development through research, advocacy, and public and private sector collaboration.

Infrastructure pipeline

A forward view of the major infrastructure projects required by the country, and when, alongside (ideally) a commitment to fund these.

Intergenerational equity

A principle that seeks fairness across generations, for example by requiring that one generation doesn't pay for a benefit enjoyed by another generation.

LGFA (the NZ Local Government Funding Agency)

Established in 2011 to deliver efficient financing for local government by pooling councils' borrowing power.

Local authorities

Local government in New Zealand consists of 11 regional councils and 67 territorial authorities (made up of unitary authorities, city councils, and district councils), collectively referred to as local authorities.

New Zealand Infrastructure Commission, Te Waihanga

A Crown entity which aims to lift infrastructure planning and delivery and is a key advisor to the government on infrastructure. This advisory role includes developing a 30-year infrastructure strategy, an infrastructure pipeline, and advice and support for major project procurement.

PPI (public-public investment model)

A partnership between a public investor, such as a sovereign wealth fund, and the Government as long-term, aligned co-investors and owners.

PPPs (public-private partnerships)

While there are many ways to structure a PPP, it is generally a long-term contract between a government entity and a private party, where the private party is responsible for designing, building, financing, and (sometimes but not always) maintaining and operating a new public infrastructure asset and related services.

Rau Paenga

A Crown-owned company (formerly Ōtākaro Limited), established in 2016 to deliver anchor projects in Christchurch. In 2022, the Labour Government announced they would repurpose the company to support and deliver infrastructure for other Government agencies, particularly those that don't routinely build things.

SPV (special purpose vehicle)

A company that is formed to undertake a specific business purpose, such as managing the delivery and maintenance of a major infrastructure project.

Targeted rates

Rates paid to a local authority by a specific group of ratepayers who receive a specific service.

Value capture

A means of capturing some or all of the value that public infrastructure generates for private landowners.

Vertical equity

A tax principle that citizens with a greater ability to pay should pay more tax than those with less ability to pay.

Vertical infrastructure

Includes education facilities, hospitals, defence and administration facilities, social housing, and other public facilities (in other words, mostly buildings)



Executive Summary

THE SIMPLE ACTIONS NEW ZEALANDERS TAKE THROUGHOUT THEIR DAYS – FROM TURNING ON THE LIGHT, TO DRINKING A GLASS OF WATER, TO ENJOYING A PICNIC IN THE PARK – RELY ON THE PROVISION OF EFFECTIVE AND WELL-MAINTAINED INFRASTRUCTURE.

Yet there is broad agreement that Aotearoa New Zealand faces a large shortfall in terms of the quantity of infrastructure the country needs, and the quality of what already exists. The country has not invested in new infrastructure at the required level, nor has it sufficiently maintained and renewed what it already has.

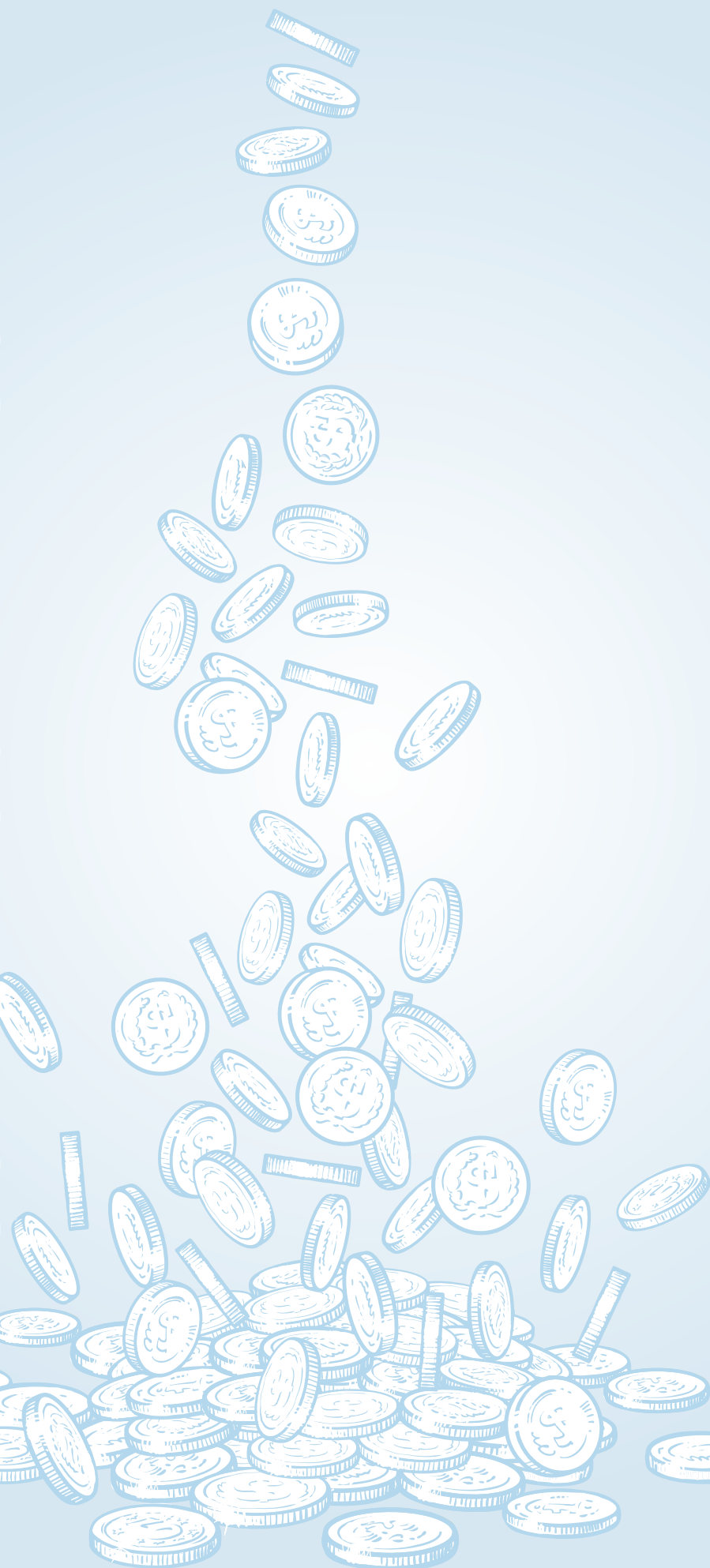
Historically, Aotearoa New Zealand's approach has been both to invest and underinvest in waves, with periods of significant investment followed by periods of underinvestment. A lack of long-term thinking and political unwillingness to spend money has meant many existing assets have been 'sweated' to breaking point over the past decades. Combined with significant recent cost inflation in infrastructure provision, a cost-of-living crisis, and a high and rising vulnerability to natural disasters, Aotearoa

New Zealand will need to make sound, long-term decisions in the years ahead to meet residents' expectations about the quality and quantity of the country's infrastructure.

This report looks at the various ways Aotearoa New Zealand can fund and finance this essential infrastructure, both to meet current needs, and to rise to emerging challenges such as climate change and a population that is both growing and aging rapidly, with much of this growth likely to happen in a small number of cities.

The country must find common ground about how to pay for what it needs by developing a strategic, long-term vision, with - as far as this is possible - multi-party agreement. The goal should be to break the 'boom-bust' cycle and ensure consistent investment levels across terms of office. This will allow Aotearoa New Zealand to move ahead strategically and at pace to provide for its growing population.

This report considers who should pay - for what, when, and how - to achieve the most efficient and equitable outcomes. Different funding and financing options spread the cost burden in different ways. Questions of



intergenerational fairness are important, as are decisions about how to spread costs between current members of society who may 'consume' more or less infrastructure, or who may be more or less well off.

The most efficient, straightforward, and transparent way to address the bulk of Aotearoa New Zealand's long-term infrastructure deficit is likely to be by means of long-term debt financing funded by appropriate taxation and/or rates, and this is an area that would merit more investigation. Many of the other options examined here, including tools such as user charges and value capture, also show promise. Some also come with heightened risks (no option is risk free), including uncertainty around income generation potential, and potential equity issues.

An important consideration is that the more bespoke and piecemeal the funding and financing approaches used, the higher the associated administrative burden and transaction costs. Such approaches are therefore best used where identified benefits (such as allowing delivery of projects earlier, or spreading the costs more efficiently among beneficiaries), offset the additional administrative cost.

Using debt wisely to support investment has the advantage of spreading the costs over the long term and can be financed relatively cheaply by central government or local councils, for example, by borrowing through the Local Government Funding Agency. To fund the resulting debt burden, both central and local government will need an increase in revenue - whether through taxation, rates, or other

revenue-generation opportunities. Taxation as a funding tool has the advantage of being both efficient, and progressive (i.e., it increases in line with increasing taxable income).

Discrete funds, such as the Regional Infrastructure Fund are useful to fund progress in defined areas (such as climate change), but it is becoming increasingly clear that councils



will need additional streams of steady, reliable, and non-contestable revenue to address the infrastructure gap in their regions. Changing rules around central government paying rates to councils, removing GST from rates, and/or adopting another similar approach could go towards providing this.

In addition, finding ways to build revenue opportunities into new infrastructure can help fund more infrastructure, now and in the future, and can help get projects off the ground that may otherwise not happen at all. Revenue-generating options include road tolls, user charges (on water usage, for example), value capture, targeted rates, and development contributions. All these can probably be used to better advantage to provide a boost in revenue for local councils - though none is likely to be a panacea to funding woes in and of itself.

The coalition Government has expressed its intention to make more use of private finance in infrastructure provision. Private finance comes at a higher direct cost than public debt but has the potential to bring with it a range of benefits that can offset that higher cost. One model that includes the use of private finance is public-private partnerships (PPPs), an umbrella term that encompasses a wide range of models globally. There is good evidence that PPPs

deliver projects on time and on budget better than traditional procurement, but there is limited strong independent evidence one way or another about whether they provide better value for money over the whole lifetime of projects (which may be as long as 40 years).

Aotearoa New Zealand has very limited experience with PPPs, with only eight being procured between 2012 and 2017, all under a single model. Independent research should be undertaken to provide a more informed view of the benefits they have delivered.

City or regional deals are formal contracts awarded by central government, typically to local governments or partnerships of stakeholders such as academic institutes and business groups, to support a range of initiatives, building towards a shared goal. City deals can help local and regional authorities grappling with funding issues, but also have the potential to create a significant administrative burden at both the local and central government level, which must be funded adequately.

A key focus for Aotearoa New Zealand should be ensuring that city deals do not progress in some places at the expense of others, leading to regional inequalities (as has happened in other jurisdictions such as the United Kingdom). We therefore recommend that the development of city deals proceed alongside the implementation of other more systemic solutions to councils' funding issues.

This report challenges the public and leaders of Aotearoa New Zealand to engage with three key questions about the funding and financing of infrastructure:

1. Can the country engage in a serious conversation about the significant costs on the horizon and accept that these will need to be funded in some form or other by New Zealanders (whether through taxation, rates, or user pays)?
2. Can the country acknowledge that debt should play a large role in addressing the infrastructure need and, while the majority should be public debt, private finance and other tools have the potential to increase delivery capacity and deliver additional benefits?
3. Can the country develop a long-term approach to funding and financing infrastructure (and to building a stable pipeline of projects), which would both reduce these costs and allow us to plan for them in the coming decades?

Aotearoa New Zealand's ability to seriously engage with these questions will be a crucial element in determining whether future generations can reap the many social, environmental, and economic benefits that result from access to quality, resilient infrastructure.

Recommendations

New Zealanders should agree on a shared vision to bridge the infrastructure gap and prepare the country's growing population for a resilient future.



RECOMMENDATION 1

SEEK MULTI-PARTY AGREEMENT, TO THE EXTENT POSSIBLE, ON A STRATEGIC LONG-TERM VISION FOR THE COUNTRY'S INFRASTRUCTURE NEEDS

- Explain how (and when) these needs will be met. Support this vision with consistent investment levels across terms of office, to break the 'boom-bust' cycle.
- Be clear about desired and expected population growth trends and how they will likely affect the country's long-term infrastructure pipeline.



RECOMMENDATION 2

GET MORE FROM INFRASTRUCTURE INVESTMENT

- Get better value from procurement and delivery of infrastructure. In particular, reduce time and cost overruns by applying recent international research findings on best practice. This will require increased capacity and capability in government procurement.
- Focus on maintaining and optimising the use of infrastructure the country already has.



RECOMMENDATION 3

USE A RANGE OF APPROACHES TO FUND AND FINANCE INFRASTRUCTURE, BUT RECOGNISE THAT THE BULK OF THE COUNTRY'S NEEDS WILL CONTINUE TO BE FINANCED BY DEBT, AND SERVICED BY TAXATION AND/OR RATES

- Recognise that both central and local governments will need to borrow more to help bridge the infrastructure gap.
- Support and encourage a mature conversation as a country about its increasing needs, and the benefits of debt-financed infrastructure investment.
- Note that debt financing is not suitable for all forms of infrastructure investment. Maintenance and renewal of worn-out infrastructure is better funded using operational expenditure and depreciation.
- At central government level, investigate options to service increased debt levels for capital investment, noting that the most efficient and fair way to fund the biggest portion of infrastructure growth will likely be via progressive and other forms of taxation.
- At local government level:
 - Enable a greater level of resource transfer from central government to address chronic underinvestment in infrastructure - for example, by charging central government rates on their property, and/or by removing GST from rates. If not, expect rates to continue to rise sharply, with the burden felt most by those with the least ability to pay.
 - Continue to provide direct transfers from central to local government following a transparent process, for example, to:
 - ▶ Support building climate change resilience and adaptation, and
 - ▶ Help communities (especially lower-income communities) fund essential infrastructure where local councils are unable to meet the costs.



RECOMMENDATION 4

IDENTIFY OPPORTUNITIES TO ATTACH REVENUE SOURCES TO NEW INFRASTRUCTURE, PARTICULARLY WHERE THIS WILL LEAD TO ADDITIONAL BENEFITS

- Examples include:
 - Tolling roads to optimise the use of transport assets, for example by reducing congestion.
 - Volumetric charging for water provision to optimise the use of water assets, by encouraging lower use and better identifying wastage.
 - Making use of the full range of revenue-generating tools available, such as value capture, targeted rates, and development contributions to finance specific projects that may otherwise not be funded, taking equity considerations into account.



RECOMMENDATION 5

ENSURE FUNDING AND FINANCING DECISIONS CONSIDER QUESTIONS OF EQUITY, EFFICIENCY, AND EFFECTIVENESS

- Recognise that decisions about equity and fairness – for example, determining who benefits from new infrastructure, and who should therefore pay for it – to a certain extent involve value judgements and are subjective.
- Consider and balance all relevant principles of fairness in infrastructure investment decisions (some of which may conflict with one another). Principles include:
 - Vertical equity (those with greater ability to pay should pay more).
 - Intergenerational equity (which seeks fairness across generations).
 - The benefit and exacerbator principles (those who benefit from a service, or cause a need for the use of costly resources, should pay).



RECOMMENDATION 6

WITH THE PROPOSED RESTART OF THE PUBLIC-PRIVATE PARTNERSHIP (PPP) PROGRAMME IN AOTEAROA NEW ZEALAND, LEARN FROM EXPERIENCES HERE AND OVERSEAS TO ENSURE THE BEST OUTCOMES

- Use a structured process to determine the right procurement model for each project (whether PPP or otherwise). No procurement model will work in every situation, and the correct model should be chosen based on unique project and market factors.
- Recognise that research on PPPs shows they can provide benefits including significant time and cost savings at construction. The current evidence base is non-conclusive as to whether or not they provide better value for money over the lifetime of projects than non-PPP procurement models.
- Fund independent research to inform future projects, asking substantive questions about the quality of infrastructure provided under PPP (and other procurement models) and their costs and benefits over the full life cycle of contracts.
- Ensure procurement processes are sufficiently transparent to allow researchers to benchmark and compare across procurement models.
- Encourage competitiveness in the bid process, where possible, to get the best deal for the public – for example, by providing certainty in advance about projects being considered for procurement.
- Learn from international lessons on contracting, for example, by:
 - Including appropriate variation mechanisms in PPP contracts, to reduce the cost and complexity of making variations or extensions.
 - Reviewing termination mechanisms to better address the risk that a piece of infrastructure may no longer be needed in the future (for example, if a school is no longer needed due to a falling roll).
 - Ensure government procurers are appropriately resourced to understand the complexities of the model.



RECOMMENDATION 7

TRIAL CITY AND REGIONAL DEALS, WHICH CAN PROMOTE GROWTH AND ENABLE INVESTMENTS IN ESSENTIAL INFRASTRUCTURE PROJECTS THAT MIGHT OTHERWISE GO UNFUNDED

- Note that long-term planning is a key factor to success. Success may be undermined if deals are not honoured by future governments.
- Ensure creating city and regional deals does not lead to inequity and competitiveness between and within regions, for example, by encouraging neighbouring cities or regions to co-design proposals on areas of shared interest.
- Ensure sufficient human resources are available (and funded) at both local and central government level to develop, oversee, monitor, and evaluate the success of any city or regional deal.
- Recognise that, due to the time and effort involved in setting up city deals, they are likely to support a small number of cities or regions, rather than comprise a comprehensive nationwide solution to the infrastructure deficit.



Understanding the infrastructure deficit

INFRASTRUCTURE FORMS THE BACKBONE OF THE COUNTRY AS A FUNCTIONING SOCIETY AND IS ESSENTIAL FOR THE PROVISION OF BASIC NEEDS: PIPES BRING FRESH DRINKING WATER AND TAKE AWAY WASTE TO BE PROCESSED; ELECTRICITY PRODUCED IN POWER PLANTS WARMS AND LIGHTS HOMES; SCHOOLS AND UNIVERSITIES PROVIDE EDUCATION; HOSPITALS TREAT ILLNESS; AND TELECOMMUNICATIONS ALLOW CITIZENS TO FUNCTION AS ACTIVE MEMBERS OF A WIDER SOCIETY.

Infrastructure also provides much of the structure that makes lives enjoyable and worth living. Parks and cycleways provide places to exercise and play, while built infrastructure such as concert venues and libraries offer access to culture, entertainment, and spaces for communities to meet and learn.

Finally, high quality and well-maintained infrastructure underpins the economic prosperity of Aotearoa New Zealand. Roads, rail, and bus networks transport

citizens to their place of work, and ports and airports facilitate the transportation of people and goods around Aotearoa New Zealand, and allow products to be shipped all over the world.

This report looks at the various ways Aotearoa New Zealand can fund and finance this essential infrastructure, both to meet current needs, and to rise to some emerging challenges (climate change and population growth, for example). There is a clear need to find common ground about how the country will pay for what it needs so it can move ahead strategically, and at pace, to provide for its growing population.

A key consideration in this report is to examine who should pay - for what, when, and how - in order to achieve the most equitable outcomes. Different funding and finance options spread the cost burden in different ways. Questions of intergenerational fairness are important, as are decisions about how to spread costs between current members of society who may 'consume' more or less infrastructure, or who may be more or less well off.

The report begins with an overview of some of the key challenges Aotearoa New Zealand faces in providing high quality infrastructure, and how it measures up internationally. Chapter 2 looks closely at how the country currently funds infrastructure, and identifies options to increase revenue and access the required finance.

The coalition Government has expressed a goal to attract more private finance into major infrastructure projects. The report therefore takes an in-depth look (in Chapter 3) at existing research on public-private partnerships - the most

common model for private finance to be introduced into public infrastructure projects. The final chapter of the report is dedicated to city and regional deals - another current focus area of the coalition Government.

CURRENT INVESTMENT IN INFRASTRUCTURE IS INADEQUATE TO MEET THE NEEDS OF CHALLENGING TIMES AHEAD

There is broad agreement that Aotearoa New Zealand faces a large shortfall in terms of the quantity of infrastructure

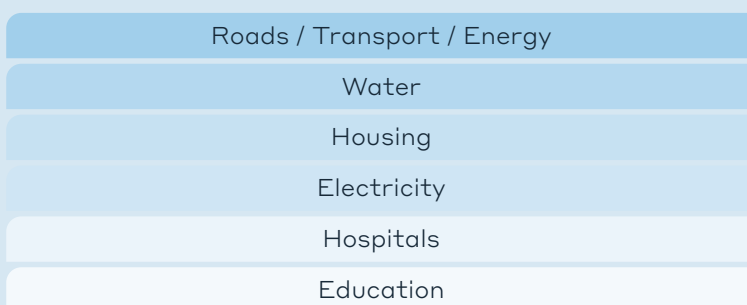


needed, and the standard of what already exists. The country has not invested in new infrastructure at the required level to keep up with population growth, nor has it sufficiently maintained and renewed what it already has (*Infrastructure Commission 2024a*). The country also faces significant future challenges from climate change, which will place added pressure on the resilience of existing infrastructure (*New Zealand Government, 2023c*).

The dire state of Aotearoa New Zealand's infrastructure is reflected in a widespread lack of affordable housing, leaking water pipes, overflowing stormwater drains, inadequate public transport, potholed roads, and a lack of capacity in the country's leaking schools, prisons, and hospitals.

An Ipsos survey of New Zealanders undertaken in 2023 found that less than a third (29%)

Figure 1. Areas of greatest investment deficit in Aotearoa New Zealand infrastructure, ranked (Smith & Campbell, 2024)



of New Zealanders are satisfied with national infrastructure provision, compared to a global average of 38%. New Zealanders questioned for the survey identified flood defences and housing as the most important areas for investment, but also rated the quality of water supply and sewerage, roads, rail, and airports as below par (*Ipsos 2023*). A recent report by ASB Bank (*Smith & Campbell, 2024*) highlighted roads, transport, energy, water infrastructure, and housing as the areas needing most improvement (see Figure 1).

If the country continues to invest in infrastructure at current rates, that will add up to a shortfall (deficit) in funding of as much as \$210 billion over the next 30 years, according to an analysis by Sense Partners (*2021*) for the Infrastructure Commission. Over the same time period, the construction workforce will need to increase in size by 140%.

To bring our infrastructure up to scratch will cost \$1 trillion (in today's prices) over the next 30 years - a total of \$31 billion per year. This is almost double the current spend (*Sense Partners 2021*).

How did the country get to this point? The key contributing factors are set out below.



STUART
CROSBY

“Infrastructure such as roads, water pipes and buildings have a long lifespan but until now we haven’t taken a strategic approach to how we plan for, develop, fund, and maintain infrastructure. [...] For too long, we have been in ‘fix-it’ mode, rather than getting ahead of the challenges that our cities, towns and provinces face.”

Former President of Local Government Aotearoa New Zealand (Local Government in New Zealand, 2022)



ROSS
COPLAND

“30 years from now up to 1.7 million new Kiwis will call Aotearoa New Zealand home. Our climate is changing, technology is evolving, congestion is growing and this generation faces a 75% chance of a catastrophic earthquake on the Alpine Fault during their lifetime.”

Chief Executive of the New Zealand Infrastructure Commission (Infrastructure Commission, 2022b)





HON DR MEGAN WOODS

“ There are significant challenges ahead. A growing population is increasing demand for housing, transport, schools, hospitals, and other essential services. We not only need to build more and better infrastructure, but we need to prepare to mitigate the impacts of climate change on our built environment. Cyclone Gabrielle has presented us with an earlier-than-expected challenge to rebuild and strengthen infrastructure after demonstrating what can happen if we don’t.”

Former Minister of Infrastructure (New Zealand Government, 2023a)



HON CHRIS BISHOP

“ This deficit has not come about by accident. It is the product of decades of poor practice across successive governments. This lack of attention to our infrastructure and investment management is costing us. It’s costing us time, money, and ultimately our standard of living. The way we invest in, build, and manage infrastructure is deeply inefficient and has to change. We simply can’t go on the way we’ve been going. ”

Current Minister of Infrastructure (2024a)



Decades of underinvestment

Historically, Aotearoa New Zealand's approach has been to both invest and underinvest in infrastructure in waves, with periods of significant investment followed by periods of underinvestment.

Big waves of infrastructure investment took place in Aotearoa New Zealand between 1910 and 1930, and then again from 1950 to 1986 (*Eaqub, 2014*). Just as significantly, waves of underinvestment took place from the mid-1980s to the early-2000s - but these periods were not followed by higher levels of investment to catch up on deferred maintenance (*Kiernan, 2024*). This has led us to many infrastructure assets simultaneously reaching the end of their lives, and needing to be substantially repaired or replaced. *Eaqub (2014)* points to a "looming bulge of capital renewals and replacements in coming decades".

For several decades, political decisions made by both central and local governments have focused on keeping taxes and rates low, and holding government spending steady as a percentage of GDP (*Hickey, 2024b*). Politicians campaign successfully on spending less, reducing taxes, or not raising rates (*Marnie Prickett, quoted in Edmunds, 2024*). This leaves no fat in the system to make up for historic shortfalls. A lack of long-term thinking and political unwillingness to spend money has





also meant many existing assets have been ‘sweated’ to breaking point over the past decades (Hewett, 2024).

The historical underinvestment and lack of investment leading to the current crisis has resulted in a generational transfer of wealth. Previous generations have in effect pushed costs forward to be dealt with by future generations. Equity issues arise from that, which we consider below.

Boom-bust investment and fluctuating political priorities

A major issue affecting the certainty of the infrastructure ‘pipeline’ (long-term plan) has been the differing approaches to infrastructure provision from governments of different political persuasions over the decades. Both left- and right-leaning governments have cancelled existing projects on taking office, and changed the country’s long-term investment vision based on their political philosophies. This carries with it significant cost implications and wastage each time there is a change of government.

A recent example is the cancellation of the iReX interisland ferry terminal project by the incoming coalition Government at the end of 2023.

At the time of the cancellation, \$424 million had already been spent on the project according to Kiwirail (*Hunt, 2024*). Contract termination fees will increase this considerably. Similarly, during the terms of the previous Labour government (2017-2023) eight major road projects were cancelled (*Orsman, 2021*). Some of these projects have now been reinstated under the coalition Government, but will now cost significantly more.

The flip-flopping on the shape and form of the Auckland Harbour Bridge expansion (discussed below) is perhaps one of the best examples of how political indecision and vacillation can, and does, cost New Zealanders significant amounts, often with little to show for it over decades. Costs mount up, not just because planning and design work is done multiple times, but also because the country is unable to reap the economic benefits of new infrastructure while it remains unbuilt.

Fluctuations in investment levels between governments and changes of priorities also impact supply chains, as well as the ability of the construction sector to plan and deliver projects, and to upskill staff. This discourages the creation of large-scale construction companies that

would have the ability to invest in technology, training, and systems to help Aotearoa New Zealand reduce unit costs and improve efficiency in infrastructure delivery (*Kiernan 2024, Hickey 2024*).





“These boom-and-bust cycles are completely unsustainable, and they impact our sector more than any other. For 50 years it’s been a case of ‘what goes up, must come down,’ and in that cycle we lose good experience, good people, and good businesses.”

Master Builders Chief Executive David Kelly (Bell, 2023).



“We know that countries experiencing year-to-year swings in public investment tend to be less efficient than others and that Aotearoa New Zealand’s swings are more volatile than Australia and many other high-income countries.”

(Infrastructure Commission, 2022b).





Auckland Harbour Bridge



Case Study: Decades of indecision on the future of the Auckland Harbour Bridge

From the moment Auckland's iconic Harbour Bridge opened in 1959, usage was so high that capacity was an issue. While the original plan had been for seven car lanes and two lanes for walking and cycling, public and political concerns about construction costs had resulted in a four-lane, car-only bridge that barely covered current needs, much less the needs of the future.

Approvals and funding were marked by delays and indecision - starting from the initial concept in the mid-1920s to its eventual construction. When it was finally



built, the number of lanes were reduced and no footpath was included, leading one commentator to dub the project “a ringing testament to [...] the perils of short-term thinking and penny-pinching” (*McLeay, n.d*). Shortly after the bridge was opened, conversations began about retrofitting it to accommodate more traffic. In 1968, two new lanes - locally referred to as the Nippon Clip-ons - were attached to each side of the bridge.

This was still not enough to deal with the volume of cross-harbour traffic. Since the 1970s, hundreds of ideas to improve transport flow across the Harbour have been considered (*Kitchin, 2024a*) - ranging from bridge undercarriages and pedestrian

clip-ons, to tunnels and brand new bridges. Multiple times, project proposals have been made only to be cancelled when changing governments directed funding elsewhere.

More than 60 years after its initial opening, Auckland is still talking about an additional harbour crossing. As things stand today, the coalition Government has committed to a second harbour crossing as part of a larger transport infrastructure package (*Wilson, 2024*), a continuation of project planning that commenced under the Labour Government. This is expected to take the shape of a tunnel under the Waitematā Harbour, although other options are still being considered.



A focus on new projects at the expense of maintenance

Aotearoa New Zealand has not been good at maintaining and renewing existing infrastructure, instead favouring the building of new infrastructure. According to the New Zealand Infrastructure Commission, *Te Waihanga (2024)*, for every \$10 invested in new infrastructure, the country now loses \$6 on depreciation. In addition, Aotearoa New Zealand spends less on maintenance and renewal of worn-out infrastructure than it loses each year via depreciation. In other words, the country does not replace what it uses up in drinking, waste and stormwater, roading, electricity generation, and gas distribution assets. This is an unsustainable approach (*Hickey, 2024b; Infrastructure Commission, 2024a*).



A rapidly growing population

The population of Aotearoa New Zealand has been growing quickly and is expected to increase further from 5 million to 6 million sometime between 2043 and 2048 (*Stats NZ, 2024*). Official population projections may, however, be an underestimation. Ernst & Young's analysis suggests a much faster growth rate, with Aotearoa New Zealand potentially reaching six million as early as 2038 (*Scott, 2023*). This fast upward growth will continue to put pressure on all types of infrastructure, especially the water and wastewater pipes, roads, and utilities needed to support new housing.

Another recent report (*NZCTU, 2024*) noted that Aotearoa New Zealand's population consistently grows faster than anticipated by Treasury in their economic updates, exacerbating the infrastructure deficit. The same report calculates that if population growth continues at pre-COVID-19 levels from this point (1.96% per annum), the country could expect a \$10.1 billion per year underspend in public investment (for both infrastructure and public services combined) over the next four years alone.

Without a clear medium-long-term plan about levels of population growth the country is planning to sustain, it will be impossible to plan for the infrastructure it will need.

The Productivity Commission's (2022) recommendation that governments should produce a General Policy Statement on population is one potential way forward. A long-term understanding of the size of population that infrastructure is being prepared for is essential, especially given how long infrastructure assets take to build.

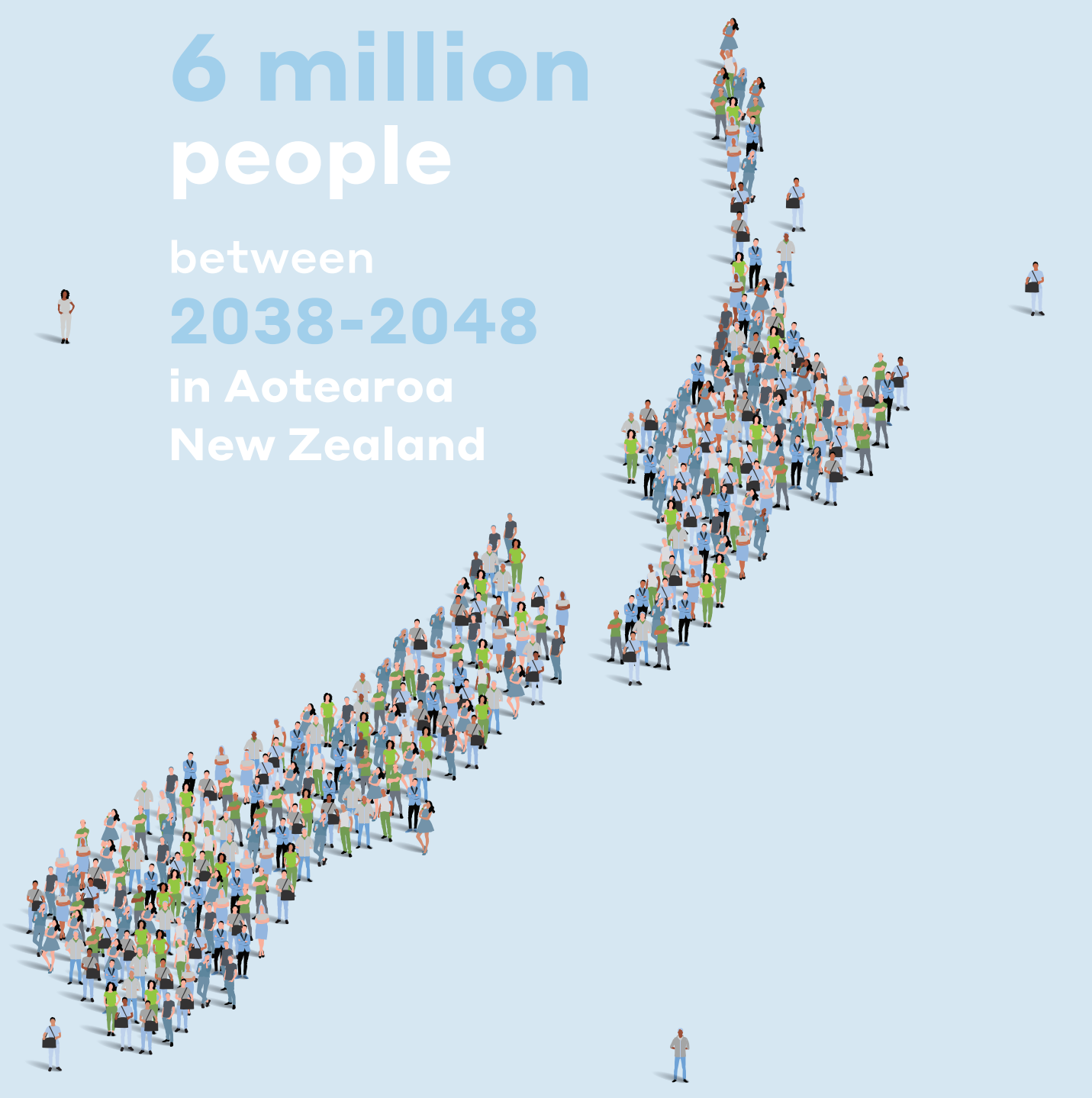
A further issue is that as much as half of the future growth is expected to take place in just five cities: Auckland, Hamilton, Tauranga, Wellington, and Christchurch. Queenstown is also growing quickly and is projected to experience the highest rate of growth of any city (1.6% per year). Significant investment will be required in those cities to cope with increased demand. The trend of urbanisation (people moving from rural areas to towns and cities) will also mean fewer rate payers to share the essential costs of infrastructure in rural areas (*Infrastructure Commission, 2022*).

Finally, the country's population is aging, meaning that over time it will require a change to the type of infrastructure provided - more hospitals and geriatric facilities, for example. Having fewer people of working age will add pressure to the challenge of funding the infrastructure the country needs (*Spoonley, 2020*).



6 million
people

between
2038-2048
in Aotearoa
New Zealand





Claire Edmondson



LONG TERM INFRASTRUCTURE PLANNING NEEDS POPULATION STRATEGY

WSP Director of Strategic Advisory (Policy & Change) Claire Edmondson explains why a national population strategy is urgently needed to secure our infrastructure future.

The graph below (Figure 2) from the Infrastructure Commission (2024e) shows how our population projections have compared with population growth since 1950.

Projections in the 1950s overestimated future population growth, and did not account for a big societal shift - more women entering the workforce and a reduction in size of the average New Zealand family. By contrast, today's projections may well significantly underestimate growth from climate-related migration.

By concentrating only on natural population increases, alongside short-term immigration and economic factors, while overlooking climate change and other potential geopolitical shocks, our current approach may be leading the country into an uncertain future. That's bad news for infrastructure planning and economic forecasting.

Aotearoa New Zealand needs a long-term population strategy. As just one example, the Government (rightly) requires local authorities to zone and plan considering 30-year time spans. That is impossible to do accurately without knowing how many people will be living in the country in 30 years' time, and where they will be living. Without a clear understanding of population targets, it is challenging to secure funding and build future-ready infrastructure.



LEARNING THE LESSONS OF THE PAST

A long-term population strategy would help us plan, build, and fund infrastructure on a scale that meets the needs of the population in 30 years' time, or further into the future.

In Aotearoa, large-scale infrastructure projects typically take about 15 years from idea to completion. But, sadly, as part of our current business case and investment assessment processes, we use population forecasts that have historically proven to be significantly inadequate, which means on some new projects, capacity is reached just five years after the infrastructure is completed.

A recent report from Principal Economics (*Torshizian & Maralani, 2022*) highlights the cost of delay in infrastructure decisions. Our current approach leads to high costs, low capacity, and minimal growth benefits. It's time to move away from this inefficient strategy and invest in infrastructure that provides lasting benefits for the future.



TOWARDS SOLUTIONS

One potential solution, which addresses both funding and planning challenges, would be to attempt to insulate infrastructure investment decision-making from our three-year political cycle, as it is in overseas jurisdictions. This could be achieved by developing a long-term population strategy. A long-term infrastructure pipeline could then be developed by a government agency or a more independent organisation, based on the strategy.

By taking investment decision-making out of the political realm, and basing it on agreed population predictions, we can be more effective and strategic in achieving the outcomes we want for our country.



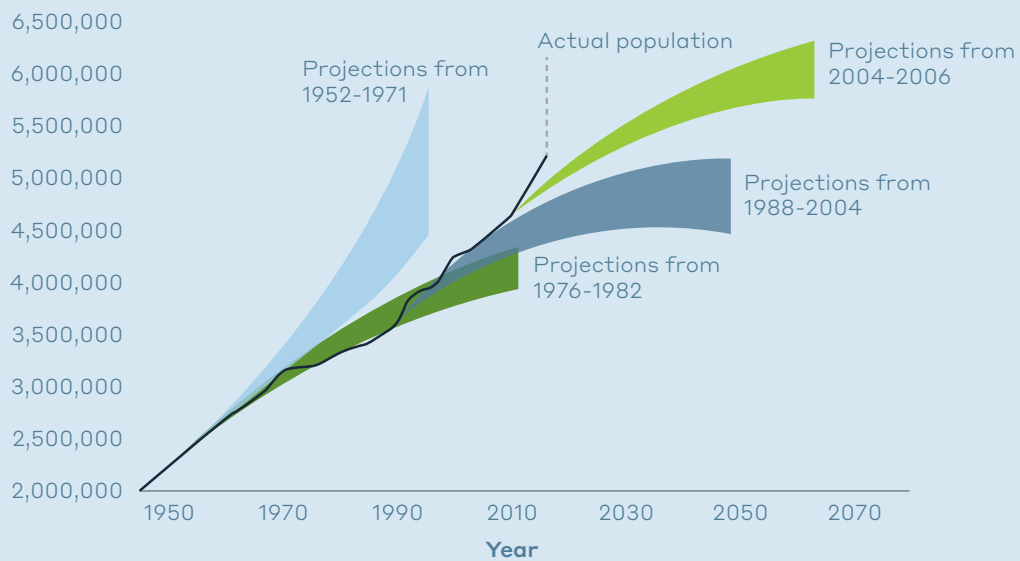
CULTIVATING A SHARED VISION

Te Ao Māori principles consider a seven-generation planning time horizon. While we may not need to plan that far ahead, why not consider a 50 to 100-year horizon for infrastructure planning?

Cultivating a shared vision for our future infrastructure direction means deliberating on crucial questions, such as immigration strategy.

A serious national conversation is needed so informed decisions can be made about the path we choose to follow. That way, the strong reasons we have for building intergenerational infrastructure will translate into even stronger actions.

Figure 2: Historic population estimates (Infrastructure Commission 2022b)



Higher expectations, rapidly increasing costs, and some big future challenges

Several other significant factors also play into Aotearoa New Zealand's current and future infrastructure deficit challenges. First, **geopolitical pressures** - such as the supply chain issues caused by COVID-19 and price increases caused by the conflict in Ukraine - have pushed up the costs of infrastructure provision significantly in recent years, as have high levels of inflation. As just one example, a recent report by Infometrics found the cost of building a bridge had increased by a significant 38% in the past three years, and sewerage systems by 30% (*Olsen, 2024a*). This will place further burden on infrastructure procurers in central and local government - and ultimately on taxpayers and ratepayers.

Second, the need to adapt to, and mitigate, the impacts of **climate change** will continue to push up costs (*New Zealand Government, 2023c*). Aotearoa New Zealand continues to struggle with costly clean-up jobs from natural disasters, and these events are expected to become more frequent and more serious over time (*Ministry for the Environment, 2022*). The reality of climate change also demands more resilient infrastructure - stronger roads and bridges, storm-resilient buildings, and a reset of the country's cities to make them less prone to flooding

(*Mercier, 2023b*) - none of which interventions are cheap. Moving to a net-zero carbon emissions economy will also require new investment in renewable energy generation infrastructure (*Infrastructure Commission, 2022*).

Adding further strain to the system, Aotearoa New Zealand has faced significant **workforce shortages** in the construction sector in the past few years (despite current redundancies in the sector, which are expected to be temporary). The Infrastructure Commission estimated in 2022 that the country would need 118,500 more workers to plug the current gap alone. The shortage of workers reduces competition, pushes up prices, and makes it harder to get work done quickly - increasing overall costs.

Others have pointed to the impact of a time-consuming **consenting process** for new builds under the Resource Management Act 1991 (*Moore et al., 2023*), and the tendency of 'scope creep' to add cost and time to major infrastructure projects (*Brown, 2024a*).

Finally, **environmental and climate-related standards** for building and development have been strengthened over time, putting further cost and time pressures on infrastructure. While such higher standards are valuable and desirable to future-proof the country's cities and waterways, compliance with new codes and regulations does cost more. Increasingly high standards for earthquake proofing have also added a significant burden, with some complaining that these standards may have gone too far (*Kitchin, 2024c*).

In summary, Aotearoa New Zealand finds itself in a tight corner, with increasing demands from aging infrastructure, a growing population, external pressures, and skyrocketing costs. Meanwhile, public and political sentiment demonstrates very limited willingness to raise taxes or rates to cover the increase in cost (or even to tolerate the disruption building new infrastructure causes to everyday life).



HOW DOES AOTEAROA NEW ZEALAND COMPARE INTERNATIONALLY?

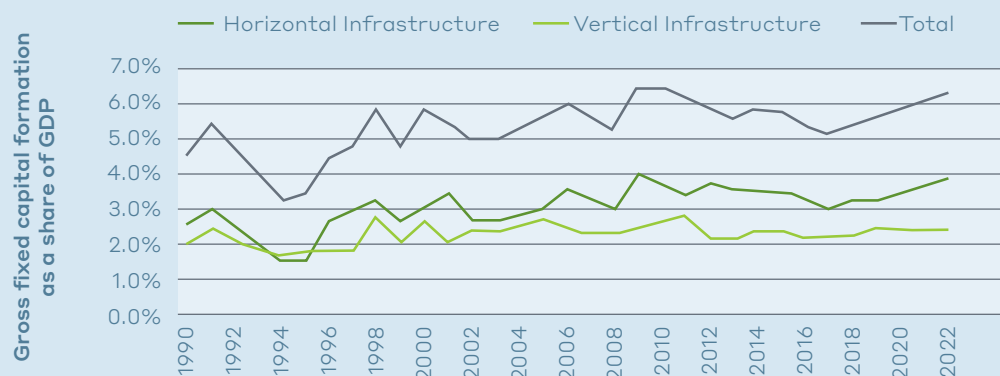
Comparing Aotearoa New Zealand's infrastructure spend to other countries is not necessarily helpful to determine whether it is underspending, given the country's specific geographical and demographic challenges. This is a long, thin, earthquake prone, sparsely populated country surrounded by ocean and far from international supply chains. However, international comparison can at least provide a useful benchmark.

The Infrastructure Commission (2024) puts Aotearoa New Zealand's annual spending on infrastructure as a portion of GDP as fairly stable overall between

2003 and 2022. Investment during that period has fluctuated between 5.0% and 6.5% of GDP, with an average spend of 5.8% (see Figure 3).

According to the Infrastructure Commission (2021a), during the period 2007-2020 Aotearoa New Zealand spent a similar share of GDP as the average high-income country on network infrastructure - which comprises electricity, telecommunications, transport, and water. However, the Infrastructure Commission also notes that some high-income countries spend substantially more relative to GDP. This includes Australia, which ramped up spending in most infrastructure sectors from 2014 (*Infrastructure Commission, 2021*).

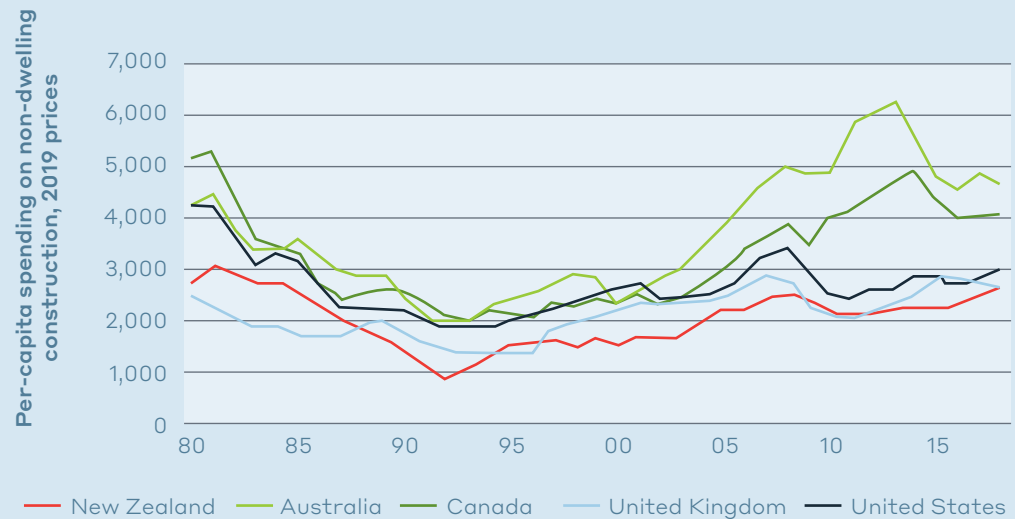
Figure 3. Infrastructure capital investment as a share of GDP, 1990–2022 (Infrastructure Commission, 2024)



When Aotearoa New Zealand's investment in infrastructure is measured per capita, the amount spent looks comparatively less generous, with the country's per capita spend in the bottom half of 38 countries measured in an analysis by Infometrics (Olsen,

2020). The analysis concludes that Aotearoa New Zealand has been investing in infrastructure at a lower rate than other comparable countries for the last 30 years, and a sizable rise in expenditure is needed to make up for this underinvestment (see Figure 4).

Figure 4. Per capita spending on non-dwelling construction, 2019 prices (Olsen, 2020)



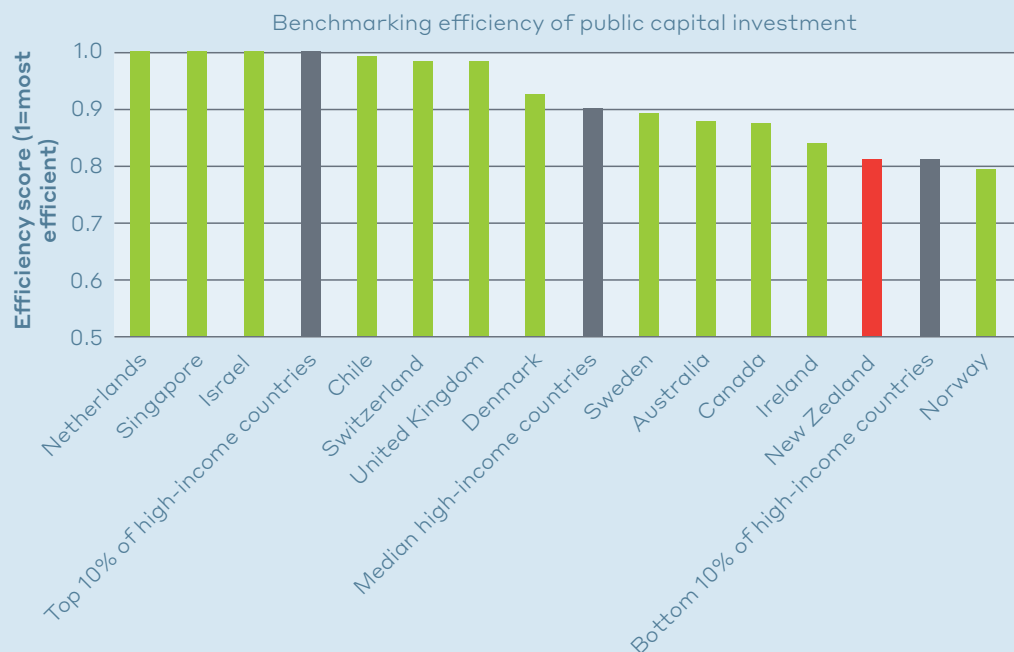
The next logical question is whether the country spends wisely and builds efficiently. Unfortunately, there is a lack of good quality benchmarking data (domestically and internationally) that would help establish whether projects are being delivered in a cost-effective way here compared to other countries (*Infrastructure Commission, 2021a*).

In terms of the quality of infrastructure overall, Aotearoa New Zealand ranks 43rd out of 54 high-income countries in the World Economic Forum's infrastructure quality index, suggesting poor

performance in terms of efficient investment (*Schwab, 2019*).

An analysis by the Infrastructure Commission (*2021*) concluded that the country is close to the bottom 10% of high-income countries for cost effectiveness. Other high-income countries that have invested a similar amount per capita have better infrastructure (see Figure 5). For instance, Aotearoa New Zealand invests about the same amount as France per capita, but the quality of infrastructure there is around 23% higher (*Schwab, 2019*).

Figure 5. Comparing the efficiency of infrastructure investment in high-income countries (Infrastructure Commission, 2021)



However, as the Infrastructure Commission also points out, it is far from an exact science to fairly assess the efficiency of a country's performance against others. Relevant factors include the quality and type of data available, how infrastructure is defined by each country, and the geological and population factors that influence the type of infrastructure required. Even more importantly, the size of a country's GDP and its total population will affect the total pool of money available to invest, making both GDP and per capita comparisons less useful tools.

In the example of France given above, the country is just over twice the size of Aotearoa New Zealand in terms of land mass, but has a population more than 13 times the size. That provides a far bigger population base to fund necessary infrastructure, per square kilometre. France benefits from economies of scale, which allows it to operate multiple passenger trains, underground city rail networks, and high-quality highways.

In summary, Aotearoa New Zealand has low population density and a challenging landscape, but only a middle-of-the-range GDP to support investment. The country is geographically far from others, making construction materials

(and labour) more expensive to import, and is particularly prone to earthquakes and storms. In fact, Aotearoa New Zealand has been judged the second riskiest country in the world in terms of expected annual losses from natural disasters as a portion of GDP (*Lloyd's, 2018*). Adding to these unique challenges, the country finds itself at the end of a long period of underinvestment in infrastructure (*Infrastructure Commission, 2024a*).

These factors point to the conclusion that Aotearoa New Zealand's infrastructure spend (both as a portion of GDP and in relation to amount spent per capita), ought in fact to be higher than average compared to other high-income countries - at least while the country rebuilds. Because the average spend here is in fact middle-of-the-range or low compared to other countries (depending on the measure used), this in turn supports the conclusion that Aotearoa New Zealand is currently underspending.



Riverlink Project



Christchurch Stadium



City Rail Link Project



Transmission Gully Motorway Project

BUDGET AND TIME OVERRUNS COST MONEY

It would be difficult to point to a large infrastructure project not subject to time and cost overruns in Aotearoa New Zealand. Some examples include:

- The costs of the Riverlink project, currently under construction, which will provide increased flood protection in the Hutt Valley, were reported to have ballooned from \$700 million to over \$1 billion (*Huston, 2024*).
- The cost of the new Christchurch stadium, Te Kaha, went up from \$473 million to \$683 million (*Dann, 2022*).
- The City Rail Link project, a 3.45km twin-tunnel underground rail link below the Auckland city centre, increased in 2023 by \$1 billion from an initial price of \$4.419b. As of May 2023 the cost was estimated at \$5.493b (*Bevin, 2023*).
- The Transmission Gully Motorway Project, which was budgeted at \$850 million but is thought to have cost \$1.25 billion (*NZTA, n.d.-c*).

There can be many reasons for cost overruns, including 'scope creep' (where the project's deliverables are extended over time, beyond the original scope). It is, however, worth noting that cost and time overruns are by no means just an Aotearoa New Zealand phenomenon.

In a significant piece of work, Flyvbjerg and Gardner (2023) examined 16,000 megaprojects undertaken in 136 countries over several decades and found only 47.9% came in on budget. Only a tiny number – 8.5% – came in both on budget and on time.

HOW CAN AOTEAROA NEW ZEALAND REDUCE COST AND TIME OVERRUNS?

Aotearoa New Zealand could save significant sums by tackling the issues that lead to cost and time overruns. Long-term and intensive research by Flyvbjerg and Gardner (2023) analysed what makes an infrastructure project succeed

or fail in terms of cost, time, and benefits delivered. Some key factors highlighted in the research include:

- **Thinking slow, acting fast.** This means investing more time upfront to create a detailed, tested plan, and compressing delivery time as much as possible. A shorter delivery time limits the risk of ‘black swan events’ (such as a pandemic or a major storm) derailing the project.
- **Focusing on the ultimate purpose,** or ‘why’ of the project in the design process, rather than leaping straight to the solution.

- **'Building with Lego'.**

Modularity (getting one part right then replicating learnings at speed) is the key to getting big projects done fast and cheaply.

- **Making more accurate cost and time predictions upfront**

by treating the project as one of a class of similar projects (buildings or bridges, for example), rather than seeing the project as unique. Cost estimates based on data from other similar projects are far more accurate, but are rarely used as a predictor.

- **Proactively mitigating risks**

by spotting and eliminating dangers in advance.

- **Not undertaking projects that are not set up to succeed**

with the required people, funds, and contingencies.

- **Not using untested technology,**

and not being tempted to go for the tallest, biggest, or 'best' example of its kind.

Following the lessons developed in Flyvbjerg and Gardner's analysis has the potential to save significant sums in this country.



THE OVERALL COST TO BUILD HERE IS NOT SIGNIFICANTLY HIGHER THAN ELSEWHERE

A recent review of transport costs worldwide, covering more than 900 projects in 59 countries, identified Aotearoa New Zealand as the most expensive country in the world in which to build rapid-rail transit infrastructure (Goldwyn et al., 2023).

The review found the cost per kilometre for building a 'metro' or rapid transit rail line in Aotearoa New Zealand is US\$922.37 million per kilometre, compared with only US\$321.43 million in Australia. The lowest cost countries - Portugal, South Korea, Spain, and Finland - build transit lines for just US\$100m/km - more than nine times less than Aotearoa New Zealand.

The review's conclusions look less dramatic on closer inspection. Crucially, the figures do not distinguish between overground and tunnelled rail. The five most 'expensive' countries in the study had built projects that were more than 65% tunnelled. Aotearoa New Zealand only had one example of 'metro' rail to draw on for the study - the City Rail Link - which is 100% tunnelled.

The Infrastructure Commission (2022a) recently analysed and compared the costs of infrastructure provision in a number of countries across

eight categories of project type, and concluded that Aotearoa New Zealand does not have high infrastructure construction costs across the board relative to other high-income countries.

The country does appear to have higher infrastructure project costs for some (but not all) project types:

- Urban motorway costs tend to be higher in Aotearoa New Zealand than in North America (but compare favourably with Australia and Europe).
- Rural motorway costs tend to be higher in Aotearoa New Zealand than in Europe or North America (but cost less than in Australia).
- Road tunnel costs tend to be higher in Aotearoa New Zealand than in Europe (but compare well with Australia) (Infrastructure Commission, 2022a).

The report also noted several factors that make it hard to compare infrastructure costs here with other countries, including the difficulty of comparing 'like for like', the range of costs within countries for similar projects, and the small number of projects Aotearoa New Zealand has undertaken in some categories.



∨

“If we face a cost premium for infrastructure projects, it primarily relates to complex, large-scale infrastructure projects rather than smaller or more standardised infrastructure projects.”

(Infrastructure Commission, 2022a)

ROOM FOR IMPROVEMENTS IN EFFICIENCY

Regardless of how it compares internationally, Aotearoa New Zealand can, and should, focus on improving efficiency in infrastructure provision.

Various commentators have pointed to several focus areas for potential improvement. These include the need for better investment planning with bi-partisan support for a long-term infrastructure pipeline, a focus on outcomes rather than outputs, more rigorous cost-benefit calculations, improvements to the country's resource consent and decision-making processes, and improved capability within government procurement. Several of these are discussed in more detail below.



“ We have both an investment gap and an efficiency gap. We need to deliver infrastructure more cost-effectively, ensure good value for money from new infrastructure, and ramp up our investment.”

(Infrastructure Commission, 2021a)

Delays caused by decision-making processes

Aotearoa New Zealand could improve efficiency by reducing the length of time projects take to deliver here.

A recent report commissioned by Infrastructure New Zealand and prepared by Principal Economics found Aotearoa New Zealand takes on average 15 years to complete major transport links (*Torshizian & Maralani, 2022*) with long delays between project planning and delivery. The report highlights the potential to cut the average timeframe for transport projects to just eight years by making changes to the decision-making process.

Solutions proposed in the Principal Economics report include reform of the resource management process, building in more flexibility to the planning process, and requiring that the cost of delay be calculated regularly as the decision process progresses.

As just one example the Waikato Expressway took 40 years from conception to completion. The Principal Economics report concluded the project could have been 20 years shorter using better decision-making processes. A shorter delivery time would have delivered \$2.3 billion in economic gains to Aotearoa New Zealand - an amount that exceeds the total cost of the project itself (estimated at \$1.9 billion).

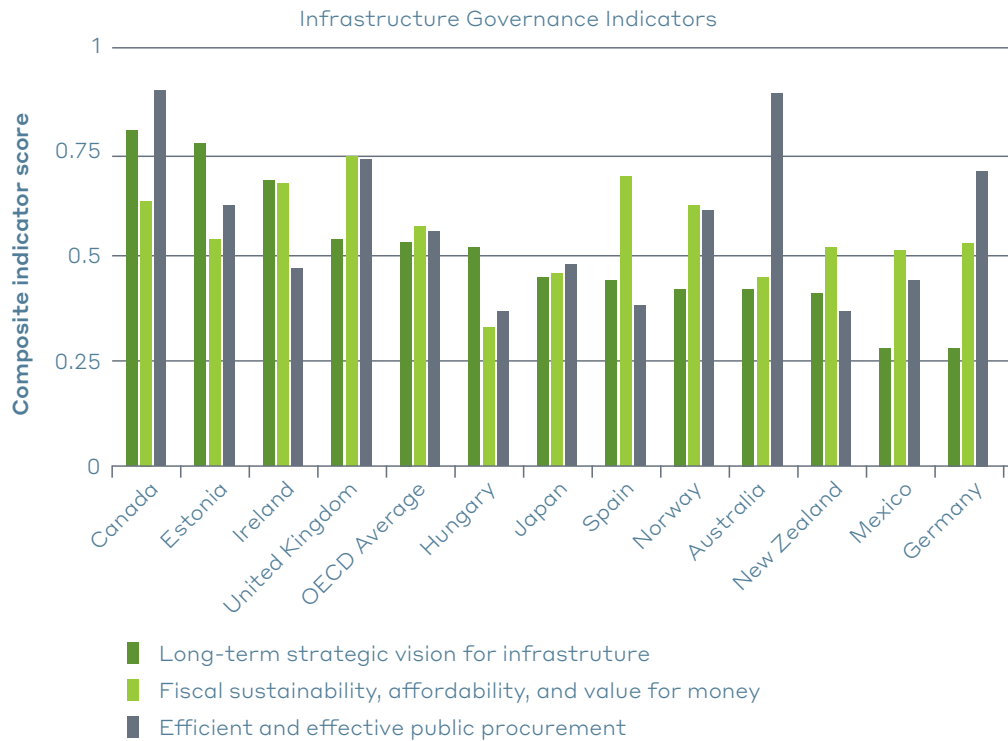
These findings back up the commonly heard refrain within the sector that ‘the cheapest time to build infrastructure is always today’. This is partly because infrastructure construction prices tend to rise slightly faster than economy-wide prices (*Infrastructure Commission, 2022b*). It is also because any delay to provision of infrastructure means the economic benefits it will deliver are also delayed.

Improve public procurement capability

The OECD ranks Aotearoa New Zealand comparatively poorly on ‘infrastructure governance’ (see Figure 6), which measures:

- Long-term strategic vision.
- Fiscal sustainability, affordability, and value for money.
- Efficient and effective public procurement (Berl, 2023).

Figure 6. OECD infrastructure governance indicators (OECD, as reproduced by BERL 2023)



Aotearoa New Zealand rates particularly low on efficient and effective public procurement.

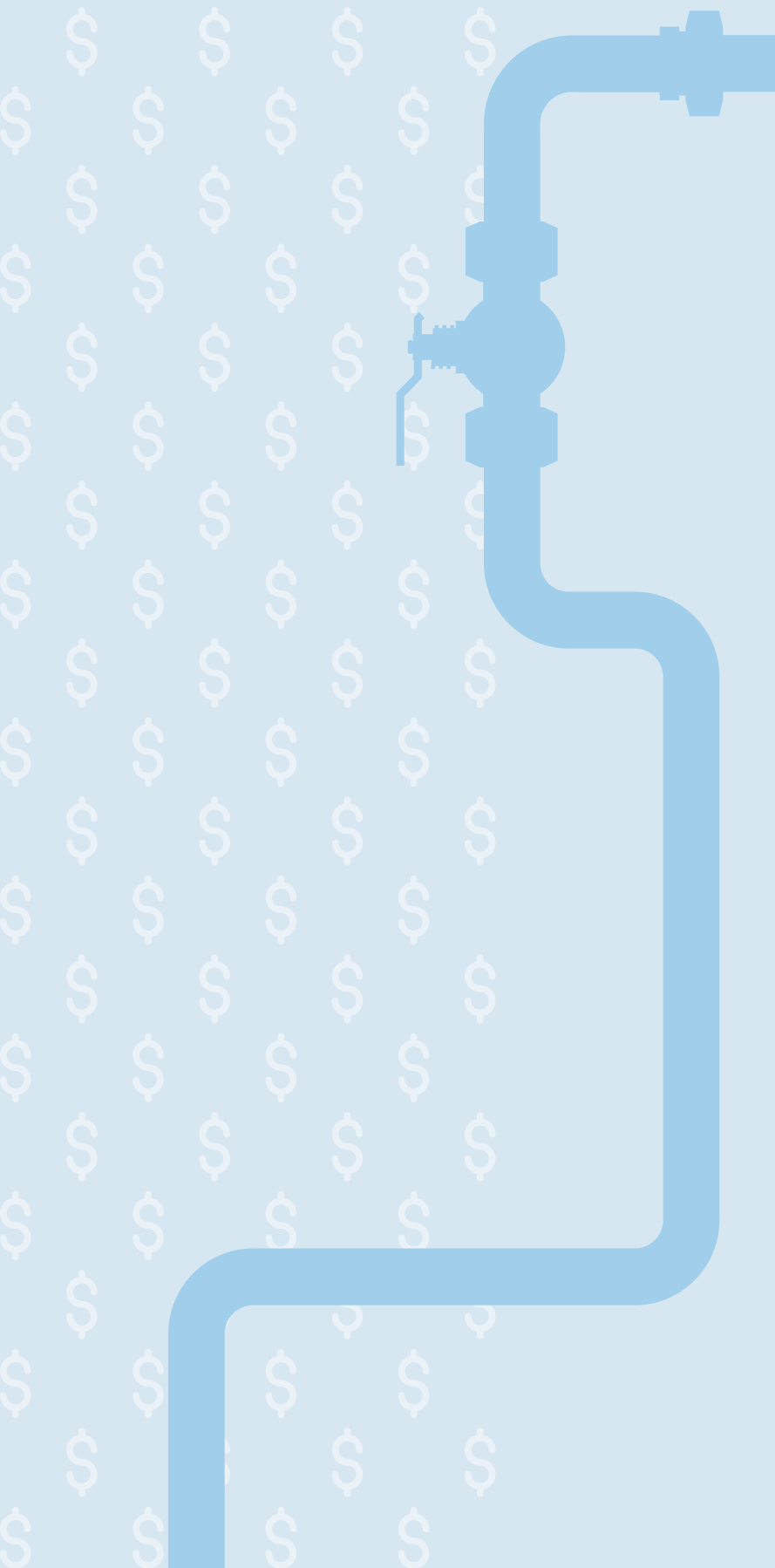
This is unfortunate given the common theme of success in low-cost countries for transport infrastructure delivery is the internal capacities of government agencies to deliver projects. A major international review of transit infrastructure (*Goldwyn, 2023*) points to the inefficiencies that come from governments contracting projects to the private sector without adequate capability for oversight.

In this country, an analysis by Singer (*2018*) for Infrastructure New Zealand noted that some of the country's public sector agencies are high performing in terms of procurement, and some less so.

The report also concluded that, most importantly, the country needs an impartial party to oversee infrastructure procurement at central and local levels: to ensure there is a master plan; to coordinate the pipeline across agencies; to collect and compare data; and to assist those agencies that do not hold sufficient capability in-house to successfully drive all procurements.

A positive and impactful start on this was made by the last Labour Government, which set up the Infrastructure Commission as an independent Crown entity to improve the planning, funding, and delivery of infrastructure projects across the country (*Infrastructure New Zealand, 2023b*). The last Labour Government also established Rau Paenga, a specialist infrastructure agency, tasked with helping government agencies with limited procurement capabilities (*Rau Paenga Ltd, n.d.*).

The coalition Government plans to build on this progress, establishing a National Infrastructure Agency by expanding Crown Infrastructure Partners. Among other jobs, the agency will be tasked with becoming a centre of expertise for procurement, and will provide advice and expertise to the Crown on new financing models for infrastructure (*New Zealand National Party, 2024*).



SAVE COSTS WITH GOOD PLANNING AND A CLEAR PIPELINE

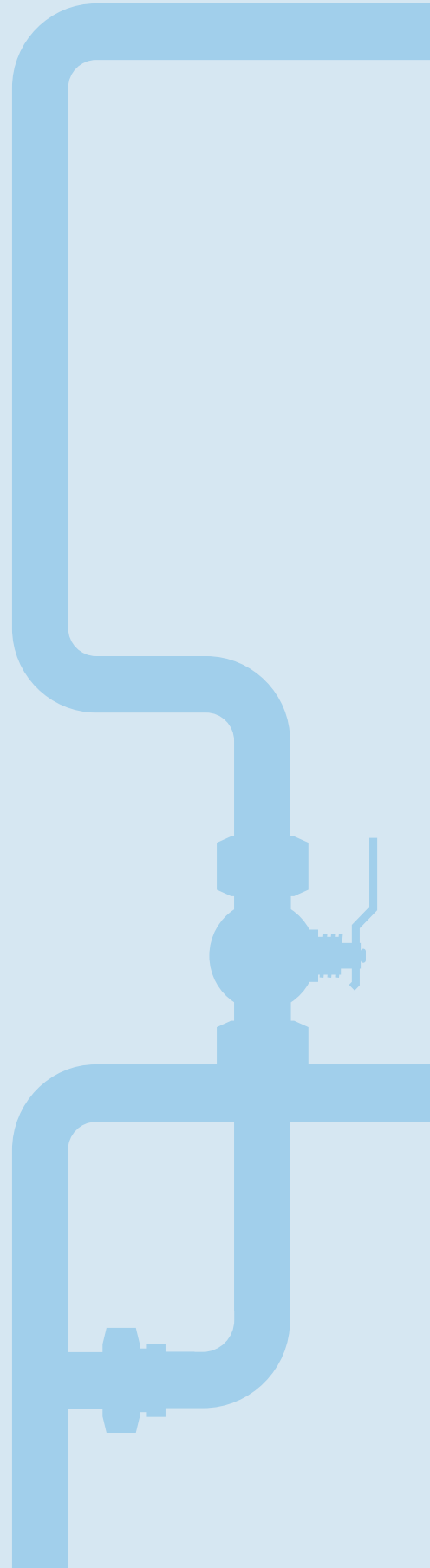
In terms of long-term strategic vision for infrastructure, Aotearoa New Zealand's approach to developing a 'pipeline' of upcoming projects has been described as "piecemeal" and "ad hoc" (Edmunds, 2024; Kiernan, 2024).

Efforts have been made to fix this. The Infrastructure Commission is responsible for developing and maintaining a 30-year infrastructure strategy for the country, with the first iteration released in 2022. They have also made progress developing a pipeline (available on the Infrastructure Commission website), which provides some short-term clarity. This clarity deteriorates quickly beyond the next three years, however (Olsen & Glynn, 2023). The pipeline is most developed and certain in terms of spending for water, waste, and environment. Commitments around transport spending are 'moderately uncertain', and 'highly uncertain' in terms of energy and communications spending (Olsen & Glynn, 2023).

A lack of certainty about upcoming priorities has negative impacts for productivity, planning, and investment confidence. It also limits the ability of the construction sector to scale up, produce economies of scale, and source a workforce to meet the needs of the country's pipeline (Olsen & Glynn, 2023).

According to recent analysis by Infometrics for Infrastructure New Zealand (*Olsen & Glynn, 2023*), a streamlined delivery pipeline could unlock productivity benefits and improvements that would save between 13% and 26.5% on project costs. These savings would translate to an additional \$2.3-\$4.7 billion annually to spend elsewhere. The analysis concluded that, over a 30-year period, a more certain pipeline could close a significant proportion (if not all) of the country's current infrastructure deficit.

This suggests that improving the clarity and certainty of the long-term pipeline should be an absolute priority. The National Party recently released a policy statement on how it will approach this challenge, including an intention to develop a 30-year National Infrastructure Plan (pipeline) (*Bishop, 2024a*). As we note below, this will only be sustainable in the long-term if it can attract bi-partisan support across the strategic vision and choice of areas for investment.





✓

“ Aotearoa New Zealand needs to adopt a longer-term strategic plan around its infrastructure investment, with better coordination between central and local government, private investors, and constructors. The project pipeline seems to have become increasingly ad hoc in recent years, with ideological biases from both the left and right undermining the decision-making process and making the future work plan uncertain and lumpy.”

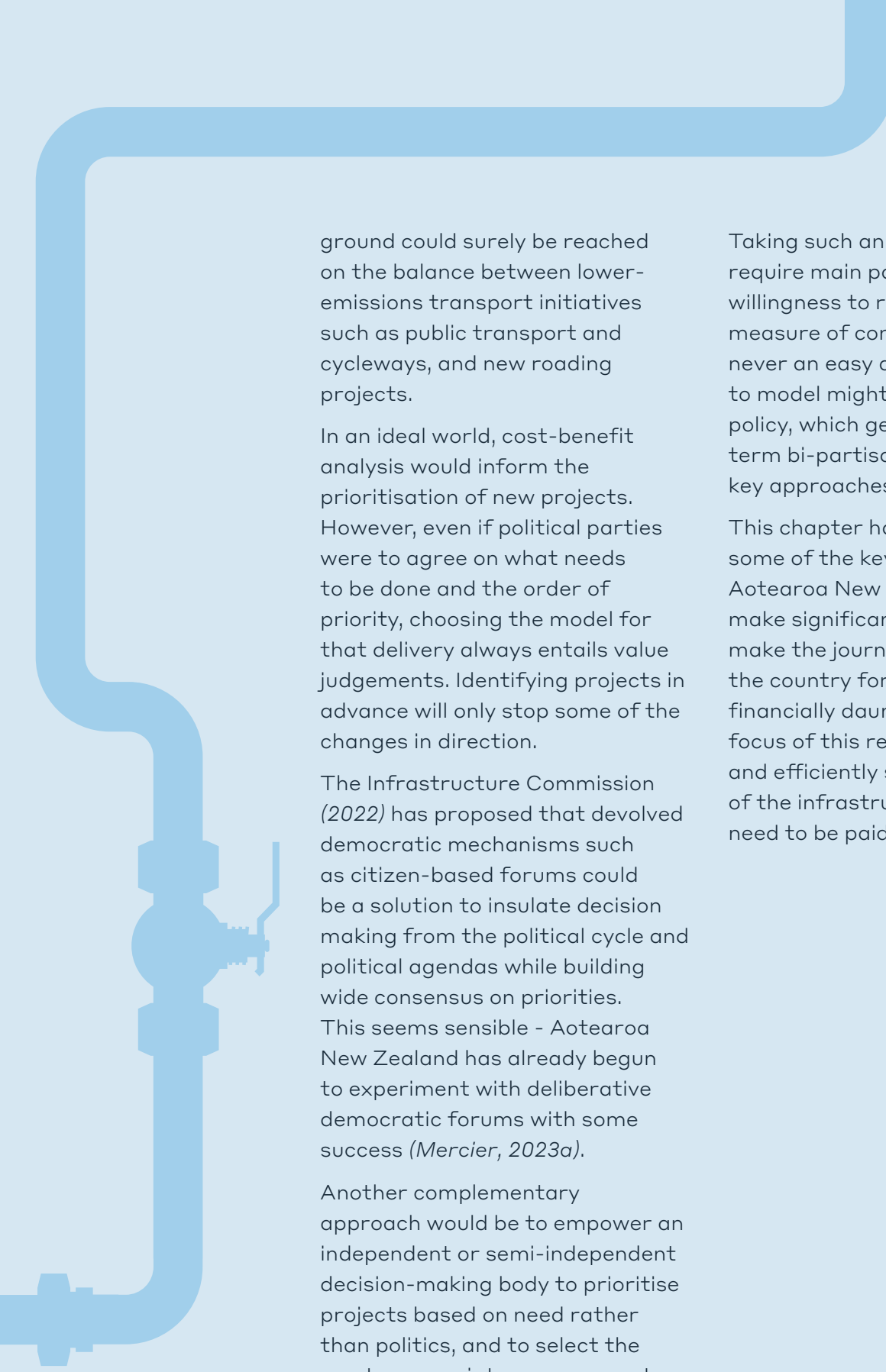
(Kiernan, 2024).

DEVELOPING A CLEAR PIPELINE WILL REQUIRE BI-PARTISAN SUPPORT

While there is agreement across political parties that the problem in Aotearoa New Zealand regarding the country's infrastructure is sizable and must be addressed, successive governments have had different ideas and policies about how this problem should be tackled - for example, by placing more or less priority on public transport compared with new road networks, or favouring urban densification more, or less, compared to greenfield housing development.

Commentators have therefore called for the main political parties to align to provide greater policy certainty for investment, and approaches that meet somewhere in the political middle (*Smith & Campbell, 2024*).

Ideally, political parties would work together to find sufficient middle political ground, backed up by evidence including cost-benefit analyses, to form the basis of the pipeline, and to make commitments to uphold any agreements for the long term. Maintenance and renewals of core infrastructure such as water provision and existing roads is essential, and this should be the priority. All parties should surely be able to agree on the need for a well-functioning transport network. Similarly, some common



ground could surely be reached on the balance between lower-emissions transport initiatives such as public transport and cycleways, and new roading projects.

In an ideal world, cost-benefit analysis would inform the prioritisation of new projects. However, even if political parties were to agree on what needs to be done and the order of priority, choosing the model for that delivery always entails value judgements. Identifying projects in advance will only stop some of the changes in direction.

The Infrastructure Commission (2022) has proposed that devolved democratic mechanisms such as citizen-based forums could be a solution to insulate decision making from the political cycle and political agendas while building wide consensus on priorities. This seems sensible - Aotearoa New Zealand has already begun to experiment with deliberative democratic forums with some success (Mercier, 2023a).

Another complementary approach would be to empower an independent or semi-independent decision-making body to prioritise projects based on need rather than politics, and to select the most appropriate procurement processes for these. Decision-making would need to be informed by the need to plan for climate change, as well as a clear long-term population strategy.

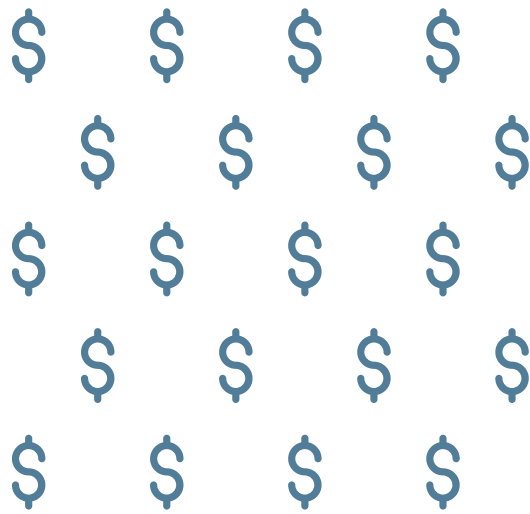
Taking such an approach would require main parties to adopt a willingness to relinquish a certain measure of control, however - never an easy ask. A good example to model might be foreign trade policy, which generally enjoys long-term bi-partisan agreement on key approaches.

This chapter has highlighted some of the key areas in which Aotearoa New Zealand could make significant cost savings to make the journey to preparing the country for the future less financially daunting. The next focus of this report is how to fairly and efficiently spread the costs of the infrastructure that will still need to be paid for.



CHAPTER 1 - RECOMMENDATIONS

- Seek multi-party agreement, to the extent possible, on a strategic long-term vision for the country's infrastructure needs, explaining how (and when) these needs will be met. Support this vision with consistent investment levels across political terms, to break the 'boom-bust' cycle.
- Be clear about desired and expected population growth trends and how these will likely affect the country's long-term infrastructure pipeline.
- Get better value from procurement and delivery of infrastructure. In particular, reduce time and cost overruns by applying recent international research findings on best practice. This will require increased capacity and capability in government procurement.
- Focus on maintaining and optimising the use of infrastructure the country already has.



CHAPTER 2.

How infrastructure is funded and financed in Aotearoa New Zealand

PAY FOR IT NOW, OR LATER - BUT PAY FOR IT YOU MUST

GIVEN AOTEAROA NEW ZEALAND'S SIGNIFICANT INFRASTRUCTURE CHALLENGES, AND IN THE CONTEXT OF A COST-OF-LIVING CRISIS AND WITH THE ECONOMY IN RECESSION, THE QUESTION BECOMES - HOW DOES THE COUNTRY PAY FOR THIS?





Though the terms are often used interchangeably, funding and financing have distinct meanings:

- **Funding** refers to who pays for the infrastructure - in other words, taxpayers, ratepayers, and people who use it and pay fees via fees or tolls.
- **Financing** refers to the methods used to cover the upfront costs. Projects might be financed by government and local authorities by issuing bonds, or through the use of private finance, for example.

Borrowing money ('debt-financing') can help governments defray upfront investment costs for infrastructure and thereby allow more assets to be built, more quickly. Infrastructure can be financed in a range of imaginative ways - for example, via asset recycling, by way of a Special Purpose Vehicle under the Infrastructure Funding and Financing Act 2020, or via a public-private partnership (PPP). However, one way or another, the residents of a country will eventually be required to pay the full cost of the infrastructure they use.

While some voters may favour politicians who promise lower taxes and rate freezes, lower funding for the public sector puts pressure on what can be built, renewed, or maintained. It is a truism that if citizens and residents want functional infrastructure, they can pay now, or later - but, eventually, they still must pay for what is used - whether through taxes, rates, or user charges.

Different funding and financing options offer the ability to move

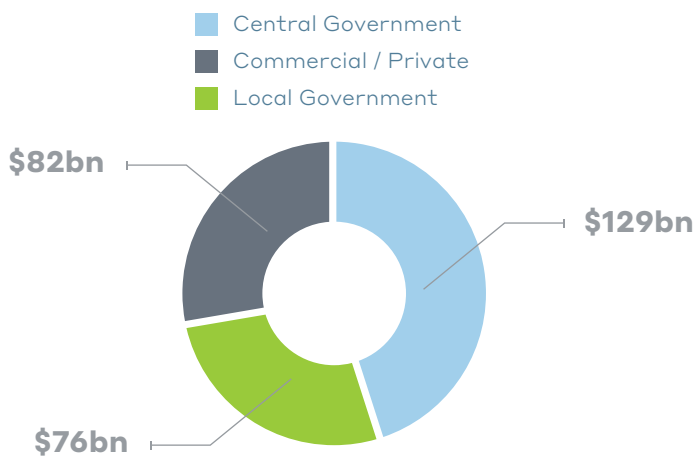
costs around between different members of existing populations, and between current and future generations - potentially leading to more or less equitable outcomes. Different funding and financing approaches can also be more, or less, efficient, transparent, or sustainable - all relevant factors in choosing a model for delivering different types of infrastructure. These issues are discussed below in relation to different proposals.



WHO BUILDS INFRASTRUCTURE IN AOTEAROA NEW ZEALAND?

In 2022, the country's infrastructure was worth around \$287 billion - equal to \$55,800 per New Zealander. Of this, 45% is owned by central government, 26% is owned by local government, and the remainder is commercially and privately owned (*Infrastructure Commission, 2024a*) (see Figure 7).

Figure 7. The value of infrastructure assets by sector of ownership, 2022 (*Infrastructure Commission, 2024a*)



Infrastructure is often categorised as horizontal or vertical. Horizontal infrastructure includes transport, electricity and gas, water and waste, and telecommunications - things such as roads, pipes, and cables that go along the ground or under it. Vertical infrastructure includes education facilities, hospitals, defence and administration facilities, social housing, and other public facilities - mostly buildings, in other words.

Responsibilities for providing different categories of infrastructure are divided between central and local authorities in Aotearoa New Zealand, with some types of infrastructure also owned privately. Horizontal infrastructure is funded and provided as follows (*Infrastructure Commission, 2024a*):

- Road transport** is the largest category of infrastructure assets, valued at \$67 billion. In general, local government is responsible for local roads, and central government is responsible for state highways. Central government also contributes some money to local roads, public transport, and walking and cycling facilities, and total assets are split roughly evenly between central and local government.
- Electricity and gas infrastructure and telecommunications infrastructure** together are valued at around \$67 billion, and are commercially owned and operated.
- Rail, water, air, and other transport infrastructure** is split between central and local government, with some infrastructure owned privately.

- **Water, sewerage, drainage, and waste services** are mostly owned by local government, with a small portion owned privately and by businesses.

Vertical infrastructure in Aotearoa New Zealand is funded as follows:

- **Infrastructure for preschools, schools, and tertiary education** is funded by central government, with a very small number of schools owned privately.
- **Hospitals** are funded by central government, with a small number owned privately.
- **Public administration and safety infrastructure**, such as army barracks, prisons and courts, fire stations, police stations, and government administration assets are largely funded centrally, with slightly less than a third of assets owned by local authorities.

- **Social housing infrastructure** is owned approximately two thirds by the central government with the remainder owned by local authorities.

- **Other vertical infrastructure**, such as libraries, social assistance infrastructure, and arts and recreation infrastructure such as swimming pools, stadiums, and recreation centres, as well as the services infrastructure that supports telecommunications and the internet, are owned primarily by local government. Central government owns less than 20% of this type of infrastructure.

Different sectors have different funding models. For example, telecommunications and energy infrastructure are operated commercially in this country, with income generated entirely from charging consumers. In contrast, water, transport, education, and health infrastructure are primarily operated as non-profit public entities and funded through taxes and rates (supplemented by some user charges) (*Infrastructure Commission, 2024a*).



HOW INFRASTRUCTURE IS CURRENTLY FUNDED AND FINANCED

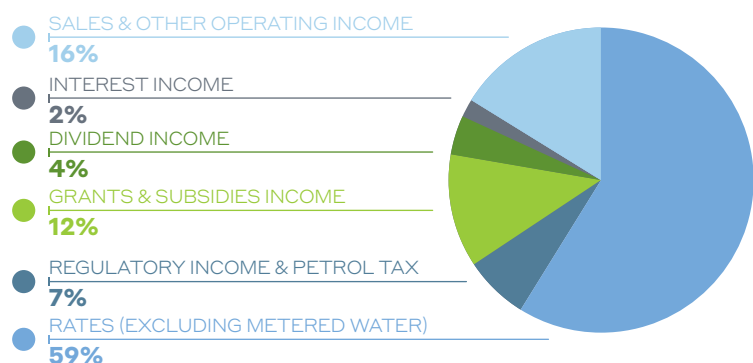
Central government pays for its share of infrastructure through taxation and other government revenues including levies, fees, investment income, and the sales of goods and services. It often finances infrastructure by borrowing (by issuing government bonds, for example). Debts are then paid back over time using taxes, rates, and other revenues.

While central government is mostly funded by income and consumption taxes, local government is mostly funded by taxes on property (rates). Rates made up between 47% (NZ Productivity Commission, 2019) and 59% (Local Government in New Zealand, n.d.) of total council income in 2018. Councils also generate income from regulatory fees such as parking fines, the sale of goods and services like swimming pool charges, and interest earned from investments (see Figure 8).

Local governments also receive grants and subsidies from central government - including their share of road taxes and charges. Multiple infrastructure-related grants and funds have been set up by central government over the years. One example is the Infrastructure Acceleration Fund, a \$1 billion fund launched in 2021 to support new or upgraded infrastructure, which should enable new homes to be built in areas of high housing need (*Kāinga Ora Homes and Communities, n.d.*). Another is the current government's Regional Infrastructure Fund, worth \$1.2 billion, which aims to focus help outside the main cities (*Jones, 2024*).

Local governments usually finance new infrastructure by borrowing, while maintenance and renewals are ideally funded by operational expenditure.

Figure 8. Local government operational revenue sources, year ended 2018 (Local Government in New Zealand (n.d.))

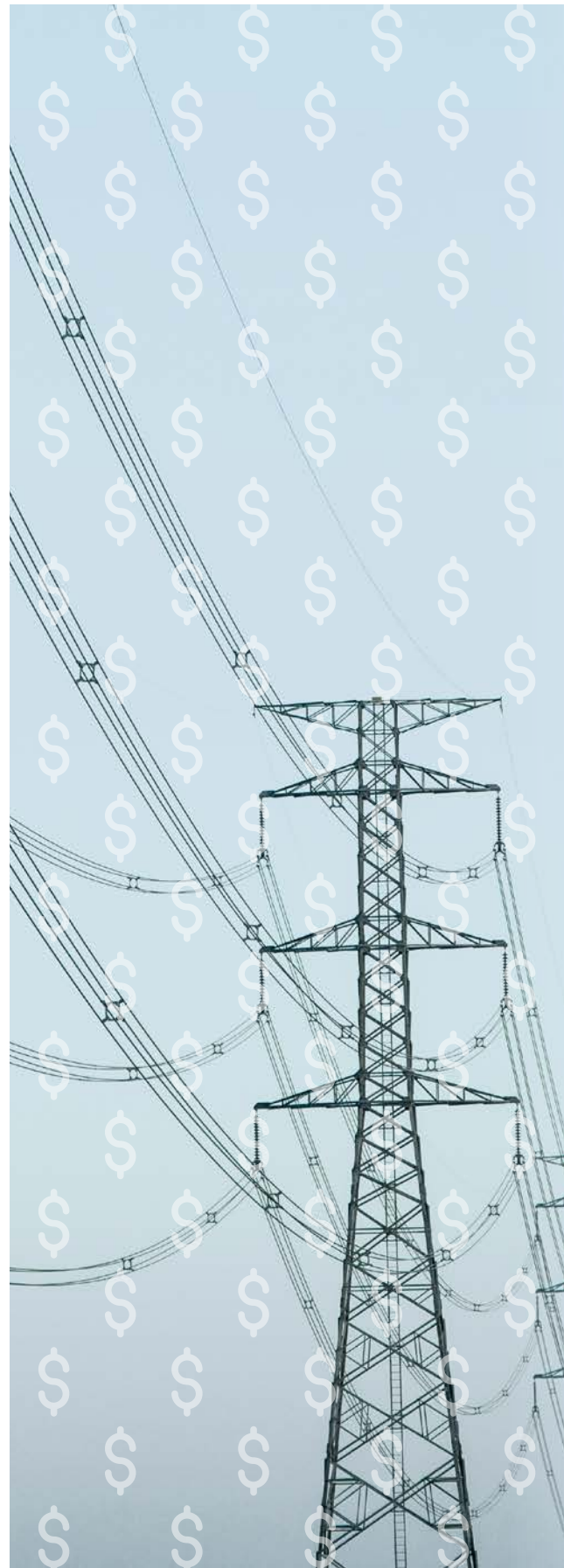


APPLYING THE FAIRNESS PRINCIPLES TO INFRASTRUCTURE INVESTMENT DECISIONS

Before looking at the different options available to pay for ongoing investment in infrastructure (and to catch up on the deficit), it is useful to think about the principles of fairness and equity that should underpin different choices. As mentioned earlier, different funding and financing options move costs around between the different members of existing populations, and between current and future generations – potentially leading to more or less equitable outcomes.

For example, questions that might be asked include whether a specific new piece of infrastructure should be funded by a long-term loan. How can Aotearoa New Zealand guarantee the infrastructure built will still be fit for purpose in 30 years (when someone who hasn't yet been born will still be paying for it)? Similarly, are road tolls fair, given the charges may impact lower income families more than higher income ones? Or is it fair for ratepayers to fund new infrastructure to support housing growth brought about by central government immigration policies? There are multiple value judgements involved in each decision.

A recent survey by the Infrastructure Commission (2024d) backed up the point that assessing 'fairness' involves



significant value judgements and is inherently subjective. Responses varied based on age, gender, ethnicity, and region. Views also varied depending on the type of infrastructure:

- Nearly three-quarters of respondents thought it was fair that what households pay for electricity (74%) and water (72%) should be based on what a household uses.
- Just over one-third (34%) of respondents thought that usage was a fair way to fund roads.
- Over half (55% to 60%) of survey respondents did not think it was fair for households to pay for services based on the cost to supply (infrastructure is more expensive to deliver in remote and rural locations).

The NZ Productivity Commission (2019) identifies several principles of fairness that are helpful to apply to infrastructure funding decisions:

- **The benefit principle** - that services should be funded by those who benefit from them.
- **The exacerbator principle** - that whoever causes a need for the use of costly resources (for example, someone who pollutes a river or causes congestion) should pay for it.

- **Horizontal equity** - a tax principle that citizens with the same characteristics should pay the same tax - for example, those who use the same amount of water should pay the same water tax, or those with the same income should pay the same income tax.
- **Vertical equity** - a tax principle that citizens with greater ability to pay should pay more tax than those with less ability to pay (known as a progressive tax). This may be based on income, consumption, wealth, or property value.
- **Intergenerational equity** - a principle that seeks fairness across generations, for example, by requiring that one generation doesn't pay for a benefit enjoyed by another generation or doesn't impose a cost on another generation.
- **Tax incidence** - this refers to who ultimately pays a tax or a rate. For example, GST is a tax on retailers, which is ultimately paid by purchasers of goods or services. Rates are a tax on property owners, but the cost of rates is also passed on to renters.

The different fairness concepts can conflict with each other. One example of this might be where a targeted rate to pay for a new train station is added to all properties in an area, regardless of the individual wealth of the property owners - in that case, the benefit principle conflicts with the principle of vertical equity.

It is therefore concerning when the benefit principle is quoted in isolation as the most important guiding principle in infrastructure decision making. Doing this may lead a decision maker to prioritise an approach using a model that does not also consider other relevant fairness principles.

A further difficulty in applying the benefit principle relates to the complexity of calculating and allocating benefit, and the subjectiveness of attempts to do so. Most infrastructure and services have a 'mixed good nature' (*Society of Local Government Managers, 2019*). In other words, they provide benefits to both private individuals and the wider public. As one example, a new railway line might benefit:

- The people who travel on it.
- The people who live near the new station, whose property values are likely to increase.
- People who drive along the same route, because the railway will reduce congestion.
- Nearby towns and regions, which now have better links to the outside world.

- The whole country, by providing economic growth and by reducing carbon emissions.

Attempting to apportion all these benefits is not straightforward. Different people are likely to rate each impact differently, depending on their values.

This emphasises the importance of ensuring that all five fairness concepts listed above, as well as tax incidence, are used to inform decisions about who should pay for new infrastructure (*NZ Productivity Commission, 2019*).



RECOMMENDATIONS

- Ensure all funding and financing decisions consider questions of equity, efficiency, and effectiveness, but recognise that these decisions (for example, determining who benefits from new infrastructure, and who should therefore pay for it), involve value judgements and are inherently subjective.
- Consider and balance all relevant principles of fairness in infrastructure investment decisions (some of which may conflict with one another). Principles include:
 - Vertical equity (those with greater ability to pay should pay more).
 - Intergenerational equity (which seeks fairness across generations).
 - The benefit and exacerbator principles (those who benefit from a service, or cause a need for the use of costly resources, should pay).

OPTIONS FOR CENTRAL GOVERNMENT TO FUND AND FINANCE INFRASTRUCTURE

An analysis by Sense Partners showed that to fund the country's infrastructure deficit would require the country to increase investment in infrastructure from 5.8% per annum to 9.6% of GDP per annum. Sustaining higher investment will require us to increase either taxes, rates, or user charges (or more likely a combination of those), while lower investment would require us to accept less or lower-quality infrastructure (*Infrastructure Commission, 2024*).

There are several ways in which government can increase the money available to pay for infrastructure, with varying degrees of political popularity:

- Taxation.
- Borrowing.

- Increasing other forms of revenue - through user pays for example.

Taxation has several advantages as a funding option, but is unpopular

There are two main arguments in favour of funding a significant portion of new and future infrastructure through increases in tax revenues.

First, taxation has better levers to address questions of vertical and horizontal equity than rates. Under the country's progressive taxation system, those with a greater ability to pay are expected to pay more, and those with less ability to pay, should pay less. Income tax rates are also the same regardless of where a person lives. Rates at the local level, by contrast, are assessed at a flat rate based on property values within each town and region. Rates are assessed



regardless of ability to pay, and the rate applied is different across regions.

Second, certain types of taxation are particularly good at addressing issues of intergenerational fairness. For example, inheritance tax (*Barrett, 2020*), wealth taxes (*Treasury, 2023*), and capital gains tax (*Tax Working Group New Zealand, 2019*) all provide mechanisms for transferring accrued wealth from older generations (who many commentators believe have underinvested in infrastructure for several decades), to younger ones, who are required to foot a large bill within a condensed period of time.

While increasing rates of taxation to help fund the infrastructure deficit would make sense for both these reasons, and while it is also relatively straightforward and efficient to

administer compared to some other options, it is clearly not a popular option with voters, nor therefore with many politicians. Other options, discussed below, include increasing rates at the local council level, and finding ways to gather more revenue from the users of infrastructure. While each of these have their place, it is likely they will not be able to fully redress decades of underinvestment.

Several commentators (*Southgate, 2023; Watkins, 2024*) have pointed to the importance of holding an honest public conversation about the challenges Aotearoa New Zealand now faces, and what the alternative looks like if the country continues to underinvest at the current rate.



Central government has scope to borrow more

Where funds are not already set aside for the purpose, the most straightforward way to finance (as opposed to fund) new infrastructure is for central government to borrow money to do so. As with raising taxes, this is not a politically popular approach at the central or local government level.

Borrowing to finance infrastructure allows the cost of the project to be spread out over time, avoiding the need to find as much capital up front. Because the costs are spread over time, debt financing also has the advantage of allowing more to be built now, and more quickly (*Infrastructure Commission, 2024b*).

Financing infrastructure using public debt is also generally seen as equitable. Costs are

spread over the lifetime of the infrastructure, meaning the costs are paid by all the people who use it throughout its lifetime (*Infrastructure Commission, 2022b; NZ Productivity Commission, 2019*).

In Aotearoa New Zealand central government borrowing is carried out by the Treasury on behalf of the Crown by selling funding or debt instruments, known as securities. The main type of government securities are bonds and bills. These are sold by online tender to a narrow range of pre-agreed lenders (mainly large banks) at an agreed price, with a date for when the debt will be repaid. Primary lenders often then sell the securities to other investors such as fund and pension managers, and insurance companies.



New Zealand Treasury issues several types of bonds for different purposes. Green Bonds are worth particular note. These can be issued to finance specific infrastructure projects intended to support climate change mitigation and environmental outcomes (*Treasury, 2024*). These could be used to support cities to become more flood resilient using green infrastructure - such as by restoring wetlands, for example (*Mercier, 2023b*).

Aotearoa New Zealand is in a good position to borrow more money than it has already, and there appears to be good consensus that the country could afford to borrow more to finance infrastructure (*Anthony Walker from S&P interviewed by Hickey, 2024a; Infrastructure Commission, 2022b; Smith & Campbell, 2024*).

Aotearoa New Zealand has a strong Crown balance sheet and comparatively low public debt compared to other countries in the OECD. In 2022, the country's current Crown debt sat at around 57% of GDP, compared to an OECD average of 89% - which may suggest capacity for further government financing (*OECD, 2024*).

There are downsides to borrowing money. The principal and interest must be paid back, increasing pressures on the Crown's revenue. How much a government borrows can also affect the wider economy. If the government borrows too much relative to GDP, that debt may be perceived as riskier,

pushing up financing rates and potentially triggering credit rating downgrades. This can push up interest rates across the board, as well as putting upward pressure on the exchange rate and inflation (*Treasury, 2014*).

However, Aotearoa New Zealand is not currently in that situation. In a recent media interview, Anthony Walker, S&P's Global Director of Sovereign and Public Finance Ratings, expressed the view that the Crown's AAA rating is solid, estimating that the Crown could likely borrow a further 30% of GDP (\$120 billion) before risking any danger of a credit rating downgrade (*Hickey, 2024a*).

There is also excellent investor demand both globally and locally to lend to the Aotearoa New Zealand government to fund infrastructure - as demonstrated by a recent bond issue where investors made \$19 billion worth of bids for \$4 billion worth of bonds - a very high rate (*Hickey, 2024a*).

However, new fiscal rules require the government to aim for core Crown debt to be held at 20%-40% of GDP in the longer term. Reaching and maintaining this lower debt range may mean some productive investment opportunities could be missed (*Smith & Campbell, 2024*).

Failing to properly invest in the infrastructure needed for the country to function well, now and in the future, could cost us more in the long term than prudent borrowing now.

The government can also finance projects through private investment

The cheapest way for the government to borrow is via the release of securities. Another option is to seek private financing for specific infrastructure programmes and projects.

The cost of borrowing privately to finance a specific project is higher than borrowing via a government bond or bill, because the investor carries more risk. However, private sector investment is often said to leverage market competition and efficiencies - thus achieving lower overall project costs or otherwise better outcomes than the government can achieve by paying for the infrastructure itself via borrowing. Private finance can also be a way to fund projects that will otherwise (due to a political unwillingness to invest in infrastructure, for example) never see the light of day.

Private investment can take various forms, many of which are different configurations of public-private partnerships (PPP). A PPP is typically a long-term contract for the delivery of a service that involves the construction and long-term operation and maintenance of infrastructure, financed from external sources. The government generally retains ownership of the asset throughout. PPPs are discussed at length in Chapter 3.

Other options for private finance include 'leasing models' (similar to a PPP) in which the private sector finances, builds, and then owns a piece of infrastructure, which they then lease back to the Government for a fixed period (e.g., 20-25 years) (*Infrastructure New Zealand, 2023a*). At the end of the lease period, the private sector operator may be required to hand the asset back to the government in a pre-agreed condition, there may be a right of renewal on the lease, or the asset may remain in private ownership.

Another option is asset recycling - a strategy employed by governments to generate funds for infrastructure investment by selling or leasing existing government-owned assets, and reinvesting the proceeds into new infrastructure projects. In asset recycling, the investor makes their money back from the revenues generated by the recycled assets (from road tolls, rents, or water charges, for example). Asset recycling unlocks financing for new infrastructure without increasing debt levels and taxes. Some investors favour this model because investing in stable and mature assets is less risky than investing in new-build projects (*World Economic Forum, 2017*).

The asset recycling approach has been used widely in Australia and the UK to generate new financing for infrastructure projects, but has also faced criticism for being

another form of privatisation in disguise. Criticisms focus on the loss of public ownership or control over essential assets, potential impacts on service quality or affordability, and the potential for infrastructure assets to be run down over time. Privatising infrastructure assets may lead to increased user fees, tolls, or charges as private operators seek to maximise profits (Quiggan, 2017). Controls can be put in place to mitigate some of these risks, such as capping increases in fees or tolls to levels of inflation.

Some of these concerns may be dealt with by considering asset recycling options in partnership with Aotearoa New Zealand investors such as ACC, Superfund, or KiwiSaver schemes. Such an

approach, known as a public-public investment (PPI) model (New Zealand Superannuation Fund, 2024) would keep the profits in Aotearoa New Zealand, while New Zealanders would retain some influence (via popular pressure) over what happens to the infrastructure and how it is operated. The National Party's Infrastructure for the Future plan (2024) sets a goal to boost investment by these agencies in infrastructure projects in the country.

It is important to note that, while New Zealanders would benefit from any upside on these schemes, they would also be subject to the downsides if significant risks materialised.





St Peters Interchange under construction.



Case Study: Asset recycling in Sydney's WestConnex motorway scheme

WestConnex is a 33-kilometre mostly underground motorway scheme in Sydney (WestConnex, 2024). It has been described as the biggest transport project in Sydney and Australia since the Harbour Bridge, with the total cost forecast to be at least \$20 billion. Tolls, government contributions, and asset recycling helped cover the costs (*New South Wales Government, 2019*).

The project was originally funded and financed as a collaboration between the NSW Government and private companies, to build and manage the motorway scheme. The government procurer (Roads and Maritime) gave permission to a private company (Sydney Motorway Corporation), established and originally 100% owned by



the New South Wales (NSW) Government, to build, fund, operate, and maintain the motorway for a specific period, and to collect tolls from users. After this period, the motorway will be handed back to Roads and Maritime in good condition (*New South Wales Government, 2019*).

The NSW Government sold its ownership in the Sydney Motorway Corporation to the Sydney Transport Partners consortium in two competitive sale processes in 2018 and 2021, for a total price of more than \$20 billion (*Infrastructure Partnerships Australia, 2024*). Money from these sales was put aside to fund further stages of the WestConnex project and other future infrastructure projects (*New South Wales Government, 2019*).

Partially separating the different stages of the project, primarily the design and

construction stage from the tolling stage, meant risks could be better understood, and managed, and more efficiently priced. The Sydney Motorway Corporation was able to separately procure contracts for the design and construction parts of the project, and complete elements of the project in a sequential way.

Once those elements had been completed, traffic projections could be tested, meaning the risk for any purchaser of not generating the expected toll revenue decreased. More efficient management of the design and construction risk, coupled with the reduced revenue risk, meant shares in Sydney Motorway Corporation had a higher value, which in turn allowed the NSW Government to recover more through its sale than it would otherwise have done.



Debt funding is not appropriate for all purposes

As the Infrastructure Commission (2024b) sets out, debt financing is most likely to be appropriate for large, 'lumpy', or once-in-a-generation investments that will generate benefits over a long period of time, and where taking out debt will allow government to spread large up-front costs of investment over a longer period of time.

Debt financing is not desirable in the case of routine renewal investment, or maintenance. Not only does this type of investment not stimulate new growth or bring new revenue, using debt to finance renewal deficits effectively pushes the payments onto future generations twice: first at the time of underinvestment, and again when debt is used to finance efforts to address the deficit (Infrastructure Commission, 2024b). Instead, renewals should be funded through annual operating budgets or via depreciation.

Image credit: HEB Construction





RECOMMENDATIONS

- Use a range of approaches to fund and finance infrastructure, but recognise that the bulk of the country's growing infrastructure needs will need to be financed by debt, and serviced by taxation and/or rates.
- Recognise that both central and local governments will need to borrow more to help bridge the infrastructure gap.
- Support and encourage a mature conversation as a country about the country's increasing needs, and the benefits of debt-financed infrastructure investment.
- Note that debt financing is not suitable for all forms of infrastructure investment. Maintenance and renewal of worn-out infrastructure is better funded using operational expenditure and depreciation.
- At central government level, investigate options to service increased debt levels, noting that the most efficient and fair way to fund the biggest portion of infrastructure growth will likely be via progressive and other forms of taxation.



Left to right:
Brigitte Hicks and
Dr Rowan Dixon



THE COLOUR OF MONEY: FUNDING GREEN

In the world of finance, a new language has appeared – characterised by phrases such as green, blue, social and environmental impact. WSP sustainability advisors Brigitte Hicks and Dr Rowan Dixon explain the rapidly evolving area of sustainable finance.

Sustainable finance is the process of integrating environmental, social, and governance (ESG) factors into financial decision-making. We tend to see this in action through debt financing of projects, assets, and organisational change to reduce carbon emissions. But it's also about changing the financial system itself. This is much broader and includes integrating ESG into how we approach lending, investing, insurance, and risk management. Another way of describing it is 'financing green' and 'greening finance'.

In the past, investment models didn't always consider infrastructure projects' impact on broader community benefits, such as social equity, an unpolluted clean environment, or healthy ecosystems. These days, there's a growing awareness that investments can include the delivery of these broader benefits.



A GLOBAL TREND

Investors involved in large-scale projects are increasingly guided by scientific predictions and sustainable business practices. They want financial stability and to know their money is going towards positive impact. In return, they benefit from reduced risk exposure (from the impacts of climate change, for example), as well as potentially better returns. Borrowers benefit from access to cheaper capital via reduced borrowing rates.

In the next 10 years, the worldwide green finance market is expected to reach \$28.71 USD trillion in value, up from \$4.18 trillion in 2023 (*Spherical Insights, 2024*). There is considerable opportunity for Aotearoa New Zealand to capture a large share of this by leveraging and strengthening its green credentials and sustainable finance systems.

We've seen this play out recently with investment companies like BlackRock, which now views climate risk as investment risk. The company is ramping up investment in areas like renewable energy, including committing \$2 billion to a fund focused on making Aotearoa New Zealand the first country in the world with 100% renewable electricity.



AOTEAROA NEW ZEALAND IS FORGING AHEAD

In 2018, the Crown-owned New Zealand Green Investment Finance Ltd (NZGIF) was established to accelerate investment that will help reduce greenhouse gas emissions (*Arderne & Shaw, 2018*). The Sustainable Finance Forum's Roadmap for Action followed in 2020, laying out how environmentally friendly financing can increase across Aotearoa New Zealand.

Interest has continued to grow. Aotearoa New Zealand is now developing its own sustainable finance taxonomy, the Local Government Funding Agency offers sustainable finance products to Councils and strong offshore demand continues for our Sovereign Green Bond Programme.

BusinessDesk reports that nearly a third of all debt on the NZX debt market is now in green or sustainable bonds - an increase of 40% in two years (*Hurrell, 2024*).



A GLOBAL TREND

While the finance industry has historically faced criticism for its environmental impacts and ethical practices, it is slowly going green through initiatives that promote sustainable finance, and environmentally responsible investments.

Financiers are acutely aware of the risks and opportunities. In a promising sign, they seem to be acting pragmatically - wanting to ensure long-term profitability while doing better by the environment and society.



A NEW BREED OF FINANCE

These trends present a clear opportunity. With society facing new challenges from climate change, a new breed of bond is contributing to environmental sustainability and carbon-friendly infrastructure. Green bonds are being issued for environmentally sustainable, land-based projects; blue bonds for marine and coastal conservation projects. Environmental impact bonds, and sustainability bonds, are issued for projects that bring positive environmental or social outcomes.

In Aotearoa New Zealand, green bonds issued by Auckland Council have helped fund the rehabilitation of Puketutu Island, City Rail Link, and water and wastewater infrastructure. The Council produces impact assessments (*Auckland Council, 2022*) of how each green-funded asset is reducing carbon emissions and achieving broader benefits.

Among many examples, a project to switch Auckland's train fleet from diesel to electric saw 21,858 metric tons of carbon dioxide reduced and avoided in 2023. A replacement pump station completed last year saw 3,170,081 cubic metres of water pass through a new sustainable wastewater facility. These are just a few examples of the broad range of sustainable funding and financing approaches employed by Auckland Council to shape its projects and assets, and the organisation itself.

State owned enterprise Transpower has green financing instruments worth a combined \$3.2 billion (*Transpower, 2023*). These are being used to fund green assets that reduce carbon emissions from electricity generation and help develop renewable generation. Electricity firm Meridian Energy (*2023*) has its own green finance framework to finance new or existing renewable energy assets and projects that deliver positive environmental outcomes.

While Aotearoa New Zealand examples are still emerging, the effectiveness of environmental impact bonds is well illustrated by a water project in Washington DC. It's a model we could mimic.

A \$25 million bond issue by DC Water, bought by Goldman Sachs and the Calvert Foundation, aimed to reduce runoff and improve water quality from sewer overflows (*Abello, 2021*). The proceeds funded retrofitting of bioretention gardens, urban swales, kerb extensions, permeable pavements, and infiltration basins across



200 hectares of impervious urban land. The completed project led to a 30% reduction in runoff after 12 months.



PERSISTENT CHALLENGE AND DETERMINATION

Despite recent progress, there are challenges to overcome - including concerns about bond repayment capabilities, sourcing compatible projects, the level of seriousness and commitment of investors towards sustainable initiatives, and the ability of the market to deliver on sustainability metrics.

Questions sometimes also arise about the financial benefits of green investments, as lower interest rates may not always materialise. Furthermore, it's not always clear that these approaches necessarily lead to additional investment in the transition towards sustainability. Greenwashing remains a challenge, given the voluntary nature of standards and frameworks. This highlights a need for more robust and enforceable regulations to ensure the authenticity and impact of green financing.

The global sustainable finance market is expected to grow significantly in coming years, off the back of a determined global finance community. Effective green finance in Aotearoa New Zealand should benefit from this and be encouraged and applauded to support projects and organisations that accelerate our transition to a sustainable future for us all.





OPTIONS FOR LOCAL GOVERNMENT TO FUND AND FINANCE INFRASTRUCTURE

As noted above, local government plays a major role in infrastructure provision in Aotearoa New Zealand, owning around \$76 billion worth of assets (*Infrastructure Commission 2024b*). The costs of building, renewing, and maintaining infrastructure are significant. Since 2002, for every \$100 invested in infrastructure, about \$24 came from local government - an average of \$3.8 billion per year (*Infrastructure Commission, 2024b*). Renewing, maintaining, and improving this level of investment does not come cheaply.

Local government faces historic cost pressures

Councils are currently facing historically high financial pressures. There are several reasons for this, some of which mirror the issues felt by central government, and some of which are particular to councils (*NZ Productivity Commission, 2019; Olsen, 2024a*). Reasons include:

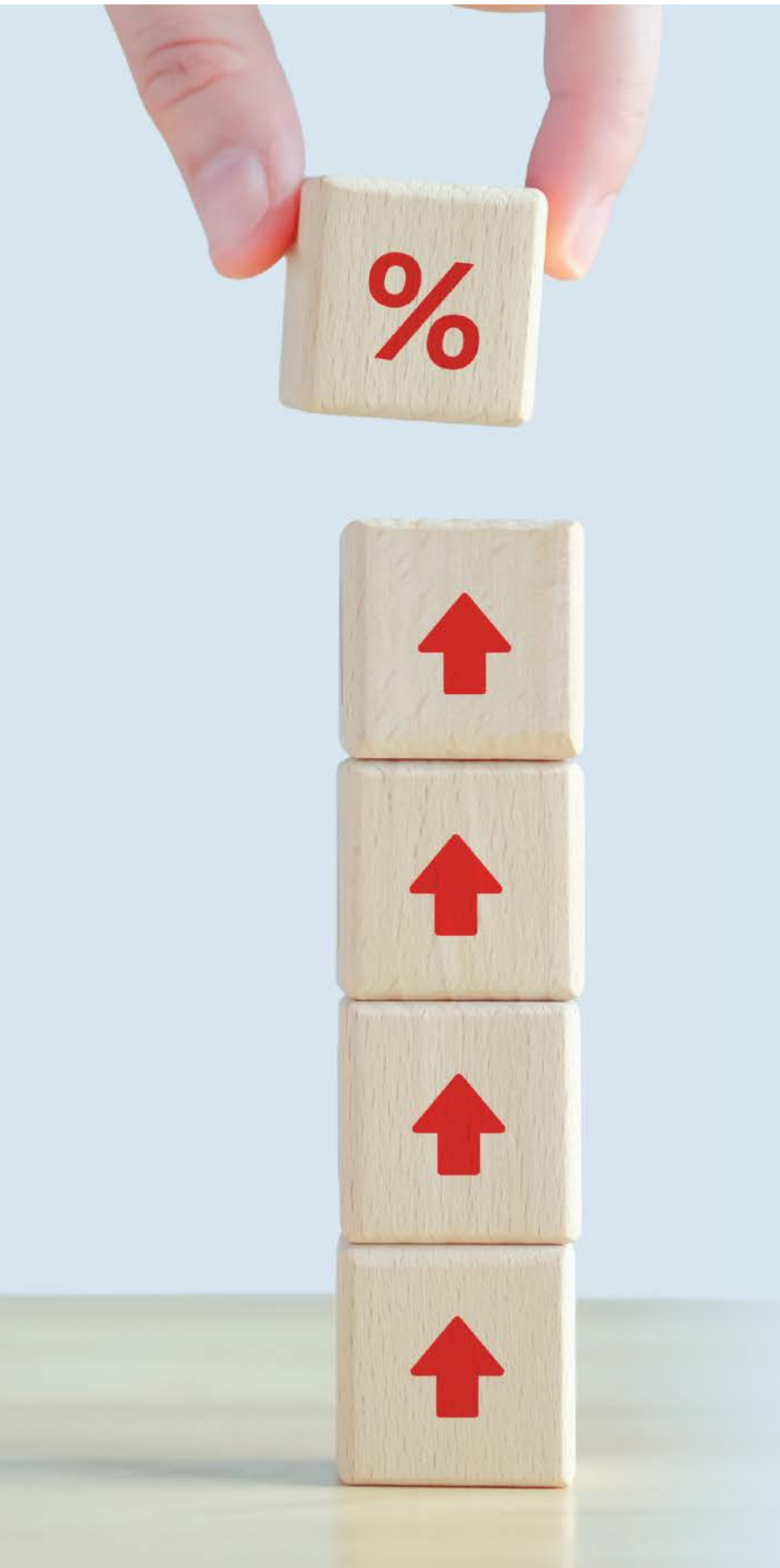
- Aging infrastructure that has not been well maintained and is reaching the end of its life all at once (often linked to political pressure from ratepayers to keep rates low).

- Skyrocketing infrastructure costs and skills shortages.
- Inflation and cost of living increases.
- Increasing cost of recovery from events caused by climate change (such as Cyclone Gabrielle, for example), combined with the significant upcoming costs of adapting to prepare for future impacts.
- Growing and aging populations (with the impact of these changes felt differently across regions).
- Increasing expectations from the community about the quantity and standard of services and infrastructure local governments should provide.
- High rates of deprivation leading to poorer communities struggling to fund necessary infrastructure.
- The impacts of tourism, especially in smaller towns with a low rate base but many visitors.
- Increasing and unfunded mandates from government. One example given by the Productivity Commission (2019) is that co-governance and co-management arrangements have imposed considerable costs on some local authorities while central

government support for these increased costs has been insufficient and ad hoc.

Many of these pressures are felt unevenly across councils, but no councils are immune to current cost pressures. Recent infrastructure cost increases for councils are a particularly pressing issue. Olsen (2024) highlighted the extent of price increases between 2021 and 2023 in a recent report. Cumulative inflation since 2020 (when councils' long-term plans were last assessed) has been more than 25% across the capital costs local government invests in. For example, the cost of building a new bridge has gone up 38% in the past three years and the cost of sewerage systems has increased by 30%.

To undertake the projects planned by councils in 2021 at today's prices will cost an extra \$11 billion over the next 10 years (Olsen, 2024). Councils must either find that extra money or do significantly less than they were planning. Given the country is now at a crunch point, with failing infrastructure that cannot be sweated much further, it's clear that more money will need to be found somewhere.



Local government has limited tools to respond

While some of the strains faced by councils in terms of infrastructure provision are similar to those felt by central government, local councils have fewer funding tools to draw on to make up the difference.

Many councils see the current funding structure as a major barrier, with some suggesting the system is 'broken' (*Review into the Future for Local Government, 2023*). Multiple reviews have highlighted the problems local councils face and recommended a raft of changes (*NZ Productivity Commission, 2019*).

The limited options available to increase council revenue include:

- Raising rates.
- Borrowing more (through the Local Government Funding Agency, or otherwise).
- Redistributing some income from central to local governments.
- Looking for more revenue sources, by increasing their use of 'user pays' options, and using existing tools such as value capture, targeted rates, and development contributions to better effect.

Each of these options are examined below.

Raising rates - a necessary evil?

The rates charged by councils increased an average of 9.8% in 2023, which was the highest annual increase in rates in 20 years, at that time. In 2024, double figure rate rises are expected around the country - the biggest increases in more than 35 years.

Over the past 20 years, rate rises have generally been in the region of 3-6% (see Figure 9). In 2024, 6% is the lowest expected increase, with an average increase across all councils of 15.3% - with a 33% increase proposed for the Far North and 25.5% for Hamilton (Kitchin, 2024b).

There are two narratives about rates rises, both of which have merit:

1. Increasing rates significantly is essential to meet costs (*Local Government in New Zealand, 2024b*).
2. Increasing rates significantly is unaffordable in a cost-of-living crisis and will put serious strain on some families (*Review into the Future for Local Government, 2023*).

To the first point, the public gets a very good return from rates compared to household expenditure on other services - the average power bill for a family is comparable to the average rates bill, for example. Meanwhile, councils are paying for many public services such as water, sewerage, parks, roads, libraries, and more. The problem, therefore, has been characterised

Figure 9. Annual percentage increases in rates, 1999–2023 (Kitchin, 2024b; Olsen, 2024a)



in large part as one of perception and public willingness to pay (Tolley, 2024). In addition, by not increasing rates, councils will continue to pass on costs to future generations, which is inequitable. One sensible proposal is to be more transparent about how rates are spent, so that the public has a better sense of the true cost of infrastructure provision (Tolley, 2024).

However, we also note that rates are something of a blunt and inequitable tool, usually based on the land value of each property, which does not consider ability to pay. Nor do they take into account the number of people who live in a particular property, meaning individuals pay significantly different amounts per head (Thornton, 2003).

While rate rises might be essential now, a more equitable long-term solution than continuing high levels of rate rises may be to transfer more money from central government to help councils meet demands (discussed further below). Income tax, which makes up a large portion of central government income, is progressive, meaning it can be tailored to the ability to pay. It is also charged per person, rather than per household. For these two reasons, funding extra costs through income tax appears, on

the face of it, to be more equitable than funding by increasing rates.

Even better, raising further revenue through other forms of taxation, such as capital gains, wealth tax, or inheritance tax, would allow some vertical transfer of wealth from generations who have benefitted from the use of infrastructure but have underinvested in future needs. It would also allow for the fact that the most wealthy individuals pay significantly less tax in Aotearoa New Zealand as a portion of their income than lower earners do (New Zealand Government, 2023b).

Most local councils have headroom to borrow more to fund infrastructure

Local councils have been borrowing steadily more over the past decade or so, with debt to revenue ratios rising from around 80% in 2009 to more than 180% in 2022 (see Figure 10). It is expected that council borrowing will increase substantially over the next 10 years and beyond.

Despite these increases, council debt is still significantly lower than it has been historically during periods when high investment was needed (see Figure 11). In the 40 years prior to World War II for example, local government

sustained debt burdens that were four to five times greater than they are today.

Figure 10. Local government debt to revenue ratios 2009–2022 (Stats NZ, 2023)

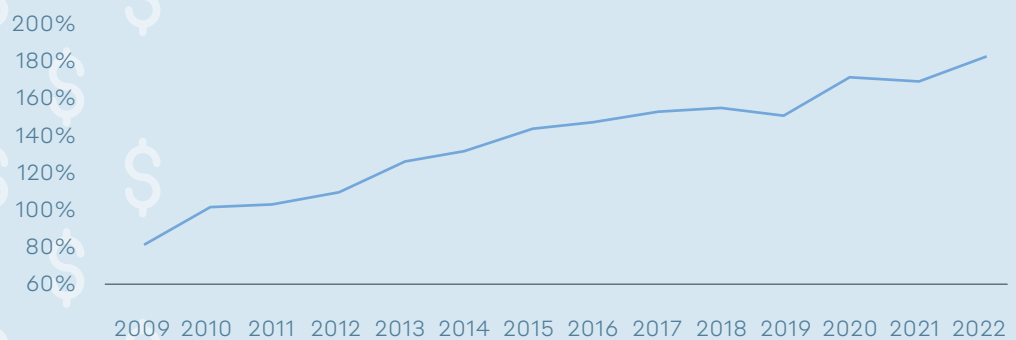
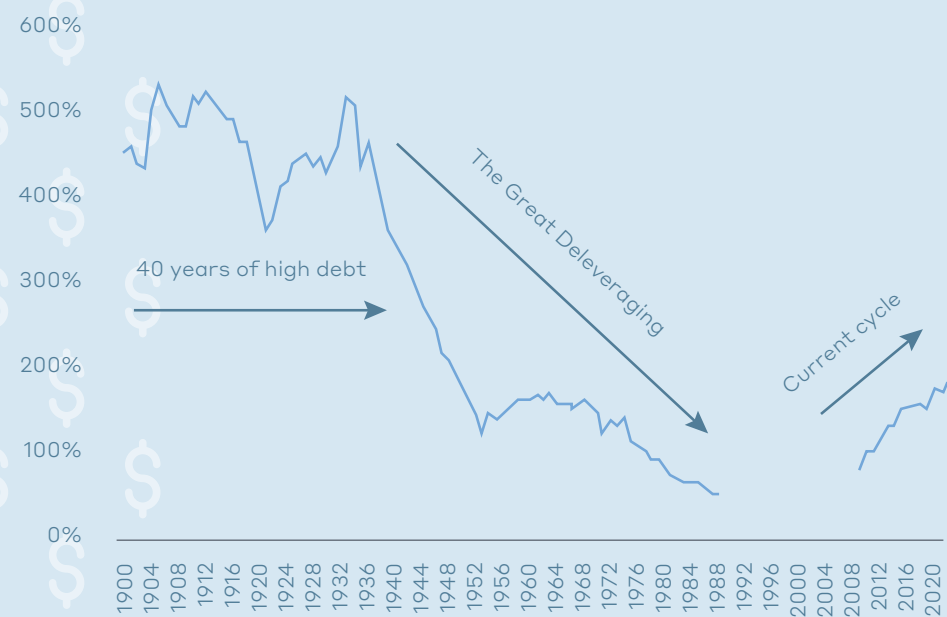


Figure 11. Local government and body debt to revenue ratios 1900–2022 (Infrastructure Commission, 2024b)



If councils wish to borrow to finance infrastructure, they can do so in several ways, the most common being:

1. Via the Local Government Funding Agency (LGFA).
2. By issuing bonds directly to investors and banks.
3. Using a Special Purpose Vehicle (SPV) under the Infrastructure Funding and Financing Act (IFFA) 2020.

Most council debt (around 90%) is financed through the LGFA (*Infrastructure Commission, 2024b*). This was established in 2011 to deliver efficient financing for local government by pooling councils' borrowing power. The LGFA borrows cheaply from domestic and international lenders, and then lends money to member councils. The cost for councils to borrow under the fund, while more than the government pays to borrow using sovereign bonds, is less than councils would pay if they were to borrow outside the LGFA (by issuing bonds, for example), or if they borrow to fund specific projects.

Borrowing under the LGFA costs around 100-120 basis points more than central government borrowing (i.e., the interest they will pay costs around 1% more) (*Infrastructure Commission, 2024b*).

The LGFA sets a lending limit for councils, calculated in relation to

their incomes. This debt ceiling is currently set at 280% of annual council revenue. Some of the bigger councils have begun to approach these lending limits, leading to concerns that council lending opportunities under the LGFA may be too constrained, at least for growth councils.

In fact, only five out of 72 councils in the LGFA have debt totalling more than 150% of annual revenues. As of the end of 2023 only Queenstown, Rotorua, and Horowhenua were beginning to approach the debt to revenue limit (*Infrastructure Commission, 2024b*). Many councils set their own debt limits, which are lower than those set by the LGFA. Rather than being constrained from borrowing more under the LGFA, these councils appear to be constrained by two factors:

- **Public opinion**, which judges how prudent a council is by its hesitancy to take on more debt (*Ramsay, 2022*). MPs and local representatives feed into this narrative by talking about increasing debt levels as fiscally irresponsible - even if it will fund growth.
- **A lack of sufficient revenue to fund further debt repayments**. Paying back debt funding is already a struggle for some councils, and interest payments by councils topped \$1.3 billion in the September 2023 year (up 64% on pre-pandemic payments). Debt

payments now equate to 8.8% of operating income for councils (*Olsen, 2024a*).

A handful of high growth urban councils are forecast to approach LGFA debt to revenue limits over the next decade (*Infrastructure Commission, 2024b*). A review of council borrowing by the Infrastructure Commission (*2024b*) found that LGFA rules on debt limits and, more specifically, the way councils interpret these, do constrain these growth councils. In theory, these councils could support more debt because they are growing faster, but they face the same debt limits as slow-growing councils.

Where councils are approaching debt limits, they have options. First, they can increase debt headroom by putting up rates (which raises their revenue, allowing them to borrow more).

Second, there is nothing legislatively to stop them from leaving the LGFA and borrowing independently of the agency, by issuing bonds, for example. There would be disadvantages to doing that, however, one of which is that it would be administratively costly to refinance their entire existing debt stock. Another disadvantage is that councils face concerns about a credit downgrade, which would lead to higher borrowing costs.

The Infrastructure Commission is less worried about the potential for credit downgrades, estimating

that if a rating downgrade caused Auckland Council to pay an additional 10 basis points on its interest rate, this would result in roughly \$2 million in additional finance costs - equating to just \$1.15 per Auckland resident per year. Some councils could, therefore, look to borrow more outside of the LGFA without worrying unduly about the financial impacts.

Another related worry for councils, though, is that leaving the LGFA may also carry reputational risk from ratepayers who expect councils to be fiscally prudent. Receiving a credit rating downgrade may feel too politically risky for elected representatives.

Finally, councils can stay in the LGFA and obtain financing under the Infrastructure Funding and Financing Act 2020, by setting up a Special Purpose Vehicle (SPV) for each specific projects. Under this option the debt created is off-balance sheet, meaning it does not affect LGFA borrowing limits (*Infrastructure Commission, 2024b*). Councils may apply targeted rates to residents who benefit from the new infrastructure.

Funding and financing projects under this approach incurs higher administrative and borrowing costs, and is therefore only appropriate for projects where the benefits offset those costs - for example where the approach will deliver more quickly (and

thus realise benefits faster), or because it will better spread costs across beneficiaries.

At the time of writing, the growth cities are consulting Ministers about raising their debt ceilings to borrow more under the LGFA. The final decision will be a question for the councils making up the LGFA, but ministerial support is needed to reassure lenders (*Milne, 2024a*).

This would be a straightforward way for growth councils to quickly access the extra money they need to finance infrastructure. It carries less political risk for councils than leaving the LGFA, and can be used for a wider range of projects, and more quickly, than borrowing under an SPV.

In summary, the big issues for many councils seem less about access to sufficient finance options and more about two key issues:

1. Many councils do not have enough revenue to easily sustain higher levels of debt. Councils clearly need access to more revenue to fund infrastructure. Some options to achieve this are discussed below.
2. Whether or not they could sustain higher debt levels, councils often feel constrained from borrowing more by public opinion.

This second point may require a public and political change of mindset to remedy.





RECOMMENDATIONS

- LGFA should consider raising debt limits for high growth councils.
- Councils that can afford it should be less risk averse to borrowing outside of LGFA where debt limits are reached.
- Better public education about the need to debt-finance infrastructure, and a change of political narrative (at central and local government level) to support this.

Borrowing under the Infrastructure Funding and Financing Act 2020

The IFFA 2020 was introduced to help create housing growth and urban development by allowing councils nearing their debt limits to sidestep existing borrowing constraints and to support value capture (through the use of targeted rates, for example) (*Ministry of Housing and Urban Development, 2024*). Money for infrastructure projects is borrowed off-balance sheet through an SPV, which is created specifically for each project. The new debt sits on the balance sheet of the SPV rather than with the council.

SPVs repay the finance raised by charging a levy to those who benefit from the infrastructure (for example, landowners in the area who gain a benefit, via rates). The finance rate for this kind of borrowing is around 100-120 basis points (1%) above council borrowing rates under the LGFA. However, the trade-off is that councils can leverage \$10.00 of debt per dollar of revenue – significantly more than the \$2.80 allowed under the LGFA. In addition, the debt does not appear on their balance sheets (*Infrastructure Commission, 2024b*).

This approach to financing infrastructure can help councils, especially those approaching their borrowing limits, and they are encouraged by various parties to use them to better advantage than they have been doing (*Productivity Commission, 2019; Infrastructure Commission, 2024b*). This is no doubt sensible advice. However, it is important to acknowledge that such agreements are bespoke and carry higher administrative and finance costs. As a result, they are only ever likely to cover a small portion of the infrastructure needed by councils. This is reflected in the fact that, since the Act came into force four years ago, just \$687 million worth of infrastructure has been financed, of which just \$125m has been drawn down so far (*Cooper, 2024*).



Moa Point Sludge Minimisation Facility



Case Study: Moa Point sludge minimisation facility

Wellington was one of the first councils to make use of the off-balance sheet borrowing option under the IFFA 2020, which they used to finance a new sludge minimisation facility at Moa Point.

The new facility will cost \$400 million, and this has been raised by borrowing from several banks as well as ACC through an SPV owned by Crown Infrastructure Partners (a government entity) (Dino, 2023).

The SPV will pay back the bank loan over 30 years via a targeted levy on all properties across the city (excluding protected Māori land), spreading the costs over the life of the new facility (Wellington City Council, 2023). When it is completed in 2026, the new facility is expected to reduce the volume of sewage sludge by up to 80% a year, cater for population growth and development, and reduce waste to landfill (Ministry of Housing and Urban Development, n.d.).

SHOULD MORE MONEY BE REDISTRIBUTED FROM CENTRAL GOVERNMENT TO LOCAL GOVERNMENT?

Most governments around the world transfer resources in some form or other to local governments. The proportion of revenue they get from each source varies considerably - though all have different levels of devolution in terms of public services, making it hard to compare (see Figure 12).

In Sweden, for example, it is of note that municipal and county councils get more than half their revenue from income taxes, and set their own tax rates based on the cost of the services they need to fund (OECD, 2016b). They also receive grant transfers from the central government allocated on a per capita basis as a lump sum. In Sweden, though, councils provide numerous public services that councils here do not, including


education, social, and health services.

In the United Kingdom, a small amount of council income (less than 15%) comes from council taxes based on property values, and most (69%) comes from central government grants (OECD, 2016c). Council responsibilities vary in each country and county in the UK, but they typically include services not covered by Aotearoa New Zealand's councils, such as education, local economic development, and social services.

In the USA, by contrast, counties, municipalities, and districts get about half their revenue from taxes, about three quarters of which comes from local property taxes (OECD, 2016d). The rest of their revenue comes from state and federal grants (22%) and other income such as tariffs and fees (26%). Responsibilities of local authorities vary by state.

Figure 12. Subnational government revenue by type in four selected OECD countries (OECD country profiles)

COUNCIL REVENUE SOURCE	NEW ZEALAND (OECD, 2016a)	UNITED STATES OF AMERICA	UNITED KINGDOM	SWEDEN
TAX REVENUES	52.4% (property tax)	51.3% (mostly property tax)	14.3% (property tax)	54.3% (mostly income tax)
GRANTS AND SUBSIDIES	23.8%	22.1%	69.1%	30.9%
OTHER REVENUES	23.8%	26.6%	16.6%	14.7%



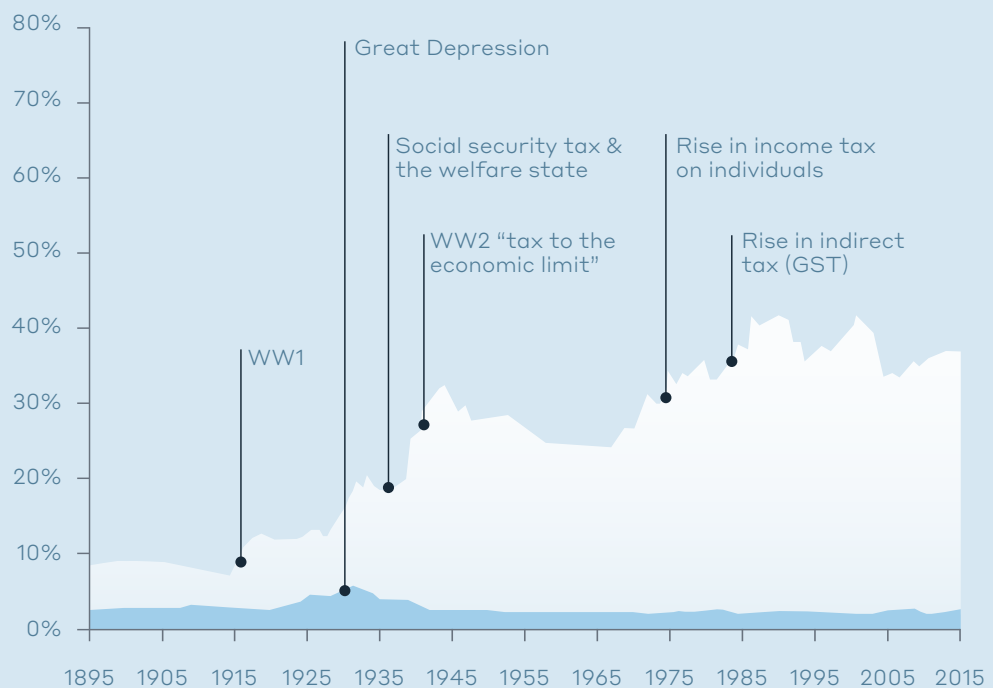
Local councils in Aotearoa New Zealand have fewer responsibilities than in the countries noted above – they do not provide healthcare, education, or social services, for example. But in terms of the distribution of income between local property taxes (rates) and grants from government (which we compare here to state governments), Aotearoa New Zealand is most like the USA, with councils receiving the bulk of their revenue from property taxes and a fairly small proportion from central government via grants and subsidies.

In Aotearoa New Zealand, the biggest portion of grants and subsidies comes from central government through the National Land Transport Fund (NLTF), to cover roading and other transport costs. The NLTF is made up of revenue collected from several sources, including fuel excise duty, road user charges, and vehicle and driver registration and licensing fees. Other grants, such as the Regional Infrastructure Fund (previously known as the Provincial Growth Fund), Infrastructure Acceleration Fund, and various tourism-related and housing growth-related funds, make up the difference.

These grants tend to be limited in duration and in total funding amount, and contestable, meaning councils must compete against each other for funding. Councils have cited problems with grant funding due to the lack of predictability, a perceived bias against small councils that lack resources to fulfil application requirements, and the fact that councils must compete against each other rather than receiving funding based on need (NZ Productivity Commission, 2019).

In terms of the total revenue available to local governments, their share of overall tax revenue has remained at around 3% of GDP for the past 50 years, despite increasing responsibilities. Meanwhile, the total tax burden on New Zealanders as a percentage of GDP has risen considerably over time, and sits at around 32–33% (Meade, 2023) (see Figure 13).

Figure 13. Central and local government taxation as a percentage of GDP (NZ Productivity Commission, 2020)





∨

“It’s no secret that the funding system for local government is broken. Relying so heavily on rates is unsustainable.”

Sam Broughton, LGNZ President (RNZ 2024b)

Several reviews have concluded that councils need more income. The recent Review into the Future for Local Government (2023), heard from many councils and other submitters, who overwhelmingly supported greater central government investment in local government. Many observed that councils often bear the cost associated with activities that facilitate economic development such as tourism, providing for population growth, and infrastructure development. However, councils do not receive any share of the resulting tax growth, making it harder for them to fund this kind of development.

The local government review concluded that relying on council rates and new revenue tools alone will not be sufficient to make up the shortfall in local council revenue. Instead, it recommended that central government invest significant funding to deliver locally specific community outcomes. The review’s recommendation was that this take the form of a \$1 billion per year fund to create capacity for local governments to pursue urgent local priorities and invest

in its capacity and capability. The review also recommended establishing an intergenerational climate change fund.

Others have also argued for a higher level of funding from central government to be made available on a long-term and more consistent basis to improve the delivery of infrastructure. A report completed for the Infrastructure Commission notes that central government can access finance at the lowest cost and pass the benefits on to others (Ramsay, 2022). More predictable and higher income for councils would enable them to plan better, would create jobs, driving the national economy and productivity, and would reduce future costs by allowing councils to maintain infrastructure to a higher standard during its lifetime (Ramsay, 2022).

A 2019 review by the NZ Productivity Commission of local government funding, on the other hand, concluded that the current funding system was adequate and sustainable since aggregate rates revenue and personal incomes had grown at similar levels since 1990 and rates had remained stable as a proportion of GDP. However, given the substantial rate increases across the country in 2023 and a further average increase of 15% planned for 2024 (necessary to make up for skyrocketing construction costs, among other things), the review may make quite different conclusions if they were doing the

work five years' later, in today's environment.

Even in 2019, the conclusion of the Productivity Commission that the current funding system is adequate was qualified by a recognition that additional funding would be needed to ensure sustainability in the future in four key areas: infrastructure in high growth cities; devolution from central government; adapting to climate change; and tourism growth.

Redistributing funds from central to local government could be the most straightforward way to increase the revenue of local councils

While there are several ways for local councils to increase their revenue levels, the most straightforward would be for central government to transfer more of its financial resources to them. Setting up discrete funds is one way to do this. As discussed, however, this relies on the discretion of the current government and is contestable, meaning that not every local council benefits to the same level. Other suggestions, some of which have been around for many years, include the following.

Removing GST from rates

A common proposal is that central government should not charge GST on rates - sometimes dubbed 'a tax on a tax' (*Nichols, 2024*). In Australia, council rates are specifically exempt from GST.

Similarly, VAT (value-added tax) is not charged on council tax in Britain.

New analysis from Infometrics shows that returning the GST charged on rates to local councils would cost the government at least \$1.1 billion annually, with 29 of Aotearoa New Zealand's 78 councils receiving more than \$10m each year (*Olsen, 2024b*). Christchurch alone would receive a refund of \$100 million this year, amounting to a potential saving per ratepayer of \$500. Similarly, Mayor Whanau has estimated the Government will receive nearly \$80m in GST on Wellington rates this year (*Nichols, 2024*). That amount could fund a 16.5% reduction in rates - or it could be put towards a substantial amount of new infrastructure.

Government could pay rates to councils

Central government agencies pay limited or no rates and charges on their properties. This includes land occupied by institutions such as schools, universities, and hospitals - even though the use of these properties requires local government infrastructure. Successive reviews have recommended governments pay rates to councils (*NZ Productivity Commission, 2019; Ramsay, 2022; Review into the Future for Local Government, 2023; Shand et al., 2007*).

In Auckland, Mayor Wayne Brown estimates the city is missing out on \$36 million annually due to government rate exemptions





- an amount that, if returned, would allow rates to be 15% lower (*Nichols, 2024*). The mayor has also called for other rate exemptions to be removed - for example, those granted to airports, port land, wharves, jetties, and churches under the Local Government (Rating) Act 2002.

The NZ Productivity Commission review (2019) noted that implementing this change would help some councils far more than others. Crown-owned land accounts for 39% of Aotearoa New Zealand's total land area, but this is distributed very unevenly across territorial authorities. Almost 90% of the land area in Buller district is Crown-owned, for example, compared to 2.6% in Gore.

Transfers could incentivise the building of new homes

The coalition Government has floated the idea of sharing a portion of GST paid on new homes with local government, to incentivise housing growth (*Bishop, 2024b*). Councils currently must fund the infrastructure needed to support new housing growth (water pipes and new roads, for example) - but they do not reap additional tax benefits from a growing population in the same way that central government does. Receiving a portion of GST on new builds may help to rectify that and provide a new incentive for housing growth.

Another approach is for the government to pay local or regional councils a sum based

directly on the amount of new building work put in place in each region, town, or city. The Productivity Commission (2019) floated this as a potential tool to provide a direct link between council revenue and a council's effectiveness in keeping land supply and infrastructure responsive to demand - though they concluded the effectiveness of such payments would be too uncertain to justify recommending them.

A further related idea, recommended by the NZ Productivity Commission in its 2019 review of funding tools, was for the government to pay development contributions (DCs) on its projects, as other developers must do. DCs are fees levied by local councils on property developers to help fund the costs of infrastructure required to support new developments (discussed further below). Legal exemptions currently exist for the Crown from paying DCs on many of its projects, and the Productivity Commission concluded this was an anomaly that should be rectified.

Further property or sales taxes are other options

Various other options have been proposed, such as linking rates to local growth in property values (as happens in some jurisdictions in the United States of America), or giving councils a portion of local income tax or local GST revenue. These options were variously dismissed by the NZ

Productivity Commission (2019) review as being too unstable and unpredictable or carrying too high an administrative and compliance burden.

Direct transfers should continue

Even if some of the options set out above were to be implemented, extra revenue would likely still be required by some local authorities.

We therefore recommend continuing the existing system of targeted direct transfers from central to local government. These transfers could take the form of separate funds to cover (by way of example):

- Climate change resilience and adaptation.
- Helping communities (especially low-income communities) fund essential infrastructure where local councils are unable to meet the cost (as recommended by the NZ Productivity Commission, 2019).

The New Zealand National Party (2024) proposes to consolidate and simplify the various existing infrastructure-related funds, in line with advice from the Infrastructure Commission. Allocation of Crown funds will be overseen by the National Infrastructure Agency once established, and this should ensure better coordination and more transparent decision-making. We support this approach.

Redistributing more resources from central to local government would be more equitable than increasing rate burdens.

Of the various options listed above, all have advantages and disadvantages. Removing GST from rates, and/or requiring the government to pay rates to local councils on their property, appeals as a simple way to transfer significant sums quickly and equitably.

Any form of additional transfer from central to local government leaves a gap in resources at the central level, which would need to be filled, whether via an increase in taxation, or from other revenue sources. This is not likely to be a politically popular conclusion, and in fact the current government has recently ruled out both the idea of paying rates on government property, and returning GST on rates (RNZ, 2024a).

However, the advantage of transferring the burden of finding extra revenue from local to central government is that taxation tools (in contrast to rates), are largely based on an ability to pay (Thornton, 2003). Removing costs from ratepayers, who are charged based on property value, and without regard to the number of people living in that property, would be a substantial benefit to those on low incomes who already struggle to pay. In addition, central government can both borrow money more cheaply than councils, and has more capacity to service any new debts.



RECOMMENDATIONS

- Enable a greater level of resource transfer from central government to address chronic underinvestment in infrastructure at local government level - for example, by charging central government rates, and/or by removing GST from rates. If not, expect rates to continue to rise sharply, with the burden felt most by those with the least ability to pay.
- Continue to provide direct transfers from central to local government following a transparent process, for example, to:
 - Support climate change resilience and adaptation.
 - Help communities (especially lower-income communities) fund essential infrastructure where local councils are unable to meet the costs.

OTHER REVENUE- DELIVERING OPTIONS CAN SUPPORT CENTRAL AND LOCAL GOVERNMENT

Governments and local authorities are currently looking at every option to squeeze more money from their tight budgets. Increasing revenue through greater use of user charges, value capture, targeted rates, levies, and development contributions can all help as part of a 'toolbox' approach to funding infrastructure (*Review into the Future for Local Government, 2023*).

Attaching revenue to infrastructure provision means more infrastructure can be built

The Infrastructure Commission's latest report on local government debt (*2024b*) concludes that the type of project which debt is used to fund is important. For example, maintenance and renewal of aging infrastructure does not bring new economic growth, nor does it generate new revenues. Unfortunately, based on 2018 long-term plans, councils are being forced to spend more and more of their capital expenditure on exactly that: by 2026, around 52% of council spending will go towards replacing existing infrastructure (*Infrastructure Commission, 2024a*).

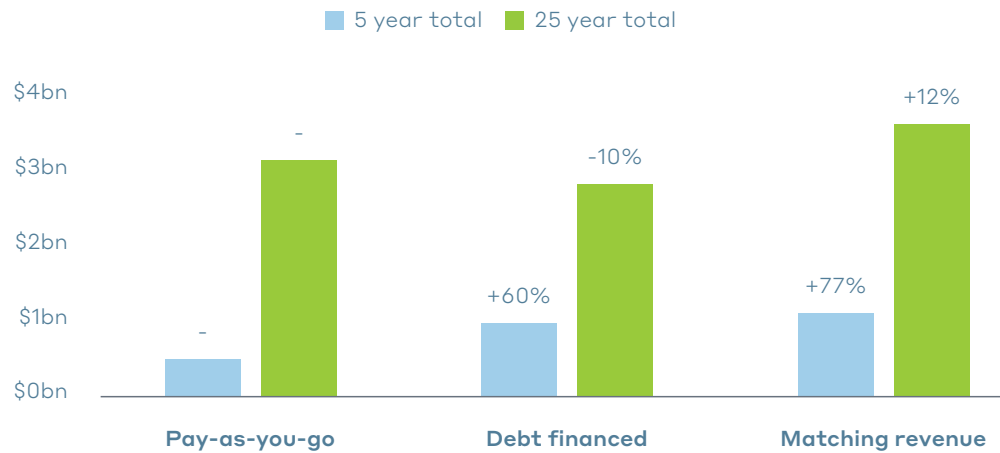
By contrast, using debt to finance improved service levels (upgrading public transport, for example), or building new infrastructure (such as a new road with a toll attached), can help to generate income by opening new sources of revenue.

In its latest report on local government debt, the Infrastructure Commission (*2024b*) demonstrates how:

- Borrowing to finance infrastructure spreads the cost out over time between current and future residents, meaning more can be spent upfront.
- Building revenue-generating opportunities into new infrastructure takes the pressure off debt repayments, allowing more infrastructure to also be built in the future (see Figure 14).

In this hypothetical example, \$100m is spent annually on infrastructure, either using existing funds or by borrowing (with or without revenue attached). Borrowing to fund infrastructure that has revenue attached allows more infrastructure to be built both in the short and longer term.

Figure 14. Total capacity for investment over five and 25 years (Infrastructure Commission, 2024)



In this hypothetical example, \$100m is spent annually on infrastructure, either using existing funds or by borrowing (with or without revenue attached). Borrowing to fund infrastructure that has revenue attached allows more infrastructure to be built both in the short and longer term.

Attaching revenue to infrastructure can lead to its more efficient use

In addition to enabling more infrastructure to be built, a second advantage of linking revenues to public infrastructure is to give ratepayers a chance to assess whether they are willing to pay for a proposed project (Infrastructure Commission, 2024b). The argument goes that, where infrastructure is funded by taxation alone, there is a disconnect between what a person pays and what they consume, and that this in turn leads people to place less value on the services they are receiving. Pricing the use of infrastructure should encourage more efficient use of those resources (Ramsay, 2022). An excellent example of this is

the proposal to charge for the provision of drinking water using volumetric charging - an approach already used in several councils - which significantly reduces water use and wastage (discussed in more detail on page 104).

Options for increasing revenue include value capture and development contributions

A few useful tools can help local authorities supplement their revenues. These include value capture (including targeted rates and betterment taxes) and development contributions.

Value capture, such as targeted rates

Value capture is not a new concept - it has been used in various forms since the late 1800s. Value capture aims to extend the potential funding of projects beyond service users and current tax/ratepayers to shift the funding focus from the narrower 'user pays' to a broader 'beneficiary pays' approach (PwC, 2017).

Depending on interpretation, a beneficiary may include anyone whose position improves because of the infrastructure investment, whether or not they use the infrastructure in question. For example, if a new train station is built in an existing suburb, beneficiaries of that new station may include:

- Developers (who stand to make a bigger profit).
- Existing property owners (whose property values increase as a result).
- Nearby businesses (because more people may visit the area).
- People who use public transport.
- People who drive (who benefit from reduced congestion, for example).

Value capture mechanisms may include development contributions, targeted rates, land value taxes, or other arrangements where property owners or developers

contribute to the cost of infrastructure improvements that enhance the value of their properties.

Targeted rates are a specific type of value capture in which a special rate is levied to fund a particular service or infrastructure project that benefits specific properties or areas within the council's jurisdiction. For example, in the case of the Mōa Point Sludge Minimisation Facility in Wellington, a targeted rate will be charged on Wellington ratepayers in addition to general rates to pay for the facility.

Targeted rates are a very useful tool to fund infrastructure that may otherwise not be built, but they can have equity implications that need to be managed carefully. As with other forms of non-progressive property-based rates, they have a proportionally bigger impact on low- and fixed-income earners. Care must be taken that the way they are applied does not make it difficult for existing residents to remain in their homes.

As another form of value capture, the NZ Productivity Commission review (2019) recommended establishing a new funding tool for councils. This would raise revenue by requiring property owners who enjoyed windfall gains in the value of their property (resulting from the value added by new infrastructure funded by the public) to pay a portion of that gain back to the public

to fund future investment. The Commission suggested this could be paid by way of a targeted rate on the change in the land value, also known as a betterment tax (Coleman & Grimes, 2010). As with the previous example, care would need to be taken to design such a tool to ensure people are not priced out of their existing homes. One option may be for residents to have the option to hold back payment until such time as their property is sold, for example.

Value capture has the potential to contribute to infrastructure funding in Aotearoa New Zealand, but it is typically seen as a supplementary revenue source rather than a comprehensive solution. While it can generate significant funds, especially in areas experiencing rapid development or infrastructure expansion, it is unlikely to cover the entirety of infrastructure costs (NZ Productivity Commission, 2019).

Development contributions

Development contributions are fees charged to property developers to help fund the costs associated with infrastructure that support new developments (such as water, sewerage, roads, connections to trunk infrastructure, new parks, and community halls, for example). The purpose of development contributions is to recover a fair, equitable, and proportionate share of the total cost of infrastructure

from those who benefit most from the growth, such as developers and new residents (*Infrastructure Commission, 2022b*).

Relative to other revenue sources, development contributions are small for most councils (and some councils do not apply them), but they are a key funding source for some high-growth councils. Their disadvantage is that applying and collecting contributions can be complex, with high administrative and compliance costs compared to general rates, for example (NZ Productivity Commission, 2019). The way contributions are calculated is also open to interpretation, leading to debate between councils and developers, and sometimes costly court cases.

Establishing a single legislative process to standardise the calculation methodology of development contributions, as recommended by the Infrastructure Commission (2022), would make it easier for councils to charge development contributions and should reduce uncertainty, legal challenges, and costs.

ROAD TOLLS AND CONGESTION CHARGING

One model for funding the construction of infrastructure - and specifically of roading infrastructure - is the use of toll roads. These are still uncommon in Aotearoa New Zealand, with only three currently in operation nationwide (NZTA, n.d.-d). However, the funding model is commonly used in other parts of the world, including in Australia, the USA, and Europe.

Under the new draft Government Policy Statement on land transport 2024-34, the coalition Government has indicated it sees tolling as a viable means of funding, or partially funding, construction and maintenance of some of its 15 new roads of

national significance. Transport officials have also recently developed advice around how legislation could be changed to allow for tolling on existing roads to raise revenue for the construction or maintenance of new roads (Pennington, 2024b).

Road tolling is simple in concept

On the surface, the use of road tolls appears to be a straightforward means of paying for roading infrastructure that otherwise might not get built. The model involves leveraging the promise of future revenue from tolling (typically over a 20-40-year horizon) to obtain full or partial financing to cover the costs of building and maintaining





a new road. Drivers who value the benefits (principally reduced travel time) of the new road sufficiently are willing to pay the toll, while those who do not sufficiently value the benefits or cannot afford the toll continue to have access to untolled alternative roads (under current Aotearoa New Zealand legislation).

Aotearoa New Zealand's three existing toll roads were funded by central government (via the National Land Transport Fund) and supplemented by Crown debt (NZTA, *n.d.-a*). In the case of the Northern Gateway and Tauranga Eastern Link, the roads were built by private companies, but are owned by the Government. The tolling and ongoing maintenance on these roads is the responsibility

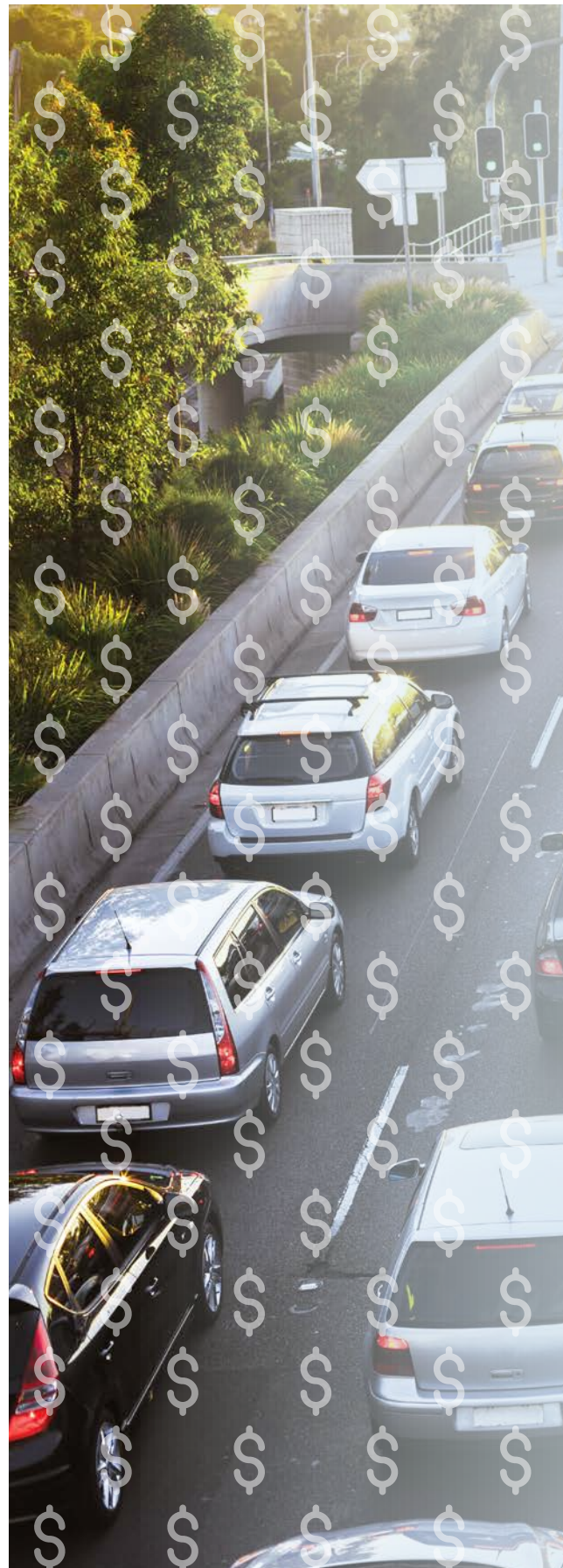
of NZTA Waka Kotahi. Tolls are to be removed once the debt component of the build cost is paid off.

Overseas, a wide range of models is used, with private companies sometimes owning and or operating toll roads for a set period before handing them back to the Government at an agreed point. In Australia, toll roads are often built and subsequently operated by private companies - for example, under a PPP model (see more on PPPs in Chapter 3) - allowing government (central and/or local) to ensure necessary roading infrastructure is provided without directly assuming the debt or risks normally associated with building and operating major road infrastructure.

Tolling can be complex to implement

In the right circumstances, road infrastructure partly or fully funded by tolling can be delivered and operated efficiently (Wyman, 2014). However, a range of complicating factors often impacts the financial, economic, and social benefits toll roads are intended to deliver (Douglas et al., 2021). One of the primary criticisms of road tolling as a revenue generation tool is that administration of tolls is often expensive and cumbersome - that is, the tolling infrastructure required, including cameras, gantries, as well as the supporting payment and collection systems can come with very high ongoing costs.

At over 30% of total tolling revenue, the costs of administering tolls in Aotearoa New Zealand are very high by global standards (Pennington, 2024). Combined with the fact that tolls currently levied on the country's three toll roads are low by international standards (Douglas et al., 2021), the net effect is that toll road revenue in Aotearoa New Zealand to date is lower than would be generated in other jurisdictions. That is, road tolling is a less effective means of generating revenue - and therefore, of funding infrastructure - in Aotearoa New Zealand than in many of the countries where it currently operates.





To improve the attractiveness of road tolling as an efficient tool in this country, a more efficient (i.e., less costly) and well-coordinated toll collection system will be essential.

A potential constraint on the potential of road tolling to generate significant revenue to fund road infrastructure in Aotearoa New Zealand is the “prevailing low toll environment” (*Douglas et al., 2021*). It is unclear how New Zealanders may react to additional toll roads, especially if toll rates are set closer to international levels. Other commentators point to the relatively light traffic in Aotearoa New Zealand outside the main urban areas, meaning tolls may not reap such high rewards here as in other countries (*Lines-MacKenzie, 2022*).

Taking a coordinated approach between existing and new toll roads will be important. Experience from other jurisdictions suggests that as toll roads become more common in an area, each new toll road is often assessed in isolation, according to a specific set of political, economic, and commercial considerations that do not consider existing or planned toll roads around it (*State of New South Wales, 2024*).

This can lead to a range of issues, including inconsistent tolling models near each other, whereby tolls in the same area may be levied by distance travelled, by an access fee (or by a combination of both), and may increase over time at different rates. Some toll roads (or combinations of toll roads) may be governed by a maximum weekly charge, while others are not. This can result in an uncoordinated and confusing situation for drivers, which reduces drivers’ willingness to pay tolls, such as in parts of Sydney (*Douglas et al., 2021*). If road tolling is to be used increasingly in Aotearoa New Zealand, a coordinated and standardised approach to tolling will be important.

High tolling environments like Sydney can also give rise to unintended economic effects, whereby the costs of tolls levied on businesses (e.g., tradespeople and freight trucks) can increase prices across the supply chain, including for those who do not directly use the toll roads (*Douglas et al., 2021*). By the same token, though, reduced congestion on a toll road may save some businesses money by increasing efficiency of travel.

Equity issues are also a consideration. As with other forms of revenue attached to infrastructure, the introduction of a range of new road tolls could well place a disproportionate burden on those least able to afford it, such as low-paid workers on fixed hours, or shift workers (NZ Herald, 2023).

A recent report on road tolling in New South Wales (State of New South Wales, 2024) noted that current tolls in Sydney impact more severely on users living in Western Sydney, and that there were fewer alternative non-toll roads for people in that area to use. The report highlighted concerns about the risk of 'mobility-related social exclusion' - that is, the risk that people will not be able to access essential services and opportunities due to transportation barriers. The report also highlighted that using inconsistent tolling models for different projects can lead to unfairness for users.

Congestion charging can bring other benefits

A recent report by the Helen Clark Foundation and WSP New Zealand (James, 2022) found that road tolling in the context of congestion charging presented considerable potential in Aotearoa New Zealand. Not only does congestion charging enjoy wide in-

principle support across much of the political spectrum (Crompton, 2023), it could be applied fairly and effectively in a number of cities, if key measures are taken to ensure equity. These include:

- Ensuring adequate public transport options are available.
- Directing revenue back to the city in which it is generated.
- Robust community engagement informs scheme design.
- Key settings such as operating hours and daily caps are carefully determined.
- Exempting payment for public transport, emergency vehicles, and mobility transport for disabled people.

Importantly, the primary policy objective of congestion charging (reducing congestion and, potentially, reducing transport-related emissions) is different to, and can conflict with, the revenue generation objective of most roading infrastructure funded by road tolling (which relies on high usage). It is therefore problematic to conflate congestion charging with road tolling designed to fund road infrastructure.



Roads are funded in a variety of ways - which is best?

In Aotearoa New Zealand, motorists contribute toward road costs via petrol excise duty or road user charges, vehicle registration, and licensing fees, as well as via rates and in some cases via general taxation (NZTA, n.d.-b). Some commentators have posed the question as to whether it is efficient or fair for motorists to pay a separate additional charge on top of these contributions to access certain toll roads (Lines-MacKenzie, 2022).

Others have proposed various models of comprehensive road user charges to fund new road infrastructure (whether instead of, or alongside tolling). These schemes employ various means of tracking motorists' use of designated (or all) roads and charging them accordingly - for example, via blunt tools such as total kilometres travelled, or via more precise methods such as transponders, which allow for time-of-day charging, and for applying different fees for use of different roads.

The coalition Government has indicated it intends to move all vehicles in Aotearoa New Zealand to an electronic road user charge system in the coming years, with road users charged for road maintenance by kilometres travelled, rather than by the type and amount of fuel they use (Brown, 2024b).

Whether this model proves to be efficient, effective, and equitable will depend on a range of decisions yet to be made.

To ensure the most efficient outcomes overall, road tolling as an option should best be considered as part of a comprehensive rethink of how roads are funded in this country. As with other decisions about infrastructure investment, value for money for different funding models should be assessed alongside fairness principles such as horizontal and vertical equity, and the benefit principle.

The benefit principle holds that the person who most benefits from the infrastructure should pay for it - in this case, the driver. However, drivers are not the only ones who benefit from a well-thought-out new road (provided it can demonstrate a positive cost-benefit analysis). Where a new road brings economic and social benefits, the whole country benefits.

Finally, a comprehensive funding model for road transport should not solely consider how to pay for roads. It should also incorporate a coordinated and dynamic set of levers that can incentivise or discourage certain behaviours for the public good. Examples are tolls that manage congestion at certain times of day (e.g., time of use charging as proposed by Auckland Transport), or increased road user charges for high-emitting vehicles.





VOLUMETRIC CHARGING AS A WAY TO FUND WATER INFRASTRUCTURE

As mentioned previously in this report, Aotearoa New Zealand has underinvested in the maintenance of infrastructure that supports drinking water, stormwater, and wastewater (three waters) provision and much of it is no longer fit for purpose. Aotearoa New Zealand's existing three waters infrastructure requires investment of \$120 billion to \$185 billion over the next 30 years (*Infrastructure New Zealand, 2023c*). As just one example of the work to be done, as of 2018, 145 of the country's 152 wastewater treatment plants discharging to freshwater needed to be upgraded to meet current standards (*Boffa Miskell & GHD, 2018*).

There are several related arguments to support directly charging water users for their usage (known as volumetric charging). First, significant investment is needed across much of the country within the very near future, and this is not expected to be funded by central government (*Milne, 2024b*). Volumetric charging could provide a way to defray some or all the cost of upgrading and maintaining systems. Volumetric charging for water use would also provide a revenue stream dedicated to

maintaining the system, meaning that - in theory at least - systems should be better maintained.


The most convincing reason for volumetric charging in our view is that it has been demonstrated to make users value the water coming into their taps more, and therefore to use less of it. Where charging has been introduced, on the Kāpiti Coast, for example, private consumption has reduced, leaks have been detected more quickly, and there has been an overall improvement in the efficiency and effectiveness of the network (*McCormick, 2024*). When Kāpiti Coast District Council introduced water meters, staff very quickly detected 443 leaks,

and this led to a 90% drop in the amount of water lost to leakage. At the same time, private use decreased by about 26%, while the consumption of high water users dropped by 70% (*RNZ, 2024c*).

Volumetric charging models must consider affordability and equity

Water pricing models should aim to balance cost recovery, conservation, equity, and affordability (*Smith, 2022*). An important critique of charging for water is that access to fresh water is a human right. From an equity standpoint, the more Aotearoa New Zealand pushes the costs of essential





services away from funding via taxation (which includes an ability to pay component), and towards individual consumers (which doesn't), the bigger the proportional burden this places on low-income households.

In the USA, for example, a study (*Cardoso & Wichman, 2022*) found that over 13.6% of water users paid an amount above the 'affordability threshold' set by the Environmental Protection Agency, spending more than 4.5% of their income on water and wastewater. The report authors expected this share of households to triple in the near future as new infrastructure was required to be built (*Smith, 2022*).

There are ways to mitigate equity issues within a water charging model. Perth, for example, uses a tiered pricing system - the more water you use within a year, the higher the price per kilolitre (*Water Corporation, n.d.*). This encourages the careful use of water while taking more of the cost burden off those who use the least.

There should also be some consideration of the total price charged for water consumption, to ensure it stays affordable (within certain thresholds).

CHAPTER 2 - CONCLUSION AND RECOMMENDATIONS

The most efficient, straightforward, and transparent way of addressing the bulk of Aotearoa New Zealand's long term infrastructure deficit is likely to be by means of long-term debt financing funded by appropriate taxation and/or rates, and this is an area that would merit more investigation. Many of the other options examined here come with risks, uncertainty around income generation potential, and some equity issues. In addition, the more bespoke and piecemeal the funding approaches, the higher the associated administrative burden and transaction costs.

Borrowing to support investment has the advantage of spreading the costs over the long term and can be financed most cheaply by central government. Local councils also get very good terms borrowing through the LGFA, though some councils are approaching their borrowing limits under this fund, or will do so in the near future. Raising the amount fast-growing councils can borrow under the LGFA would make sense.

To fund the resulting debt burden, both central and local government will need an increase in revenue. The fairest and most efficient way to do this may be to fund a significant portion of this increase

in revenue by using taxation options that are progressive (i.e., that reflect the ability to pay). Taxation options (such as wealth or capital gains taxes, for example) that move wealth from current and previous generations who have underinvested in infrastructure and maintenance, towards current and future generations who are now faced with the burden of that underinvestment, would also be fair. Taxation is cheap to administer and efficient, with well-established enforcement mechanisms, and is therefore efficient.

Councils clearly need more revenue and this report echoes recommendations made by many others over the years to develop long-term solutions to this longstanding issue. Discrete funds, such as the Regional Infrastructure Fund, are useful to fund progress in defined areas (such as climate change); however, it is becoming increasingly clear that councils will need an additional stream of steady, reliable, and non-contestable revenue to address the infrastructure gap. Changing rules around central government paying rates, removing GST from rates, and/or adopting another similar approach would provide this.



In addition, supplementing such changes with revenue gathering on infrastructure, via tolls or user charges, for example, can help fund more infrastructure, now and in the future, and can help get projects off the ground that may otherwise not happen at all. Given the complexity and high administrative burden of some approaches, attaching revenue to infrastructure is most attractive where:

- It is useful to achieve an equity purpose - such as recouping windfall property gains made by a developer or homeowner when new infrastructure massively pushes up house prices, for example.
- Applying a user charge delivers other value over and above that of revenue gathering. For example, charging for water provision helps reduce use and wastage. In the case of congestion charging, charging to enter an area or use a certain road can influence driver behaviour in ways that benefit the whole community.
- It is the best way to get an important or urgent project off the ground, because no other funding is available.

Charging tolls on roads to achieve purposes such as reducing congestion within cities can serve as a successful behaviour-change tool, while also bringing welcome extra funding. It is important that the purpose of any project is clear from the start, because the aims of revenue gathering (which works best when the number of drivers is high) may conflict with congestion management. Such programmes must be designed with fairness, equity, and affordability in mind.

Questions of affordability, equity, and overall efficiency must be applied in choosing which funding models work best for the country as a whole. Some of the suggestions provided here may face considerable political barriers. Nevertheless, they should be part of the national discussion. The key question about infrastructure funding is whether the country can face having a mature conversation about the fact that there are significant costs on the horizon and that these must be paid for. Further, if Aotearoa New Zealand can broadly agree on a long-term approach to funding and financing (and a pipeline of projects), the country also has a good chance of substantially lessening those costs.



CHAPTER 2 - RECOMMENDATIONS

USE A RANGE OF APPROACHES TO FUND AND FINANCE INFRASTRUCTURE, BUT RECOGNISE THAT THE BULK OF THE COUNTRY'S NEEDS WILL CONTINUE TO BE FINANCED BY DEBT, AND SERVICED BY TAXATION AND/OR RATES:

- Recognise that both central and local governments will need to borrow more to help bridge the infrastructure gap.
- Support and encourage a mature conversation as a country about its increasing needs, and the benefits of debt-financed infrastructure investment.
- Note that debt financing is not suitable for all forms of infrastructure investment. Maintenance and renewal of worn-out infrastructure is better funded using operational expenditure and depreciation.
- At central government level, investigate options to service increased debt levels for capital investment, noting that the most efficient and fair way to fund the biggest portion of infrastructure growth will likely be via progressive and other forms of taxation.
- At local government level:
 - Enable a greater level of resource transfer from central government to address chronic underinvestment in infrastructure - for example, by charging central government rates on their property, and/or by removing GST from rates. If not, expect rates to continue to rise sharply, with the burden felt most by those with the least ability to pay.
 - Continue to provide direct transfers from central to local government following a transparent process, for example, to:
 - ▶ Support building climate change resilience and adaptation, and
 - ▶ Help communities (especially lower-income communities) fund essential infrastructure where local councils are unable to meet the costs.

ENSURE FUNDING AND FINANCING DECISIONS CONSIDER QUESTIONS OF EQUITY, EFFICIENCY, AND EFFECTIVENESS.

- Recognise that decisions about equity and fairness - for example, determining who benefits from new infrastructure, and who should therefore pay for it - to a certain extent involve value judgements and are subjective.
- Consider and balance all relevant principles of fairness in infrastructure investment decisions (some of which may conflict with one another). Principles include:
 - Vertical equity (those with greater ability to pay should pay more).
 - Intergenerational equity (which seeks fairness across generations).
 - The benefit and exacerbator principles (those who benefit from a service, or cause a need for the use of costly resources, should pay).

IDENTIFY OPPORTUNITIES TO ATTACH REVENUE SOURCES TO NEW INFRASTRUCTURE, PARTICULARLY WHERE THIS WILL LEAD TO ADDITIONAL BENEFITS.

- Examples include:
 - Tolling roads to optimise the use of transport assets, for example by reducing congestion.
 - Volumetric charging for water provision to optimise the use of water assets, by encouraging lower use and better identifying wastage. Equity and affordability considerations must be built into any pricing models to ensure everyone can afford to access clean drinking water, and that those on low incomes do not pay large bills proportional to their income.
 - Making use of the full range of revenue-generating tools available, such as value capture, targeted rates, and development contributions to finance specific projects that may otherwise not be funded, taking equity considerations into account.

CONSIDER ROAD TOLLING AND CONGESTION CHARGING AS PART OF A COMPREHENSIVE RE-THINK OF THE MANY DIFFERENT WAYS THAT ROADS ARE PAID FOR IN THIS COUNTRY, ENSURING FAIRNESS AND CONSISTENCY ACROSS THE WHOLE SYSTEM.

- Consider road tolling and congestion charging as behaviour modification tools, alongside revenue generation - though note that these two goals will sometimes conflict. Being clear about the overall goal of a new toll is key to designing the best model.
- Require significant efficiency improvements in toll collection if use of this model is to increase.
- Ensure any system is coordinated at a system level, considering other nearby toll roads and keeping the tolling model consistent across areas.
- Require equity considerations to be a key part of decision making about whether road tolls and congestion charges are introduced in an area, and how tolls are applied.



Public-private partnerships

THE COALITION GOVERNMENT HAS EMPHASISED ITS DESIRE TO UTILISE PRIVATE FINANCE AS A WAY TO BUILD AND MANAGE NEW INFRASTRUCTURE PROJECTS, AND HAVE POINTED TO PUBLIC-PRIVATE PARTNERSHIPS (PPPS) AS THEIR PREFERRED VEHICLE FOR THIS (BISHOP, 2024B). AOTEAROA NEW ZEALAND HAS USED PPPS PREVIOUSLY, BUT HAS NOT ENTERED INTO ANY NEW PPP ARRANGEMENTS FOR SEVERAL YEARS. IT IS THEREFORE A GOOD TIME TO TAKE A GOOD LOOK AT THE CURRENT EVIDENCE FOR AND AGAINST THE USE OF THE VARIOUS PPP MODELS, AND TO LEARN FROM EXPERIENCES HERE AND OVERSEAS ABOUT WHAT WORKS AND DOESN'T WORK.

Independent, unbiased evidence on the efficacy and value for money of PPPs (also known as PFIs, P3s, PFPs, and AFPs) is surprisingly thin on the ground, given they have been in use for up to several decades in at least 20 countries worldwide. In Aotearoa New Zealand, as in many jurisdictions, public discourse tends to be either

wholly positive, or wholly negative, with views often split along political lines.

What good quality evidence there is suggests that PPPs neither offer a silver bullet for the country's infrastructure woes, nor are they as bad as their detractors fear. For New Zealanders to benefit from their renewed use, however, they should be used only where - after careful deliberation and an assessment of all potential delivery models by informed and independent experts - they are shown to provide value. In addition, contracts must be well structured and well managed by a public sector trained and equipped to understand how to avoid the pitfalls other countries have faced. Current staffing reductions in the public service may impact on its ability to do that.

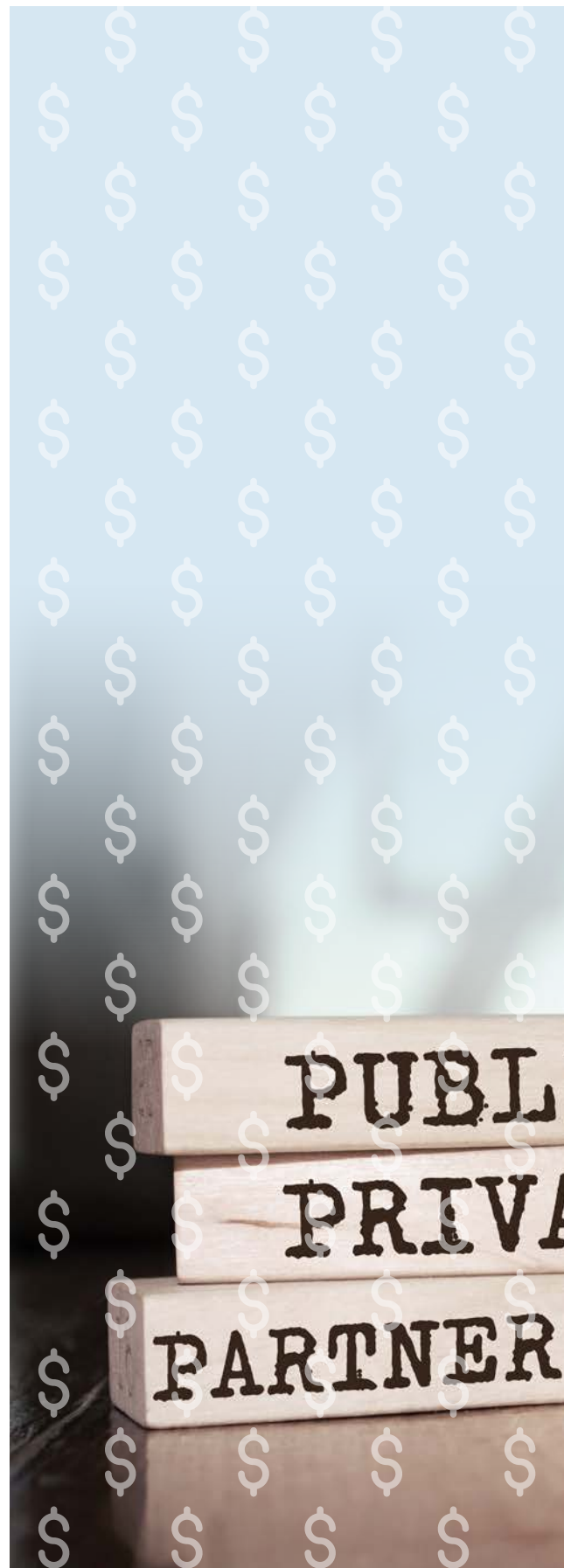
WHAT ARE PPPs?

There are many different ways to structure PPPs - it is not a one-size-fits-all model, and for that reason there is no clear and consistent definition internationally (*Treasury, 2015*). However, in general, a public-private partnership is a long-term contract between a government entity and a private party.

The private party is responsible for designing, building, financing, and (sometimes but not always) maintaining and operating a new public infrastructure asset and related services. PPPs have been used for many different types of infrastructure but are most popular internationally for transport, large buildings, water, and sewerage (*OECD, 2012*).

The idea behind a PPP is that the arrangement more optimally allocates risks that large infrastructure projects face (time and cost overruns, for example), moving some from the public to the private sector, motivating the private sector to perform more efficiently during both the construction and operations of the asset. The idea is that assets will be designed to ensure they are fit for purpose and enable efficient and effective delivery of operational services (as a common party is responsible for both). Payment of the construction and operations costs are generally largely conditional on the achievement of performance-based outputs (*Treasury, 2015*).

PPP procurement places a greater focus on whole-of-life performance than traditional procurement. The argument goes that because private contractors are required to provide a good quality asset for the whole duration of the contract, and payment is based on performance, they are more likely to choose quality construction materials and methods to save them costs





down the line (*Treasury, 2015*). This is expected to provide better outcomes in terms of value for money for the public sector.

While some of the purported benefits of PPPs may be able to be achieved through different contracting processes (fixed price contracts, for example), the argument for PPP is that the presence of private finance in the project (and the increased attention to due diligence on deliverability, design, governance, and monitoring this brings), makes the contract more enforceable.

The government procuring agency typically only commences payment upon completion of construction (or commencement of operations) and can withhold the payment of money if the asset does not perform as contracted.

PPPs are delivered by a legal entity set up for the purpose of delivering that project, known in Aotearoa New Zealand as a Special Purpose Vehicle (SPV). The SPV raises finance from investors to pay for construction and services, by establishing a consortium of firms to build and run the project.

An SPV consortium typically involves:

- **Equity Providers** who provide capital to the project by taking shares in the SPV.
- **Debt Providers** who provide the remaining capital through a loan agreement with the SPV.
- **A series of subcontractors** for physical works, asset management, and operations (where the PPP model includes that) (*Infrastructure Commission, 2021b*).

Once the asset is constructed and available for use, the government procuring agency begins making payments to the consortium and continues to do this over the contract term; in this way the consortium makes profit for its shareholders over time. In some projects, revenue may be gathered from users of the asset, such as via road tolls or ticket sales, to cover the repayments partially or fully, although this has not been done in Aotearoa New Zealand PPPs to date.

HOW DO PPPs DIFFER FROM MORE TRADITIONAL PROCUREMENT?

In a traditional (or conventional) procurement model, the responsible government agency will engage with a range of different contractors over the lifecycle of the asset, and lead the procurement processes at each stage.

Traditional practice is for the government agency to first engage consultants to prepare a design for a project. Once the design is complete, contractors will then be invited to submit bids for the construction work. The government/Crown may use existing funds to pay for this, or will borrow directly to fund the project using government bonds.

Once the asset has been built, the agency will usually contract again with separate parties to maintain and operate it, or will operate it themselves (*New Zealand Government Procurement, 2019*).

In the case of a traditionally procured school, for example, the principal and the school board are responsible for ensuring the buildings are maintained, using subcontractors, with funding allocated under normal budgeting processes. Under a PPP, the private contracting party would be responsible not only for designing and building the school, but then for ensuring it is looked after to a pre-agreed standard for the whole period of the contract (usually 20-30 years), with funding committed for the full contract period. This may include hard and



soft facilities management such as moving furniture, changing light bulbs, mowing lawns, repairing serious structural issues, and anything in between.

It's worth noting that in both traditional procurement and PPPs, the government contracts out to the private sector all aspects of the design and construction process, and most of the maintenance activities. The Aotearoa New Zealand Government has not done any of the construction work on infrastructure builds itself since the Ministry of Works was disestablished in 1988. In both forms of procurement, the ownership of the asset always remains with the government agency. Contrary to common misconception, PPPs as currently conceived do not constitute privatisation of public assets.

The biggest differences lie in:

- How the procurement happens - in a PPP, this takes place at the commencement of the process for a long-term contract between the government and one party. In traditional procurement, it takes place in multiple stages over the lifetime of the asset, in a series of shorter contracts, between the government and multiple parties.
- Who the direct borrower is - whether the private or the public sector.

PERFORMANCE OF PPPs: WHAT THE RESEARCH SAYS

PPPs stack up well on some indicators - there is convincing evidence they reduce cost and time overruns, for example, which can save huge amounts of money for government (*Office of the Auditor General of Ontario, 2014*).

However, there has been very little independent comparative analysis of the lifetime performance or efficiency of traditional procurement with PPP arrangements to date (*Dharmapuri Tirumala et al., 2021; UK National Audit Office, 2018*). Value for money in PPPs is judged differently around the world, and the limited available studies deliver contradictory conclusions as to effectiveness of the model (*Hodge & Greve, 2017*).

A review of the existing evidence is summarised below, organised by some of the key claimed benefits of PPPs:

- Reducing cost and time overruns.
- Lower overall cost and better value for money.
- Whole-of-life quality, and better maintained assets.
- Appropriate risk allocation, leading to cost savings.
- Increased innovation and best practice.

Reducing cost and time overruns - certainty over construction costs

Substantial cost and time overruns on major infrastructure projects are frequent in Aotearoa New Zealand and gain a lot of public and political attention. However, this is by no means an Aotearoa New Zealand phenomenon alone. International research, which examined 16,000 megaprojects undertaken in 136 countries, found:

- Only 47.9% projects came in on budget.
- Only 8.5% came in both on budget and on time (*Flyvbjerg & Gardner, 2023*).

The cost impact of this on government budgets is substantial: the same study calculated the mean cost overrun on major building projects worldwide to be 62%. Even worse, cost overruns for large projects don't follow a normal distribution, but are characterised by significant overruns: four out of every 10 building projects cost three times more than budgeted (*Flyvbjerg & Gardner, 2023*). Being able to minimise or even eliminate these risks would be very cost efficient.

The evidence shows that PPP projects are more likely than projects with traditional procurement models to come in on time and to budget:

- In the UK, a 2002 Treasury study of 50 large infrastructure projects found traditional procurement projects were on average 17% over schedule and 47% over budget, compared to PPP projects, which were delivered on average 1% early, with close to zero cost overruns (*Mott MacDonald, 2002*).
- In Canada, statistical analyses found PPPs outperform non-PPP delivery models during the construction stage in both cost overrun and schedule delay (*Zhang et al., 2020*). However, substantial initial budget underestimation was found to be a feature of both models of project delivery.
- In Australia, a study compared 21 PPP projects with 33 traditional projects. The PPPs in the study were completed 3.4% ahead of time on average, while traditional projects were completed 23.5% behind time. The PPPs also demonstrated superior cost efficiency of 11.4% when measured from the time the contracts were signed (*Raisbeck et al., 2010*).



- In Aotearoa New Zealand, the Infrastructure Commission reviewed the five PPP projects (made up of 11 schools and two prisons) that had been completed at the time of the review in 2021. They found they had generally been delivered on time and on budget, with each operational PPP project having experienced delays of fewer than six months between the initial market briefing to the time the projects became operational (Infrastructure Commission, 2021b).

Three further PPP projects in this country were not yet complete at the time of the 2021 Infrastructure Review - two road projects (Transmission Gully and the Pūhoi-Warkworth Highway, since completed), and one prison project (Waikeria), which is still under construction.

These three projects have faced significant delays and cost overruns, but these occurred in the context of the Covid-19 pandemic lockdowns, supply chain issues, and rapid inflation, when projects delivered under other delivery models experienced similar or worse outcomes. Further, many of the extra costs faced by these projects have been absorbed by the private sector under the PPP contract conditions, rather than paid by taxpayers.

Coming in on time and on budget can save the public sector considerable amounts. In Ontario, for example, of 51 PPP projects reviewed by the Ontario Auditor General in 2014, 86% came in under budget, saving taxpayers an impressive Canadian \$12.25 billion.

There are two clear reasons that PPP projects do well under this measure. First, PPPs require a great deal of complex planning upfront, meaning risks and costs are likely to be better understood to begin with and can therefore be better managed. Better planning also results in statistically shorter building times, meaning there is a reduced likelihood that major weather or other disasters will impact the build (*Flyvbjerg & Gardner, 2023*). It would be good to see this lesson applied to the planning and delivery of all infrastructure in Aotearoa New Zealand.

Second, the consequences of going over time and budget are far more damaging to the private partner under a PPP than under a traditional model. Not only will a PPP consortium not be paid until the project is complete and providing the service to a pre-agreed level, but the money lenders will also expect repayments to commence on the scheduled date (and the lenders normally undertake significant technical due diligence on the project to get certainty that they will be repaid). This gives the contractors a double incentive to take every available measure to

get the project finished on time.

Crucially, a full PPP model that includes a long-term maintenance component may not necessarily be needed to gain all the cost and time advantages. Half the examples in the Ontario sample mentioned above used a Build-Finance model, rather than a longer-term contract including maintenance and operations. Nevertheless, contracts delivered under a Build-Finance-Maintain or Design-Build-Finance-Maintain model (those that included a long-term maintenance component) were still more likely to be delivered under budget, and also more likely to be delivered significantly (greater than 10%) below budget.

Overall cost and value for money

An argument against using PPPs is that they cost more than non-PPP projects for several reasons:

1. **They include higher finance costs.** In the UK, the National Auditor estimated the additional finance cost of PPPs at 2%-3.75% above the cost of government bonds (*UK National Audit Office, 2018*).
2. **They include substantial legal and other adviser fees due to the complexity of contracts.** A feature of the PPP model is that it seeks to achieve whole-of-life benefits, with 'pay for performance' over a long contract term. This means increased costs

for advisers and lawyers on both sides, both when the contract is being developed and often later, if things go wrong or need to be altered (*Infrastructure Commission, 2021b*). The counterfactual is that a traditional procurement process will usually comprise multiple short-term contracts over the lifetime of the asset, with associated costs each time. We found no analysis comparing these costs between the two models.

a. **A range of other fees and costs may be incurred,**

such as lenders' fees and SPV management and administration fees, which can add up to several per cent of the total amount lent (*UK National Audit Office, 2018*).

b. **High costs may also be added for any contract variation,**

or termination of the contract should the service no longer be necessary (*UK National Audit Office, 2018*).

To account for the above, most jurisdictions require analysis to show these increased or additional costs can be offset through increased efficiency or other benefits accruing from the PPP process (for example, from more efficient allocation of risks). However, there is surprisingly little comparative analysis available which speaks to how much extra

PPPs cost compared with non-PPP projects in comparative jurisdictions.

One Canadian study suggests that increased costs associated with PPPs are more than recouped by the savings through reduced risk to the government procurer during construction. Ontario's Auditor (2014) looked at 74 PPP infrastructure projects in the province and concluded that:

- The tangible costs of the projects (construction costs, financing, legal services, etc.) were a massive \$8 billion higher than if the projects had been contracted out and managed by the public sector.
- However, this extra cost was more than offset by the risk of the projects not being delivered on time and to budget under public procurement - which the auditor calculated at \$14.6 billion.

More research would be needed in this space to confirm these findings apply equally in other jurisdictions and, more importantly, that they continue to apply over the lifetime of a project.

In Aotearoa New Zealand, PPP procurement must show that it will be no more expensive over its lifetime than if it were procured under a traditional approach - even after allowing for the additional costs noted above - and that it will provide value for money

in comparison (*Infrastructure Commission, 2021b*). This process, called the Value for Money Assessment, includes the following key steps:

- **Defining a Reference Project:** Describing what the public sector would do if they were to deliver the project traditionally (asset design, maintenance arrangements, and method of delivery).
- **Defining a Public Sector Comparator (PSC):** Looking at the whole-of-life cost of delivering the Reference Project, and including the estimated cost of the risks to the public sector and private contractors.
- **Setting an Affordability Threshold:** Defining the maximum price that a procuring entity would pay for the project, which needs to be below the Public Sector Comparator.

It is important to note that Value for Money Assessments are a highly technical process, and the long-term nature of them mean the outcomes are highly sensitive to economic and other assumptions. Taking different approaches in relation to these assumptions can therefore result in quite different outcomes.

One factor highlighted by the Auditor General in the UK (2018) is that the level of the discount rate used is hugely determinative

to the outcome of an assessment to benchmark a project against the Public Sector Comparator. A discount rate is a percentage figure that reduces future payments back to the present value: “Discounting using a lower discount rate, which compares private finance with the actual cost of government borrowing, results in fewer private finance deals being assessed as [giving] value for money” (*UK National Audit Office, 2018*).

There is limited independent analysis on the question as to whether PPPs show better value over the whole period of their contracts (*Boardman et al., 2016; Duffield et al., 2020*).

One study carried out by the University of Melbourne investigated whether 12 social infrastructure PPPs that had been operating for between three and 15 years were meeting the service delivery outcomes expected by service providers (such as school principals and doctors, who were working in the buildings) (*Duffield et al., 2020*). Two of the PPPs included in the study were from Aotearoa New Zealand.

The research found:

- All service providers reported that the PPP projects investigated opened for service to the community on time, and, since that time, had performed better than the traditional model.

- Of service providers, 95% preferred working within a PPP facility over a traditional government owned and operated facility.
- Interviewees felt that maintenance was carried out in a timely manner, and they appreciated having the time they would otherwise have spent organising maintenance to focus on their core business.
- The level of satisfaction with the quality of service delivered remained high through the years of operation investigated.

It was not clear from the research how the interviewees were selected, and some were employed directly by the PPP, so this research should perhaps be read as indicative only.



“ I like that in a PPP we have a Facility Management expert that manages the facility and that the educators do what they are experts in. And, I like that maintenance and upgrades are funded and carried out. PPP schools work better for students, and with better facilities the students take pride and treat the buildings better.”

Service provider from a PPP project in Australian study (IPA, 2021)

Nevertheless, the ongoing high levels of satisfaction for service providers using these facilities does suggest the PPP model was a successful means of achieving and maintaining positive outcomes for those projects.

However, another study in Australia, this time on 12 PPP schools in Melbourne, came to a different conclusion. The schools were compared with non-PPP schools in similar socioeconomic areas on a range of outcomes, and found no substantial difference between the performance of each type of school overall (*Dharmapuri Tirumala et al., 2021*).

It is unfortunate that more independent research on value for money has not been carried out given the length of time PPPs have been in use. If Aotearoa New Zealand embarks on the use of PPP procurement once more, carrying out such research should be an absolute requirement. If not, the debate about whether they provide value for money over the lifetime of the contract will continue to be ideologically led rather than evidence based.

Whole-of-life quality, and better-maintained assets

One of the ways in which PPPs appear to provide a distinct advantage is that:

- Money for maintenance throughout the lifecycle of the asset is ring fenced under the contract.
- Specific standards for maintenance are stipulated under the contract. Anyone not complying can be penalised financially.

This should mean that assets are better maintained throughout their lifecycle. In Aotearoa New Zealand, as in many countries, schools, hospitals, or prisons often face such cost pressures that they are faced with the stark choice on any given year between maintaining their buildings properly or continuing to provide core services, meaning core maintenance work can slip behind.

In theory, another way to guarantee schools and hospitals spend sufficient amounts on maintenance to maintain buildings at a functional standard without the use of private finance would be by entering into long-term maintenance contracts, or ring-fencing maintenance funds (*UK National Audit Office, 2018*).

However, this would not provide the other maintenance-related benefit provided by PPPs, such as whole-of-life asset performance (for example, if problems with a building emerge due to poor construction work, this will be fixed by the SPV).

As a thought experiment, it is worth considering the many non-PPP schools built in Aotearoa New Zealand between 1994 and 2005, when building rules were less strict than they are today. As of 2021, 550 of these were still leak prone (*Pennington, 2021*). In some cases, schools have been able to seek redress from construction companies, but not in all. Under a long-term PPP contract, because the contract focuses on outcomes, this kind of construction defect would be remediated as part of the contract at no additional cost to the government, even years after the time of construction.



Risk allocation

PPPs are appealing in that they enable more appropriate risk allocation between the public and private sector, by increasing the scope of work a single party is responsible for (design, build, and maintenance, for example). The PPP contracting process puts a lot of time and effort into risk allocation and risk management. The types of risks projects may face include:

- Construction (delays, cost overruns).
- Financial (fluctuations in interest rates and exchange rates).
- Market (such as variations in demand for the new infrastructure).
- Environmental (for example, natural disasters).
- Regulatory (changes in regulations or consent processes).
- Political (changes in government policies).
- Supply chain (availability of materials).

The rule of thumb is that risks should sit with the party best placed to bear them - because this makes the risk adjusted cost (i.e., the expected total cost) of the contract lower.

PPPs enable transfer of risks to the private sector that other contracts do not, for example, whole-of-life asset performance risk, which can only be efficiently transferred because a single party is responsible for the design, construction, and maintenance of a project.

In the PPP process, the private sector can lose a lot of money if the price has been set too low to include all the possible risks. Conversely, if risk has been assessed too conservatively the other way, the government might end up paying well above market rates for a project.

There are many international cases of financial losses incurred by the private sector in PPP projects. These are demonstrations of the risk allocation working as intended, with the private sector bearing the costs of its own miscalculations or underperformance and the public sector continuing to receive the benefits of the delivered asset at the bid price (*Infrastructure Commission, 2021b*).

But there are also other examples of PPP projects getting into trouble, where governments have been forced to step in and assume costs that were not originally budgeted for (*Boardman et al., 2016*). Cost escalation is a potential risk for governments using any model of procurement; however, it is not a particular feature of PPPs.



Vinny Minett



BALANCING RISK IN PPPs

From consenting delays and materials shortages to unknown ground conditions and extreme weather, risk is part of all large infrastructure projects. For all projects, better understanding, allocation, management, and mitigation of risk is critical to success, and public-private partnerships are no exception. WSP Director of Strategic Advisory (Investment) Vinny Minett explains.

Allocating risk is about identifying who is responsible for a risk, or who will pay if the risk materialises. The golden rule of risk allocation is that risks should sit with the party best able to manage them, resulting in the lowest expected cost.

To understand a risk, analysis is done to understand the likelihood of a risk occurring, as well as the likely outcome if it does occur. For example, in assessing the outcome of a flood on a building site, there may be three scenarios:

1. 'The best case' - the flood washes away some earth and shuts the site for a day.
2. 'A moderate case' - the site loses access for a week.
3. 'The worst case' - the building's foundations are washed away.

Assumptions are then made about how risk can be managed and mitigated. For example, one potential mitigation may include storing materials in areas that are less likely to flood. The person best placed to manage that risk would be the site contractor (except, possibly in the case of extreme floods) - in theory, the contractor would also be able to charge a lower cost for managing that risk than other parties could do.



SETTING REALISTIC AFFORDABILITY THRESHOLDS

In the context of PPPs, risk allocation is intimately linked to the setting of the 'affordability threshold' - the maximum price that a private sector party can charge for delivering the project.

To avoid problems later, the affordability threshold should accurately reflect the expected (risk adjusted) cost of a project if it were to be delivered under a non-PPP model. For example, an official review into the set-up of Wellington's Transmission Gully expressway PPP found the maximum price the government would pay for the road under a non-PPP model was set too low (Cook, 2021). This resulted in private sector bidders having difficulty meeting the figure while accounting for risks allocated to them.



BEING CAREFUL WITH RISK TRANSFER

Some of the criticism of the way Aotearoa New Zealand has run PPPs to date relates to the government pushing too much risk onto project consortia, who have then pushed it on further, to contractors and subcontractors.

For instance, is it always reasonable to expect contractors to shoulder the risk of delays in attaining project consents? Consents are issued by local and regional governments, and in most cases, a lot of this process is out of a contractor's control.

Pushing too much risk onto the private sector can result in fewer parties being prepared to bid on a project, or parties quoting higher prices to reflect the cost of the risk transfer.

As the buyer of all large infrastructure projects, the coalition Government will want to carefully consider where the ultimate responsibility for different risks should lie. Some risks may (or may not) sit with the private sector. If they do, it's worth asking can the party manage and price the risk effectively?

Another relevant question is whether it is in the country's best interests to transfer a risk that would have a high cost, but has a low likelihood of occurring. In some situations, it may be better for the public sector to hold that risk, and to insure or manage it themselves. This would lower the PPP bid price.





EXPLORING SHARED RISK

The purist view of risk allocation is often very black and white. Risk either sits with the public sector, or the private sector. But there is a third way - shared risk.

The Tłjchq Highway Project is a good example (*Government of Northwest Territories, 2021*). The highway is a 100-kilometre all-weather gravel road in northern Canada, which connects a remote First Nations community to the Yellowknife Highway.

Built on permafrost, the ground stays frozen year-round. Building on either permafrost or non-permafrost ground is relatively straightforward but designing for potential climate change impacts on a permafrost road proved tricky.

The Government of the Northwest Territories (GNWT) in Canada wanted a fixed-price contract for designing, building, and maintaining the road for 25 years, but factoring in climate change risk made it expensive. A risk-sharing plan was created. The private sector partner designed for likely, scientifically modelled climate outcomes. If the climate outcomes turn out worse than modelled, the private sector will cover extra costs up to a limit, with GNWT covering the rest. This approach gave the private partner an incentive to manage risks without overpricing for worst-case scenarios.

Success is about smart risk management, not wild risk taking. For Aotearoa New Zealand, getting the best out of PPPs means moving past highly standardised contracts and adopting flexible risk allocation practices that will, in the long run, benefit the country and its critical infrastructure needs.



Innovation and best practice

A connection is often made between PPPs and increased opportunity for innovation, Performance-based specifications, in theory, can provide SPVs/contractors with the flexibility to generate innovative solutions in design, construction, and operation.

Again the evidence is not strong, with limited empirical studies to support or disprove claims about enhanced innovation (*Lember et al., 2019*). A literature review by Liu et al. (2024) of the relationships between PPPs and innovation concluded that PPP models provide an environment for innovation pre contract award, but much less so in the subsequent phases of infrastructure project delivery.

Callens et al. (2022) analysed survey and interview data on 24 PPPs in Belgium and the Netherlands, and noted some innovation in these partnerships. They point out that since PPPs are long-term collaborations, contractual stimuli and collaborative activities (information sharing, network management) can complement and even reinforce each other to create novel ideas in PPPs.

Can PPPs provide an off-balance sheet option?

It is a common misconception that a PPP artificially lowers the reported level of government debt by moving that debt to the private sector. This is not correct for Aotearoa New Zealand, as the government procurer's future obligation to pay for the PPP is recognised on the Crown balance sheet and appropriated in advance (*Infrastructure Commission, 2021b*).

The advantage it does give financially, though, is that the first substantial payment on a PPP does not fall due until project completion - this means cashflows are spread out over time.



PPPs IN AOTEAROA NEW ZEALAND

PPPs have been used for several decades and are common in countries including the UK, USA, Canada, Northern Europe, and Australia, but are much less so here. In Aotearoa New Zealand there have been eight PPP projects to date, comprising 11 schools, three prisons, and two major roads. Except for Waikeria Prison, no new projects were contracted under the 2017-2023 Labour government, but the coalition Government has indicated its intention to use them more.

Two main models of PPP have been used in Aotearoa New Zealand:

1. **Design, Build, Finance, and Maintain (DBFM)**. This model transfers responsibility for the delivery of a new asset, financing of the projects, and maintenance for a defined period (usually 20-30 years) to the private sector partner. The Crown retains ownership of the asset at all times.

2. **Design, Build, Finance, Operate, and Maintain (DBFMO).** In this model the private sector has also taken responsibility for operating the asset. Examples include the Wiri Prison in Aotearoa New Zealand and Ravenhall Prison in Australia. In those cases, contractors are not just responsible for maintaining the buildings, but also for looking after prisoners (*Duffield et al., 2020*).

Two main studies have assessed the performance of PPPs in Aotearoa New Zealand to date. The Infrastructure Commission conducted a review of the five projects operational in 2021 (comprising 11 schools and two prisons).

They interviewed participants in those projects including procuring entities, successful consortia, major sub-contractors, unsuccessful consortia members, equity providers, banks, and a range of advisors to the parties including legal, financial, and technical advisors, probity auditors, and independent reviewers. Respondents:

- Praised the standard of the assets as being often superior to other similar assets managed by the same procuring entity.

- Had mixed views on the extent to which the model led to innovations in design, construction, and service delivery.
- Noted that a number of projects attracted international contracting resources to the market, which arguably increases the competition and knowledge base for the Aotearoa New Zealand construction sector (*Infrastructure Commission, 2021b*).

A limitation of the review is that it predominantly interviewed people in the private sector. Interviews were unfortunately not carried out with service providers (people working in the schools and prisons).



Schools

According to recent advice from the Ministry of Education to Minister Stanford, Aotearoa New Zealand's PPP schools generally cost more to operate than a regular state school (Pennington, 2024a). No formal analysis or calculations are referred to in the advice, unfortunately. The return for higher operational costs is that PPP schools free up school principals' time from looking after buildings and organising clearing and gardening (Infrastructure Commission, 2021b; Leahy, 2024). The principal of Auckland's Hobsonville Point Primary School reports being happy he doesn't have to organise who is going to mow the school lawns, for example. A further advantage in PPP schools is the contractual incentive for maintenance and repairs to be carried out promptly (if not, the contractor doesn't get paid).

Other anecdotal evidence points to some issues (Leahy, 2024). The principal of Rolleston College notes that the contract process is less flexible than just asking 'Bob the caretaker' to get something done. Any unforeseen jobs or variation to the maintenance contract between the Ministry of Education and private investors can lead to drawn-out negotiations. There have also been some issues of PPP schools not being allowed to make school grounds accessible to the public in the way they wished to do, or to make facilities available cheaply

for community groups (Leahy, 2024; Opus, 2015).

Anecdotal criticisms of PPP schools in this country for lack of flexibility in contracts reflect similar experiences in the United Kingdom (UK National Audit Office, 2018). Some government departments in that country reported they had been locked into paying for services they no longer required due to the length of the contracts. In one example, Liverpool City Council found itself paying around £4 million per year for over a decade for Parklands High School, which was sitting empty (UK National Audit Office, 2018).

It is important to note that the United Kingdom example above reflects a PPP model that has not been used in Aotearoa New Zealand, but it is useful as a story to encourage the inclusion of international learning in this country's next iteration of PPPs. Finding ways to improve contracts to best avoid these issues should be a focus area.

Prisons

There are three PPP prisons in Aotearoa New Zealand:

1. Waikeria - still under construction.
2. Auckland Prison.
3. Auckland South Corrections Facility, at Wiri.

In Waikeria and Auckland Prisons, the SPV is responsible for designing, building, financing, asset management, and facilities maintenance for the first 25 years of its operational life. The facilities themselves are managed by Corrections. By contrast, Auckland South Corrections Facility at Wiri is a full PPP with the SPV also being responsible for the operation of the facility. Operations for the prison have been subcontracted to Serco.

One of the conditions in the contract for the prison at Wiri is that it will outperform the Department of Corrections in reducing re-offending. This was a very innovative idea at the time, which has since been copied in other countries. To drive innovation, the Department minimised constraints where possible to allow the private sector flexibility in the design and operation of the prison to achieve the desired service outcomes (Treasury, 2015).

The prison has been performing well against key custodial measures (such as levels of reported incidents and assaults) and was judged very positively in a 2021 Gateway Review. The private partners have consistently (from 2017 to 2023) outperformed publicly run prisons in terms of reducing reoffending (*Vance 2019, Department of Corrections 2024*), and have received incentive payments in exchange for these results. In 2021/22, for example, the prison achieved a 47.3% lower reoffending rate than publicly run prisons and received a bonus of \$1.5 million.

The Department of Corrections notes that some of this difference in outcomes may be due to other factors, including a disproportionate number of long-term prisoners in the cohort (*Department of Corrections 2024*). Nevertheless, it is a very good outcome.

The two PPP models employed by Corrections in Aotearoa New Zealand differ by their inclusion or exclusion of custodial operating services from the PPP contract. Noting the rhetoric regarding ‘privatised prisons’ internationally, and the disproportionate representation of vulnerable populations within the prison population, an additional level of scrutiny and due diligence should be applied to any future PPPs where custodial services are proposed to be included.

Roads

Transmission Gully and the Pūhoi-Warkworth Highway are Aotearoa New Zealand’s only examples of PPPs for road projects. Each has faced significant cost and time overruns, some of which have been passed on to the government. For example, in the case of Transmission Gully, the government paid an extra \$200 million to cover costs relating to the Kaikōura earthquake and slips caused by a particularly wet season (*Strang, 2022*).

However, neither project is a particularly useful case study to demonstrate (or disprove) the benefits of PPPs in terms of limiting time and cost overruns, in large part due to the impacts of Covid disruptions, which caused issues for all major projects under construction at that time. A recent post-construction review of Transmission Gully for the Infrastructure Commission (*Infrastructure Commission, 2024c*) concluded that the PPP model itself was not to blame for the challenges encountered by the project. It did note there were elements of the PPP model that could have been better applied, including the setting of the affordability threshold, addressing project governance issues, and better dealing with recurring relationship issues between key parties.

In the case of the Pūhoi-Warkworth Highway, costs appear to have run \$203m over original budgets, and some of these extra costs were covered by the government. The rest went to a dispute process, which appears to be ongoing. While the government ended up contributing extra money for both projects outside the original contracted costs, the contractors also paid substantial fines for every day of overrun on the contract, demonstrating one of the key benefits of a PPP contract - that payment is dependent on successful provision of a contracted service.



WHAT TYPE OF PROJECTS ARE PPPs BEST SUITED TO?

There are differing opinions on this question and different approaches internationally. In the UK around two-thirds of all PFI projects have been for 'accommodation' such as schools and hospitals. They have also been used successfully (and not so successfully) internationally for roads, tunnels, bridges, rail, and everything in between. Many commentators argue that PPPs are particularly suited to projects that come with a revenue stream, for example, a road with a toll.

There are various frameworks that can help assess the type of procurement model that might best fit a project. Australian National PPP Guidelines (2008) set out the range of different procurement models, advantages, and disadvantages and which situations are best suited to each. Simplified, these suggest PPPs lend themselves best to projects:

- With a total capital value exceeding \$100 million. In Aotearoa New Zealand, this puts a PPP out of scope for many infrastructure projects at the local government level - unless projects can be bundled together.
- Where the scope and outputs can be defined clearly and are not likely to change prior to project completion.

- Where services can be bundled to create a long-term operational or maintenance opportunity.
- Where a significant portion of the material risks can be defined, allocated, and potentially transferred to a private party - the theory being that allocating the risk to the party most cheaply and effectively able to manage it should mean lower costs for all parties.

A benefit of a PPP procurement model is that it forces all parties to think long term and ask important questions about whether the proposed infrastructure will still be needed in 20 years, in the same form, and whether it will still be fit for purpose in several decades. This calculation may become increasingly difficult under climate change: PPPs lock governments into long-term contracts at the same time that Aotearoa New Zealand's future is becoming significantly less predictable. This likely points to the need for greater flexibility to be built into PPP contracts than was the case in earlier iterations.

OPPORTUNITIES FOR IWI TO INVEST IN PPPs

A key recommendation from Aotearoa New Zealand's infrastructure strategy (*Infrastructure Commission, 2022b*) is to provide opportunities to strengthen partnerships with Māori across the infrastructure system. Iwi are increasingly playing a more active role in the infrastructure sector in Aotearoa New Zealand, and investing significantly into private infrastructure and development projects (*Infrastructure Commission, 2023*).

The long-term nature of PPPs and their focus on the achievement of social outcomes and improving infrastructure within Aotearoa New Zealand has the potential to align with iwi investment objectives. Iwi as investors tend to have a strong home bias and long time horizons, and iwi trusts typically

have social and environmental objectives in addition to their financial objectives (*Infrastructure Commission, 2023*).

There is international precedent for Indigenous investment within PPPs. The Northwest Territories Government in Canada delivered the Tłıchǵ All-Season Road PPP, a 28-year PPP to design, build, finance, operate, and maintain a 97km road. The Indigenous Government (the Tłıchǵ) took a 20% equity stake in the project. A review reports the project is bringing significant value to lands owned and controlled by the Tłıchǵ Government by reducing travel costs and allowing for faster and more reliable access to the region (*Canadian Council for Public-Private Partnerships, 2019*).





PROGRESSIVE PPPs MAY BE WORTH INVESTIGATING

Recent conversation in Aotearoa New Zealand around the renewal of the PPP programme has included consideration of Progressive PPPs. The model is used in various jurisdictions overseas, including Canada and the United States, and introduces an early collaborative stage into PPPs. In this early stage, a private sector partner (or partners) will be procured through a relatively short-form procurement process, focused on qualifications. The private sector partner then collaborates with the public sector to develop the project's scope and structure, and they follow a structured process together to eventually execute a more traditional PPP contract (*Casady & Garvin, 2022*).

This model has emerged in response to some of the challenges of traditional PPPs, which include achieving the

desired risk allocation through the competitive bidding process, managing complex environmental or consent processes, and consulting with complex stakeholder groups. The model represents a shift away from pure competition and towards integrating private sector innovation early in the planning process, thus aligning project objectives more closely with public sector needs. However, the model also presents risks. The early involvement of private partners can reduce competitive tension, potentially leading to less favourable project terms and impacting the ability to achieve and demonstrate value for money (*Casady & Garvin, 2022*).

Aotearoa New Zealand could explore the applicability of the Progressive PPP model in the local context, with specific focus on the potential benefits and risks of the model, and determine whether it has the potential to improve the delivery of major infrastructure projects.

TRADITIONAL PROCUREMENT PROCESSES SHOULD BE IMPROVED

Traditional procurement will almost certainly remain the primary procurement method in Aotearoa New Zealand. This will be true even if Aotearoa New Zealand enthusiastically embraces PPPs as a preferred model for procurement going forward. PPPs, even in countries that have embraced them wholeheartedly, have only ever made up a small percentage of their total infrastructure investment (less than 10% in nearly all cases (*OECD, 2012*)).

This points to the importance of finding creative ways to improve all types of procurement to bring in some of the benefits PPPs may demonstrate. This might include focusing more on ensuring projects are built to last, rather than built for the cheapest price, for example. Or it might mean improving due diligence in the contracting process to reduce cost and time overruns, with better attention paid to risk allocation and mitigation.

Increasing the capability of government to deliver contracts to budget and on time could potentially have the biggest impact on costs for the country. A recent review of many thousands of infrastructure projects worldwide summarises practical ways to improve delivery - these can and should be applied across the board (*Flyvbjerg & Gardner, 2023*).





IMPROVING GOVERNMENT CAPABILITY AND INCREASING COMPETITION WILL BE IMPORTANT

As a small country that has not done any PPPs for some time now, government capability in Aotearoa New Zealand for managing the projects will be low. While that is the case for all forms of large infrastructure procurement, regardless of the model of delivery, the PPP contracting process is particularly complex. It requires high levels of understanding, as well as significant involvement from external specialist advisers to ensure the government gets a good deal. There is a risk of a power imbalance arising between government procurement and the international consortia who are likely to be bidding on PPP contracts here. Aotearoa New Zealand will have to upskill quickly, and put in place checks and balances (such as independent review of contracts) to ensure the country does not experience some of the problems PPP programmes have experienced in other countries.

In a second issue for Aotearoa New Zealand, as a small country it sometimes lacks large contractors to bid on the biggest infrastructure projects. When Minister Stanford recently floated the potential to enter PPPs to

build more schools (*Pennington, 2024b*), she was advised by the Ministry of Education that market feedback indicated domestic construction suppliers were not interested in the PPP model, due in part to the anticipated risk allocation to contractors and the high costs of tendering.

The advice did note, however, that these challenges could be mitigated through adjustments to the PPP model, which is anticipated to occur prior to the reintroduction of PPPs in Aotearoa New Zealand.

One solution proposed by some of the participants in this research to improve competitiveness and willingness to bid on PPPs was that the government could consider partially refunding bidding costs for unsuccessful bidders (often as much as \$10 million per consortium) in exchange for purchasing the intellectual property included in the bid. This is in line with international best practice - not just for PPPs, but for any procurement that has a high cost of bidding. The argument goes that this would increase the number of parties willing to bid, and the resulting impact of increased competition on price would more than make up for the costs incurred by government in reimbursing partial costs.

Industry also argues that another way to enhance competition would be to ensure a more predictable pipeline for infrastructure builds here - an issue that has been covered comprehensively in the literature (*Infrastructure Commission, 2022b*). A more secure pipeline would mean skilled workers would remain in the country, and big international operators would be more likely to come here and set up shop permanently.

CHAPTER 3 - CONCLUSION AND RECOMMENDATIONS

There is good evidence PPPs provide value for money at the construction phase, because they reduce cost and time overruns, though there is insufficient evidence about the extent to which PPPs provide value for money over the lifetime of contracts. Given PPPs pose some specific risks compared to other procurement models, due to the very long-term nature of contracts, more research is needed in this space. Following the recommendations below will help minimise some of those risks to get the best outcomes from PPPs.





CHAPTER 3 - RECOMMENDATIONS

CHOOSE THE RIGHT PROCUREMENT MODEL FOR THE JOB

- Ensure a political preference for one model over another does not cloud consideration of the best model for the job. No one-size-fits-all procurement model will work for every project.
- Instead, use a structured process, including qualitative and quantitative considerations, to determine the right procurement model for each project.
- Value for Money Assessments are complex and sensitive to key assumptions, particularly the discount rate applied. Ensure appropriate sensitivity analysis is completed, and analysis is subject to independent review before a procurement model is determined.

ENCOURAGE COMPETITIVENESS IN THE BID PROCESS, WHERE POSSIBLE, TO GET THE BEST DEAL FOR THE PUBLIC

- Providing certainty well in advance about the infrastructure projects being considered for procurement will support the 'scaling up' of resources to bid for projects (*Infrastructure Commission, 2021b*).
- Consider partially reimbursing bid costs for unsuccessful bids.
- Upskill government procurers to ensure they come to the negotiating table as equal partners.

ENSURE THE MODEL IS TRANSPARENT

- Provide sufficient levels of transparency to allow researchers to benchmark and compare across models.
- Require a contract summary and summaries of progress reports relating to the project to be shared publicly, to ensure transparency and allow the wider sector to learn from errors.
- Ensure appropriate levels of independent oversight and contractual mechanisms to mitigate private sector 'super-profits' and ensure benchmarking of long-term service costs throughout the term of the contract.

LEARN FROM INTERNATIONAL LESSONS ON CONTRACTING

- Include variation mechanisms in PPP contracts to reduce the cost and complexity of making variations or extensions to the contract.
- Review termination mechanisms in PPP contracts to better address the risk that a piece of infrastructure may no longer be needed in the future (for example, if a school is no longer needed due to a falling roll).
- Ensure the contract considers the long-term potential impacts of climate change, or of technology changes - and is flexible enough to be adapted if needed.
- Ensure government procurers are appropriately resourced to understand the complexities of the model.
- Ensure service providers, such as school principals, correctional officers, and hospital administrators, have an appropriate level of input into project development (as suggested by Duffield et al., 2020).

ENSURE GOOD-QUALITY RESEARCH INFORMS FUTURE PROJECTS

- Fiscal responsibility demands better research into the cost benefit of infrastructure procurement and delivery. This need is heightened with PPPs due to their complexity. Independent research should continue, asking substantive questions about the quality of the infrastructure provided and its costs and benefits over the full life cycle of the contract.





CHAPTER 4.

City and regional deals: Bridging the gap between central and local government

CITY AND REGIONAL DEALS HAVE BEEN PROPOSED AS A POTENTIAL SOLUTION TO ADDRESS AOTEAROA NEW ZEALAND'S PRESSING CHALLENGES RELATED TO THE COUNTRY'S INFRASTRUCTURE DEFICIT. THIS INTEREST HAS BEEN FUELLED BY THE COALITION GOVERNMENT'S COMMITMENT TO DEVELOP A FRAMEWORK FOR CITY AND REGIONAL DEALS, EXPECTED TO BE RELEASED LATER IN 2024, CENTRED ON FOSTERING ECONOMIC GROWTH AND PRODUCTIVITY (*HATTON, 2024*). LOCAL GOVERNMENT NEW ZEALAND HAS ALSO EXPRESSED AN INTEREST IN THE POTENTIAL OF CITY DEALS TO CREATE BETTER REGIONAL PROJECT PIPELINES (*LOCAL GOVERNMENT IN NEW ZEALAND, 2024A*).

Overseas, city deals have emerged as a strategic tool for establishing a localised partnership approach to infrastructure planning and funding, and to facilitate collaboration between central and local government entities. By offering a collaborative framework, city deals enable key stakeholders to align objectives, pool resources, and leverage expertise to tackle infrastructure deficits and drive inclusive growth at the local and regional levels.

This section examines the advantages and disadvantages of city deal structures, drawing insights from international examples to inform their potential application within the Aotearoa New Zealand context.

CITY DEALS ARE A COLLABORATIVE APPROACH TO URBAN DEVELOPMENT AND GOVERNANCE

City deals are formal contracts awarded by central government, typically to local governments or partnerships of stakeholders such as academic institutes and business groups, to support a range of initiatives building towards a shared goal (KPMG, 2023).


A city deal has objectives beyond a single infrastructure project, and creates streams of infrastructure work over timeframes of 10-20 years, or more. City deals often focus on economic development, connecting multiple projects and funding models (Utz, 2016).

The exact definition and nature of city deals varies between

countries and situations, but at the heart of the concept is the devolution of power, or transfer of specific authority, responsibilities, and decision-making powers from central government to local or regional governments, enabling sub-national government organisations to establish commitments, funding arrangements, and governance structures tailored to their specific needs and priorities (KPMG, 2023).

City deals are also known as regional deals and place-based agreements, among other names. The concept of city deals emerged in the United Kingdom to decentralise decision-making and empower local authorities to take greater control over local affairs, helping to realise the potential of cities as drivers of national and regional economic development



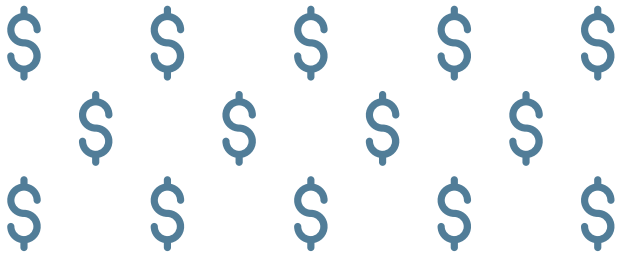


and innovation. In return, cities were required to demonstrate “strong, visible and accountable leadership and effective decision-making”, and take on more risk (Carr-West, 2021).

The success of city deals in the UK inspired similar initiatives in other countries, including Australia and Canada. A fully fledged city deal, bringing together central and local government, industry stakeholders, and the community, to achieve a set of long-term shared objectives, has not yet been undertaken in Aotearoa New Zealand (although close analogies have existed, such as the Canterbury Earthquake Christchurch Central City Rebuild, and Let's Get Wellington Moving).

CITY DEAL FINANCING - PUBLIC AND PRIVATE OPTIONS

Elements of a city deal may involve private capital for financing using models such as public-private partnerships (PPPs), joint ventures, or asset monetisation. However, private financing is not critical for the development of a city deal. In Sweden, for example, ‘City Development Agreements’ (Stadsutvecklingsavtal) have been established between central government and individual municipalities or regions to coordinate efforts and investment into sustainable urban development and infrastructure. Funding often comes from a combination of government grants, municipal budgets, and European Union funds (Sjöström et al., 2020).



Manchester



Case Study: Manchester. An example of a successful city deal

The Greater Manchester city deal was set up in 2011, devolving powers from central government to a new Combined Authority created out of 10 local authorities. The objectives were to drive economic growth through housing investments, and transport infrastructure projects in rail and bus improvements (*Greater Manchester Combined Authority, n.d.*).



The city deal provided Greater Manchester Combined Authority with a guaranteed long-term funding stream from central government - a £30 million per annum rolling infrastructure fund - and enabled better access to European Union funding (*WSP New Zealand, 2024*).

The UK's model for city deals attaches financial incentives for economic growth. For example, the Greater Manchester city deal included an innovative 'earn back'

mechanism, where the city's investment in economic growth earned it a proportionate share of the national tax take (*McVeigh, 2023*). By contrast, Australia's city deal model has not incorporated extensive financial reform (*KPMG, 2023*).



ADVANTAGES OF THE CITY DEAL CONCEPT IN AOTEAROA NEW ZEALAND

Several features of city deals make them a promising option in Aotearoa New Zealand. Some of the most compelling cases for their consideration include the following.

City deals may support councils grappling with a lack of resources


City deals may offer an alternative solution to local governments who are otherwise limited to property rates increases to pay for infrastructure assets (*Hatton, 2024*). This can be especially beneficial to councils in the regions where inflation, interest costs, extreme weather repair costs, and increased depreciation have made it difficult for councils to address the infrastructure deficit in their locality (*Polis Consulting Group, 2023*).

A rebalancing of power toward local government bearing more power and autonomy may also support faster and more effective efforts to address the infrastructure deficit (*Infrastructure New Zealand, 2023d*). Infrastructure New Zealand has remarked on the imbalance of funding between central and local government; Aotearoa New Zealand is one of the most centralised countries in the OECD as measured by the

ratio of tax that goes to central government compared to local government (*OECD, 2016a*). Infrastructure New Zealand estimates that local government entities own 37% of infrastructure while receiving approximately 7% of funding (*Hatton, 2024*).

There is already precedent for city deals in Aotearoa New Zealand

Existing arrangements between central and local government show that projects involving similar partnerships for regional outcomes can be successful. These include Auckland Transport initiatives such as the City Rail Link, and the post-quake Canterbury rebuild (*MinterEllisonRuddWatts, 2023*). The Provincial Growth Fund (PGF) (replaced by the Regional Infrastructure Fund) has been regarded as a close proxy to city deals, and, while there are key differences, an independent evaluation of the PGF determined it a success in creating jobs and boosting regional economic growth (*Allen + Clarke, 2021*).



City deals can provide certainty and help address Aotearoa New Zealand's lack of steady infrastructure pipeline

The long-term nature of city deals (generally 10-20 years) provides greater certainty for the infrastructure sector delivering on large projects (*Hatton, 2024*). Having a more certain pipeline enables businesses to invest in regions with confidence, employ a local workforce, and address the long-term infrastructure deficit (*Hatton, 2023*).

City deal successes can be realised relatively quickly

Compared to traditional government processes, city deals are often faster at realising outcomes for regions. Decentralisation is posited to have the potential to enhance the coverage, quality, and efficiency of services through more efficient resource allocation. Local authorities often have stronger pre-existing relationships with motivated stakeholders, and a clearer sense of how to achieve positive outcomes for their area. The theory suggests that local governments' proximity to voters improves transparency and accountability relative to more centralised systems (*Smoke, 2015*).

A Hamilton City Council fact-finding mission of Australian city deals in 2023 concluded that

Aotearoa New Zealand is well positioned in this regard, and has several advantages over Australia, stating that Aotearoa New Zealand, "excel(s) in several areas, including our relationships with mana whenua / iwi communities, our national land transport funding model, and our initiatives in affordable housing and climate change adaptation" (*Franke-Bowell, 2023*).

However, significant central government capacity to oversee city deals is required to make city deals successful (*MinterEllisonRuddWatts, 2023*) - a challenge addressed in the following section.



CHALLENGES AND LESSONS FROM INTERNATIONAL CITY DEALS

While city deals hold promise for addressing complex challenges and driving inclusive growth in cities and regions, they are not without their challenges and drawbacks. Key issues observed in overseas case studies are addressed below.

Longer-term city deals struggle to survive short-term changes in government

As discussed in previous chapters, central government has struggled to take a long-term perspective on infrastructure, and it will take a significant shift in mindset or legislation for a central government of any ideological make-up to commit to deals over 10 or more years. According to Sam Broughton, Local Government New Zealand President and Selwyn District Mayor, “Local government plans for 30 years. Central government doesn’t do that” (*MacManus, 2024*).

In Aotearoa New Zealand, central government is often perceived by local government as overbearing and the legislative framework for dealing with local government is highly prescriptive, which has further eroded trust (*Milne, 2023*). The Review into the Future for Local Government, released in June 2023, suggests a lack of trust between central and local

government is as much of a hurdle to progress as funding. Alignment between different levels of government has been a critical success factor in the development of city deals in the UK and Australia (*Milne, 2023*).

City deals have the potential to create inequality between and within regions

City deals can cause inequitable social and economic outcomes because of their focus on economic growth (*MinterEllisonRuddWatts, 2023*). Critics of the UK city deal model claim that due to central government’s ‘ad hoc’ deal-making process, there has been inequality in the sequencing and prioritisation of deal-making, creating “patchwork governance” (*Waite et al., 2023*).

Without a comprehensive framework to guide local participants on how deals may be selected for funding, and what the funding terms will be, better-resourced cities may be more effective at “playing the game of deal-making” and win city deals over more needy areas (*Waite et al., 2023*). One suggested solution is for the Aotearoa New Zealand city deals framework to include an opportunity for cities or regions to co-design proposals, developing common approaches to shared issues (*MinterEllisonRuddWatts, 2023*).

Competitiveness can outdo collaboration

Playing the deal-making game can also bring out competition to a level that is ultimately detrimental to the parties involved. The Mayor of Greater Manchester warned Aotearoa New Zealand mayors and CEOs of the pitfalls he experienced with the Greater Manchester Combined Authority in a visit to Aotearoa New Zealand.

While the arrangement between 10 local authorities enabled better access to central government and European Union funding, he found competitiveness between municipalities hampered the success of deals. The need to bid for resources from central government led to parochialism, and only after years of experience have mayors adapted to the need to work together for funding in the city deal model (*Hatton, 2024*).

Additional capacity is needed for oversight, monitoring, and evaluation

Introducing city deals requires human resources to measure and assess project outcomes at both local and central government levels. If implemented in Aotearoa New Zealand, local government would require extra capacity for the monitoring and evaluation of local projects, as would the central government level (*MinterEllisonRuddWatts, 2023*). The independent panel for the Review into the Future for Local Government (*2023*) recommended establishing a dedicated Crown department that focuses on brokering place-based agreements.

Successful city deals have made the most of more streamlined decision-making processes at the local level; however, central government must have the capacity to oversee their investment. Critics of Australia's city deal system challenge what they see as a lack of resources to supervise the number and scale of city deals (*MinterEllisonRuddWatts, 2023*).



HOW WOULD AOTEAROA NEW ZEALAND NEED TO ADAPT CITY DEALS TO WORK HERE?

Making city deals work in Aotearoa New Zealand's governance structure

The UK and Australian examples of city deals include levels of government not applicable to the Aotearoa New Zealand context, such as the European Union and the Australian state governments. While these have been crucial in their specific situations for governance and funding purposes, Aotearoa New Zealand has alternative city deal partnership opportunities outside of local government. Māori, at an iwi and hapū level, are potential candidates, as are universities and business associations (*MinterEllisonRuddWatts, 2023*).

In addition, Aotearoa New Zealand already has 11 regional councils. Depending on the model adopted for city deals in Aotearoa New Zealand, these subnational authorities may be perceived as duplicative to city deal arrangements or be a ready-made partner for undertaking city deal contracts (*Waite et al., 2023*).

Finding the balance between collaboration and efficiency

Multi-level collaboration is key to the city deal model, but careful planning is needed to ensure all parties work together while maintaining clearly defined boundaries (*MinterEllisonRuddWatts, 2023*). It is also important to ensure the administrative process is not so burdensome and restrictive as to result in overwhelming time and cost overruns.

Australian city deals have been criticised for becoming an “intergovernmental collaborative extravaganza”, where the competencies and accountabilities of the participants were unclear and confusing (*SGS Economics & Planning, 2022*). Multiple experts assert the importance of spending time on getting governance settings right from the outset, with a clear structure of management and decision-making (*AECOM, 2017*).

Where to start? And on what?

One of the first questions for the implementation of any city deal mechanism in Aotearoa New Zealand will be whether central government chooses to start by offering them to some or all major cities, the growth cities (Auckland, Hamilton, Tauranga, Wellington, and Christchurch), or to smaller urban centres and regions such as Palmerston North, Nelson, or Manawatū (*Waite et al., 2023*).

City deals are also not right for every region and for every objective. They are best suited to the improvement of complex economic systems, and for local governments that are resourced sufficiently to effectively negotiate and deliver on the city deal (*MinterEllisonRuddWatts, 2023*). Aotearoa New Zealand has an opportunity to learn from overseas examples and tailor the city deal system for places of differing sizes, composition, and needs throughout the country (*WSP New Zealand, 2024*).



CHAPTER 4 - CONCLUSION AND RECOMMENDATIONS

As demonstrated in successful implementations such as Manchester and Australia, city deals offer a promising framework for fostering collaboration between local and central governments, providing efficiency and a clear direction and funding certainty for long-term urban development projects.

A key strength of city deals lies in their ability to establish a strategic blueprint for cooperation between central and local governments, promoting sustainable growth and enabling investment in a range of essential infrastructure projects that might otherwise go unfunded. Central to this model is the principle of devolution, wherein additional powers and funding are delegated to local authorities, empowering them to drive local development initiatives.

While city deals hold promise for addressing specific urban development challenges, they should be viewed as one tool among many, requiring supplementary funding for councils to ensure comprehensive and equitable development. There may only be capacity for a limited number of city deals, underscoring the importance of prioritisation and strategic investment.



CHAPTER 4 - RECOMMENDATIONS

- Trial city and regional deals, which offer a promising framework for fostering collaboration between local and central governments, promoting growth, and enabling investments in essential infrastructure projects that might otherwise go unfunded.
- Note that long-term planning is a key factor to success. Success may be undermined if deals are not honoured by future governments.
- Ensure creating city and regional deals does not lead to inequity and competitiveness between and within regions, for example, by encouraging neighbouring cities or regions to co-design proposals on areas of shared interest.
- Ensure sufficient human resources are available (and funded) at both local and central government level to develop, oversee, monitor, and evaluate the success of any city or regional deal.
- Recognise that, due to the time and effort involved in setting up city deals, they are likely to support a small number of cities or regions, rather than comprise a comprehensive nationwide solution to the infrastructure deficit.
- Consider alternative city deal partnership opportunities outside of local government. In Aotearoa New Zealand, Māori (at an iwi or hapū level) are potential candidates, as are universities and business associations.
- Spend time getting governance structures right to ensure partnerships remain efficient while also allowing sufficient levels of collaboration.



Report Conclusions


AS DISCUSSED AT LENGTH IN THIS REPORT, AOTEAROA NEW ZEALAND FACES A SERIOUS INFRASTRUCTURE DEFICIT, CAUSED BY DECADES OF UNDERINVESTMENT AT BOTH THE CENTRAL AND LOCAL GOVERNMENT LEVELS. TO SOLVE THIS DEFICIT, THE COUNTRY CAN TAKE ADVANTAGE OF A RANGE OF AVAILABLE FUNDING AND FINANCE TOOLS.

Private finance, accessed through public-private partnerships, for example, may be the right approach in some situations, and could reduce the risk of cost and time overruns in major projects. PPPs lend themselves best to higher-cost projects or programmes, where long-term service requirements can be defined. Due to their long-term nature, PPPs come with unique risks, and Aotearoa New Zealand should be careful to learn from other jurisdictions.

Bespoke ways to attach revenue streams to infrastructure projects - such as value capture on new housing estates, establishing toll roads, or charging for water provision - should form part of a toolbox of approaches to help fund projects that might otherwise not be funded. For these, as with all approaches, fairness and equity considerations must be firmly borne in mind to reach the best outcomes for the population.

Similarly, city and regional deals show promise to foster collaboration between central and local governments (and other parties) to promote growth and enable investments in essential infrastructure projects that might otherwise go unfunded.

However, the central issue is that Aotearoa New Zealand has underinvested in infrastructure as a nation, and continues to do so. The report encourages the country to engage in a serious conversation, recognising that the bulk of the country's growing infrastructure needs will need to be financed by debt, and serviced by taxation and/or rates. Bespoke approaches to funding and financing infrastructure also need to play a role, but these approaches can be more resource-intensive, and should be used where the benefits (such as increasing delivery capacity or allowing delivery of projects earlier) offset the additional cost.



New and reliable revenue streams will also be required at local government level to address local infrastructure deficits. The report recommends a greater level of resource transfer from central government to address chronic underinvestment in infrastructure. Options include charging the central government local rates, and/or removing GST from rates. If this does not happen, the country can expect continued sharp rates rises, with the burden felt most by those with the least ability to pay.

The way Aotearoa New Zealand funds and finances its infrastructure deficit is one part of the overall picture. To make the most of any investment, the country needs to build multi-party support for a long-term pipeline of projects, or alternatively, find ways to make evidence-based decisions about infrastructure priorities that rely less on the political process. A clear long-term vision and commitment to investing in priority projects will be key to success. We were repeatedly advised by those we spoke to in preparing this report that finding the finance to support projects is the least difficult part, once a clear vision and commitment is in place and funding is identified.

The country can (and should) also learn from international research to improve efficiency and decision-making in infrastructure procurement and delivery. Equally important will be learning from the past and ensuring that the infrastructure that is built is well-maintained over time.

Whichever approach to funding and financing infrastructure is taken, now and in the future, the priority must be to proceed quickly. Every repeated delay in building or renewing crucial infrastructure results in increased construction costs, while the country misses out on the economic, social, and environment benefits that high quality and fit-for-purpose infrastructure will deliver to all.

References

Abello, O. P. (2021, 2 September). 'Green Infrastructure' for Clean Water Shows Its Worth in Washington, D.C.

<https://nextcity.org/urbanist-news/green-infrastructure-for-clean-water-shows-its-worth-in-washington-d.c#:~:text=But%20the%20District%20recently%20marked,management%20plan%20known%20as%20the>

AECOM. (2017). City deals playbook. AECOM. <https://aecom.com/au/wp-content/uploads/2017/03/City-Deals-Playbook-v5-web.pdf>

Allen + Clarke. (2021). Evaluation of the Provincial Growth Fund. Ministry of Business, Innovation and Employment. <https://www.mbie.govt.nz/dmsdocument/21594-evaluation-of-the-provincial-growth-fund>

Ardern, J., & Shaw, J. (2018, 5 December). Media release: \$100 million investment fund launched to invest in reducing emissions. New Zealand Government. <https://www.beehive.govt.nz/release/100-million-investment-fund-launched-invest-reducing-emissions>

Auckland Council. (2022). Green Bond Annual Report 2022/2023. <https://www.aucklandcouncil.govt.nz/about-auckland-council/investor-centre/information-for-investors/annualreport/annual-green-bond-report-2023.pdf>

Australian Government. (2008). National Public Private Partnership Guidelines Volume 1: Procurement Options Analysis. <https://www.infrastructure.gov.au/sites/default/files/migrated/infrastructure/ngpd/files/Volume-1-Procurement-Options-Analysis-Dec-2008-FA.pdf>

Barrett, J. (2020). Forget a capital gains tax - what New Zealand needs is a tax on inherited wealth. *The Conversation*. Retrieved 17 May 2024 from <https://theconversation.com/forget-a-capital-gains-tax-what-new-zealand-needs-is-a-tax-on-inherited-wealth-143604>

Bell, M. (2023, 30 August 2023). Boom-bust construction cycle worries builders. *Stuff NZ*. <https://www.stuff.co.nz/business/property/132837847/boombust-construction-cycle-worries-builders>

Berl. (2023, 24 September). *Birds Eye View Winter 2023*. <https://berl.co.nz/birds-eye-view/winter-2023>

Bevin, A. (2023, 18 May). Council to cough up share of \$1b CRL blow-out. *Newsroom*. <https://newsroom.co.nz/2023/05/18/council-to-cough-up-share-of-1b-crl-blowout/>

Bishop, C. (2024a, 26 March). Media release: Speech to the Infrastructure Funding & Financing Conference. <https://www.beehive.govt.nz/speech/speech-infrastructure-funding-financing-conference>

Bishop, C. (2024b, 27 February). Media release: Speech to the Wellington Chamber of Commerce. New Zealand Government, <https://www.beehive.govt.nz/speech/speech-wellington-chamber-commerce-5>

Boardman, A., Siemiatycki, M., & Vining, A. R. (2016). *The Theory and Evidence Concerning Public-Private Partnerships in Canada and Elsewhere*. The School of Public Policy Publications, 9(12), 1-33.

Boffa Miskell, & GHD. (2018). *Three waters review. Cost estimates for upgrading wastewater treatment plants to meet objectives of the NPS Freshwater. Final Report*. Department of Internal Affairs. [https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-documents/\\$file/Costs-of-wastewater-upgrades-GHD-Boffa-Miskel-Final-report-Oct-2018.pdf](https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-documents/$file/Costs-of-wastewater-upgrades-GHD-Boffa-Miskel-Final-report-Oct-2018.pdf)

Brown, S. (2024a). *Media release: Driving ahead with roads of regional significance*. New Zealand Government. <https://www.beehive.govt.nz/release/driving-ahead-roads-regional-significance>

Brown, S. (2024b, 28 March). *Media release: EV road user charges bill passes*. New Zealand Government. <https://www.beehive.govt.nz/release/ev-road-user-charges-bill-passes>

Burger, P., & Hawkesworth, I. (2011). *How to attain value for money: Comparing PPP and traditional infrastructure public procurement*. *OECD Journal on Budgeting*, 2011(1), 91-146.

Callens, C., Verhoest, K., & Boon, J. (2022). *Combined effects of procurement and collaboration on innovation in public-private partnerships: a qualitative comparative analysis of 24 infrastructure projects*. *Public Management Review*, 24(6), 860-881.

Canadian Council for Public-Private Partnerships. (2019). *Connecting Communities in Canada's North. 2019 National Award Case Studies*. <https://www.pppcouncil.ca/getattachment/6e6b933d-721b-4983-beef-ffd799dde0e6/2019-Award-Case-Study-Tlicho-Road-final-web.pdf>

Cardoso, D. S., & Wichman, C. J. (2022). *Water Affordability in the United States*. *Water Resources Research*, 58(12).

Carr-West, J. (2021, 19 October). *Reflecting on UK City Deals: Unlocking local government potential or maintaining the status quo?* LGIU. <https://lgiu.org/reflecting-on-uk-city-deals-unlocking-local-government-potential-or-maintaining-the-status-quo/>

Casady, C. B., & Garvin, M. J. (2022). *"Progressive" Public-Private Partnerships: Are they reformative or regressive!?* *Public Works Management & Policy*, 27(4), 342-346. <https://journals.sagepub.com/doi/epub/10.1177/1087724X221106164>

Cook, C. (2021, 20 April). *Transmission Gully never likely to hit initial cost estimates - review*. RNZ. <https://www.rnz.co.nz/news/national/440825/transmission-gully-never-likely-to-hit-initial-cost-estimates-review>

Cooper, G. (2024, 26 March). Powerpoint: Local government financing of infrastructure. What to make of the existing options? Infrastructure Funding and Finance Conference 2024, Wellington, New Zealand.

Crampton, D. E. (2023, 29 April). Time to make the shift to congestion charging. <https://www.nzinitiative.org.nz/reports-and-media/opinion/time-to-make-the-shift-to-congestion-charging/#:~:text=Everyone%20who%20contributes%20to%20traffic,stop%2Dand%2Dgo%20traffic.>

Dann, J. (2022, 23 June). A complete timeline of the Christchurch stadium omnishambles. The Spinoff. <https://thespinoff.co.nz/business/23-06-2022/a-complete-timeline-of-the-christchurch-stadium-omnishambles>

Department of Corrections. (2018, 30 September). Auckland South Corrections Facility Performance Report. Quarter ending 30 September 2018. https://www.corrections.govt.nz/resources/statistics/prison_performance_tables/auckland_south_corrections_facility_performance_report

Department of Corrections. (2024, 29 May). Kali Mercier OIA response C180057. Available on request.

Dharmapuri Tirumala, R., Dangol, N., Tiwari, P., & Vaz-Serra, P. (2021). Comparative analysis of outcomes under PPP and traditional modes of delivery: a study of schools in Melbourne. *Construction Management & Economics*, 39(11), 894-911.

Dino, A. (2023, 16 August). Bell Gully and Chapman Tripp advise on landmark infrastructure funding deal. *New Zealand Lawyer*. <https://www.thelawyer.com/nz/practice-areas/corporate-and-ma/bell-gully-and-chapman-tripp-advise-on-landmark-infrastructure-funding-deal/456302>

Douglas, N., Brennand, T., & Wignall, D. (2021). Assessing Toll Road Demand in New Zealand. *Australasian Transport Research Forum 2021 Proceedings*. https://australasiantransportresearchforum.org.au/wp-content/uploads/2022/05/ATRF2021_Resubmission_122-1.pdf

Duffield, C., Saeed, A., & Tamburro, N. (2020). Measuring the value and service outcomes of Social Infrastructure PPPs in Australia and New Zealand. *Infrastructure Partnerships Australia*. https://www.researchgate.net/publication/340449377_Measuring_the_value_and_service_outcomes_of_Social_Infrastructure_PPPs_in_Australia_and_New_Zealand

Eaqub, S. (2014). Local government finances. A historical perspective. <https://oag.parliament.nz/2014/assets/docs/water-and-roads.pdf>

Edmunds, S. (2024, 27 March). The \$200b problem: How broken is New Zealand? *Stuff NZ*. <https://www.stuff.co.nz/business/350222410/200b-problem-how-broken-new-zealand>

Flyvbjerg, B., & Gardner, D. (2023). *How big things get done. The surprising factors behind every successful project, from home renovations to space exploration.* Macmillan.

Franke-Bowell, J. (2023, 9 October). City staff scope out lessons on city deals in Australia. *Waikato Times*. <https://www.waikatotimes.co.nz/nz-news/350087160/city-staff-scope-out-lessons-city-deals-australia>

Goldwyn, E., Levy, A., Ensari, E., & Chitti, M. (2023). *Transit Costs Project: Understanding Transit Infrastructure Costs in American Cities*. <https://transitcosts.com/data/>

Government of Northwest Territories. (2021). *Tłıchq Highway Project*. <https://www.inf.gov.nt.ca/en/TlıchoHighway>

Greater Manchester Combined Authority. (n.d.). *Greater Manchester city deal*. U. K. Government. https://assets.publishing.service.gov.uk/media/5a74aff3e5274a56317a6538/Greater-Manchester-City-Deal-final_0.pdf

Hatton, E. (2023, 27 July). Industry groups seek answers over delayed transport plan. *Newsroom*. <https://newsroom.co.nz/2023/07/27/industry-groups-seek-answers-over-delayed-transport-plan/>

Hatton, E. (2024, 12 April). Lessons from Manchester as Govt works out how it wants city deals run. *Newsroom*. <https://newsroom.co.nz/2024/04/12/lessons-from-manchester-as-govt-works-out-how-it-wants-city-deals-run/>

Hewett, W. (2024, 15 March). Why economist believes spending billions on infrastructure could've been avoided. *MSN.com*. Accessed 13 March 2024.

Hickey, B. (2024a). *The real reason our government won't borrow to fix our infrastructure issues*. Spotify. Retrieved 17 May 2024 from <https://open.spotify.com/episode/2YIGGdIQ1b6QIs6CuHxY3?si=dHM7MPwWQfmJwEnzJbHsPA>

Hickey, B. (2024b, 27 February). *When the magical thinking hits a wall of reality*. *The Kākā*.

Hodge, G. A., & Greve, C. (2017). *On Public-Private Partnership Performance: A Contemporary Review*. *Public Works Management & Policy*, 22(1), 55. <https://journals.sagepub.com/doi/abs/10.1177/1087724X16657830>

Hunt, T. (2024, 15 February). \$424 million sunk in failed Interislander and terminal project. *The Post*. <https://www.thepost.co.nz/nz-news/350179462/424-million-sunk-failed-interislander-and-terminal-project>

Hurrell, G. (2024, 5 March). Green bonds now a big slice of NZX debt market. *BusinessDesk*. <https://businessdesk.co.nz/article/markets/green-bonds-now-a-big-slice-of-nzx-debt-market>

Huston, J. (2024, 28 January). Cost-cutting looms for Hutt City RiverLink to ensure its survival. *RNZ*. <https://www.rnz.co.nz/news/national/507728/cost-cutting-looms-for-hutt-city-riverlink-to-ensure-its-survival>

Infrastructure Commission. (2021a). *Investment gap or efficiency gap? Benchmarking New Zealand's investment in infrastructure*. <https://media.umbraco.io/te-waihanga-30-year-strategy/2ilbayro/investment-gap-or-efficiency-gap.pdf>

Infrastructure Commission. (2021b). New Zealand public private partnership model review. <https://apo.org.au/sites/default/files/resource-files/2021-01/apo-nid311260.pdf>

Infrastructure Commission. (2022a). The lay of the land: Benchmarking New Zealand's infrastructure delivery costs. <https://tewaihang.govt.nz/our-work/research-insights/the-lay-of-the-land-benchmarking-new-zealand-infrastructure-delivery-costs>

Infrastructure Commission. (2022b). Rautaki Hanganga o Aotearoa 2022 - 2052 New Zealand Infrastructure Strategy. <https://tewaihang.govt.nz/the-strategy>

Infrastructure Commission. (2023). State of Play - Māori Engagement in Infrastructure What does the literature say? New Zealand Infrastructure Commission Te Waihanganga. <https://tewaihang.govt.nz/media/toon3c32/m%C4%81ori-engagement-in-infrastructure-what-does-the-literature-say.pdf>

Infrastructure Commission. (2024a). Build or maintain? New Zealand's infrastructure asset value, investment, and depreciation, 1990-2022. <https://media.umbraco.io/te-waihanganga-30-year-strategy/djkmtwj4/build-or-maintain.pdf>

Infrastructure Commission. (2024b). Is local government debt constrained? A review of local government financing tools. <https://media.umbraco.io/te-waihanganga-30-year-strategy/ac2jrick/is-local-government-debt-constrained.pdf>

Infrastructure Commission. (2024c). Transmission Gully Independent Post Construction Review. <https://media.umbraco.io/te-waihanganga-30-year-strategy/03vbqymv/transmission-gully-post-construction-review-executive-summary-and-insights-for-the-future.pdf>

Infrastructure Commission. (2024d). What do Kiwis think is a fair way to pay for infrastructure? Retrieved 16 May 2024 from <https://tewaihang.govt.nz/news-events/what-do-kiwis-think-is-a-fair-way-to-pay-for-infrastructure>

Infrastructure New Zealand. (2023a). Infrastructure New Zealand position paper: Private capital. Retrieved 17 May 2024 from <https://infrastructure.org.nz/wp-content/uploads/2023/04/Infrastructure-NZ-Policy-Position-Private-Capital.pdf>

Infrastructure New Zealand. (2023b, May). Infrastructure New Zealand position paper: System stewardship. <https://infrastructure.org.nz/wp-content/uploads/2023/05/Infrastructure-NZ-Policy-Postions-System-Stewardship.pdf>

Infrastructure New Zealand. (2023c). Infrastructure New Zealand position paper: Water infrastructure and services. <https://infrastructure.org.nz/wp-content/uploads/2023/12/Infrastructure-NZ-Policy-Postions-Water-Infrastructure-002.pdf>

Infrastructure New Zealand. (2023d). Position Paper: City and regional deals - laying the foundations for partnership. <https://infrastructure.org.nz/wp-content/uploads/2023/11/Infrastructure-NZ-Policy-Postions-City-and-Regional-Deals-v2.pdf>

Infrastructure Partnerships Australia. (2024). Westconnex remaining equity sell down. Australia and New Zealand Infrastructure Pipeline. Retrieved 17 May 2024 from <https://infrastructurepipeline.org/>

Ipsos. (2023). Infrastructure in New Zealand 2023. An Ipsos Global Advisor Study. <https://www.ipsos.com/en-nz/nz-infrastructure-survey-2023>

James, T. (2022). Te Ara Matatika | A Fair Charge for Better Cities. The Helen Clark Foundation and WSP New Zealand. <https://helenclark.foundation/publications-and-medias/te-ara-matatika-a-fair-charge-for-better-cities/>

Jones, S. (2024, 2 February). Media release: Tai Tokerau Water Boost. New Zealand Government,. <https://www.beehive.govt.nz/release/tai-tokerau-water-boost>

Kāinga Ora Homes and Communities. (n.d.). Infrastructure Acceleration Fund. . Retrieved 16 May 2024 from https://kaingaora.govt.nz/en_NZ/working-with-us/housing-acceleration-fund/infrastructure-acceleration-fund/

Kiernan, G. (2024, 15 January). What's going wrong with our infrastructure? Infometrics. <https://www.infometrics.co.nz/article/2024-01-whats-going-wrong-with-our-infrastructure>

Kitchin, T. (2024a, 19 February). A bridge not far enough for Auckland. Podcast: The Detail. Newsroom. https://newsroom.co.nz/2024/02/19/a-bridge-not-far-enough-for-auckland/?utm_medium=Social&utm_source=Twitter#Echobox=1708297274-1

Kitchin, T. (2024b, 10 April). The rates conversation. Podcast: the Detail. RNZ. <https://www.rnz.co.nz/programmes/the-detail/story/2018933495/the-rates-conversation>

Kitchin, T. (2024c, 24 April). Quake rules in for a shake-up. RNZ. <https://www.rnz.co.nz/programmes/the-detail/story/2018935474/quake-rules-in-for-a-shake-up>

KPMG. (2023). Seven considerations for city deals for New Zealand. <https://assets.kpmg.com/content/dam/kpmg/nz/pdf/2023/11/city-deals-2-pager-final.pdf>

Leahy, B. (2024). Government considering private sector to build more Kiwi schools, says Education Minister Erica Stanford. NZ Herald.

Lember, V., Petersen, O. H., Scherrer, W., & Ågren, R. (2019). Understanding the relationship between infrastructure public-private partnerships and innovation. *Annals of Public and Cooperative Economics*, 90(2), 371-391. <https://onlinelibrary.wiley.com/doi/10.1111/apce.12232>

Lines-MacKenzie, J. (2022, 12 January). New Zealand's toll roads 'a waste of time', motoring commentator says. *Stuff*. <https://www.stuff.co.nz/motoring/news/127462744/new-zealands-toll-roads-a-waste-of-time-motoring-commentator-says>

Liu, L. X., Clegg, S., & Pollack, J. (2024). The effect of public-private partnerships on innovation infrastructure delivery. *Project Management Journal*, 55(1), 31-49.

Lloyd's. (2018). A world at risk. Closing the insurance gap. Lloyd's and CEBR. <https://www.lloyds.com/worldatrisk>

Local Government in New Zealand. (2022). Infrastructure thinking must be long term. Retrieved 16 May 2024 from <https://www.lgnz.co.nz/news/media-releases/infrastructure-thinking-must-be-long-term/>

Local Government in New Zealand. (2024a, 7 February). City and Regional Deals - Options and key considerations. <https://www.lgnz.co.nz/news/publications/city-and-regional-deals-options-and-key-considerations/>

Local Government in New Zealand. (2024b, 14 March). Drivers behind rates rises across the country laid bare. <https://www.lgnz.co.nz/news/media-releases/drivers-behind-rates-rises-across-the-country-laid-bare/>

Local Government in New Zealand. (n.d.). Local government explained. Retrieved 16 May 2024 from <https://www.lgnz.co.nz/local-government-in-nz/local-government-explained/>

MacManus, J. (2024, 15 April). Councils funding is a disaster. Are city deals the answer? *The Spinoff*. <https://thespinoff.co.nz/politics/15-04-2024/councils-funding-is-a-disaster-are-city-deals-the-answer>

McCormick, M. (2024). Improving water infrastructure requires new investment strategies. *Water*(233), 57. https://www.waternz.org.nz/Article?Action=View&Article_id=2702

McLeay, N. (n.d.). From distant dream to reality: The fight for the Auckland Harbour Bridge, 1926-1951. Retrieved 18 May 2024 from <https://ahi.auckland.ac.nz/2019/10/30/from-distant-dream-to-reality-the-fight-for-the-auckland-harbour-bridge-1926-1951/>

McVeigh, P. (2023, August). The "city deal" model: A new way to address our infrastructure deficit in Aotearoa. Martin Jenkins. <https://www.martinjenkins.co.nz/insights/the-city-deal-model-a-new-way-to-address-our-infrastructure-deficit-in-aotearoa/>

Meade, L. (2023). City deals – options and key considerations. A paper prepared for Local Government New Zealand <https://www.lgnz.co.nz/news/publications/city-and-regional-deals-options-and-key-considerations/>

Mercier, K. (2023a). A shared future: Working with communities to adapt to a changing climate. *The Helen Clark Foundation and WSP New Zealand*. <https://helenclark.foundation/publications-and-medias/a-shared-future/>

Mercier, K. (2023b). *Sponge Cities: Can they help us survive more intense rainfall?* <https://helenclark.foundation/publications-and-medias/sponge-cities/>

Meridian Energy. (2023). *Green finance framework.* https://www.meridianenergy.co.nz/public/Investors/Green-Finance/2023-updates/Meridian-Green-Finance-Framework_February-2023.pdf

Milne, J. (2023, 26 July). *Battered trust the biggest hurdle to bold new local government funding model.* Newsroom. <https://newsroom.co.nz/2023/07/26/battered-trust-the-biggest-hurdle-to-bold-new-local-government-funding-model/>

Milne, J. (2024a, 02 April 2024). *Fastest-growing cities want to break through debt ceilings.* Newsroom. <https://newsroom.co.nz/2023/07/26/battered-trust-the-biggest-hurdle-to-bold-new-local-government-funding-model/>

Milne, J. (2024b, 5 February). *No bailing out water, says minister.* Newsroom. <https://newsroom.co.nz/2024/02/05/no-bailing-out-water-says-minister/>

Ministry for the Environment. (2022). *Aotearoa New Zealand's First National Adaptation Plan.* <https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/>

Ministry of Housing and Urban Development. (2024). *The Infrastructure Funding and Financing Act 2020.* Retrieved 17 May 2024 from <https://www.hud.govt.nz/our-work/the-infrastructure-funding-and-financing-act-2020>

Ministry of Housing and Urban Development. (n.d.). *Infrastructure Funding and Financing Wellington Sludge Minimisation Facility Levy Order 2023.* Retrieved 18 May 2024 from <https://www.hud.govt.nz/our-work/infrastructure-funding-and-financing-wellington-sludge-minimisation-facility-levy-order-2023/>

MinterEllisonRuddWatts. (2023, 26 June). *Enabling cities and regions: Insights on City Deals and place-based approaches.* <https://www.minterellison.co.nz/insights/enabling-cities-and-regions-insights-on-city-deals-and-place-based-approaches>

Moore, D., James, D., Comendant, C., Rohani, M., Woock, K., & Loan, J. (2023). *Infrastructure Consenting for Climate Targets. Estimating the ability of New Zealand's consenting system to deliver on climate-critical infrastructure needs.* Sapere. <https://media.umbraco.io/te-waihanganga-30-year-strategy/z50ht3nz/infrastructure-consenting-for-climate-targets.pdf>

Mott MacDonald. (2002). *Review of Large Public Procurement in the UK* <https://www.edinburghtraminquiry.org/wp-content/uploads/2017/10/CEC02084689.pdf>

New South Wales Government. (2019). *Project Summary | WestConnex.* Retrieved 17 May 2024 from https://www.treasury.nsw.gov.au/sites/default/files/2020-11/0023_westconnex_summary.pdf

New Zealand Government. (2023a). He Whakakaupapa mō Te Hanganga o Aotearoa | The Infrastructure Action Plan 2023. <https://www.treasury.govt.nz/sites/default/files/2023-05/infrastructure-action-plan-2023.pdf>

New Zealand Government. (2023b). IRD report shows wealthy NZers pay much lower tax rates than other earners. Beehive.govt.nz. Retrieved 17 May 2024 from <https://www.beehive.govt.nz/release/ird-report-shows-wealthy-nzers-pay-much-lower-tax-rates-other-earners>

New Zealand Government. (2023c). Strengthening the resilience of Aotearoa New Zealand's critical infrastructure system. Summary discussion document. https://consultation.dpmc.govt.nz/national-security-group/critical-infrastructure-phase-1-public-consultation/user_uploads/dpmc171-summary-strengthening-the-resilience-of-nzs-critical-infrastructure-system-final.pdf

New Zealand Government. (2024). Draft Government Policy Statement on land transport 2024-34. <https://www.transport.govt.nz/assets/Uploads/GPS-on-land-transport-2024-Consultation-4-March-2023-.pdf>

New Zealand Government Procurement. (2019). Traditional Delivery Model. Construction Procurement Guidelines. <https://www.procurement.govt.nz/assets/procurement-property/documents/traditional-delivery-model-construction-procurement.pdf>

New Zealand National Party. (2024). Infrastructure for the future. Retrieved 17 May 2024 from https://assets.nationbuilder.com/nationalparty/pages/17956/attachments/original/1686090956/Infrastructure_for_the_Future.pdf?1686090956

New Zealand Superannuation Fund. (2024). Listed equities. Retrieved 17 May 2024 from <https://nzsuperfund.nz/how-we-invest/investing-in-nz/opportunities/>

Nichols, L. (2024, 27 March). Auckland Mayor Wayne Brown issues half-billion-dollar payment demand to government, end of 'free ride'. New Zealand Herald. <https://www.nzherald.co.nz/nz/auckland-mayor-wayne-brown-issues-half-billion-dollar-payment-demand-to-government-end-of-free-ride/FHQZKNW4ZJFMNK7H6NFMYPH772U/>

NZ Herald. (2023, 21 November). Herald editorial: Auckland congestion charges, road tolls and petrol tax - equity is the obvious issue. <https://www.nzherald.co.nz/nz/auckland-congestion-charges-road-tolls-and-petrol-tax-equity-is-the-obvious-issue/173HJXTCUFA2NUNFT7IC63EJFY/#:~:text=Equity%20is%20the%20obvious%20issue.,fixed%20hours%20or%20shift%20workers>

NZ Productivity Commission. (2019). Local government funding and financing: Final report. https://www.productivity.govt.nz/assets/Documents/a40d80048d/Final-report_Local-government-funding-and-financing.pdf

NZ Productivity Commission. (2022). *Immigration - Fit for the future*. <https://www.productivity.govt.nz/assets/Inquiries/immigration-settings/Immigration-Fit-for-the-future.pdf>

NZCTU. (2024). *Investing in a growing population*. <https://union.org.nz/public-investment-in-new-zealand-fails-to-meet-growing-need/>

NZTA, Waka Kotahi (n.d.-a). *FAQs overview*. General. Retrieved 19 May 2024 from <https://www.nzta.govt.nz/roads-and-rail/toll-roads/toll-road-information/frequently-asked-questions/general/>

NZTA, Waka Kotahi (n.d.-b). *Funding sources*. <https://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/archive/201821-nltp/planning-and-investment-principles-and-policies/investment-and-funding-assistance-policy/funding-sources/#:~:text=Revenue%20collected%20from%20fuel%20excise,transport%20activities%20under%20the%20NLTP.>

NZTA, Waka Kotahi (n.d.-c). *Transmission Gully motorway*. Retrieved 18 May 2024 from <https://www.nzta.govt.nz/projects/wellington-northern-corridor/transmission-gully-motorway/>

NZTA, Waka Kotahi (n.d.-d). *Where the toll roads are*. Retrieved 18 May 2024 from <https://www.nzta.govt.nz/roads-and-rail/toll-roads/toll-road-information/where-the-toll-roads-are/>

OECD. (2012). *Recommendation of the Council on Principles for Public Governance of Public-Private Partnerships*. <https://www.oecd.org/governance/budgeting/PPP-Recommendation.pdf>

OECD. (2016a). *New Zealand*. Retrieved 18 May 2024 from <https://www.oecd.org/regional/regional-policy/profile-New-Zealand.pdf>

OECD. (2016b). *Sweden*. <https://www.oecd.org/regional/regional-policy/profile-Sweden.pdf>

OECD. (2016c). *United Kingdom*. <https://www.oecd.org/regional/regional-policy/profile-United-Kingdom.pdf>

OECD. (2016d). *United States*. <https://www.oecd.org/regional/regional-policy/profile-United-States.pdf>

OECD. (2024). *General government debt*. <https://data.oecd.org/gga/general-government-debt.htm>

Office of the Auditor General of Ontario. (2014). *2014 Annual Report*. <https://www.auditor.on.ca/en/content/annualreports/arreports/en14/305en14.pdf>

Olsen, B. (2020, 24 June). *New Zealand infrastructure spending lags international partners*. Infometrics., <https://www.infometrics.co.nz/article/2020-06-new-zealand-infrastructure-spending-lags-international-partners>

Olsen, B. (2024a). *Analysing increases in local government costs for Local Government New Zealand*. https://d1pepq1a2249p5.cloudfront.net/media/documents/Analysing_increases_in_local_government_costs_LI2BVKU.pdf

Olsen, B. (2024b, 24 April). The cost of returning GST from rates to local councils. *Infometrics*. <https://www.infometrics.co.nz/article/2024-04-the-cost-of-returning-gst-from-rates-to-local-councils>

Olsen, B., & Glynn, J. (2023). Estimating the Costs of an Uncertain Infrastructure Pipeline. *Infometrics*. <https://infrastructure.org.nz/wp-content/uploads/2023/10/Infrastructure-NZ-Estimating-the-Costs-of-an-Uncertain-Infrastructure-Pipeline-Report-SINGLE-PAGES-Media-Release.pdf>

Opus. (2015). Post occupancy evaluation. Hobsonville Point Primary School, Hobsonville Point, Auckland. Ministry of Education. <https://assets.education.govt.nz/public/Uploads/POE-Report-Hobsonville-Primary-v11.pdf>

Orsman, B. (2021, 24 July). Labour Government's highway projects on a road to nowhere. *NZ Herald*. <https://www.nzherald.co.nz/nz/labour-governments-highway-projects-on-a-road-to-nowhere/HN3DSQOESZ4SJDCVM3LDJOTZWM/>

Pennington, P. (2021, 27 June). Schools still dealing with hundreds of leak-prone buildings. *RNZ*. <https://www.rnz.co.nz/news/national/445621/schools-still-dealing-with-hundreds-of-leak-prone-buildings>

Pennington, P. (2024a, 8 April). Companies 'not interested' in public-private partnerships for schools, government warned. *RNZ*. <https://www.rnz.co.nz/news/national/513676/companies-not-interested-in-public-private-partnerships-for-schools-government-warned#:~:text=However%2C%20the%20advice%20to%20Education,the%20previous%20National%2Dled%20government.>

Pennington, P. (2024b, 23 April). Officials encourage Transport Minister Simeon Brown to look at tolling existing roads. *Newshub*. <https://www.newshub.co.nz/home/politics/2024/04/officials-encourage-transport-minister-simeon-brown-to-look-at-tolling-existing-roads.html>

Polis Consulting Group. (2023). *Rebooting the Regions: City and Regional Deals in New Zealand*. Squarespace. <https://static1.squarespace.com/static/63acc2a734d094144ed1e4c5/t/656e59434cd86417e3944980/1701730646781/City+and+Regional+Deals.pdf>

PwC. (2017, July). Value creation and capture. https://www.pwc.co.nz/pdfs/2017pdfs/Value%20Capture_NZ.pdf

Quiggan, J. (2017, 6 June). Asset recycling may look new and exciting. But it's the last gasp of a failed model. *The Guardian*. <https://www.theguardian.com/commentisfree/2017/jun/07/asset-recycling-may-look-new-and-exciting-but-its-the-last-gasp-of-a-failed-model>

Rau Paenga Ltd. (n.d.). *Delivering and supporting Crown infrastructure across Aotearoa New Zealand*. <https://www.raupaenga.co.nz/>

Raisbeck, P., Duffield, C., & Xu, M. (2010). Comparative performance of PPPs and traditional procurement in Australia. *Construction Management & Economics*, 28(4), 345-359.

Ramsay, K. (2022). *Financing & funding of infrastructure in New Zealand*. Infrastructure Commission. <https://media.umbraco.io/te-waihanga-30-year-strategy/n5tlf2tc/financing-and-funding-of-infrastructure-in-new-zealand.pdf>

Review into the Future for Local Government. (2023). He piki tūranga, he piki kōtuku. Department of Internal Affairs. [https://www.dia.govt.nz/diawebsite.nsf/Files/Future-for-Local-Government/\\$file/Te-Arotake_Final-report.pdf](https://www.dia.govt.nz/diawebsite.nsf/Files/Future-for-Local-Government/$file/Te-Arotake_Final-report.pdf)

RNZ. (2024a, 27 March). Government rejects Auckland Mayor Wayne Brown's demands over rates, GST. https://www.rnz.co.nz/news/political/512836/government-rejects-auckland-mayor-wayne-brown-s-demands-over-rates-gst?utm_source=substack&utm_medium=email

RNZ. (2024b, 30 April). Govt might take \$1.1b hit to return GST on rates to councils. <https://www.rnz.co.nz/news/political/515560/govt-might-take-1-point-1b-hit-to-return-gst-on-rates-to-councils>

RNZ. (2024c, 29 January). Water meters in Wellington? How it worked in Kāpiti. <https://www.rnz.co.nz/news/national/507809/water-meters-in-wellington-how-it-worked-in-kapiti>

Schwab, P. K. (2019). The Global Competitiveness Report. World Economic Forum. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

Scott, M. (2023, 23 November). Six million could come quicker than we think. Newsroom. <https://newsroom.co.nz/2023/11/23/six-million-could-come-quicker-than-we-think/>

Sense Partners. (2021). New Zealand's infrastructure challenge, Quantifying the gap and path to close it. Te Waihangā New Zealand Infrastructure Commission.

SGS Economics & Planning. (2022, 2 May). We need (better) city deals from the Commonwealth. <https://sgsep.com.au/publications/insights/we-need-better-city-deals-from-the-commonwealth>

Shand, D., Horsley, G., & Cheyne, C. (2007). Funding local government. Report of the local government rates inquiry. <https://ndhadeliver.natlib.govt.nz/ArcAggregator/arcView/frameView/IE12126512/http://www.dia.govt.nz/Agency-Independent-Inquiry-into-Local-Government-Rates-Index>

Singer, L. S. J. (2018). Creating value through procurement: A report into public sector procurement of major infrastructure projects. Infrastructure New Zealand. <https://infrastructure.org.nz/wp-content/uploads/2021/08/Infrastructure-NZ-Procurement-Study-Report-FINAL.pdf>

Sjöström, E., Waltré, N., Nilsson, A., & Carrion, A. R. (2020). Financing sustainable city goals in Sweden: preliminary findings. Discussion Brief. Stockholm Environment Institute. <https://www.sei.org/wp-content/uploads/2020/03/discussion-brief-oct-2020-financing-sustainable-city-goals-in-sweden.pdf>

Smith, M., & Campbell, J. (2024). Infrastructure. It's not just a pipe dream. ASB Bank. <https://www.asb.co.nz/content/dam/asb/documents/reports/economic-note/asb-infrastructure-overview-apr-2024a.pdf>

Smith, S. M. (2022). The effects of individualized water rates on use and equity. *Journal of Environmental Economics and Management*, 114(102673). <https://www.sciencedirect.com/science/article/pii/S0095069622000456>

Smoke, P. (2015). Accountability and service delivery in decentralising environments: Understanding context and strategically advancing reform. OECD. <https://www.oecd.org/dac/accountable-effective-institutions/Governance%20Notebook%202.6%20Smoke.pdf>

Society of Local Government Managers. (2019). Local government funding and financing. Taituarā. https://taituara.org.nz/Attachment?Action=Download&Attachment_id=2041

Southgate, P. (25 October 2023). What we need from the incoming Government. NZ Local Government Magazine. <https://localgovernmentmag.co.nz/what-we-need-from-the-incoming-government/>

Spherical Insights. (2024). Global Green Finance Market Insights Forecasts to 2033. <https://www.sphericalinsights.com/reports/green-finance-market#:~:text=Global%20Green%20Finance%20Market%20Insights,USD%2028.71%20Trillion%20by%202033.>

Spoonley, P. (2020, 6 August). The New New Zealand. RNZ Nine to Noon. <https://www.rnz.co.nz/national/programmes/ninetonoon/audio/2018761192/paul-spoonley-the-new-new-zealand>

State of New South Wales. (2024). Independent Toll Review. Interim Report. State of New South Wales (NSW Treasury). https://www.treasury.nsw.gov.au/sites/default/files/2024-03/20240311_Toll-Review-Interim-Report.pdf

Stats NZ. (2023). Local authority financial statistics: Year ended June 2022. Retrieved 17 May 2024 from <https://www.stats.govt.nz/information-releases/local-authority-financial-statistics-year-ended-june-2022/>

Stats NZ. (2024). National Population Projections: 2022(base)-2073. Retrieved 23 April 2024 from [https://www.stats.govt.nz/information-releases/national-population-projections-2022base2073/#:~:text=New%20Zealand's%20population%20\(5.13%20million,and%205.85%20million%20in%202033.](https://www.stats.govt.nz/information-releases/national-population-projections-2022base2073/#:~:text=New%20Zealand's%20population%20(5.13%20million,and%205.85%20million%20in%202033.)

Strang, B. (2022, 19 March). Why has Transmission Gully taken so long, and what now? Stuff. <https://www.stuff.co.nz/dominion-post/news/wellington/128101425/why-has-transmission-gully-taken-so-long-and-what-now#:~:text=Within%20weeks%2C%20New%20Zealand%20was,the%20opening%20of%20the%20motorway.>

Tax Working Group New Zealand. (2019). Future of tax: final report volume I. <https://taxworkinggroup.govt.nz/sites/default/files/2019-03/twg-final-report-voli-feb19-v1.pdf>

Thornton, D. (2003). Council rates most unfair form of tax. New Zealand Herald. <https://www.nzherald.co.nz/nz/council-rates-most-unfair-form-of-tax/FN6TDD6QMME4QVISRWN5DX44F4/>

Tolley, A. (2024, 26 March). Panel discussion. Infrastructure Funding and Finance Conference 2024, Te Papa, Wellington.

Torshizian, D. E., & Maralani, D. M. (2022). Great decisions are timely. Benefits from more efficient infrastructure investment decision-making. Principal Economics. <https://infrastructure.org.nz/wp-content/uploads/2022/10/Cost-of-delay-in-infrastructure-decisions-Principal-Economics-report-Oct-2022.pdf>

Transpower. (2023). Green bond report. https://static.transpower.co.nz/public/uncontrolled_docs/2023%20August%20-%20Transpower%20Green%20Bond%20Report.pdf?VersionId=EADHuYDD_C7yk3dlaFF5QeyVaOrByCsr

Treasury. (2014). How New Zealand governments determine their fiscal strategies: A layman's guide. Retrieved 17 May 2024 from <https://www.treasury.govt.nz/sites/default/files/2015-03/nzgdfs-A5.pdf>

Treasury. (2023). Budget 2023 tax initiatives information release. <https://www.treasury.govt.nz/sites/default/files/2023-07/b23-tax-4796987.pdf>

Treasury. (2024). Green bonds. Retrieved 17 May 2024 from <https://debtmanagement.treasury.govt.nz/government-securities/green-bonds>

Treasury (2015). The New Zealand PPP model and policy: Setting the scene. A guide for public sector entities. <https://www.treasury.govt.nz/sites/default/files/2015-10/ppp-public-model-and-policy-sep15.pdf>

UK National Audit Office. (2018). Report by the Comptroller and Auditor General to HM Treasury "PF1 and PF2", HC 781 Session 2017-2019. <https://www.nao.org.uk/reports/pfi-and-pf2/>

Utz, C. (2016, 14 June). Improving infrastructure planning and funding using UK-style City Deals. <https://www.mondaq.com/australia/construction-planning/500118/improving-infrastructure-planning-and-funding-using-uk-style-city-deals>

Vance, A. (2019, 20 February). \$1.1m bonus for private prison company Serco, for keeping people out of jail. Stuff. <https://www.stuff.co.nz/national/politics/110725103/11m-bonus-for-private-prison-company-serco-for-keeping-people-out-of-jail#:~:text=Auckland-,%241.1m%20bonus%20for%20private%20prison%20company%20Serco,keeping%20people%20out%20of%20jail&text=Serco%20has%20a%20billion%2Ddollar,run%20Wiri%20prison%20until%202040.&text=Private%20prison%20operator%20Serco%20has,keeping%20inmates%20>

Waite, D., Pike, A., & Roy, G. (2023). The prospect of City Deals in New Zealand. Greater London Authority. https://www.gla.ac.uk/media/Media_1007488_smxx.pdf

Water Corporation. (n.d.). Understanding your water use charges. <https://www.watercorporation.com.au/Help-and-advice/Bill-and-account/Rates-and-charges/Understanding-your-water-use-charges>

Watkins, T. (2024, 21 April). We need to have a grown-up conversation about our future. The Post. <https://www.thepost.co.nz/politics/350252193/we-need-have-grown-conversation-about-our-future>

Wellington City Council. (2023). New funding model secures \$400 million for Mōa Point Sludge Minimisation Facility. Retrieved 17 May 2024 from <https://wellington.govt.nz/news-and-events/news-and-information/our-wellington/2023/08/sludge-facility-funding>

WestConnex. (2024). Homepage. Retrieved 17 May 2024 from <https://www.westconnex.com.au/>

Wilson, S. (2024, 9 February). Government plans for Auckland harbour crossings: Transport Minister Simeon Brown on more car lanes, nothing for bikes. NZ Herald. <https://www.nzherald.co.nz/nz/government-plans-for-auckland-harbour-crossings-transport-minister-simeon-brown-on-more-car-lanes-nothing-for-bikes/3EDI2BOEBRHEXD4JGKKB5QB3E/>

World Economic Forum. (2017). *Recycling our infrastructure for future generations*. https://www3.weforum.org/docs/WEF_Recycling_our_Infrastructure_for_Future_Generations.pdf

WSP New Zealand. (2024, 3 March). *Can City Deals improve Aotearoa New Zealand's transport and spatial planning outcomes?* <https://www.wsp.com/en-nz/insights/city-deals-nz>

Wyman, O. (2014). *Infrastructure investment policy blueprint*. World Economic Forum. https://www3.weforum.org/docs/WEF_II_InfrastructureInvestmentPolicyBlueprint_Report_2014.pdf

Zhang, J., Chen, F., & Yuan, X.-X. (2020). *Comparison of cost and schedule performance of large public projects under P3 and traditional delivery models: a Canadian study*. *Construction Management & Economics*, 38(8), 739-755. <https://www.tandfonline.com/doi/full/10.1080/01446193.2019.1645344>

