



FOURTH QUARTER 2024

# INFRASTRUCTURE FORECAST REPORT 2

NEW ZEALAND TRENDS IN  
INFRASTRUCTURE CONSTRUCTION

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At RLB, our work goes beyond managing projects - we drive value and innovation for improved outcomes. From world-renowned landmarks like the Sydney Opera House to the support of major infrastructure including Central Interceptor and the Downtown Infrastructure Development Plan, our contributions leave a lasting impact on communities and the planet. With a steadfast commitment to sustainability, we aim to inspire a better tomorrow through the work we do today.

We believe in delivering with excellence, fostering collaboration, and always striving to make a positive difference. This is how we build trust, deliver quality, and continue to set the standard in our industry.

### AUTHORSHIP

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## KEY POINTS

Infrastructure construction picked up over the past year, partly reflecting demand from strong population growth in recent years. Nonetheless, the easing in capacity pressures in the construction sector more broadly has contributed to a slowing in construction cost inflation.

### CIVIL CONSTRUCTION COST PRESSURES CONTINUED TO EASE

Activity indicators such as ready-mixed concrete production signal softer construction activity more broadly, which in turn is alleviating cost pressures. Softer demand has led to lower prices in civil construction materials. Similarly, steady global steel production has helped ease infrastructure construction cost pressures, which is positive for New Zealand's construction sector.

### BUILDING SECTOR FIRMS REMAIN PESSIMISTIC ABOUT OUTLOOK

NZIER's Quarterly Survey of Business Opinion shows that the construction sector is still very downbeat regarding the economic outlook. This pessimism reflects continued weak construction demand, with building sector firms reporting a decline in output and new orders. This is weighing on pricing power and, in turn, profitability in the construction sector.

### FUTURE OUTLOOK IN KEY INFRASTRUCTURE PROJECTS REMAINS POSITIVE

Despite these challenges, the infrastructure investment outlook presents a more positive narrative. Te Waihanga, the New Zealand Infrastructure Commission, reported in its Pipeline snapshot that infrastructure projects totalled \$121.2 billion in March 2024. Of this, around \$44 billion is estimated to be under construction and \$11 billion in procurement. Key sectors driving this investment pipeline include transport and water infrastructure. The Government announced in March its renewed plans for Roads of National Significance (RONS), and unveiled the September National Land Transport Programme which allocated nearly \$33bn for transport projects including the reintroduction of the RoNs, a focus on road maintenance, alongside further public transport initiatives.



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## 1. INTRODUCTION

**Welcome to the 2024 December quarter edition of the Rider Levett Bucknall *New Zealand trends in infrastructure construction*, where we discuss the key developments in infrastructure construction. We also discuss what these recent developments indicate for the construction outlook ahead, including our forecasts for infrastructure construction cost inflation.**

We assess the outlook for infrastructure construction costs based on the key drivers on the demand and supply side. On the demand side, this includes infrastructure investment, as well as the macroeconomic environment, which influences broader construction activity. On the supply side, the availability of labour and building materials are the key influences for the construction sector.



**The release of gross domestic product (GDP) data for June 2024 showed a small decrease of 0.2 percent in economic activity for the quarter. This follows a 0.1 percent growth in the previous quarter. On an annual basis, GDP is 0.5 percent lower than year-ago levels, with annual average GDP growth of -0.2 percent for the year to June 2024.**

## 2. RECENT ECONOMIC DEVELOPMENTS AND TRENDS

The GDP release indicated continued weakness in domestic demand. The largest contributor to the GDP contraction was retail trade and accommodation, followed by wholesale trade. Overall, economic activity in New Zealand remains subdued, especially considering the strong migration-led population growth over the past year.

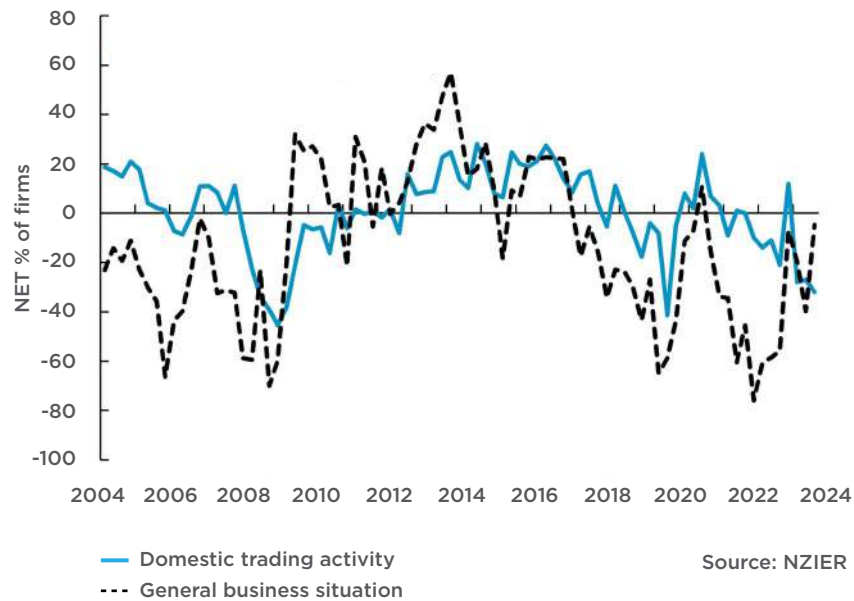
This economic stagnation is occurring against a backdrop of high interest rates, which has dampened demand across a broad range of sectors. The increase in the Official Cash Rate (OCR) from October 2021 to May 2023 in response to high inflation increased borrowing costs. Higher interest rates dampened consumer spending and business investment, further straining economic growth. The high interest rate environment has been particularly challenging for households with mortgages and businesses reliant on credit, as higher interest rates reduce disposable income and increase operating costs.

As inflation pressures eased in the New Zealand economy, the RBNZ commenced its monetary policy easing cycle by cutting the OCR in its August meeting, with further cuts in their October and November meetings. The cuts aimed to move interest rates to less restrictive settings by lowering borrowing costs. The reduction in the OCR is expected to stimulate economic activity by encouraging spending and investment.

With the start of the easing cycle, there are signs that businesses are feeling more positive. The latest NZIER *Quarterly Survey of Business Opinion* (QSBO) showed an improvement in business confidence following the OCR cuts, with retailers and services sector firms feeling the most upbeat. This is despite continued soft demand, with a net 32 percent of firms reporting reduced activity over the September quarter.

The impact of softening demand in reducing capacity pressures is reflected in the continued shift towards (lack of) demand being reported by firms as the primary constraint on their business. In the September quarter, a net 64 percent of firms reported a lack of sales as the primary constraint on their business, a substantial increase from the 48 percent who reported this being their primary constraint in the previous quarter.

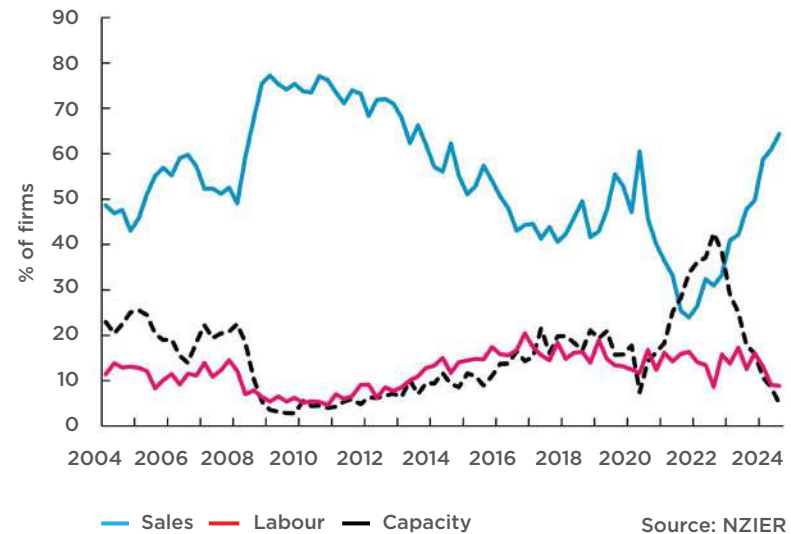
**FIGURE 1 General business situation and own trading activity**



In contrast, the proportion of firms citing labour shortages as the primary constraint dropped from 18 percent to 5 percent, significantly below the peak of 43 percent during the COVID-19 pandemic in September 2022. This reduction in labour shortages has eased capacity pressures across the New Zealand economy, including in the construction sector.

When it comes to hiring, the NZIER QSBO showed over a third of firms reduced staff numbers in the September quarter, and a net 9 percent intend to reduce staff numbers in the next quarter. Weaker labour demand is further supported by the September quarter's New Zealand labour market data, which shows a 0.5 percent decline in employment and an increase in the unemployment rate to 4.8 percent. This suggests continued softening in the New Zealand labour market.

**FIGURE 2 Economy wide: factor constraints**



Despite the improvement in business confidence, firms remain cautious about investment, with a quarter of firms reporting they planned to reduce investment in buildings. We expect that until firms have more conviction about a sustained recovery in demand, they will remain cautious about hiring and investment.



## 2.1 INTEREST AND EXCHANGE RATES

The RBNZ commenced its monetary policy easing cycle by cutting the OCR by 25 basis points in the August Monetary Policy Statement (MPS). It followed this up with another 50 basis point cut in each of the October and November meetings. The easing in inflation provided the RBNZ with comfort that inflation was contained back towards its 1 to 3 percent inflation target band. The 0.6 percent increase in CPI for the September quarter brought annual inflation to 2.2 percent. Importantly, the RBNZ Survey of Expectations showed medium-term inflation expectations anchored around its inflation target mid-point at 2.2 percent.

The focus on other central banks has also been on the commencement of the monetary policy easing cycle. In particular, the US Federal Reserve reduced its Fed funds rate by 50 basis points in September and followed up with a 25 basis point cut in November amid progress in easing inflation pressures.

We expect currency movements will continue to be influenced by interest rate differentials. Given the earlier start to the easing cycle and the more significant cuts in the OCR by the RBNZ, this is reducing the yield attractiveness of the New Zealand dollar and, hence, weighing on the currency. We anticipate a recovery in the NZD/USD once the Federal Reserve continues its monetary policy easing cycle.

Other factors are also influencing currency movements. Chinese exporters, anticipating economic uncertainty and the potential for increased tariffs from the Trump administration, have pre-emptively increased export volumes to the US. This trend is expected to continue in the coming months and may weaken demand for the USD in the near term. However, elevated geopolitical uncertainty - particularly in the Middle East and Ukraine - could drive increased demand for the USD as investors seek safer assets, such as US Treasury bonds.



## 2.2 BUILDING INVESTMENT

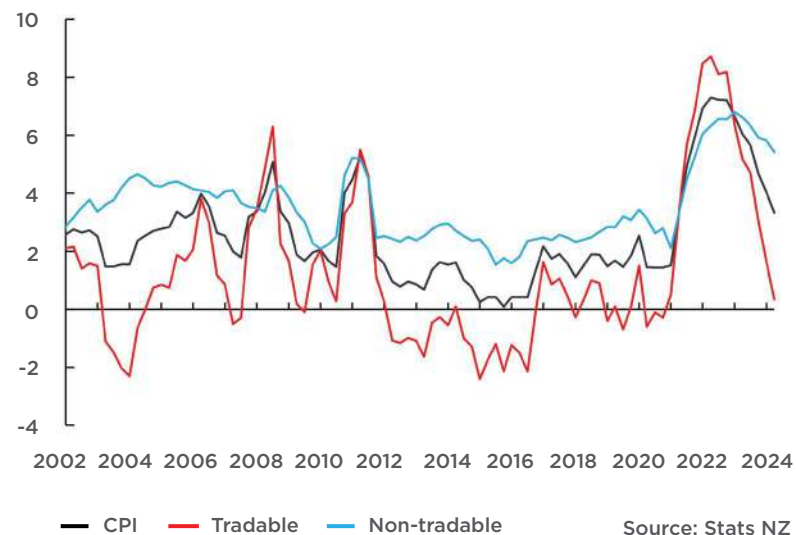
The June GDP data showed a 1.4 percent increase in Other construction over the quarter, resulting in this type of construction being 2.3 percent higher on year-ago levels.

Other construction broadly encompasses construction associated with civil engineering, including major earth-moving, demolition, site clearance, and structures like bridges, pylons, and assets for oil and gas, but excludes building excavations and routine road resealing.<sup>1</sup> The lumpy nature of infrastructure projects means that there can often be large changes in Other construction from one quarter to the next. Although we continue to expect a recovery in Other construction over the coming years, the weaker population growth, given the recent turnaround in net migration, will likely weigh on this recovery.

High inflation in 2022 and 2023 significantly impacted costs associated with civil construction. The rising inflationary pressures led to increased costs of materials and inputs used in construction activities. This inflationary trend translated into higher production costs for firms engaged in civil construction projects in the past few years. However, weaker construction demand is driving further easing in capacity pressures in the construction sector, which in turn is supporting a slowing in civil construction cost inflation.

In the September quarter, CPI showed a further easing in annual inflation to 2.2 percent. The result was largely driven by a decline in tradable inflation, with non-tradable inflation still elevated at 4.9 percent. Some services prices remain elevated, suggesting that some domestic inflation pressures persist in the New Zealand economy.

FIGURE 3 Inflation continues to ease

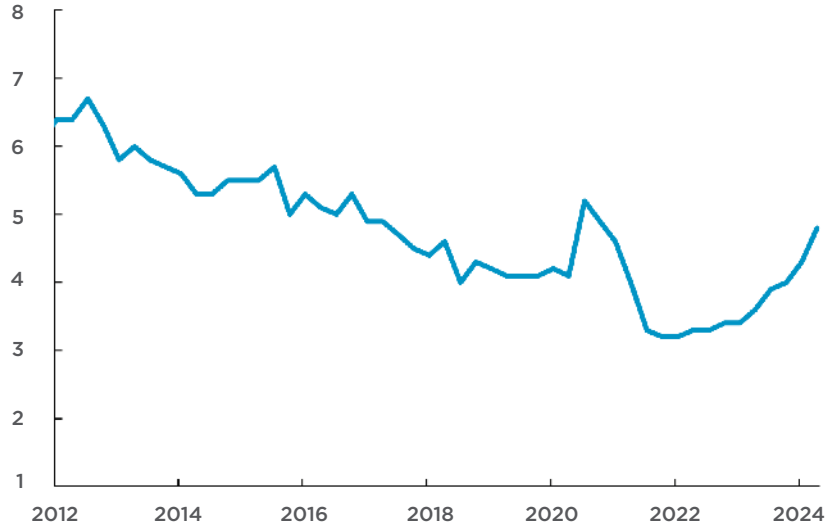


The impact of the recent OCR cuts is beginning to gain traction, though interest rates remain elevated. While the easing cycle has started, households and businesses continue to be cautious about spending and investment. Firms responded to weaker demand by scaling back on staff numbers, and alongside public sector cutbacks, this is contributing to a continued softening in the labour market.

September quarter labour market data showed a lift in the unemployment rate to 4.8 percent. Given that the labour market tends to lag broader economic activity, we expect a further lift in the unemployment rate so that it reaches a peak of 5.5 percent in late 2025.

<sup>1</sup> <https://www.stats.govt.nz/assets/Uploads/Retirement-of-archive-website-project-files/Methods/Annual-national-accounts-sources-and-methods/Annual-national-accounts-sources-and-methods.pdf>

**FIGURE 4 The unemployment rate has been increasing as the economy slows**



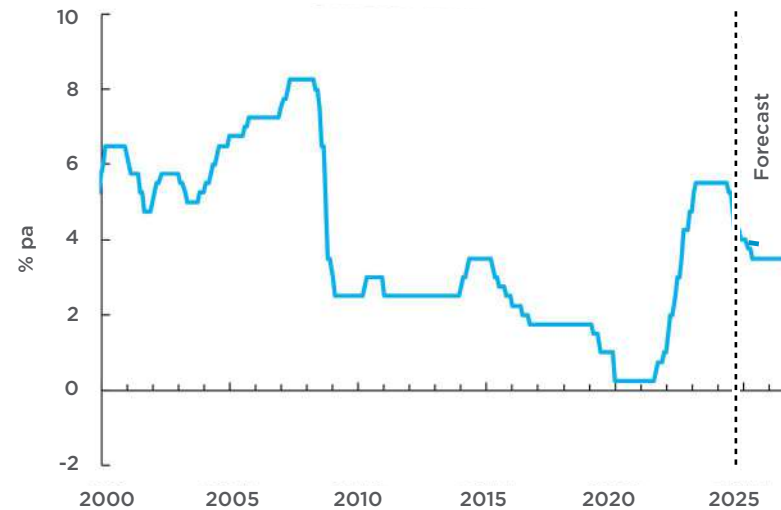
Source: Stats NZ

The RBNZ highlighted at its November MPS its comfort that annual consumer price inflation is returning to within its inflation target band and that inflation expectations and firms' price-setting behaviour are anchored. We forecast a more measured pace of OCR cuts by the RBNZ over the coming year and expect the OCR to reach 3.5% around mid-2025.

**Global oil prices stabilising**

Crude oil is vital in infrastructure construction as it is refined into various products used in civil construction, such as for paving roads and highways. Additionally, diesel fuel, derived from crude oil, powers construction machinery and transportation vehicles, facilitating the building of infrastructure projects. Moreover, crude oil-based products, like plastics and synthetic materials, are used in numerous construction components, making crude oil a cornerstone of modern infrastructure development.

**FIGURE 5 The RBNZ commenced its easing cycle in August**



Source: RBNZ, NZIER forecast

**FIGURE 6 The cost of crude oil is forecasted to stabilise**

Crude Oil, Brent, U.S. Dollars per Barrel



Source: Federal Reserve Bank of St Louis (FRED), Consensus Economics forecast

Since the onset of the COVID-19 pandemic, global oil prices have experienced significant fluctuations. Similar to our last update, we continue to forecast a stabilisation in oil prices. Markets are adjusting to post-pandemic conditions, and supply chains are becoming more resilient. This stabilisation reflects a more balanced supply-demand dynamic, with prices expected to settle at sustainable levels. Recent developments suggest that the oil market is finding equilibrium, leading to more predictable and stable pricing (see Figure 6).

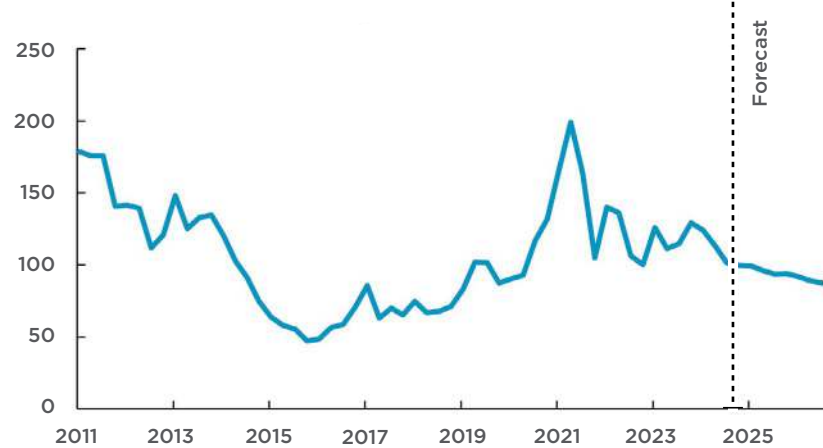
**Global price of iron ore forecast to stabilise in the coming years**

Iron ore is a critical component in the production of steel, which is essential for infrastructure construction, including buildings, bridges, railways, and roads. The global price of iron ore is an important economic indicator, reflecting the demand for construction and manufacturing industries. Like oil prices, the global price of iron ore has exhibited significant volatility. In the recent quarter, iron ore prices have decreased, and a continued decline is forecasted, with prices expected to stabilise between \$80 and \$100 per metric ton. This stabilisation is anticipated as markets adjust to post-pandemic conditions and global inflation stabilises (see Figure 7).



**FIGURE 7 The cost of iron ore is forecasted to stabilise**

Global price of Iron Ore, U.S. Dollars per Metric Ton



Source: Federal Reserve Bank of St Louis (FRED), Consensus Economics forecast

**Global steel prices stabilised with increased production**

In this update, we continue to see a stabilisation in steel prices globally due to increased production capacity and the stabilisation of the global iron ore supply chain. The increase in China’s steel production at the beginning of 2024 contributed to this price stabilisation. This trend is likely to reduce cost pressures in infrastructure projects, which is positive for the construction and development sectors in New Zealand (see Figure 8).

**Transport infrastructure inflation shows a pick-up more recently**

Regarding transport-related infrastructure, Waka Kotahi NZ Transport Agency cost indexes track construction cost trends for specific infrastructure components, including maintenance, construction and bridges.

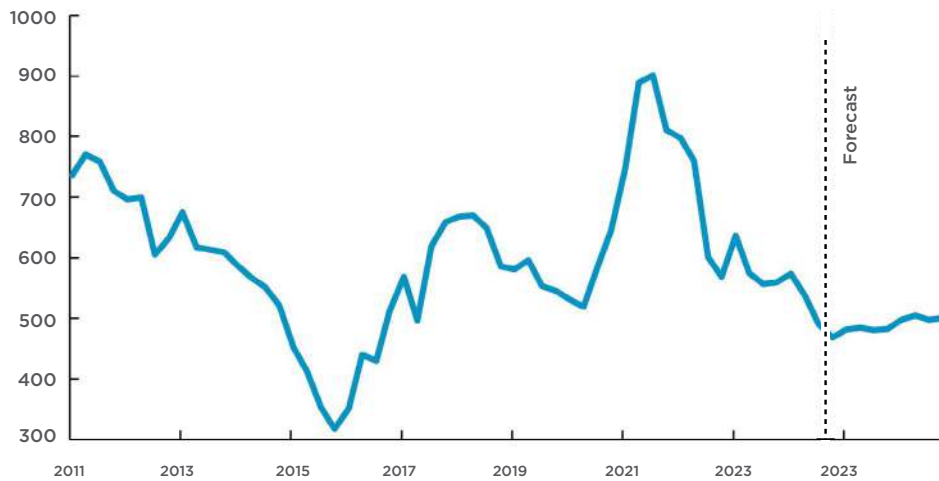
The NZTA Transport Agency Construction Index focuses on costs specific to transport infrastructure maintenance, construction, and bridges. In contrast, the Capital Goods Price Index – Civil Construction measures broader price changes in civil construction, covering a much wider range of infrastructure projects.

The NZTA Transport Agency Construction Index is specific to NZTA projects, while the latter encompasses a wider scope of civil construction work.

The sharp easing in the Waka Kotahi NZ Transport Agency cost indexes for Q3 is consistent with the recent easing in the CGPI – Civil Construction measure, reflecting the increased capacity in the construction sector given soft construction demand more broadly. (see Figure 9).

The fluctuation in bitumen prices can significantly impact infrastructure construction costs, particularly in roading projects where bitumen is a key component. We have continued to see moderate growth in the price of bitumen of between 1 and 4 percent in recent months. This adjustment suggests a potential stabilisation in material costs for construction projects reliant on bitumen (see Figure 10).

**FIGURE 8 The bitumen price adjustment series shows more modest growth**



Source: China Iron and Steel Association, Consensus Economics forecast

**FIGURE 9 Waka Kotahi NZ Transport Agency cost indexes**

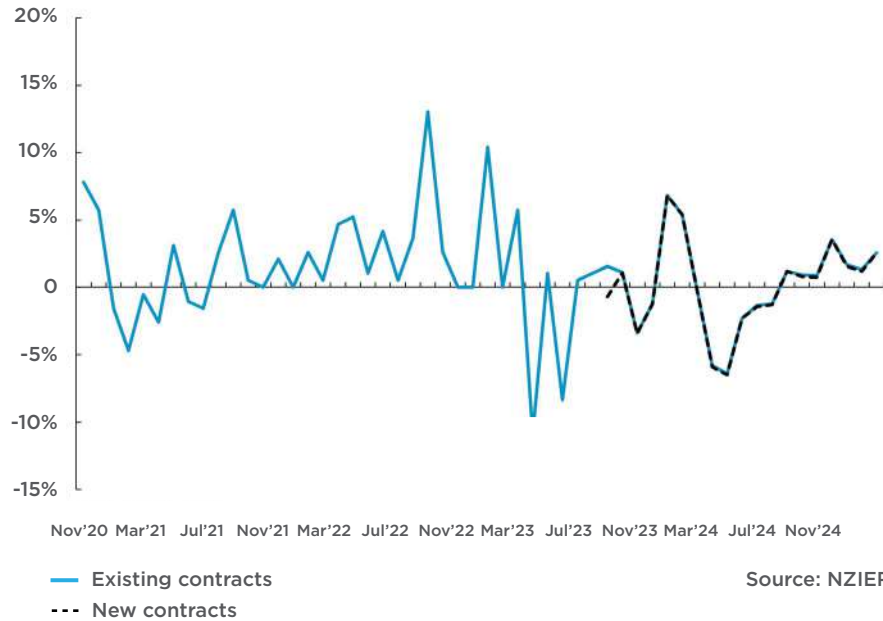


— Waka Kotahi Maintenance index  
 - - - Waka Kotahi Construction index  
 — Waka Kotahi Bridge index

Source: Waka Kotahi

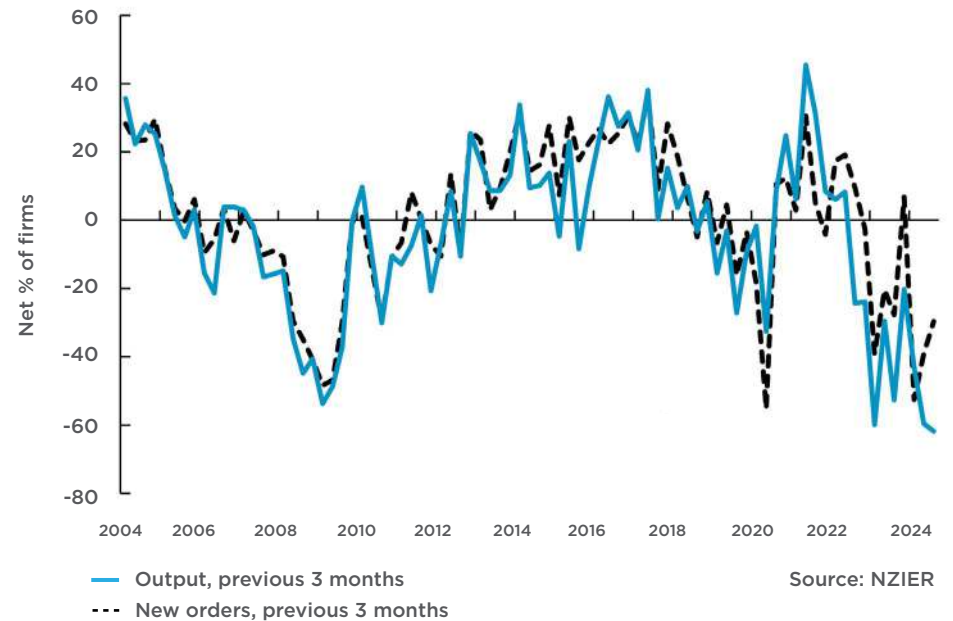
**FIGURE 10 The bitumen price adjustment series shows more modest growth**

Monthly change in series value



**FIGURE 11 Weak construction demand driving pessimism in the sector**

Net % of firms



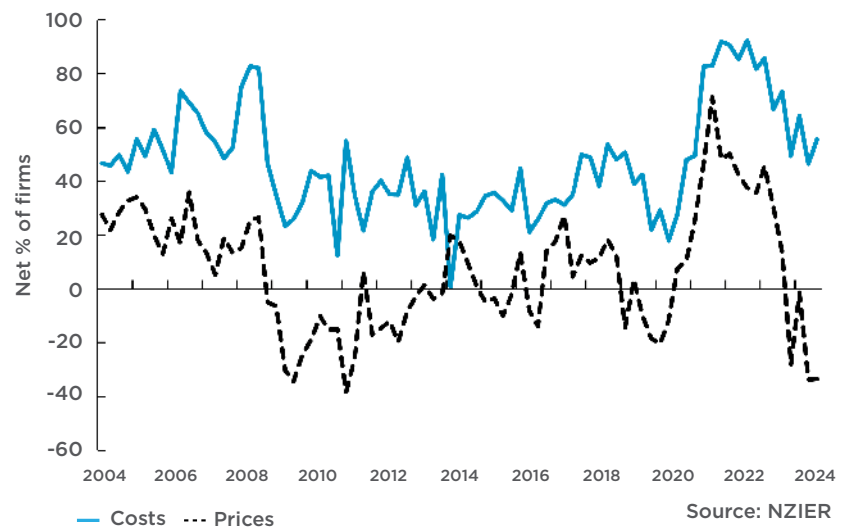
**Construction sector remains pessimistic**

The QSBO measure of activity in architects' own offices points to ongoing weakness in the near-term construction work pipeline. The weakness is broad-based across the different types of construction work, which is driving further easing in capacity pressures in the construction sector.

Building sector firms remain downbeat, albeit less so. A net 9 percent of building sector firms surveyed in the September NZIER QSBO expect a deterioration in general economic conditions over the coming months, compared to a net 65 percent in the June quarter. This improvement in sentiment follows the recent reduction in the OCR, which has likely helped ease some of the pressures in the sector and supported a more optimistic outlook.

**FIGURE 12 Sharp easing in pricing pressures**

Net % of firms



### 3. INFRASTRUCTURE CONSTRUCTION DEMAND

**The Pipeline snapshot<sup>2</sup> produced by Te Waihanga, the New Zealand Infrastructure Commission, shows that infrastructure projects totalled \$143.6 billion in value for the September 2024 quarter. Of this, approximately \$73.6 billion is under planning, \$45.7 billion is estimated to be under construction, and \$9.9 billion is in procurement.**

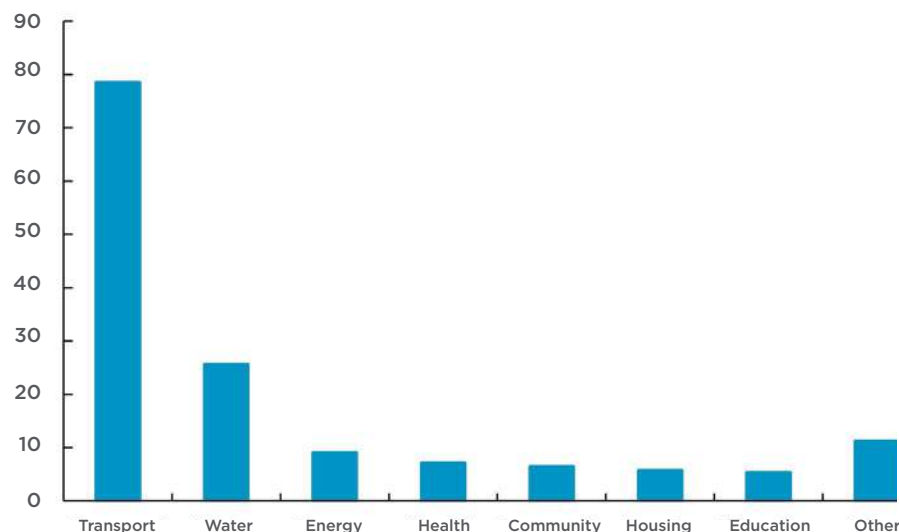
Compared to the June 2024 quarter, there is an additional \$11.4 billion in projects currently under planning, while there is a reduction of \$1 billion in procurement projects and a reduction of \$2.1 billion in projects under construction.

In terms of projected procurement, the September 2024 pipeline update indicates that 395 active projects valued at \$9.9 billion were in procurement. Te Waihanga also projects that the value of projects in procurement and expected to enter procurement in the next 12 months will add between \$0.4 billion to \$0.8 billion per quarter through to 2027. Additionally, \$12.1 billion of infrastructure investment from the pipeline is expected to take place in 2024, with expectations for 2025 remaining at \$11.6 billion.

In the near term, infrastructure investment in the transport, social and community facilities, housing, and water sectors are expected to dominate the infrastructure pipeline. The Pipeline snapshot shows that transport and water infrastructure are driving infrastructure investment, with the value of transport projects totalling \$78.5 billion. Meanwhile, the value of water infrastructure planned for the coming years totalled \$25.6 billion (see Figure 13).

Meanwhile, the Australia New Zealand Infrastructure Pipeline<sup>4</sup> produced by Infrastructure Partnerships Australia shows that there are currently 25 projects in the infrastructure pipeline in New Zealand, dominated by four projects in transport.

**FIGURE 13 Transport and water infrastructure dominate the infrastructure pipeline**



Source: Te Waihanga, the New Zealand Infrastructure Commission

The Partnership highlighted the Waitemata Harbour Connections (second harbour crossing), Auckland Airport expansion and East West Link, Ōtaki to North of Levin highway as key projects in this pipeline.

The New Zealand Infrastructure Commission, Te Waihanga, has identified several key infrastructure projects with the highest estimated value. These include the Te Kaha Canterbury Multi-Use Arena (CMUA), Project Pihi Kaha - Whangārei Hospital Redevelopment, and the Auckland and Wellington rail network programme. Significant projects related to the Government's Roads of National Significance (RoNS) with Waka Kotahi are also highlighted, such as the Northland corridor,

a 100km stretch of four-lane, mainly grade-separated expressway connecting Auckland and the North. Additionally, several Southern Corridor improvements are also highlighted, including connection at Manukau to Papakura to provide enhanced journey reliability along SH1. Another notable project is a new 27km long motorway between Mackays Crossing (Paekākāriki) and Linden, featuring grade-separated interchanges at Mackays and other key points. The Fast-Track Approvals Bill should also support the demand for infrastructure construction. The 149 projects chosen by the government for inclusion in the fast-track process include 43 infrastructure projects. These include new road, rail and public transport investments, as well as renewable electricity and mining projects.<sup>5</sup>

<sup>2</sup> <https://tewaihanga.govt.nz/the-pipeline/pipeline-snapshot>

<sup>3</sup> "Other" includes sectors such as Communications, Education and Waste

<sup>4</sup> Infrastructure pipeline by location - Infrastructure Pipeline

<sup>5</sup> <https://www.beehive.govt.nz/release/fast-track-projects-released>

## 4. METHODOLOGY

**Rider Levett Bucknall commissioned NZIER to produce a framework for forecasting a measure that tracks infrastructure construction cost changes. While there is published information on construction costs relating to infrastructure construction from a variety of sources, including Waka Kotahi, what has been lacking is forecasts of infrastructure construction cost inflation.**

Part of this reflects the large-scale and specific nature of infrastructure projects, which means that it is difficult to determine an index that is more broadly representative of cost changes in infrastructure construction. Another reason is the lack of forecasts of the inputs that go into composite indices that are compiled to capture past movements in various types of infrastructure construction costs.

We have developed a forecast for a representative index of infrastructure construction costs based on 1) the inputs we found to have a significant influence on infrastructure construction costs and 2) the availability of forecasts of these inputs themselves.

### 4.1.1 CAPITAL GOODS PRICE INDEX – CIVIL CONSTRUCTION

While recognising that infrastructure can span many different types of construction, we consider the Capital Goods Price Index – Civil construction sub-index (CGPI-Civil) the most appropriate measure to represent changes in infrastructure construction costs in New Zealand.

Stats NZ defines the CGPI as a measure which shows “*changes in prices of new physical assets. For the construction industry, these physical assets include residential and non-residential buildings, and infrastructure-related construction such as roads and pipelines. It excludes the cost of ongoing maintenance and services.*”

The CGPI-Civil sub-index covers *Transport ways, Systems for water and sewerage, Energy generation, transmission, and distribution works, Construction of telecommunications infrastructure, Other civil construction.*

### 4.1.2 FORECASTING METHODOLOGY

Based on our testing of empirical relationships of data, we determined the inputs which influence infrastructure construction costs. We require these inputs to have forecasts themselves so we can use them to form a forecast for CGPI-Civil. Based on these criteria, we developed a forecast model based on the trend and cyclical movements in the following variables. We also note the source of the historical data and forecasts next to each series: Federal Reserve Economic Data (FRED), Reserve Bank of New Zealand (RBNZ), Stats NZ, NZIER Quarterly Predictions (QP) and Consensus Economics.

- New Zealand Labour Cost Index (Stats NZ; NZIER QP)
- New Zealand population (Stats NZ; NZIER QP)
- Commodity prices (FRED; Consensus Economics)
- NZD/USD (RBNZ; NZIER QP)
- New Zealand output gap (NZIER QP)
- New Zealand construction output gap (NZIER QP).

Our forecast model for civil construction costs reflects the influence of labour market conditions, demographics, commodity prices, the New Zealand dollar and the extent to which both construction and broader economic activity are tracking relative to capacity in the New Zealand economy.

For example, acute labour shortages have driven strong wage growth, which in turn puts strong upward pressure on construction costs in the construction sector.

More details on our forecasting model based on these inputs can be found in Appendix A.

## 5. CONSTRUCTION COSTS



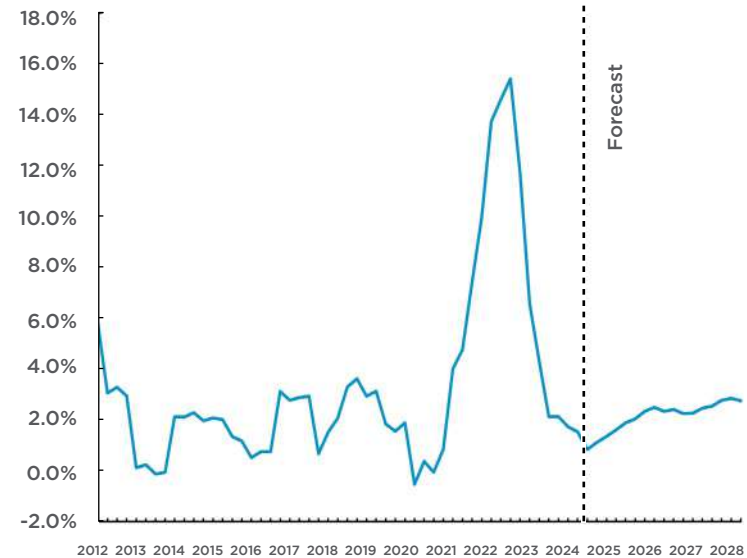
**The Capital Goods Price Index – Civil construction sub-index (CGPI-Civil) (the Index) is an official measure of cost movements in the sector. The Index excludes GST, and we use the Index as an indicator of cost escalation.**

The Index is a national average across all typologies. We, therefore, advise caution when applying the increase in the CGPI-Civil as an indicator of cost escalation for specific projects.

Following the OCR cuts since August 2024, The 0.2 percent increase in civil construction costs in the 2024 September quarter saw annual civil construction cost inflation ease to 1.5 percent from the same quarter last year (see Figure 14 and Table 1).

**FIGURE 14 Civil construction building cost inflation**

CGPI-Civil construction index, annual % change



Source: Stats NZ, NZIER forecasts

We expect construction cost inflation to stabilise at lower levels over the coming year, reflecting the continued easing of capacity pressures in the sector. Our CGPI-Civil Index forecasting model, which incorporates various inputs, indicates a continued easing of labour cost inflation. Moreover, consensus forecasts continue to predict a near-term decrease in oil prices and a similar trend for commodity prices over the next few years. Consequently, our model suggests that annual inflation in the CGPI-Civil Index will continue to fall over the coming year.

We forecast annual civil construction cost inflation will trough at 0.8 percent at the end of 2024. Beyond that, we expect civil construction cost inflation to gradually pick up to just below 3 percent over the medium term.

The upward revision to our longer-term forecasts reflect the more favourable economic conditions, driven by a decrease in interest rates. Our forecast of stronger construction demand later in the projection from lower interest rates is a key driver of our forecast of stronger civil construction cost inflation, relative to our previous forecasts.



**TABLE 1 CGPI-Civil construction cost index**

Year	Quarter	Index	Quarterly % change	Annual % change
<b>2019</b>	Mar	818	-0.2%	2.9%
	Jun	829	1.2%	3.1%
	Sep	830	0.2%	1.8%
	Dec	833	0.4%	1.6%
<b>2020</b>	Mar	834	0.1%	1.9%
	Jun	824	-1.2%	-0.5%
	Sep	833	1.1%	0.4%
	Dec	833	-0.1%	-0.1%
<b>2021</b>	Mar	841	1.0%	0.8%
	Jun	857	1.9%	4.0%
	Sep	873	1.8%	4.8%
	Dec	894	2.5%	7.4%
<b>2022</b>	Mar	925	3.4%	10.0%
	Jun	975	5.4%	13.7%
	Sep	1000	2.6%	14.6%
	Dec	1032	3.2%	15.4%
<b>2023</b>	Mar	1033	0.1%	11.7%
	Jun	1039	0.6%	6.6%
	Sep	1043	0.4%	4.3%
	Dec	1054	1.1%	2.1%

Year	Quarter	Index	Quarterly % change	Annual % change
<b>2024</b>	Mar	1055	0.1%	2.1%
	Jun	1057	0.2%	1.7%
	Sep	1059	0.2%	1.5%
	Dec	1063	0.4%	0.8%
<b>2025</b>	Mar	1067	0.4%	1.1%
	Jun	1071	0.4%	1.4%
	Sep	1076	0.4%	1.6%
	Dec	1083	0.6%	1.9%
<b>2026</b>	Mar	1089	0.5%	2.0%
	Jun	1096	0.7%	2.3%
	Sep	1103	0.6%	2.5%
	Dec	1108	0.5%	2.3%
<b>2027</b>	Mar	1115	0.6%	2.4%
	Jun	1121	0.6%	2.3%
	Sep	1128	0.6%	2.3%
	Dec	1135	0.7%	2.5%
<b>2028</b>	Mar	1143	0.7%	2.5%
	Jun	1152	0.8%	2.8%
	Sep	1160	0.7%	2.9%
	Dec	1167	0.6%	2.8%

Forecast

**Note:** The current and forecast CGPI-Civil is a national average, which does not differentiate between regions or sectors. We therefore advise caution in applying the CGPI-Civil as a measure of cost fluctuation for specific projects.

**Source:** Stats NZ, NZIER forecasts

## Appendix A Forecast methodology

### A.1 FORECAST INPUTS

Our forecast model makes use of four inputs from NZIER's regular forecasts and forecast models:

- forecasts of the all-sectors, all salary and wage rates LCI, described below
- forecasts of GDP:
  - » short-term forecasts based on sector – and expenditure-specific cycles in economic activity
  - » long term forecasts based on labour force growth and trend historical multifactor productivity growth
- long-term trends in industry-specific GDP forecasts based on a descriptive (Vector Auto-Regression) model of trend shares of GDP by industry.
- exchange rate: NZD/USD.

In addition, the forecasting method for the CGPI-Civil also makes use of:

- historical oil price and metals prices
- average consensus forecasts for commodity prices.

The mid-point of consensus forecasts is used to forecast prices because these reflect a variety of different perspectives and forecast methods and consequently embody more information and better-formed expectations than the forecasts of a single forecaster.

### LCI All industries

The forecast of the LCI All Industries is used as input for our CGPI-Civil forecast; it is determined jointly with other key measures of macroeconomic activity. The forecasts are produced through an iterative process that considers both demand and supply aspects of the macroeconomy, institutional settings and economic shocks to global demand or local supply, such as droughts.

The forecast can be accurately described as having both a long-term trend component and a cyclical component. The trend component is forecast using the relationship between CPI inflation and overall wage inflation.

Cycles around the trend reflect fluctuations in the output gap (actual growth in output in the economy relative to growth in productive capacity). These fluctuations affect labour costs by affecting wage demands and the proportion of wage cost from overtime rates.

Forecast cycles also incorporate delayed effects of rising labour demand on unemployment and employment and, subsequently, wage inflation. Growth in the LCI lags rising labour demand by 18 to 24 months.

### A.2 FORECASTING MODEL

The CGPI-Civil series is forecasted using an econometric model with two parts:

- A model of the long-term trend in the Civil Engineering Index as a function of all-sectors, all salary and wage rates LCI and population growth, oil price, and commodity prices
- A model of short-run and cyclical movements in the Civil Engineering Index as a function of changes in GDP and construction output gap and autoregressive terms.

Output gaps for GDP and construction and all other sectors forecast here are constructed from a (Hoddrick Prescott) filtered trend of industry activity around which cycles can be measured. These cycles dissipate over time, leaving our forecasts to be based on long-term trends.

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