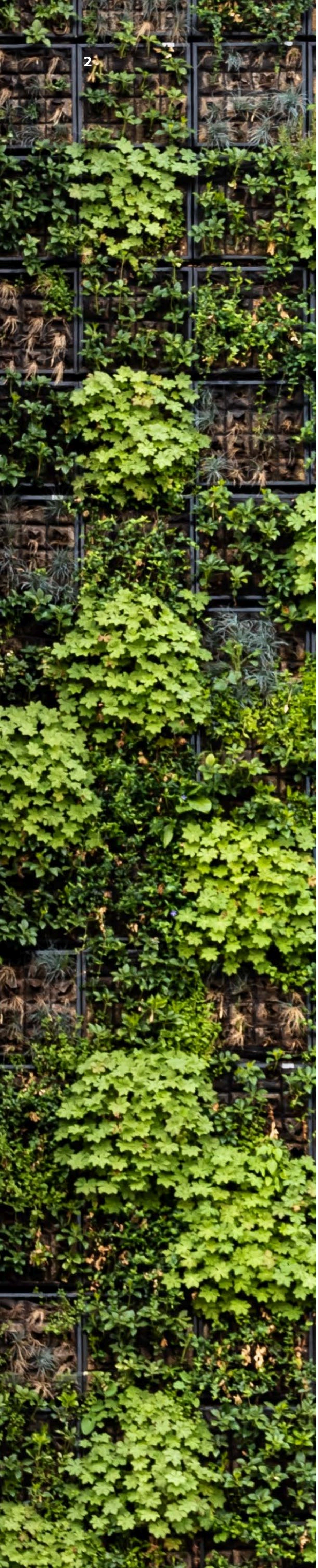
Turner & Townsend

75 & celebrating

Australia and New Zealand market insight report

Q3 2021

making the **difference**



Introduction

Construction activity across Australia and New Zealand continues at pace over Q3 2021, however, long lead times and rising freight costs are placing further pressure on construction markets, amid ongoing supply constraints and labour shortages.

Our latest Australia and New Zealand market insight report finds that global supply chain pains caused by surging demand, supply shortages and supply bottlenecks continue to push up the cost of key building materials such as steel, timber and electrical materials. This is placing further pressure on Australia and New Zealand's already constrained construction markets. Skilled labour shortages continue to be felt across both countries, with international and state border restrictions increasing pressure on the industry.

Despite these significant challenges, construction activity presses on, particularly in the public sector. The outlook is positive, with an increase in activity forecast for 2022 onwards when the private sector is expected to recover in line with international borders opening to non-Australian and non-New Zealand citizens.

In the run up to COP26, this quarter's report focuses on net zero carbon (NZC) and the actions we need to immediately take to minimise emissions. We ask our NZC subject matter experts to provide on-the-ground insight into setting and implementing a NZC strategy, achieving KPI's and managing the supply chain through a program management approach, and methods to manage CAPEX spend to revitalise ageing assets.

Turner & Townsend's net zero commitment

2030

We are turning over a new leaf by adopting green technologies and behaviours that will ensure we reach net zero by 2030 across our whole global value chain.

100%

We have offset 100 percent of our emissions and have been carbon neutral since January 2021.

54%

We have reduced our emissions per employee by 54 percent since FY 14/15.

Australia market overview

Ongoing supply chain constraints and labour shortages continue to be the biggest challenge facing Australia's construction markets and are unlikely to ease before the end of 2021.

Each market continues to feel the impact of these challenges to varying degrees, with the cost of labour and materials across multiple trades continuing to climb as shortages grow.

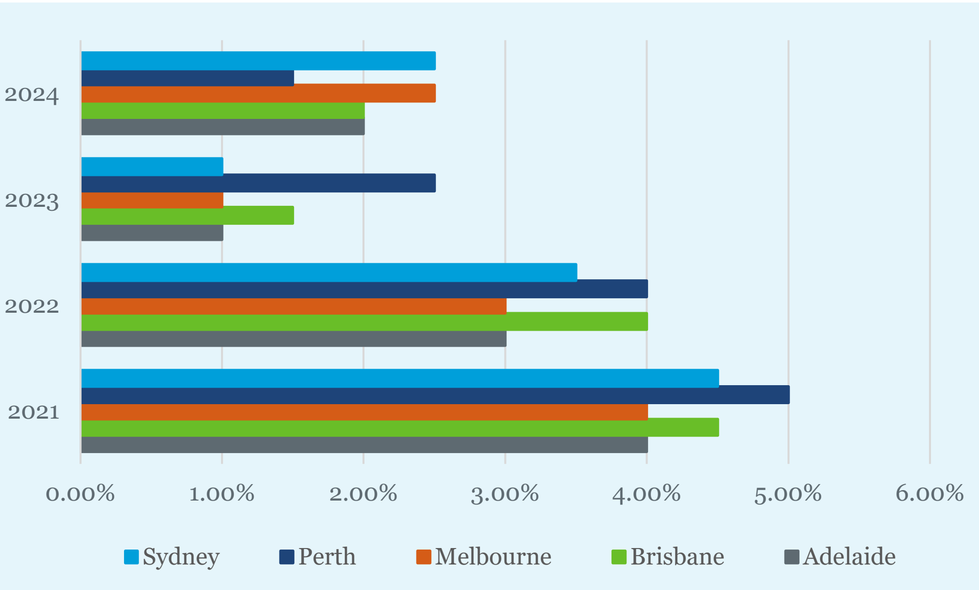
The rising cost of key building materials is one of the biggest challenges being experienced across Australian markets. Steel costs have surged by up to 40 percent, and timber and electrical materials costs by up to 30 percent. Supply chain pains caused by surging demand, material shortages and supply bottlenecks are the leading cause of this. Additionally, freight costs continue to climb to record highs, with Australia's ocean freight index spiking by 38.6 percent in the three months to June 2021. This is adding long lead times and additional cost to imported materials. The recent easing in commodity prices such as iron ore, should help to ease some price pressure on materials over the coming months.

Skilled labour shortages are being felt across most markets, with domestic and international border restrictions placing further pressure on the industry. Currently, there is no set date to lift border restrictions for skilled workers entering Australia, however, it has been flagged as the next priority after Australian citizens and permanent residents.

Despite these current challenges, the outlook for construction across Australia is positive, with an increase in activity across the non-residential sector forecast from 2022 onwards. Public sector projects have been the main driver of activity across most states, while private sector activity continues to recover.

The sizeable pipeline of public projects includes schools, transport infrastructure, hospitals and quarantine centres. Infrastructure Australia's first Market Capacity Report forecasts a surge in demand for skills, labour and materials required for the rapid increase in public infrastructure investment. Private sector activity is expected to return to pre-pandemic levels by mid-2022, in line with the broader economic recovery and the reopening of international borders to non-Australian citizens.

Figure 1:
Australia construction cost escalation



New Zealand market overview

Over the medium term, New Zealand's construction market outlook is positive, however, ongoing supply chain constraints and worsening skills shortages are creating considerable challenges for the short-term outlook.

Construction activity continues to press on across New Zealand, despite significant capacity challenges impacting projects. Building material shortages, supply bottlenecks, long-lead times, and a severe skills shortage have continued to place downwards pressure on the construction industry. This is pushing up the cost of construction across the country, with little sign of easing before the end of 2021.

Housing construction and infrastructure projects continue to be the main drivers of activity, while private investment remains subdued. Growth in these sectors is constraining domestic supply chains for key building materials. While there remains a robust pipeline of infrastructure projects around the country, demand from the housing sector is expected to cool, following the recent rise in interest rates. This should help to alleviate some pressure on the industry over the next 12 months.

Some easing of commodity prices should bring down costs of key building materials such as steel over the coming months. However, higher freight costs are likely to remain due to record volumes of freight and severe port congestion, which could offset any easing in imported material costs.

Private sector activity is steadily increasing, and this should continue into 2022 as sentiment strengthens in line with higher vaccination rates.

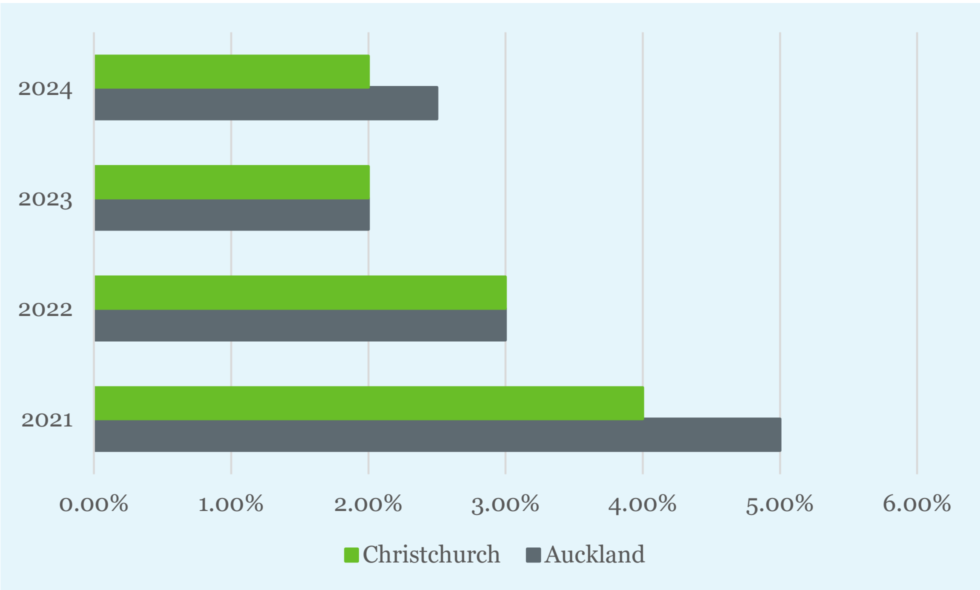


Figure 2:

New Zealand construction cost escalation

New South Wales

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

6% Site foreman / hr

15% Group 1 tradesman

12% Concrete 32 Mpa / m3

9% Plasterboard 13mm thick to stud wall / m2

35% Structural steel / tonne

25% Main contractors margin movement

The domestic supply chain is continuing to experience challenges due to international supply constraints and labour shortages, which is driving up construction costs. The labour constraints are not only confined to construction site operatives as the majority of stakeholders in the supply chain also reporting issues with securing skilled workers.

Despite current challenges, market sentiment on the outlook remains positive across the New South Wales construction market. There is a steady pipeline of work, particularly from the public sector, including transport projects, schools and hospitals. Contractors' margins are recovering to pre-COVID-19 levels. This combined with rising labour costs, continues to increase the price of construction works and we are seeing this result in higher cost escalation.

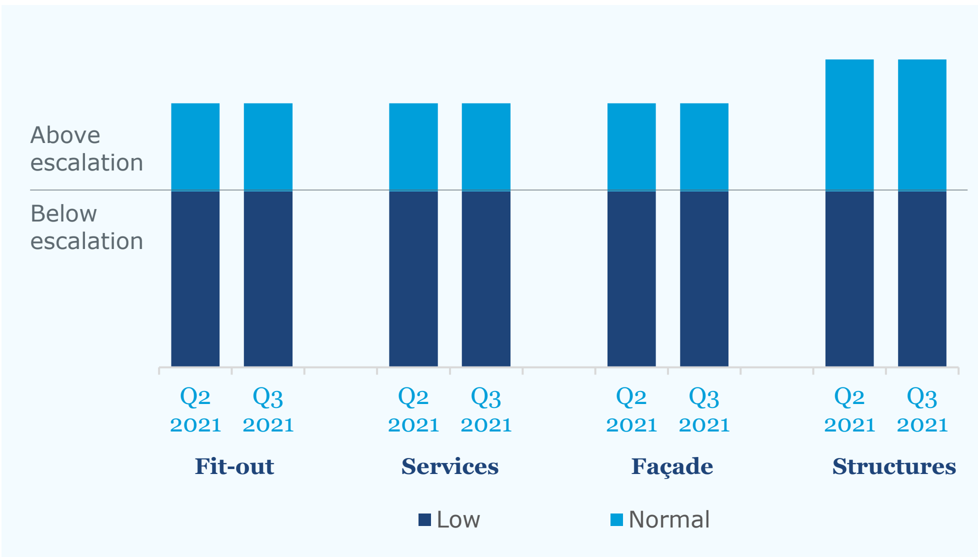
The New South Wales Government implemented a two-week construction shutdown during the month of July across greater Sydney and a longer shutdown in a number of the local government areas (LGAs). This has had a significant impact on productivity with the majority of projects reporting delays. Contractors have been working closely with clients on the larger projects to minimise this delay and make back the time prior to the contract practical completion date.

During the quarter, the New South Wales Government announced its 'Net Zero Plan Stage 1: 2020-2030'. This has increased the state's emissions reduction target from a 35 percent reduction to a 50 percent reduction by 2030 and is a welcome development from the government. We have also noticed a change in private clients' attitude towards making their business more environmentally friendly. Several large corporates now have high requirements for LEED and Green Star as a minimum standard and this is being driven as a KPI on their projects.

Figure 3:

Supply chain capacity in New South Wales

Q2 2021 – Q3 2021



Queensland

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

10% Site foreman / hr

12.4% Group 1 tradesman

3.1% Concrete 32 Mpa / m3

12.3% Plasterboard 13mm thick to stud wall / m2

42.86% Structural steel / tonne

33% Main contractors margin movement

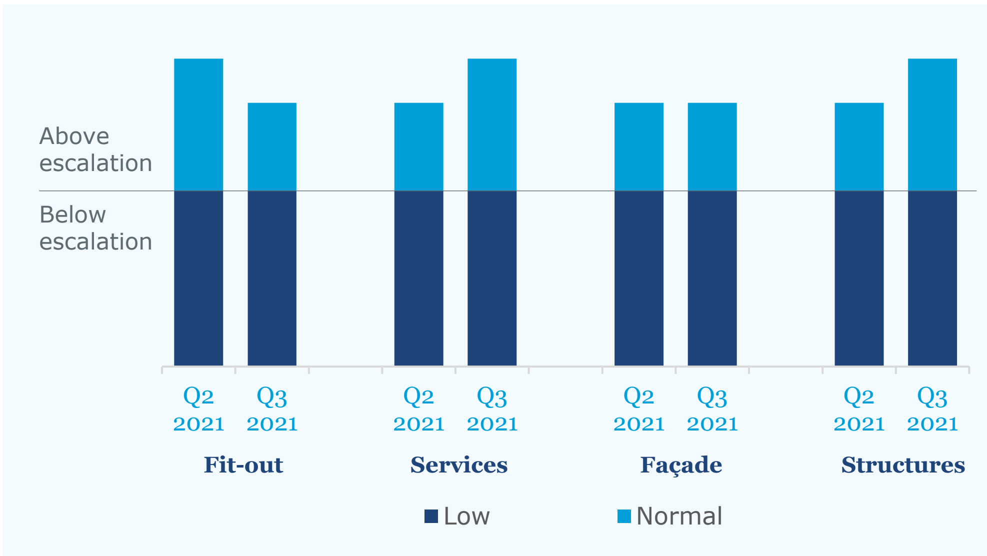
The Queensland construction market continues to heat up with an increase in the number of new opportunities in the market. Currently, there is still capacity within the southeast Queensland supply chain, however, we are hearing reports of capacity issues in regional cities due to skills shortages and strong demand. Tender activity is generally increasing, with strong demand continuing across the health, tertiary education, commercial, residential, and industrial sectors.

There have been reports of several small to medium sized sub-contractors and main contractors coming under increased financial stress, due to increases in material costs since being awarded project contracts. We are generally seeing this issue occur where contractors secured projects during 2020 when prices were relatively stable. The volatility of material costs, particularly steel and other metal products, have resulted in contractors incurring significant losses on these trades, which some contractors are unable to offset and are left to absorb the cost.

The housing stimulus package is starting to create shortages in material for residential construction such as steel, reinforcement, plasterboard, timber and roofing. This is starting to put pressure on pricing and we are seeing up to 20 percent increases in certain trades. We expect this will start to flow over into other sectors as costs continue to rise over the coming months.

Over the quarter, the Queensland Government announced it’s targets to net zero emissions by 2050. To achieve this, the state plans to power Queensland with 50 percent renewable energy by 2030 and reduce emissions by 30 percent by 2030.

Figure 4:
Supply chain capacity in Queensland
Q2 2021 – Q3 2021



South Australia

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

0% Site foreman / hr

0% Group 1 tradesman

6.7% Concrete 32 Mpa / m3

17% Plasterboard 13mm thick to stud wall / m2

13.5% Structural steel / tonne

0% Main contractors margin movement

The construction sector in South Australia remains very active, which continues to put strain on the local supply chain.

Price increases are still being experienced in the supply of structural steel, reinforcement, steel stud framing and other steel products, which has affected the increase in benchmark and trade rates.

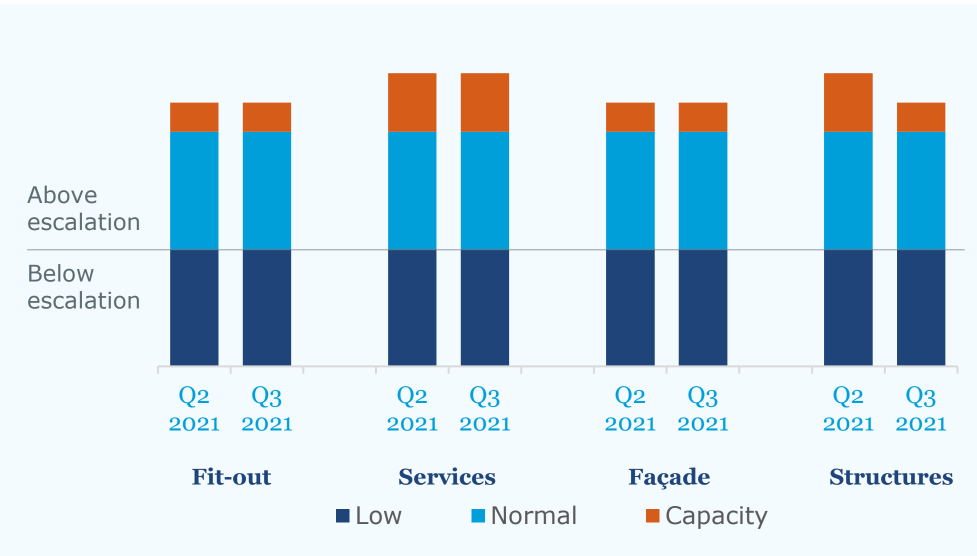
The shortage of timber supply in the local market is putting pressure on prefabricated steel framing suppliers who are struggling to keep up with demand. We are now seeing volume home building companies look for alternative solutions to maintain their cashflow and margin while also keeping projects moving.

Due to their lesser buying power, we are seeing some smaller building contractors experience longer lead times when procuring materials, as priority is being given to larger contractors with bigger orders.

Based on the above, we are continuing to see an increase in construction costs in the South Australia market, with further escalation likely to occur over coming months.

The South Australian Government has set goals to reduce the states greenhouse gas emissions by more than 50 percent below 2005 levels by 2030, and to achieve net zero emissions by 2050. The government has put in place a range of policies and programs that contribute to reducing the state's greenhouse gas emissions in energy efficiency, renewable energy sources, transport, waste management and buildings.

Figure 5:
Supply chain capacity in South Australia
Q2 2021 – Q3 2021



Victoria

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

2.3% Site foreman / hr

4.4% Group 1 tradesman

5.6% Concrete 32 Mpa / m3

0% Plasterboard 13mm thick to stud wall / m2

84% Structural steel / tonne

0% Main contractors margin movement

Residential construction activity continues to be buoyed by government stimulus and low interest rates. This is likely to be further impacted by the recently announced Victorian Homebuyer Fund, a $500m fund which will contribute up to 25 percent towards the purchase price for eligible homebuyers.

The rate of construction activity for projects underway has been impacted by COVID-19 restrictions, however, this does not appear to have slowed interest in new developments. Government spending on infrastructure is forecast to continue, and activity at Melbourne Airport is returning.

The construction market is expected to expand across many sectors into the final quarter of this year, including commercial developments (especially related to town centre building strategies), residential sector (buoyed by the Victorian Homebuyer Fund stimulus) and government spending in the education, health and rail/road sectors continuing to maintain momentum.

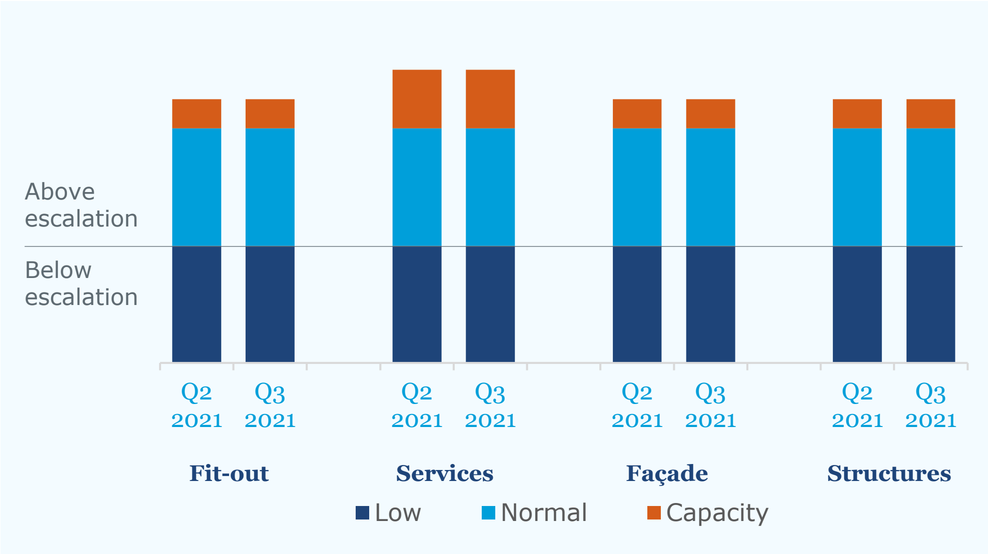
Recent COVID-19 restrictions have hindered projects already under construction, in particular the recent two week complete shutdown. Tendering activity has not slowed, however, contractors are struggling to get full trade coverage for tender returns as many subcontractors have closed operations for the duration of the shutdown. Furthermore, supply chains are strained due to logistic challenges, with some materials under significant shortage pressures from local and international demand.

Sustainability and net zero targets are an increasingly present requirement for projects. The take-up is varied depending on the sector and the type of client/developer. Large institutional organisations appear to be leading the charge with developers such as QIC having published a policy/plan to achieve Net Zero Emissions by 2028 (dated June 2020). Recent PCA and BCA changes have increased sustainability and energy performance requirements which is also contributing to the overall increase in sustainability initiatives being implemented on projects.

Figure 6:

Supply chain capacity in Victoria

Q2 2021 – Q3 2021



Western Australia

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

10.6% Site foreman / hr

5.9% Group 1 tradesman

12.1% Concrete 32 Mpa / m3

23.1% Plasterboard 13mm thick to stud wall / m2

64.4% Structural steel / tonne

33.3% Main contractors margin movement

The Western Australian construction market is currently experiencing severe skills shortages due to the government's multi-sector stimulus drive over the last 18 - 24 months. This is increasing cost, time and quality pressure with significant volatility being experienced in civil, concrete and steel prices.

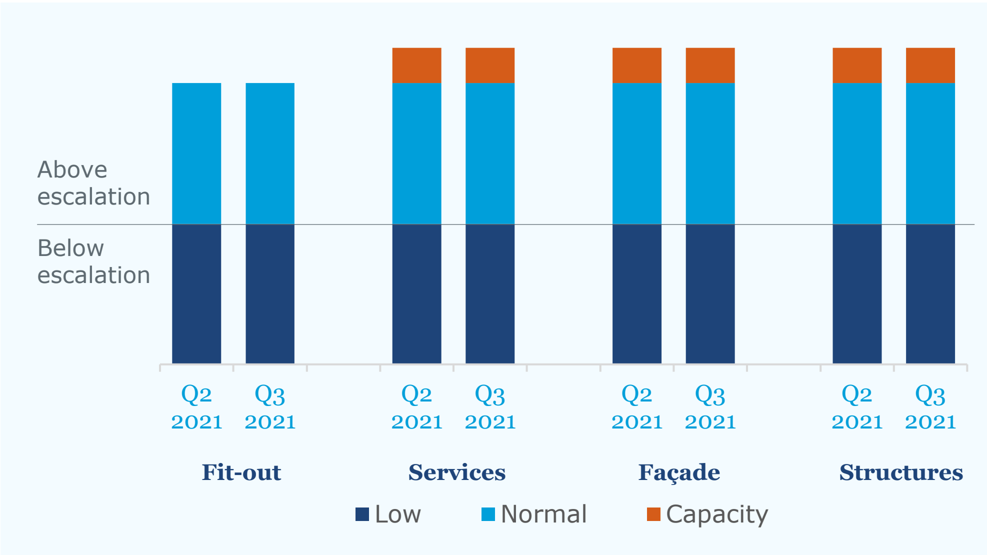
The Western Australian Government issued an update regarding the state budget for 2021-22 in September which confirmed that the economy was one of the strongest in the nation and the world during the pandemic. The budget invests in projects and initiatives that will set up the state’s long-term future, with significant funding committed to address climate change, save our forests, grow new industries, build METRONET, build Westport and create quality local jobs.

The key investment areas will focus on health, education and training, infrastructure and climate action with a $750m Climate Action Fund to deliver initiatives designed to address the threat of climate change and help industry create sustainable jobs.

The impact of the government’s accelerated multi-sector stimulus drive will likely see tender prices increase due to the limited availability of skilled labour and materials. We have already started to experience significant cost increases in civil construction, steelwork, concrete and reinforcement. This supply and demand impact will be exacerbated by a restriction in overseas skilled labour which will likely result in a lack of competition in labour rates and in turn will drive a further price spike over the next quarter.

Other contributing factors relate to the migration of skilled trades and materials being consumed by the residential sector boom as a consequence of the government incentivisation schemes released in response to the pandemic. Education and food retail have demonstrated strong growth through government investment and capital funds being invested to futureproof operations for consumer convenience.

Figure 7:
Supply chain capacity in Western Australia
Q2 2021 – Q3 2021



Auckland

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

18% Site foreman / hr

13% Group 1 tradesman

13.8% Concrete 32 Mpa / m3

21.8% Plasterboard 13mm thick to stud wall / m2

35.14% Structural steel / tonne

35% Main contractors margin movement

We are continuing to see mixed activity across Auckland's construction industry. The government, education and residential sectors are experiencing high activity levels while the commercial office and retail sectors remain subdued.

COVID-19 continues to have an impact on the construction sector, particularly for projects currently in the construction phase. Activity on site has slowed and we are likely to see completion dates pushed out due to loss of time and a backlog impacting on building material production.

We have observed an increase in tenderers willing to bid competitively on projects such as schools and residential developments in the Auckland region. The larger contractors in the market are continuing to bid with higher tender prices on complicated projects.

Tender prices have increased due to price escalation of building materials. Labour cost has also increased anywhere between 5 percent to 15 percent from Q1 2021 to Q3 2021.

Some projects are now experiencing cost issues as project budgets struggle to absorb the supply cost increases with significant value engineering required, or increased funding provided to offset the increases.

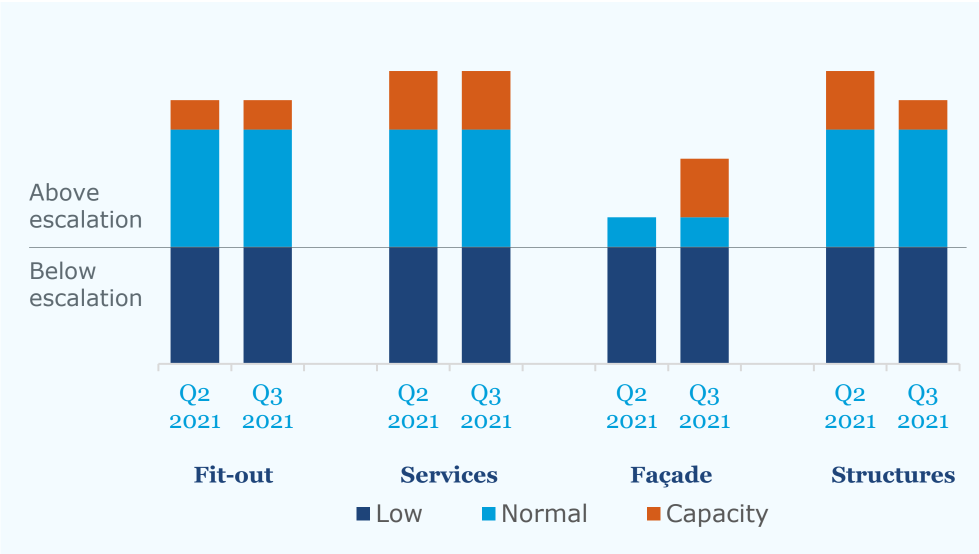
Contractors are now including additional terms in their tender returns making provision for negotiation of material price escalation, and a reduction in contract retentions/securities.

We are seeing several clients put plans in place to drive the net zero agenda. There are examples of projects with increased design times as designers get to grips with the requirements, program delays due to materials lead times, and increased construction variations required to meet the new client requirements.

Figure 8:

Supply chain capacity in Auckland

Q2 2021 – Q3 2021



Christchurch

Key price indicators

Movement (%)
Q3 2020 – Q3 2021

20% Site foreman / hr

21% Group 1 tradesman

3% Concrete 32 Mpa / m3

6.6% Plasterboard 13mm thick to stud wall / m2

70% Structural steel / tonne

50% Main contractors margin movement

Overall consumer confidence remains subdued due to the uncertainty of delay caused by COVID-19. The continued exceptional growth in house prices, up 25 percent compared to Q3 2020 and the increase in building consents issued have provided some buoyancy to construction and the real estate sector.

Demand for housing is excepted to continue in the short term with the recently announced 'one off Residence Visa pathway' which will fuel demand in the absence of cross border immigration. The continued border closures, snap lockdowns and increased demand has put a strain on the supply chain. Material shortages and price escalation are becoming the norm.

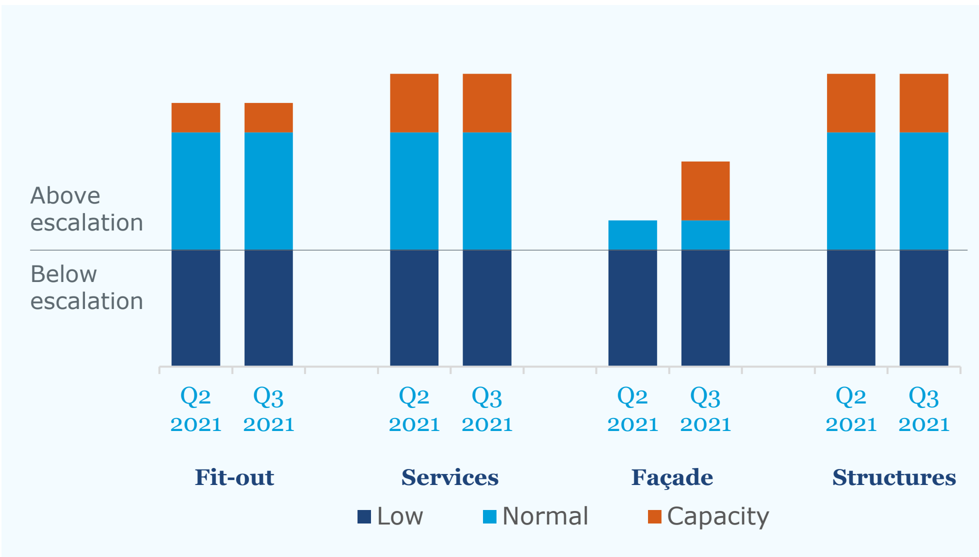
The market is currently strained due to procurement challenges. Limited manpower resources and escalating material cost are likely to delay the start of proposed projects. However, it is anticipated that national and local governments will accelerate expenditure on infrastructure projects to avoid a recession.

The majority of contractors have full order books and are becoming more selective about the projects they are prepared to bid for.

As a direct result of COVID-19, most contractors are now procuring materials well in advance and we are seeing clients increasingly provide advance payments to secure materials. Tender price validity periods are also becoming shorter as contractors look to mitigate the risk of price escalations. The extended duration of level three lockdown has put additional strain on the already struggling supply chain, leading to price escalation and project delays.

Christchurch City Council has set a target to achieve net zero by 2045. With Christchurch an earthquake prone zone, the city is working to reduce emissions from building during construction and operation and also ensure the buildings are resilient to withstand extreme and changing climate conditions.

Figure 9:
Supply chain capacity in Christchurch
Q2 2021 – Q3 2021



Australia economic overview

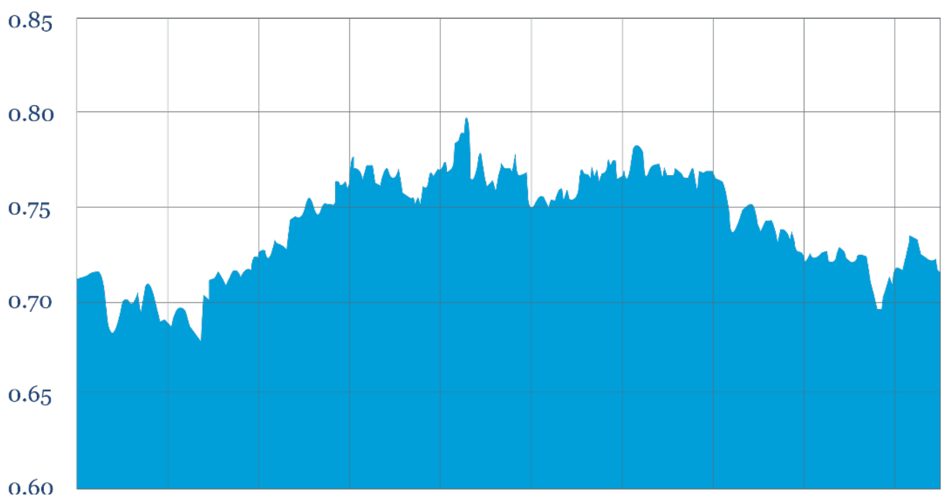
Australia's economy expanded by 0.7 percent over the second quarter of 2021, after an upwardly revised growth of 1.9 percent in the first quarter. This weak pace of growth is the result of a fall in private investment and supply disruptions impacting Australian export volumes.

Despite growth easing over Q2, the full impact of the COVID-19 lockdowns across New South Wales and Victoria are yet to be felt and are expected to result in the economy contracting over Q3. Following this, the economy is expected to return to growth over Q4 as COVID-19 restrictions ease across the country. Annual GDP growth increased by a record 9.6 percent in the year to June 2021, however, this was only due to the severe contraction that occurred in the June quarter in 2020.

Inflation surged to 3.8 percent over the 12 months to June 2021, which was mostly the result of the low base in 2020 and the winding back of government subsidies such as free childcare. However, the jump in consumer prices has sparked debate among experts as to whether high inflation will remain or whether this is just a temporary blip. The RBA has indicated that they expect inflation to fall back below 2 percent by the end of 2021, which is below their target inflation band of 2-3 percent. Low wage growth remains one of the key drags on inflation.

While total employment fell sharply over July, unemployment eased down from 4.6 percent to 4.5 percent. The reason for this was an exodus of workers leaving the labour force during the recent lockdowns who have not been actively seeking work. The New South Wales and Victoria lockdowns have been a considerable set-back for the labour market recovery and is comparable to the initial impact of the pandemic seen in 2020. As these regions re-emerge from their lockdowns labour market prospects should start to improve.

Figure 10:
AUD USD performance
Q3 2021 – Q3 2022



Forex movement of 0% in 12 months

Figure 11:
AUD forex forecasts

	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022
USD	0.73	0.74	0.75	0.75	0.75
GBP	0.54	0.54	0.54	0.53	0.54
EUR	0.63	0.64	0.64	0.63	0.63
YUAN	4.68	4.70	4.73	4.69	4.69

	Current	Previous
GDP quarterly growth rate	0.7% Mar 21 – Jun 21	1.9% Dec 20 – Mar 21
GDP annual growth rate	9.6% Jun 20 – Jun 21	-1.3% Mar 20 – Mar 21
Inflation (annual)	3.8% Jun 20 – Jun 21	1.1% Mar 20 – Mar 21
Unemployment rate	4.5% Aug 21	4.6% Jun 21
Business confidence index	-5 Aug 21	-7 Jul 21
Retail sales	-3.1% Jun 20 – Jul 21	2.9% Jun 20 – Jun 21
Interest rate	0.10% Sep 21	0.10% Aug 21

New Zealand economic overview

New Zealand's economy expanded by 2.8 percent over the second quarter of 2021, up from 1.4 percent growth in the first quarter. This higher-than-anticipated growth was led by an increase in retail trade and the accommodation and food services industries. With the reimplementation of lockdowns amid the outbreak of the Delta strain of COVID-19, growth is expected to slow over Q3.

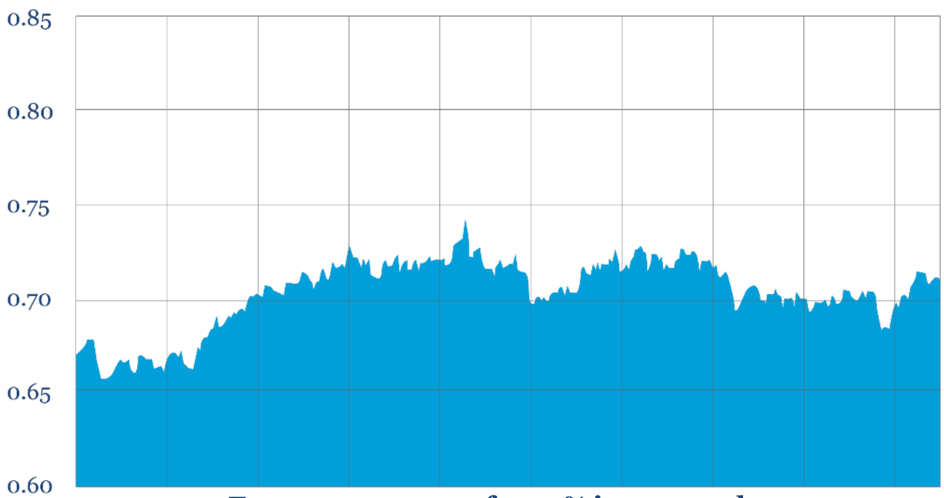
Annual GDP soared to 17.4 percent in the year to June 2021, however, this was largely due to low base effects in 2020 when the shock of the COVID-19 pandemic hit.

Strong external demand also provided a boost to growth, with services exports up 63 percent over the quarter. While external demand has been robust, domestic demand has slowed amid falling consumer confidence. Retail sales increased by 33.3 percent year-on-year in the second quarter, however, this was largely the result of low base effects, where retail sales plunged by 14.9 percent in the same quarter in 2020.

New Zealand's labour market continues to tighten, with unemployment falling to a one-year low of 4 percent and employment increasing by 1 percent over the June quarter. Labour shortages are continuing to worsen across New Zealand and will continue to place downwards pressure on growth until some easing occurs. This is also driving up labour costs with the wage inflation jumping by 2.1 percent over the June quarter.

Inflation jumped to 3.3 percent over the June quarter, the highest increase in nearly a decade. This was partially due to the low base effects in 2020, but it has also triggered concerns around the market overheating, particularly with the surge in property prices being experienced. This resulted in the Reserve Bank of New Zealand increasing the cash rate from 0.25 percent to 0.50 percent in October.

Figure 12:
NZD USD performance
Q3 2021 – Q3 2022



Forex movement of +4.4% in 12 months

Figure 13:
NZD forex forecasts

	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022
USD	0.69	0.70	0.70	0.71	0.71
GBP	0.52	0.52	0.51	0.51	0.52
EUR	0.60	0.60	0.60	0.60	0.60
YUAN	4.48	4.48	4.49	4.49	4.49

	Current	Previous
GDP quarterly growth rate	2.8% Mar 21 – Jun 21	1.4% Dec 20 – Mar 21
GDP annual growth rate	17.4% Jun 20 – Jun 21	2.9% Mar 20 – Mar 21
Inflation (annual)	3.3% Jun 20 – Jun 21	1.5% Mar 20 – Mar 21
Unemployment rate	4.0% Jun 21	4.7% Mar 21
Business confidence index	-7.2 Sep 21	-14.2 Jul 21
Retail sales	33.3% Jun 20 – Jul 21	6.6% Jun 20 – Jun 21
Interest rate	0.50% Oct 21	0.25% Sep 21

Empowering the construction industry to turn over a new leaf

Addressing the climate crisis requires a long-term commitment to change and practical action rather than words.

At Turner & Townsend, we are turning over a new leaf by adopting green technologies and behaviours that will ensure we reach net zero carbon (NZC) by 2030 across our whole global value chain. We are working with our industry to do the same for a greener and more sustainable world.

Across Australia and New Zealand, state governments and individual organisations are championing the drive to NZC by 2050. In the run up to COP26 there is increased pressure on the Australia and New Zealand governments to release their reduction plans and put solid policies in place.

As one of the most significant contributors to carbon emissions, the way that the construction industry constructs, manages, and operates built assets is a central focus in the race to reach NZC.

Yet, while a lot of investment and innovation has focused on reducing carbon in new-build construction, this is only part of the problem. Given that 80 percent of the building stock we will have in 2050 has already been built, greater emphasis should be given to reducing the daily operational emissions created by inefficient existing properties.

In this quarter's market insight report, our NZC subject matter experts provide on-the-ground insight into:

- Setting and implementing a NZC strategy.
- Taking a program management approach to achieve KPI's and manage the supply chain.
- Managing CAPEX spend to revitalise existing and ageing assets.

Defining a net zero strategy

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What are the drivers of achieving NZC?

It would be a very blinkered CEO who decides that targeting and achieving NZC is a low priority. The science is proven and, increasingly, environmental risks are impacting upon businesses, communities and individuals whether that is:

1. Climate-related risks – impacting the physical infrastructure of factories, offices or homes as more wind, fire and flood events challenge our assets.

2. Litigation-related risks – affecting business operations due to expensive lawsuits or settlements, causing brand issues, if net zero or environmental elements are not delivered.

3. Transition-related risks – impacting performance as businesses who fail to embrace a net zero future are left behind by the competition who champion innovation and brand development.

Why should organisations establish a NZC strategy?

As with any corporate strategy, it is important that there is a clear reason why that strategy is needed and will engage and empower teams and individuals to drive the strategy forward. With NZC, there are several reasons why a coherent and comprehensive strategy is required:

- **It's the right thing to do** – Achieving net zero and reducing emissions to support the Paris Agreement targets is the right thing to do for the planet.
- **It's what our stakeholders want** – Is it? There is an assumption that everyone is aligned and supportive of NZC but there is not a universal level of understanding on what it is. Organisations will need to invest time in understanding the position of stakeholders and their acceptance of NZC.
- **It's what our teams want** – For the majority, this will be true but there will be anxiety about the impact on individual roles and whether they have the new skills required to perform in a NZC world.
- **It will deliver financial returns** – There is clear evidence that a NZC approach delivers long term financial benefits driven from reduced overheads, improved market share, access to wider investment and reduced risks, but has this been articulated and communicated?

What is the most important factor when embedding a NZC strategy?

Our research demonstrates that the most important factor for successful NZC implementation is the approach taken to people and culture.

An inspiring and ambitious NZC strategy sponsored by senior leadership that contains a comprehensive plan to how the strategy will be delivered – funding, training, governance, accountability and targets – is the key upfront starting point for achieving NZC. This is not a technical challenge but one that needs consistent and transparent communication and engagement of people in the process.

Leaders who lead from the front, do not delegate accountability and build the NZC culture from top down while supporting the delivery teams with effective governance, engaging training and NZC funding will lead their organisation towards a rapid achievement of NZC targets.

Net zero carbon requires a program approach

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How do you understand your assets before undertaking a program of works?

Many of our clients are already doing great work in this space, but they have not necessarily defined, planned, executed and importantly demonstrated the great start they have made on a journey to NZC.

By engaging as many stakeholder groups as possible, we can start collating ideas and current initiatives to organise these ideas and ambitions into one 'sustainability execution plan'.

Essentially, we encourage the sharing of information about 'where a company was', 'where they are now', and importantly 'where they want to be'. This information informs the past and present, giving us a baseline from which to organise and plan out a realistic execution plan to start a NZC journey.

What areas are you typically targeting to transform assets?

We are really trying to broach the idea of tackling the direct emissions from assets, reducing the use of energy across individual and portfolios of physical assets and supporting the use of responsible supply chains to fulfil an assets requirement.

Physical assets tend to cover off a broad area of energy consumption, there are some quick wins that can be assessed, planned and executed rapidly to reduce consumption, including:

- Challenging and implementing the electrification of logistics or vehicle fleets.
- Specifying, sourcing, and implementing the use of LED lightbulbs across the real estate portfolio.
- Working through supply chain and procurement channels to hold the supply chain to a higher account.

How will we re-evaluate value in a supply chain?

This area is likely to evolve quickly in the coming years, especially as we look to drill into scope 3 emissions to further the journey towards NZC. Being accountable for emissions that are not directly owned or controlled by a company is going to re-define some of the value equations you would normally assess your supply chain.

We have typically driven value in the supply chain in programs and portfolios of work through balancing an ever-changing value equation of bulk pricing, delivery times, warranty lengths, customer service, forex conversions and landing duties alongside and quality and specification requirements.

But now we are now starting to build out new evaluation criteria to support NZC, including emissions from product deliveries, the lifecycle efficiency of a product vs transportation and unit cost, embedded carbon within a product, and definable and evidenced commitment to NZC from the supply chain

Installing solar panels on 30 assets is the same as powering 1,000 homes each year.

Installing LED lights within 268 assets is the same as taking 2,500 cars off the road.

Installing 100 water meters is the same as saving enough water for 92 Olympic sized swimming pools per annum.

Managing CAPEX to revitalise ageing assets

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What opportunities exist for CAPEX planning when revitalising ageing assets?

The roadmap to NZC includes reducing energy usage, removing carbon intensive fuels and sourcing clean fuel. In practice an existing asset should:

- Always look to replace inefficient existing equipment with high efficiency and high quality equipment.
- Remove gas-consuming boilers and appliances and replace them with electric heat pumps/heat recovery chillers or other electric alternatives.
- Source clean fuels through generation of onsite solar, noting that for an end source to receive power, approximately double that power must be generated to overcome power transmission losses or through green electrical purchase.

How can an asset become carbon neutral?

A good place to start is by through reviewing an assets capital works plan (CWP) to make sure it adequately identifies and prioritises energy efficiency opportunities and sequences in a way that minimises abortive works and costs. For example, boiler upgrades and electrical switchboard upgrades should be done concurrently to maximise electrification opportunities.

By approaching energy efficiency from a capital works perspective, developers and asset owners can avoid (or reduce) any capital problems as costs are spread over many years.

Through good planning with low hanging opportunities implemented first, avoided maintenance costs and direct operating costs will typically pay the incremental cost increase of future projects, thereby creating a neutral cost impact over the entire CAPEX plan.

What are the challenges with managing CAPEX and revitalising existing assets?

Many city assets operate as a mixed-use environment blending residential, commercial, cultural, institutional or entertainment uses into one space. In many cases, these assets operate 24-hours/day, 7-days/week, 365-days/year and therefore any shutdown can have significant impact on users and owners. On top of this, the key challenges to owners and managers include:

- Staying abreast of each technology change and update.
- Balancing expenditure between development, CAPEX and OPEX.
- Long term (ten+ year) CAPEX planning.
- Increased tenant demand for better building performance.
- Minimising impacts on existing tenants during refurbishments, replacements, and upgrades.

Revitalisation projects and CAPEX planning can be complex, time consuming and expensive. However, the long-term benefits for owners, managers, tenants and users are invaluable. Long-term benefits include:

- Increased safety, operational consistency and reliability across site with no downtime due to faults or maintenance works.
- Enhanced capability and reliability during emergency events.
- Improved NABERS ratings by reducing building consumption.
- Greater oversight into CAPEX planning to stay on top of budgeting.
- Securing tenants and reducing the risk of lower vacancy rates.

About Turner & Townsend

We are an independent professional services company specialising in programme management, project management, cost and commercial management and advisory across the real estate, infrastructure and natural resources sectors.

With 112 offices in 46 countries, we draw on our extensive global and industry experience to manage risk while maximising value and performance during the construction and operation of our clients' assets.

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