

October 2021

Infrastructure Quarterly – October 2021

A quarterly snapshot of issues and trends for New Zealand's infrastructure sector by the New Zealand Infrastructure Commission, Te Waihangā.



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Foreword - Geoff Cooper

Welcome to the second edition of Te Waihangā's Infrastructure Quarterly.

This quarter the total value of projects in the [Pipeline](#) has increased from \$61 billion to \$64 billion. There has been a big increase in water projects – From \$7.8 to \$10.4 billion. This is largely due to the release of new projects to the Pipeline from the recent Watercare Asset Management Plan.

In this edition, we dive into some major New Zealand tunneling projects – the City Rail Link and the Central Interceptor, as well as focusing on major projects in the Bay of Plenty and Tauranga region, including an interview with Tauranga City Council Commissioner Stephen Selwood.

COVID-19 continues to impact infrastructure projects around the country, especially in Auckland. Heightened alert levels have resulted in schedule delays, cost escalations due to supply chain disruptions, and a very tight labour market. This is an ongoing risk to the sector that will persist in the short term. Our Director of Economics Peter Nunns provides more context in the economic insights section.

Finally, we released our [Draft New Zealand Infrastructure Strategy](#) this month, which tackles some of our biggest [infrastructure challenges](#) to support a thriving New Zealand. The draft strategy sets out how infrastructure can enable greater accessibility in our cities and affordable housing, resilient and connected regions, a productive workforce, a clean environment and a zero-carbon economy. Getting it right requires coordination, an appetite for change, adequate funding and better use of technology. It's not all about new builds however. Renewed focus is needed on how we use existing infrastructure, changing the way we pay for services to better manage demand, taking a longer-term approach to urban planning, and removing barriers to building homes in the parts of our cities where there is already infrastructure. The draft strategy makes a total of 67 recommendations, intended to future proof our infrastructure services for the generations to come, so that infrastructure ceases to be part of the problem and instead, is recognised as core to our environmental and economic advantage.

As always, we welcome your feedback on the Infrastructure Quarterly. Make sure you drop us a line at info@tewaihangā.govt.nz if you want to make any suggestions or provide insight into the sector.

What's in the Pipeline

Our Pipeline pulls together key information on the infrastructure projects planned for New Zealand and sources project data direct from government, councils, utilities and others. The Pipeline has grown from approximately 176 projects and \$6.1 billion in 2019 to more than 2588 projects and \$64 billion of total value in 2021.

The Pipeline includes projects that have a level of certainty around timing. For projects with a longer horizon such as Let's Get Wellington Moving (Tunnel, Mass Transit etc.) and Auckland Light Rail, the ANZIP Pipeline and others can be a useful source of information.

We are continuing to build on and improve the data in our Pipeline and it remains a useful one-stop summary of what's coming up for industry.

[You can find the pipeline on our website.](#)

Pipeline snapshot

Our Pipeline is updated quarterly. Key changes since the last update include:

- 19 organisations have updated the information about their projects
- Auckland Airport has been added, initially with 3 projects underway as part of their longer-term programme of improvements.
- Meridian Energy has also been added with their Harapaki Wind Farm in Hawke's Bay.
- The total value of projects in the Pipeline has increased from \$61 billion to \$64 billion.



2,588 projects



159 organisations



\$64b total projects



\$3.4b energy



\$5.6b housing projects



\$10.4b water projects



\$24b under construction



\$4.3b community facilities



\$29b in planning (or early planning)



221 shovel ready projects

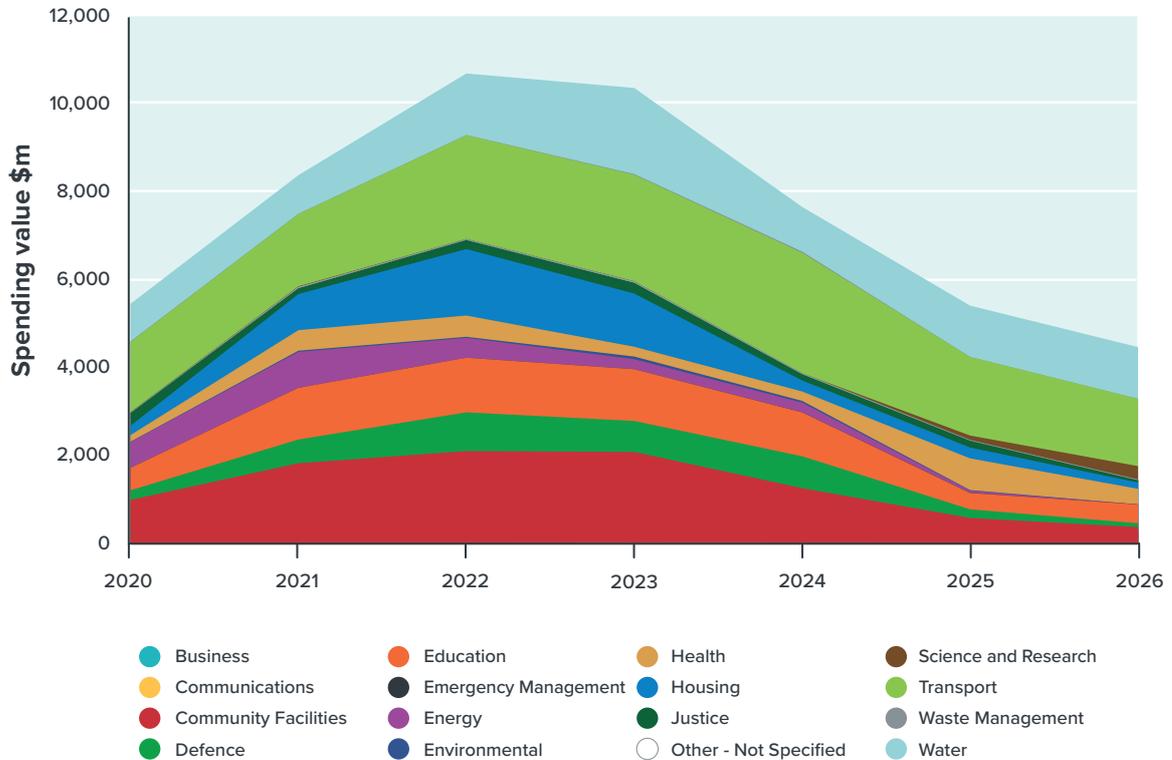


\$3.8b shovel ready projects

Increase in Water Projects

While transport projects represent the largest single category of projects in the Pipeline, there has been a substantial increase in water projects - from \$7.8 to \$10.4 billion. This is largely from the release of new projects to the Pipeline from the recent Watercare Asset Management Plan.

Forecasted spending by sector



Sector snapshot: Auckland tunnelling projects

City Rail Link



Project total
\$4.4 billion



Twin 3.45
kilometre-long tunnels



2000 people
involved in building CRL

Auckland's City Rail Link (CRL) is the largest and most complex transport project ever undertaken in New Zealand. Its twin 3.45-kilometre tunnels will connect downtown Auckland to a redeveloped Mt Eden Station, with two new central city underground stations at Aotea and Karangahape.

When completed CRL will double the number of people within 30 minutes travel time of central Auckland. It will allow up to 54,000 passengers an hour to access the city centre at peak times, which is the same as three Auckland Harbour Bridges. The project has a total value of \$4.4 billion.

COVID-19 is now the biggest challenge facing the CRL. Construction is planned to finish in late 2024, but the project has faced 205 days of lockdown or restricted working since March 2020, not including Auckland's latest ongoing Level 3 alert. Dr Sean Sweeney, the chief executive of CRL Ltd, notes that even though the alliance model being used to deliver the project provides a great deal of flexibility, this COVID-19 related disruption is of a scale and uncertainty that could not have been reasonably predicted when the project began.

There are more than 2000 people involved in building the CRL, many of whom have specialised skills like underground rail system installation that are not available in New Zealand. COVID-19 makes it difficult to bring in overseas workers where they are needed to fill specific roles. This is expected to become particularly acute as the project moves to install rail systems in the tunnels. Dr Sweeney recently pointed to the reality that overseas workers can be in a very long queue for a limited number of Managed Isolation and Quarantine places.

Source: John Williamson, City Rail Link Limited

Central Interceptor

Watercare is currently constructing a 14.7-kilometre-long wastewater tunnel called the Central Interceptor that will carry wastewater and stormwater from suburbs in central Auckland to the Māngere Wastewater Treatment Plant.

In addition to providing for population growth, the interceptor will reduce wet-weather overflows in central Auckland by up to 80%.

Since the official ground-breaking ceremony in February 2020, Auckland has experienced numerous COVID-19 lockdowns that have impacted the project in a number of ways. Under the Level 4 lockdowns, physical construction has stopped or been reduced to an absolute minimum – in August/September 2021, only basic operations to protect infrastructure and prevent environmental damage were carried out. Under the Level 3 lockdowns, work has resumed under COVID-19 protocols and continued to ensure everyone gets home safe.



Up until the current lockdown, Watercare was confident of meeting its original completion date of late 2025. However, it now expects to complete the project a few months later in early 2026 – noting this depends on the ongoing impacts of COVID-19.

While a global pandemic was not on the radar when the main works were tendered in 2018, Watercare made sufficient allowances for risks. This means the project is still tracking within budget. At the time, there was hyper-inflation in the construction market. Therefore, the company chose a shared-risk contract approach. The contractor is required to account for cost escalation, as determined by standard indices, over the contract duration. If cost escalation exceeds a threshold, Watercare will cover the additional escalation costs.

One of the few upsides of COVID-19 in 2020 was that cost escalation indices were constant or in fact went backwards. Watercare is now starting to see cost indices increase and it anticipates this will continue for the remainder of the contract. However, it expects the escalation provisions within the contract will be sufficient to cover this movement.

As with other big construction projects underway in New Zealand, the Central Interceptor project is being affected by a shortage of skilled workers and shipping delays. People with experience delivering large-scale, segmented tunnels are in high demand globally and it is proving difficult to get them into the country. It is also hard for expats currently working on the project to visit family in their home countries, which is primarily Italy as the joint venture includes an Italian company. Meanwhile shipping delays mean it is difficult to bring specialised equipment in from around the world. At this stage, the building material shortages within New Zealand have not had a major impact on the project.

While COVID-19 is presenting numerous challenges, nothing has been insurmountable to date. Watercare says that maintaining free and frank conversations with the contractor and going above and beyond in terms of staff safety protocols, means they should see the project through to its completion without significant budget or timeline slippages; and without compromising on quality.

Source: Shayne Cunis, Executive Programme Director, Central Interceptor, Watercare

Regional spotlight: Tauranga

Interview with Stephen Selwood – Tauranga City Council Commissioner



Stephen Selwood is a Commissioner at Tauranga City Council. He has extensive experience across the infrastructure sector, and has worked closely with Ministers, government agencies, and businesses. He was formerly the Chief Executive of Infrastructure New Zealand and Board member of Te Waihanga.

Q: Tauranga City has committed to a \$4.6 billion capital programme funded in part by rate increases. What are some key initiatives in that programme and what issues do they address?

Growth is the enduring issue for Tauranga and managing its effects continues to be our biggest challenge. We are likely to reach a population of 181,000 by 2033 (an increase of approximately 35,000 from 2020) and in three decades (the same time it has taken our current population to double) there will be another 60,000 people living here. This is on top of a cumulative infrastructure deficit inherited from the last three decades.

The \$4.6 billion capital pipeline in the long-term plan provides catch-up on the deficit and some provision for growth, but the undersupply of affordable homes and the need to address road congestion remain our key issues.

The plan includes nearly \$700m investment in civic amenities to bring the city to life, like aquatics, sports facilities, accessibility solutions across the city and investment in arts, culture and heritage.

\$2.6 billion is committed to urban transformation (including transport improvements) within the current footprint of the city, as well as laying the groundwork for additional homes and businesses in new areas.

This includes \$168 million for the Waiari water supply scheme and \$195 million for the development of the Te Maunga wastewater treatment plant. \$2 billion is committed to transport investment - \$192 million on walkways and cycleways and more accessible streets, \$112 million on bus infrastructure (including park and ride facilities) and \$175 million on local road renewals.

We are also investing over \$130m in the city centre and encouraging additional private investment. Potential private sector CBD developments with a capital value of \$650 million are already in the pipeline over the next 10 years and the Council has committed to leasing a new civic administration building in Devonport Road and constructing a new central library and community hub in the city centre.

With increasing threats from climate change, natural hazards and already stressed infrastructure, we have identified 315 projects to improve our city's resilience and committed \$125m to early works.

In total, the Long-term Plan is by far the biggest ever investment plan for the city.

Yet, despite that big lift in spending, we won't supply anywhere near the number of affordable houses required and while public transport, walking and cycling will improve significantly on key commuter corridors, congestion will increase.

The problem is that we've maxed out the credit card. We're leveraging all the infrastructure financing alphabet from the Housing Infrastructure Fund to Infrastructure Funding and Financing and the Infrastructure Acceleration Fund. Public Private Partnerships (PPPs) are of interest, but we need to find new ways to raise revenue to service investment.

We desperately need to unlock further development at scale, find opportunities to create and capture value in land development and accelerate road pricing and transport investment to lift productivity, deliver affordable housing, reduce carbon emissions and support mode shift.

Q: What signs of capacity and capability challenges are you seeing for local projects?

Delivering on our commitments requires significant investment in building the capacity and capability of our staff and systems to deliver on the huge capital programme. We have established a Capital Assurance Projects Division to work hand-in-hand with the project delivery teams and rewritten our procurement policies to focus on value for money and enable a partnership approach with our suppliers.

To date we have been enjoying a good response to our pipeline from the contracting sector and, like everyone, we're managing around COVID-19 restrictions. But we are very conscious of the issues the sector is facing getting skilled construction workers into New Zealand.

A recent, high-level independent review identified annual cost increases of around 20% across the sector, with increases ranging from 5% for aggregates to 48% for steel. Based on current trends, many suppliers are predicting further increases in the latter part of 2021 and it is likely that this trend will continue until at least early-2022. So, exciting and challenging times are ahead for the city.

Full details of the plan are available [here](#):

Other Bay of Plenty projects

There are also significant projects happening elsewhere in the Bay of Plenty. The infrastructure Pipeline currently includes projects from some, but not all, Bay of Plenty councils, as well as central government and some private infrastructure providers. Tauranga City Council data is not included here. Table 1 summarises significant projects in the Pipeline, excluding the Te Okuroa Drive School that is due to be completed this quarter. Potential projects in the planning stages include an indicative business case for upgrading Rotorua's courts.

Table 1: Significant Pipeline projects elsewhere in the Bay of Plenty

PROJECT	DELIVERY AGENCY	VALUE	PROJECT START DATE
SH2 Te Puna to Omokoroa Improvements	Waka Kotahi/New Zealand Transport Agency	250 – 500 Million	Q1 2020
Enabling new connections - Wairakei Ring	Transpower	100 – 250 Million	Q3 2025
Ōpōtiki Harbour Development Project	Ōpōtiki District Council	50 – 100 Million	Q4 2019
SH2: Baypark to Bayfair Link Upgrade	Waka Kotahi/New Zealand Transport Agency	50 – 100 Million	Q1 2018
Otumoetai College Redevelopment	Ministry of Education	50 – 100 Million	Q2 2018
Tauranga-Moana Innovative Courthouse	Ministry of Justice – Te Tāhū o te Ture	50 – 100 Million	Q3 2020
Wai Ariki Hot Springs and Spa – Rotorua	Pukeroa Lakefront Holdings Limited	50 – 100 Million	Q4 2020

Economic insights

Infrastructure projects are now facing schedule delays and cost escalations due to supply chain disruptions and a tight labour market. While global supply chains fared surprisingly well through the early stages of the COVID-19 pandemic, disruptions to delivery are now likely to be a medium-term problem that will take time to work through the system.

The infrastructure sector needs to prepare for ongoing supply chain and labour market issues, including factoring expected cost pressures into project and programme budgets. In the longer term, COVID-19 disruptions highlight the need to build resilience and redundancy into our infrastructure delivery system.

The impact of COVID-19 on international supply chains

Global supply chains are more interdependent than ever. Raw materials and components may be shipped between countries multiple times to produce finished goods, meaning that bottlenecks in one place can cause further delays elsewhere.

COVID-19 has disrupted factory and port operation in Asian manufacturing centres, delaying shipments of goods and causing a fivefold increase in container freight costs (Figure 1).¹ This is a significant challenge for New Zealand's construction sector, which relies upon imported machinery and materials.² 69% of Auckland homebuilders and 59% of non-Auckland home-builders report problems with material and equipment availability.³

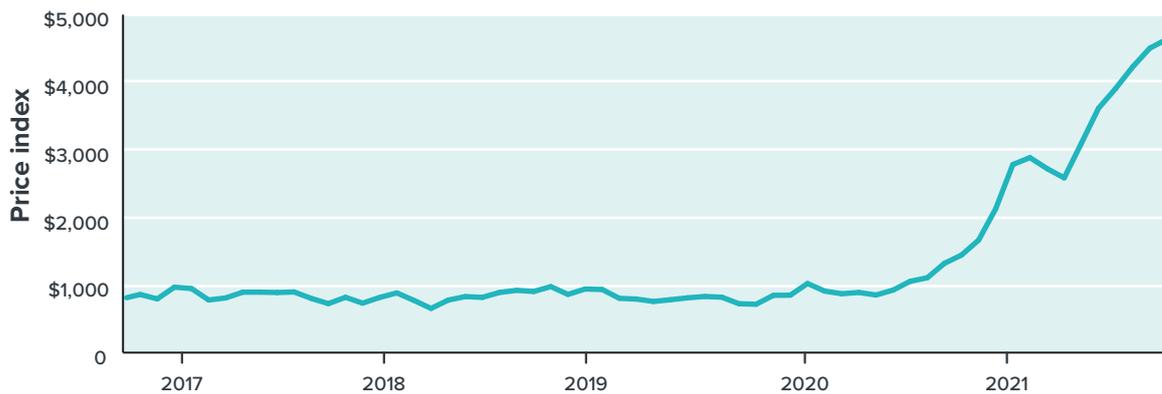
1. <https://en.macromicro.me/charts/947/commodity-ccfi-scfi>

2. <https://www.mfat.govt.nz/assets/Trade-General/Trade-stats-and-economic-research/STORM-Analysis-Unclassified-Version.pdf>
<http://www.buildmagazine.org.nz/index.php/articles/show/in-short-supply-2>

3. <https://www.stats.govt.nz/news/impacts-of-COVID-19-on-new-home-building-projects>

Figure 1: Container freight costs have escalated at an unprecedented rate⁴

Shanghai Containerised Freight Index



Source: Drewry

The impact of supply chain delays are visible in many areas. For instance, a global shortage of semiconductors is forcing car makers and construction equipment manufacturers to cut back production.⁵ Locally, we have recently seen shortages of structural timber coupled with a backlog of export logs at ports, driven by a combination of surging demand and shipping capacity constraints.⁶

Locking down the local supply chain

The impacts of the COVID-19 pandemic have been most acute in Auckland. Auckland lockdowns have a cascading effect on the nation’s construction sector due to Auckland’s role as a manufacturing and logistics centre. Most of the country’s wholesale trade and warehousing capacity is located in Auckland (Figure 2). Construction has been able to resume more rapidly in other parts of the country because lockdowns have been shorter, but difficulties shipping building materials out of Auckland have nonetheless caused delays.

Figure 2: Critical elements of the supply chain are concentrated in Auckland



Source: Statistics New Zealand Business Demography statistics, 2020⁷

Labour has never been harder to find

Current supply chain issues are exacerbated by increasing difficulties in finding labour. The share of construction firms reporting labour shortages is now at its highest ever level (Figure 3). Labour shortages are expected to persist in the medium term, as BCITO projections suggest New Zealand will have a shortfall of approximately 118,500 construction workers in 2024.⁸

4. <https://www.economist.com/finance-and-economics/a-perfect-storm-for-container-shipping/21804500>

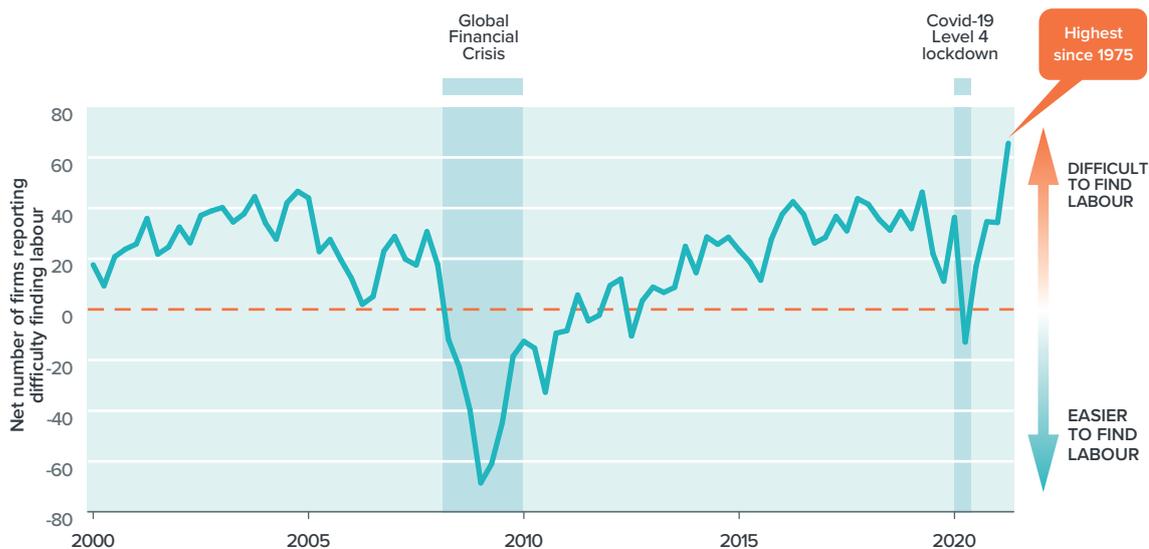
5. <https://www.dbusiness.com/daily-news/the-semiconductor-shortage-implications-for-the-global-economy/>
<https://www.equipmenttradar.com/en/blog/semiconductor-shortages-could-result-in-higher-farm-and-construction-equipment-prices-R892766>

6. <https://www.stuff.co.nz/national/politics/126038965/millions-of-cubic-metres-of-logs-leave-our-shores-every-year--all-while-we-remain-desperately-short-of-timber>
<https://www.rnz.co.nz/news/business/448022/backlog-at-ports-leads-to-frustration-there-s-a-huge-issue-within-our-sector>

7. <http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7602>

8. <https://wip.org.nz/supply-and-demand/>

Figure 3: Construction labour shortages are at their highest since 1975



Source: NZIER, QSBO

Cost escalation is expected to continue over the medium term

At this time last year, forecasters were expecting construction cost inflation to slow rapidly due to falling demand. Now, rapid cost escalation is expected due to high demand and limited availability of materials and labour (Figure 4).

Cost estimator Rider Levett Bucknall (RLB) expects non-residential building costs to rise 18% over the next four years. A project that costs \$100m today will cost at least \$118m by then. But history warns that this could easily prove to be a best-case scenario. If it is not possible to unblock global and local supply chains and train and recruit the workers we need, further cost escalation and project delays are likely to be on the horizon.

Figure 4: Non-residential construction costs are now expected to surge rather than dampening down



Source: RLB Forecast Report 95 and Forecast Report 98⁹

9. <https://wip.org.nz/supply-and-demand/>