

**WITHOUT
LIMITS**

AECOM

SENTIMENT

**INFRASTRUCTURE AND BUILDINGS CONSTRUCTION SURVEY
NEW ZEALAND 2019**

IN THIS ISSUE

How an informed, engaged public is key to modernising infrastructure

How congestion charging could unclog Auckland

Lessons in procurement from Australia and the United Kingdom

10

10th Anniversary Edition

FOREWORD

On behalf of AECOM, I would like to thank everyone who participated in the 2019 edition of *Sentiment — Infrastructure and Buildings Construction Survey*. This is the 10th anniversary of the Sentiment survey. Year after year, this survey uncovers insights that help both public- and private-sector organisations to better prepare themselves to meet the challenges of the rapidly changing construction and engineering industries across New Zealand.

This year has seen a marked improvement in industry confidence over last year's survey. Given that the new government has now had over a year to implement its policies and demonstrate its vision for New Zealand and how it will interact with the infrastructure industry, this is perhaps not an unexpected result. Familiarity tends to reduce uncertainty, and the industry is now much-more familiar with the new government's approaches to issues that affect it. We believe that there has been a 'reversion to the mean' to previous levels of optimism that prevailed prior to the September 2017 election. This renewed optimism is obviously a very positive development.

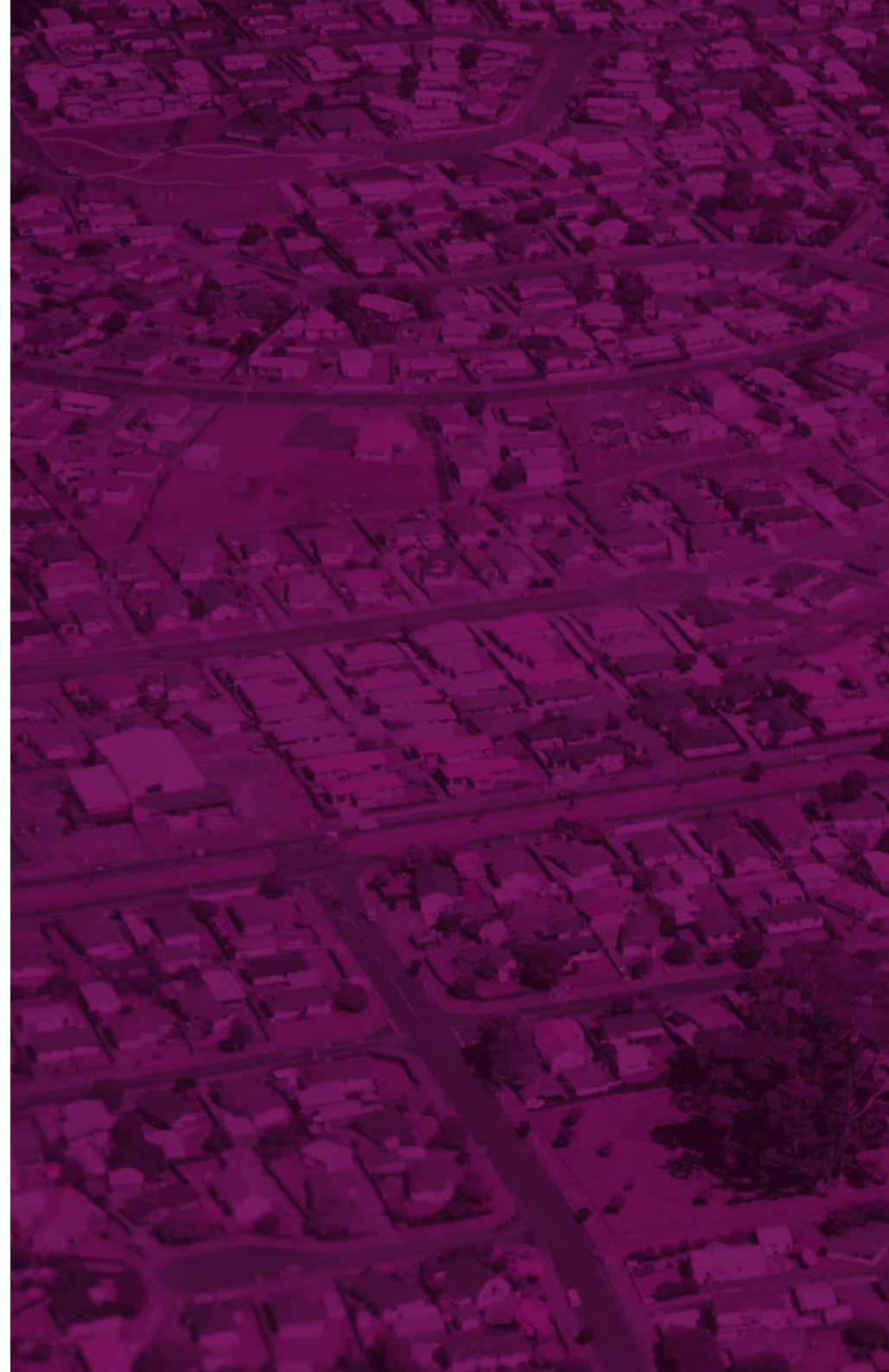
While optimism around delivery and investment for both the infrastructure and buildings sectors has improved, there remain several clouds on the horizon. Not only is the global economic backdrop somewhat uncertain, but the industry is still struggling with the usual problems: skills and material shortages; procurement processes that do not apportion risk equitably (and that erode trust); slim margins for firms operating in the sector; and, a short-term mindset that focuses on price at the expense of value. On top of this, the short length of New Zealand's political cycle makes

it more difficult than it should be to enact reforms and inhibits long-term planning by both businesses and government.

One of the other key themes that emerged from this year's survey was the need for a clearer understanding of the future pipeline of work to give industry participants more certainty around planning for upcoming work and to allow them to build the right capacity to deliver essential infrastructure. The government's announcement on 9 May about an infrastructure pipeline is a welcome step in this direction.

Finally, this year we have included an article by AECOM's global CEO, Mike S. Burke, on finding new, creative solutions to deliver modern infrastructure systems, including the funding and financing of infrastructure. This article formed part of AECOM's global *Future of Infrastructure* report, and while that report was not specifically about New Zealand, this article offers some excellent insights into how to better deliver infrastructure that are equally applicable here. For those interested, the full *Future of Infrastructure* report is available at infrastructure.aecom.com.

Craig Davidson
Managing Director – New Zealand
AECOM





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THE REVIEW

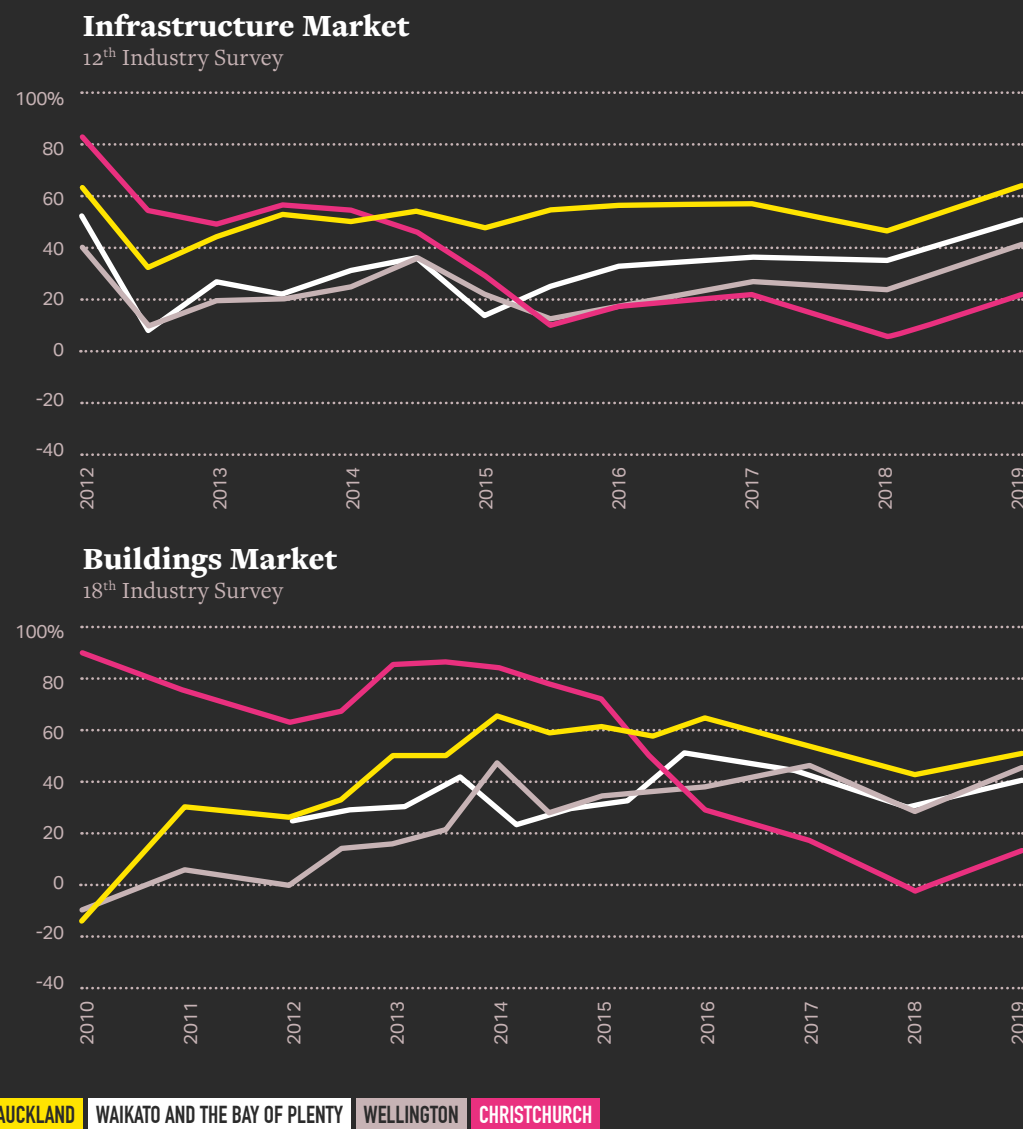
Optimism in New Zealand's outlook for both buildings and infrastructure has rebounded from last year's dip. We were initially a little bit surprised that sentiment should have recovered this much ground this quickly, especially given that a number of projects have experienced delays (e.g. the well-publicised KiwiBuild delays, among others). We believe that this is a very positive development and is likely due to a 'reversion to the mean' following the election of a new central government in September 2017. Sentiment last year was naturally affected by a decline in certainty, as the new government had different priorities in mind (e.g. more rail and less road work) for its term in office compared to the previous government. Add to that the prospect of less-well-developed relationships between the industry and the incoming government, which is only natural, and a certain amount of 'doom and gloom' on the part of an industry that tends to be conservative in outlook and last year's dip is understandable.

What is positive is that sentiment has essentially made up all of the decline from last year's results, and in some areas even exceeded 2017 levels of optimism. For example, the infrastructure market in Auckland, Waikato and the Bay of Plenty and Wellington have seen higher levels of expectations than in 2017. Whether this is just a case of familiarity with the new government reducing last year's uncertainty or whether it is due to the conduct of the new government is perhaps up for debate, but the change in sentiment is certainly palpable. Recent announcements aiming to get the industry moving, such as the government's May announcement of a \$6.1 billion project pipeline, and the fact that New Zealand is now expected to hit five million people around Christmastime, confirm that this improvement in sentiment may well be warranted.

It is notable that sentiment is strongest in Auckland, where it is high especially for education, health and existing buildings. But growth across the country is evening out, including in Christchurch, Wellington and Waikato and the Bay of Plenty.

With respect to the infrastructure sector overall, 66 percent of respondents expected infrastructure spending to increase, with another 29 percent expecting it to remain steady. In the building sector, 57 percent of respondents expected spending on buildings to increase, with another 34 percent expecting it to remain steady.

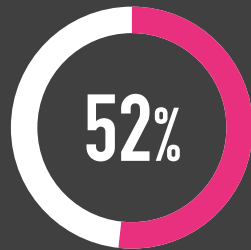
DELIVERY EXPECTATIONS TREND



Note: Industry sentiment in the Buildings Market has been surveyed since 2010, while the Infrastructure Market and the Waikato and Bay of Plenty regions have been tracked since 2012. This chart shows the trend in net delivery expectations.

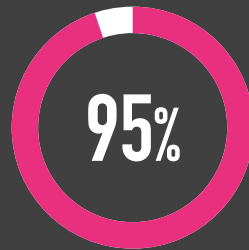
KEY INDICATORS

DELIVERY AND INVESTMENT EXPECTATIONS



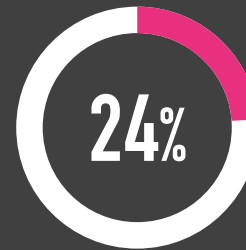
Returning optimism for road delivery

52 percent expect to see greater delivery in the roads sector — returning to May 2017 levels.



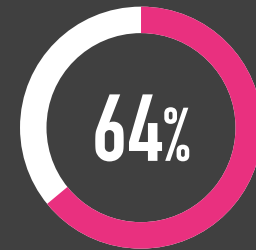
Strong expectations for infrastructure investment

95 percent of respondents expect infrastructure investment to increase or remain steady.



Continued strong building market investment outlook

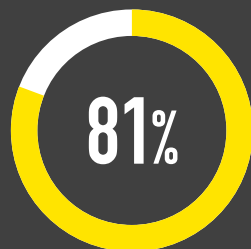
Investment in the buildings sector nationwide has increased 24 percent over the last two years.



Increasing optimism in the 3 Waters delivery expectation

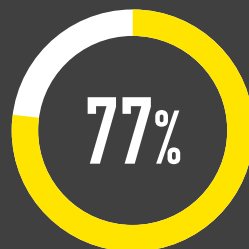
64 percent expect to see greater delivery in the 3 Waters (wastewater, potable water and stormwater) sector.

INDUSTRY SPOTLIGHT



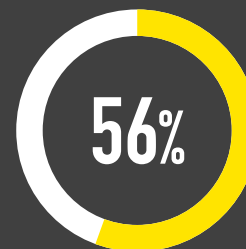
Strong South Island focus

81 percent of those working in Canterbury see their delivery focus remaining in the South Island.



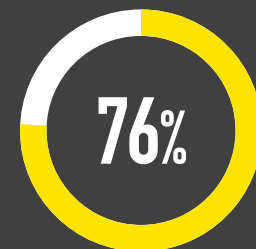
Value in partnering

77 percent view partnering/alliances as providing the best-value-for-money procurement process.



Local council barriers

56 percent view the limited in-house expertise of local councils as a significant barrier to economic efficiency.



Funding Auckland's infrastructure

76 percent want more private-sector investment to fund Auckland's infrastructure needs.

INFRASTRUCTURE MARKET

Investment and Delivery Expectation

Respondents to this year's survey continued to have confidence in both investment and delivery for the infrastructure sector, though optimism was down somewhat on the investment side. That was nearly compensated by a similar decline in pessimism. As already noted, 66 percent of respondents expected infrastructure investment to increase (with 'Investment Market Views' down -5 percent from last year's level of 71 percent). Another 29 percent expected it to remain steady. Despite this, the drop in pessimistic responses (i.e. respondents expecting a decrease in investment) was down from a level of -9 percent to only -5 percent, nearly offsetting the drop in optimistic responses, and at its lowest level in eight years.

With regard to delivery expectations (i.e. Delivery Market Views), there has been a significant (14 percent) decrease in pessimism (from -22 percent in 2018 to only -8 percent) over the next three years. Optimistic responses similarly increased from 60 percent to 76 percent, up an impressive 16 percent. These results take us back to 2017 levels before the 2018 New Zealand elections and are the second-highest level of optimism since the high-water mark in 2012.

These results, which appear quite positive, can likely only be improved by the government's announcement of a \$6.1 billion infrastructure pipeline covering five government departments,

with further departments to be added.

A number of comments we received this year focused on the need for a transparent pipeline of work to help the delivery industry plan for future resourcing and growth, so those respondents at the very least were likely quite pleased by this news.

And it is worth noting, lest one should think that this year's increase in optimism and decrease in pessimism in the infrastructure sector are only Auckland phenomena, there has been an increase in optimism across all of the main regions (i.e. Auckland, Waikato and the Bay of Plenty, Wellington, and Christchurch), which will be discussed in more detail in the next section.

“

Optimism in the energy sector this year is possibly due to an increasing focus on renewables and decarbonisation work. The government's proposed 'zero carbon' bill would, if passed, promote a transition from traditional coal- and oil-based fuels towards electrification. Decreasing prices for solar and battery storage are also driving the uptake of solar installations, coupled with urban growth driving the rollout of new electricity infrastructure and the upgrading of existing assets.”

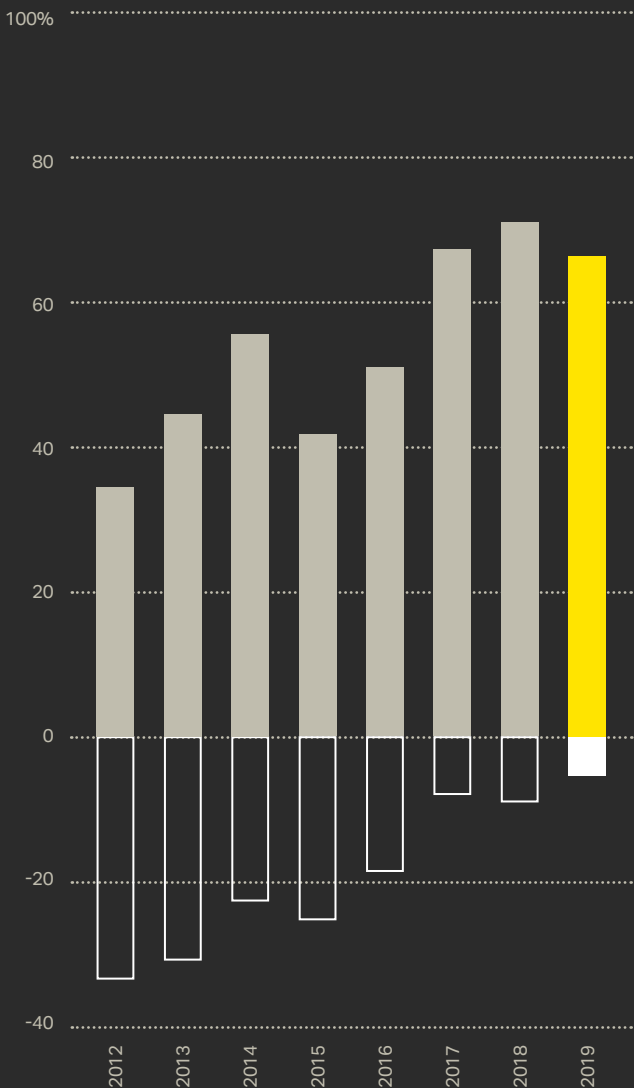


Anant Prakash

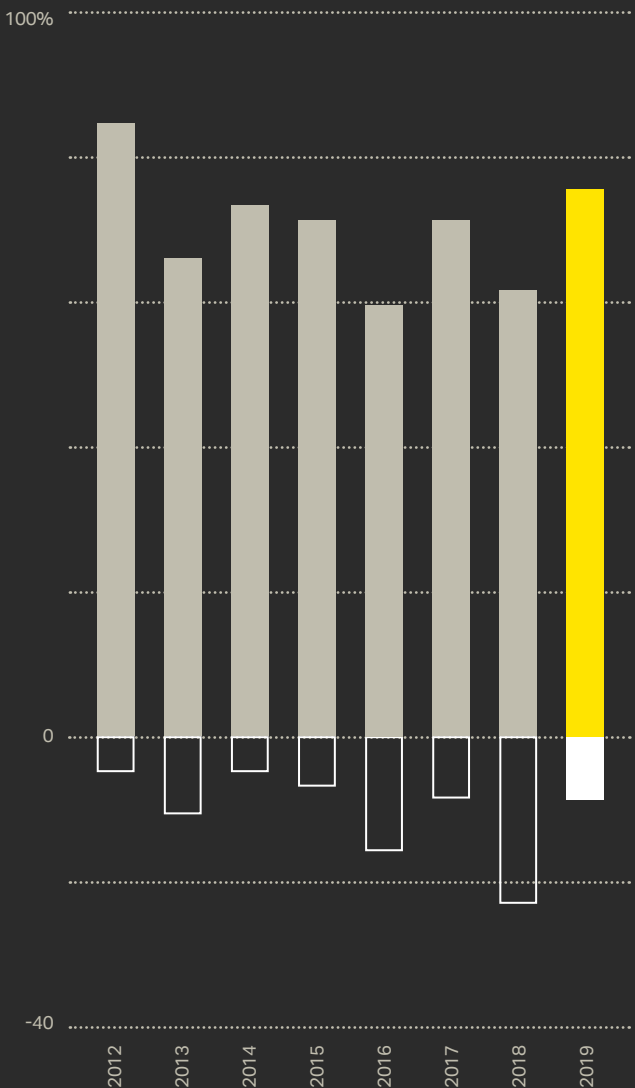
Group Director – Energy
AECOM

INFRASTRUCTURE OUTLOOK

Investment Market Views



Delivery Market Views



Note: These measures of improving or declining expectations represent the proportion of respondents' views on market direction — not the actual anticipated change in deliveries.

Delivery by Region and Sector — Infrastructure Market

At a national level, the highest percentage increases this year for delivery expectations in the infrastructure sector were in the '3 Waters' sectors of Wastewater, Potable water, and Stormwater, as well as for Land Development. Roads had the highest national increase overall compared to last year, which might reflect last year's overdone pessimism in this sector, followed by Telecommunications and Wastewater.

In Auckland, sentiment was strongest for the Rail, Wastewater and Land development sectors, which is clearly being influenced by City Rail Link, the national focus on improving water infrastructure and the housing shortage. All of these sectors saw more than 75 percent of respondents expecting an increase in the delivery of infrastructure. The most-improved scores for the Auckland region compared to last year, however, were for Roads, Energy and Telecommunications. The increases in the telecoms sector are likely tied to the impending national upgrades to support the rollout of 5G across New Zealand.

Waikato and the Bay of Plenty saw improvements in Roads, possibly due to expectations of the need for additional regional links to improve ties between Waikato, Tauranga and Auckland, as well as Telecommunications and Energy. Sentiment towards Land development was highest, followed by Wastewater and Potable Water.

Wellington posted slightly lower positive scores overall, but some strong increases in sentiment

from last year's levels, including in Roads and Telecommunications. The strongest sectors were thought to be Land Development, Potable Water and Roads.

In Christchurch, the 3 Waters sectors with the most-positive sentiment were again the 3 Waters of Potable Water, Wastewater and Stormwater. The most-improved sentiment was for Wastewater and Potable Water. At the other end of the spectrum, there was some pessimism around Roads, with about a third of respondents expecting decreases in delivery, around a third expecting it to remain 'steady', and only a fifth expecting increases. Also, while Aviation scored only in the bottom third, it is noteworthy that the Christchurch Airport has a new masterplan and significant expansion and redevelopment plans, which will lead to new work.

The 'South Island Excluding Canterbury' region had the second-highest sentiment scores overall, after Auckland, with Wastewater leading the way, followed by Potable Water and Stormwater. This focus on the 3 Waters is particularly urgent in Queenstown and Dunedin, where aging infrastructure and increasing tourism and residents, especially in Queenstown, is providing significant new demands on infrastructure, straining its current capacity. This also bodes well for work on the South Island as some of the Christchurch rebuilding work winds down.

Proportion of Respondents Expecting Increased Investment by Region

UPPER
NORTH ISLAND

CENTRAL
NORTH ISLAND

LOWER
NORTH ISLAND

CANTERBURY
SOUTH ISLAND

EXCL. CANTERBURY
SOUTH ISLAND

Note: Bubbles indicate the market optimism for growth over the next year. Black lines indicate the May 2018 results.



Aviation



Road



Rail



Stormwater



Wastewater



Potable Water



Energy

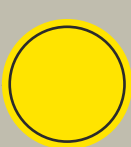


Telecommunication



Land Development

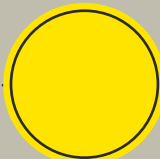
OVERALL
INFRASTRUCTURE



69%



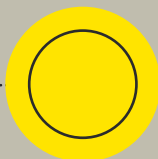
64%



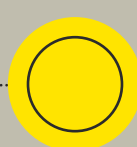
86%



73%



82%



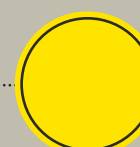
71%



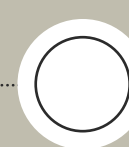
51%



50%



77%



69%



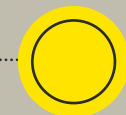
23%



61%



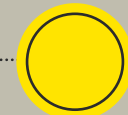
58%



59%



64%



62%



47%



48%



67%



54%



36%



52%



47%



49%



48%



52%



44%



31%



53%



46%



29%



24%



8%



51%



56%



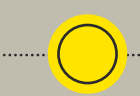
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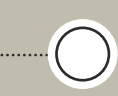
29%



30%



42%



37%



42%



63%



18%



72%



80%



74%



47%



43%



67%



56%

BUILDINGS MARKET

Investment and Delivery Expectation

Similar to the infrastructure market, respondents have greater optimism around expectations for investment and delivery levels this year in all regions.

Auckland has broken a three-year trend of declining optimism that became evident starting in our May 2016 survey, with optimism increasing among respondents. Meanwhile, Christchurch has snapped an even longer six-year trend of decreasing optimism with a strong jump.

All regions have returned to their optimism levels of May 2017, which seems to support our view that last year's pessimistic outlook was temporary and related to the New Zealand elections. We believe optimism has reverted back to its previous path as industry participants have largely got to know the new government and realised that there is still a significant pipeline of work the new government wants to see completed. Again, we suspect this trend will continue now that the government is trying to bring greater transparency to its capital spending through the new infrastructure pipeline. In addition to the increased optimism on display this year, there has also been a significant reduction in pessimism, though it is still higher than what might be considered ideal.

The investment and delivery markets are largely aligned this year on the three-year

outlook, with both having positive responses at or very near 60 percent. However, investment market views have increased steadily for the past three years, whereas the delivery market has seen a sharp bounce-back from last year's pessimistic reading. Given that there are strong expectations for capital spending in relation to buildings both the Healthcare and Education sectors, as well as other sectors like the Office sector and Mixed Use, this significant improvement in sentiment is likely warranted.

However, as other sections of this report show, there are still a number of concerns that need to be addressed, which industry participants have highlighted around challenges such as effective procurement, and filling gaps in the availability of materials and skills. Urgent action on these issues would help to ensure that New Zealand's building industry can deliver the structures needed to help grow the economy and deliver important services that New Zealanders rely on.

“

It is pleasing to see the rise in optimism in the buildings market and a settling down across the country after a period of uncertainty. The message from the government around spend in the healthcare sector, and the general increase in aviation spend is clearly getting through to the market and the feeling is certainly positive.

“As the survey highlights, the skills shortage is still a major concern and as we move into larger, more-complex projects in sectors where there has been a lesser investment in recent years, we need to look for the right people inside and outside of New Zealand for support and to bring the right skills to the industry. Finding the mix that balances the best for projects, and ultimately New Zealand, against the costs of moving people from overseas or drawing on their skills remotely is a challenge.

“This is an issue we must tackle; however, as costs increase the reduction in quality is clearly becoming evident as skills and experience are stretched. We need to make sure the best of what we have in New Zealand is focussed on the right things and be innovative around how we deliver day-to-day projects.”

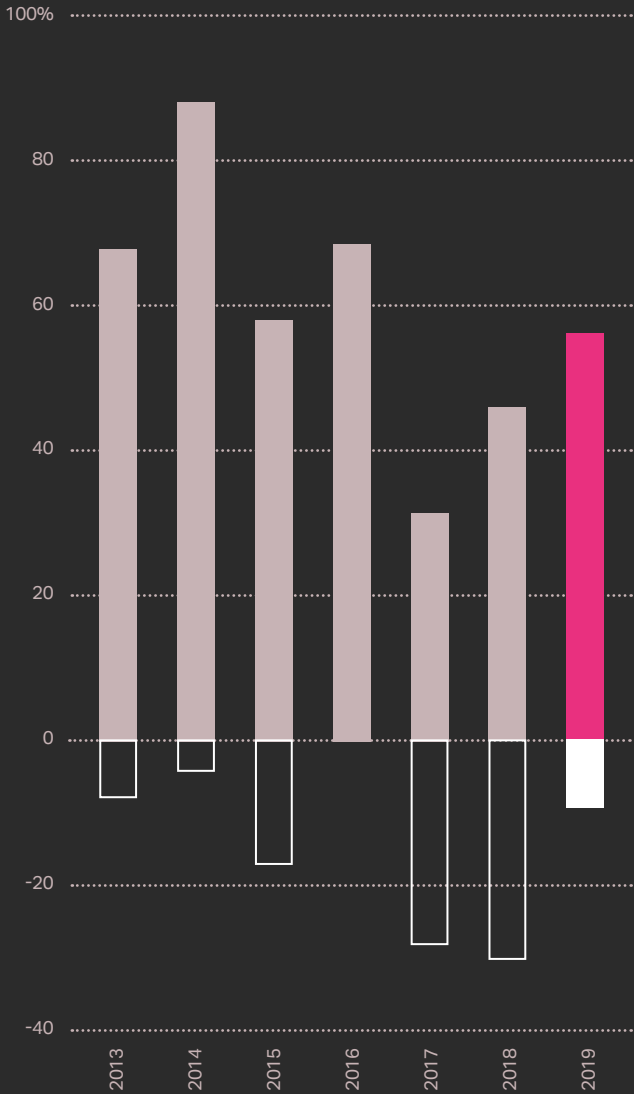


Graeme Fletcher

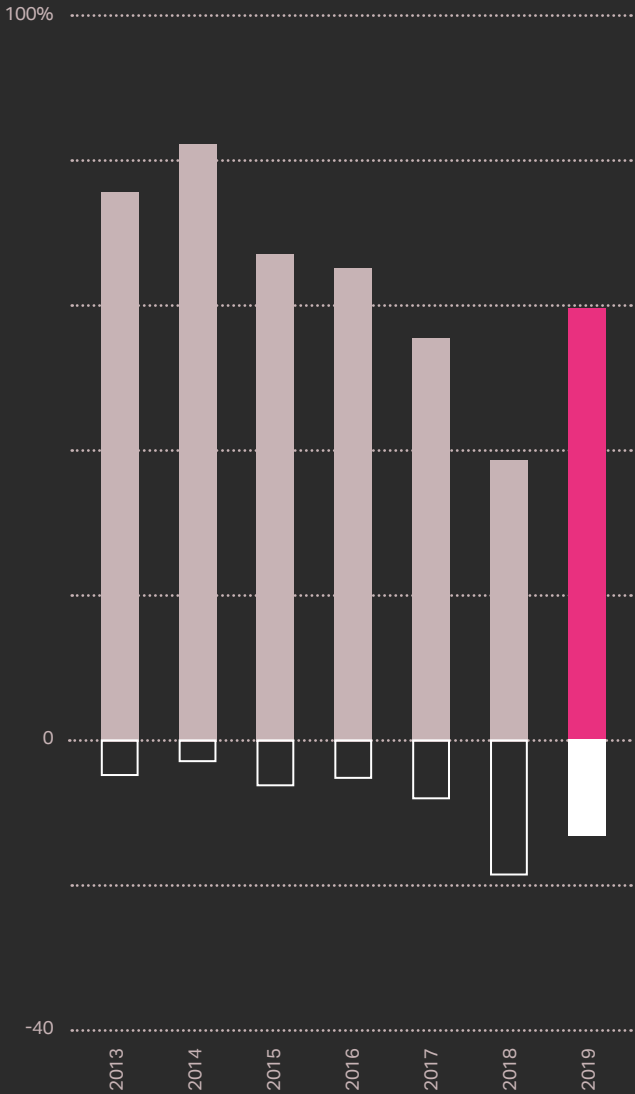
Group Director – Buildings + Places
AECOM

BUILDINGS OUTLOOK

Investment Market Views



Delivery Market Views



Note: These measures of improving or declining expectations represent the proportion of respondents' views on market direction — not the actual anticipated change in deliveries.

Delivery by Region and Sector — Buildings Market

In this year's survey, the Healthcare, Tourism and Leisure and Education sectors had the highest national scores for delivery sentiment over the next three years. Meanwhile, Mixed Use, which includes, for example, commercial space in residential developments or combined hotels and residential, had the highest overall increase at the national level compared to 2018's survey, followed by Existing Building Refurbishment and Maintenance and then the Office sector.

Auckland maintained a strong outlook, especially in the fields of Healthcare, Education and Existing Building Refurbishment and Maintenance. The Education sector had the greatest improvement in sentiment among Auckland respondents, followed by the Office and Industrial Buildings sectors.

In Waikato and the Bay of Plenty, Tourism and Leisure had the most-positive outlook, followed by Healthcare and Residential, which is likely influenced by Aucklanders looking for more-affordable housing and some significant real estate developments planned in the region, such as the Peacocke development near Hamilton. The most-improved sectors were the Mixed Use, Existing Building Refurbishment and Maintenance and Industrial sectors.

In New Zealand's capital city, Residential came in top of the heap for sentiment, which is a positive medium-term sign, at least, for Wellingtonians who are having trouble finding affordable housing. Earthquake-strengthening efforts showed up in a strong sentiment around Existing Building Refurbishment and Maintenance, and

the shortage of office space also resulted in a strong showing for the Office segment. Most improved over last year were Mixed Use, Retail, and of course the Office sector.

Christchurch saw a strong jump in the outlook for Mixed Use developments off a very low base last year, as well as Public Buildings and Healthcare. It's possible that the growing number of mixed-use developments across New Zealand are driving the increase in sentiment for this type of development, in a positive feedback loop. In a potentially positive sign for economic growth, its strongest sentiment was seen in the Tourism and Leisure sector, which might be tied to expectations around the new Christchurch Airport masterplan, and Healthcare and Education also scored well.

But the biggest jump in outlook nationally belongs to the 'South Island Excluding Canterbury' region, which was up 32 percentage points overall (compared to, for example, 9 percentage points for Christchurch, 6 for Auckland, 11 for Waikato and the Bay of Plenty and 17 for Wellington). Healthcare was by far the most-important sector, likely due in large part to expectations for work resulting from the New Dunedin Hospital, which is planned to open in November 2028. Strong tourism and the popularity of Central Otago and Southland, in particular, for New Zealanders looking for a more laid-back lifestyle are putting pressure on existing, inadequate infrastructure. A significant amount of investment will be required to bring the South Island's infrastructure up to standard to meet demand.



Population shift and an increasing focus on the regions have started to pick up with recent policy changes, including the government's \$3 billion investment over three years in the Provincial Growth Fund, and the sentiment gap is now closing in on major cities. Major projects, such as Waikeria Prison, the New Zealand Defence Force at Ohakea, and Dunedin Hospital have contributed to a more-positive outlook for public investment in vertical infrastructure across the country."



Simone Sharp

Associate Director –
Construction Services
AECOM

Note: Bubbles indicate the market optimism for growth over the next year. Black lines indicate the May 2018 results.

Proportion of Respondents Expecting Increased Investment by Region

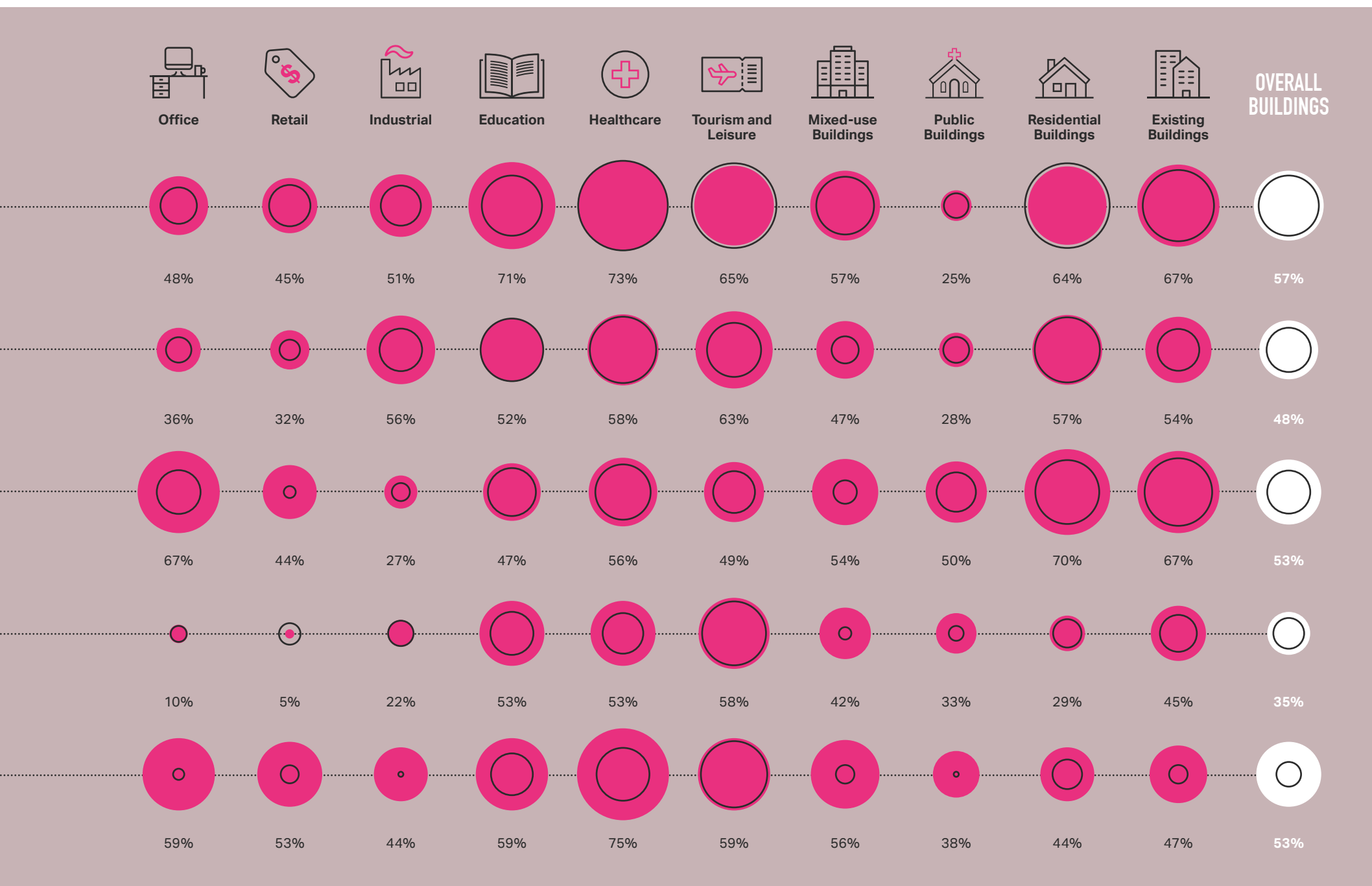
UPPER
NORTH ISLAND

CENTRAL
NORTH ISLAND

LOWER
NORTH ISLAND

CANTERBURY
SOUTH ISLAND

EXCL. CANTERBURY
SOUTH ISLAND



INDUSTRY SPOTLIGHT

Nationwide Industry Challenges

Skills and Material Shortages remain the key concerns expressed by respondents, stable at an early-to-mid 40 percent level. There has been a significant decrease (-15 percent) in concerns about Governance and Regulations — perhaps reflecting greater familiarity with the priorities and approaches of the new government. Conversely, there has been a doubling in the level of concern about Funding year over year, albeit from very low levels. There has also been a jump in worries about Poor Procurement (from 3 to 10 percent) as a key issue, while Cost Escalation has itself escalated slightly. Local Business Conditions and Confidence have reduced further from last year's already-quite-low mark. Concerns about Global Market Conditions have halved, also from a low level.

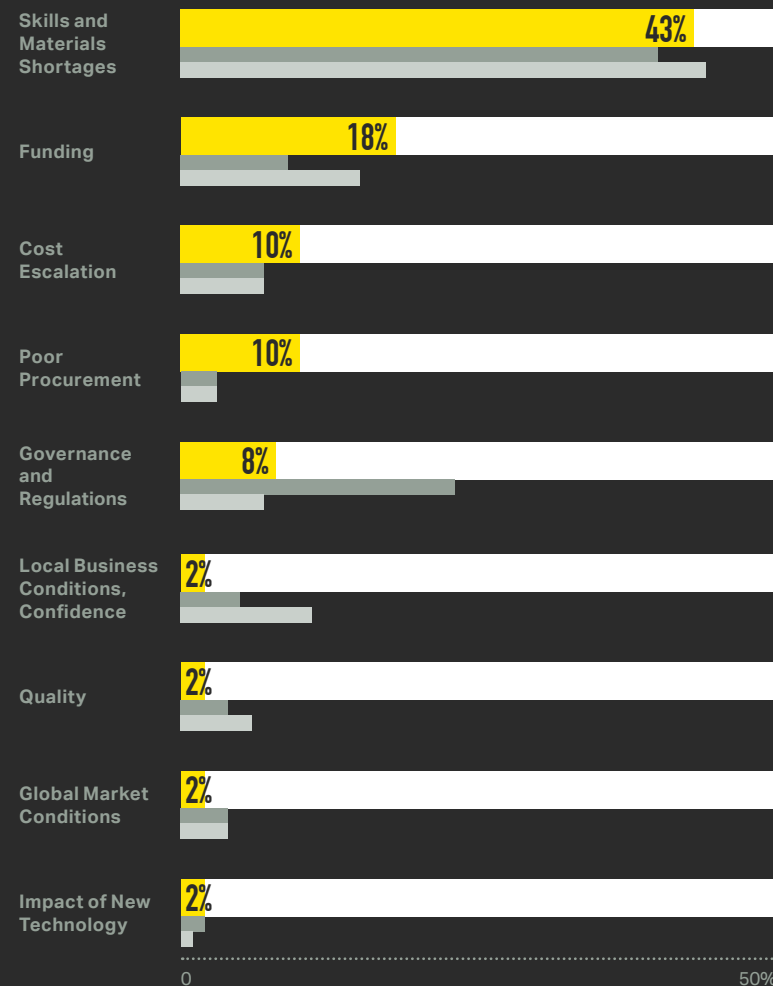
With the uncertain global outlook, owing to Brexit and potential trade wars, in particular, it might be considered surprising that concerns about the global macroeconomic environment have halved since last year. Perhaps this is due to respondents becoming inured to global uncertainty, or perhaps New Zealand's industry leaders are too focused on internal issues and not paying as much attention to the global economic outlook as they should. Likewise, the lack of concern about the impact of new technology is surprising. Are we trapped in a 'business as usual' mindset, focused on the same old problems and solutions and not really examining innovations that could mitigate some of our biggest problems? For example, new technologies that can help the industry to use skills and materials more efficiently.

Among people who commented, there was a relative lack of agreement about what they felt were the most-important challenges, but 20 percent chose risk apportionment and 20 percent specified political issues (e.g. slow decision-making and lack of agreement on the way forward). Respondents also suggested "All of the above", "Skills and materials shortages", "Earthquake recovery phase slow-down" and "Lack of a coherent planning process." Further to the concerns about political issues, it is worth noting that New Zealand's three-year political cycle negatively impacts proper long-term planning and potential productivity-enhancing reforms; too many necessary decisions end up being placed in the 'too-hard' bucket owing to short-term political considerations.

There was more agreement among suggestions for improving the current situation. Many people who commented wanted to see more training of local talent, including reviving apprenticeships and promoting the trades as viable careers, as well as long-term commitments to an infrastructure pipeline and making it easier and cheaper to import quality building materials from overseas. Immigration/visa changes were another popular suggestion, though some comments called for more visas for senior staff, others called for short-term visas for unskilled or lower-skilled labour, and still others said fewer visas should be issued for imported labour. Better remuneration of people working in the sector was also a common theme.

Top Industry Challenges

2019 2018 2017



“

With the emergence of 'volatility, uncertainty, complexity and ambiguity' and a strong pipeline of infrastructure projects next door in Australia, the risk to companies from difficulties in attracting and retaining skilled workers in New Zealand increases. Building confidence in project opportunities will encourage companies to invest further in our country and grow (not decrease) the investment in skills needed to prevent a brain drain.”



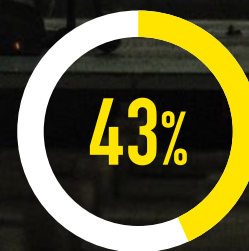
Ben Williams
Group Director – Civil
Infrastructure, AECOM

“

Our skills shortage is clearly a perennial problem and it is the root of many of our other challenges. We compete to attract talent in a global market, and we have many local challenges to draw good people into construction. The solutions are certainly complex, but this issue is not going to go away without a concerted and co-ordinated effort.”



Ben Hardy
Group Director – Construction
Services, AECOM



SKILLS AND MATERIALS SHORTAGES

Top industry challenge expressed by respondents

Procurement

This year's survey has seen an enthusiastic response from respondents commenting on the importance of — and perceived weaknesses in — procurement processes typically used across New Zealand. If one comment could best sum up the broad comments received it would be, "A race to the bottom." Respondents had three overwhelming concerns:

- There is too much focus on securing the lowest price for a project, at the expense of quality and other important goals (e.g. the need for a margin to allow for the use and training of apprentices)
- There is a lack of trust between the clients and contractors (and in some cases among contractors on a project)
- Risk is still not being equitably shared, despite some small steps in this direction by some organisations.

Two other common concerns were that: excessively stringent submission requirements were making it too expensive to compete for work, which has had a disproportionate impact on smaller contractors; and, related to the pricing issue already identified, clients were being short-sighted in not paying attention to the 'whole-of-life' costs associated with projects. This latter concern was thought to be the result of split budgets (i.e. one budget to pay for construction, but a completely separate budget that is dedicated to maintenance,

with little thought given to the impact of decisions about construction on future maintenance; essentially a 'buy now, pay later' approach to building).

Overall, respondents felt again this year that Alliances/Partnerships were still the procurement method offering the best value for money, with more than 90 percent agreeing that it provides the most or moderate value. Public Private Partnerships also scored well, with an increased share of respondents (79 percent versus 70 percent last year and 76 percent the year before) selecting this option as a procurement method providing either the most or some value for money.

Finally, an interesting paradox was observed from the comments: certain comments that appeared to be from the client side lamented a "lack of competition" among contractors, yet comments that were clearly from the contractor side bemoaned the excessive submission requirements, high risk for contractors and lack of margins they can recoup on projects. If the cost of bidding is high and margins are low then, logically, many contractors will simply not bid (especially for smaller contracts), which would explain the perceived lack of competition in the market. The obvious conclusion is that both sides would do well to look at ways to simplify the tendering process, while better sharing risk and allowing a reasonable margin for the work completed.

"Lowest price wins, so it is a race to the bottom ... There is not extra money for the likes of training our next generation."

"We need to obtain competitive prices. The market is reducing down to 2-3 key players. i.e. not enough competition."

"Complex and costly procurement is tying up significant industry capacity in unproductive tendering."

"... risk has moved even further away from the Client and towards to the design team. A fairer distribution of risk is key to restoring collaborative working and ultimately increasing value."

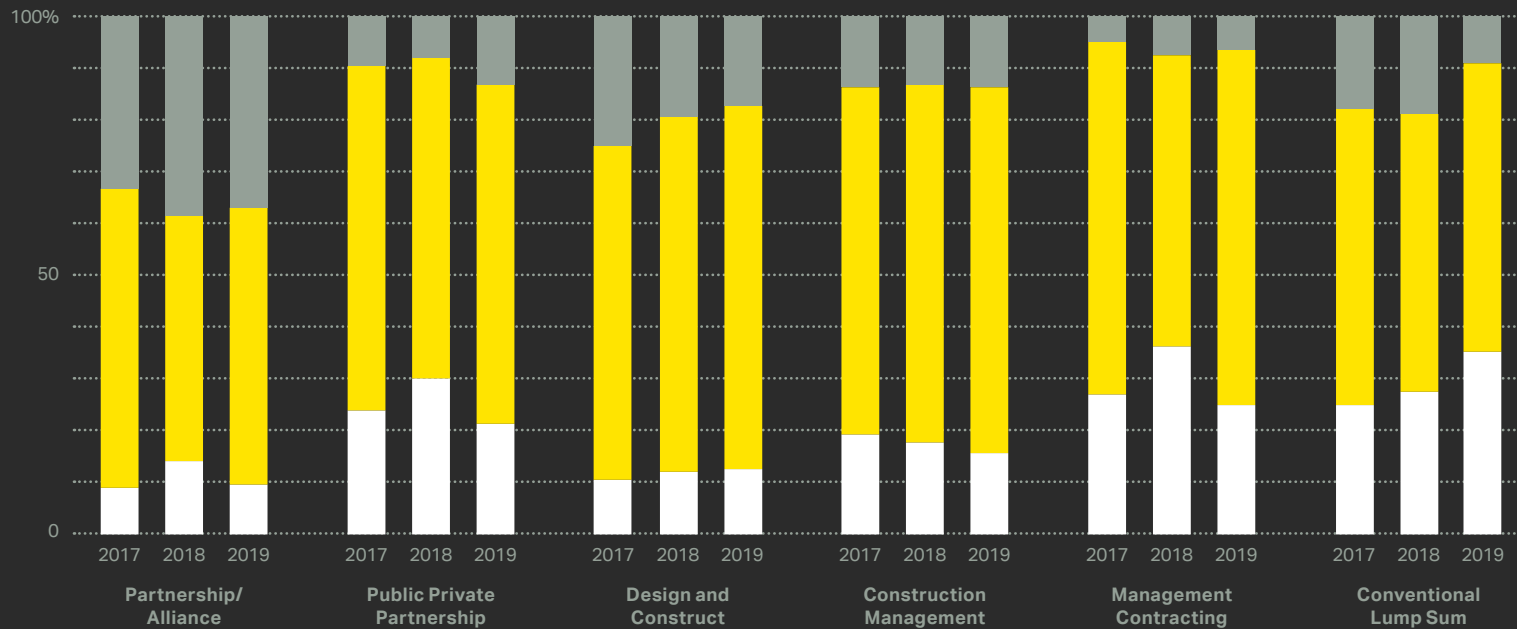
"Long Life Assets should be procured on a genuine Whole of Life cost basis. Acknowledging that 80 percent of the WoLC cost of an asset occurs after initial capital investment."

"...some clients only have a set funding allowance and will make decisions on capital costs as opposed to whole of life, because future operation and maintenance comes from different budgets."

1 2 3 4 5

Value for Money

MOST MODERATE LEAST



“
A RACE
TO THE
BOTTOM”



LESSONS IN PROCUREMENT FROM AUSTRALIA AND THE UNITED KINGDOM

The results of the 2019 New Zealand *Sentiment Survey* confirm that procurement of infrastructure projects in New Zealand remains fragmented, costly and with a counter-productive, adversarial culture. This adversarial approach and the mismanagement of risk often lead to litigation, and sometimes contribute to the high-profile failure of firms contracted to deliver critical infrastructure; Carillion in the UK and RCR Tomlinson in Australia are two recent examples of large firms from abroad, while New Zealand has also had a number of smaller firms enter receivership.

Our survey turned up numerous comments lamenting the adversarial nature of procurement in New Zealand, including the perceived misuse of open tendering, unnecessarily stringent (and expensive) tender requirements, and an unfair apportioning of risk. Problems with the tendering process have real — and substantial — costs attached. Consult Australia, for example, estimated in its *More for Less — The Economic benefits of better procurement* document that the price impacts of poor procurement in that country amounted to around AU\$239 million per year. Proportionally (assuming a 5:1 population ratio and a 1:1.05 exchange rate), in New Zealand terms that would equate to about NZ\$50 million per year. This is likely a conservative estimate in the New Zealand context, and the real number is likely considerably higher. Moreover, it quotes economic modelling estimating that long-term benefits are significant with AU\$2.5 billion in cost savings for government in the 15-year period from 2015 to 2030 and an increase in GDP of AU\$5.1 billion in the same timeframe. Again, in New Zealand terms these figures would be around NZ\$525 million in cost savings and a cumulative NZ\$1.07 billion increase in GDP.

What then can be learned from the UK and Australia's experiences to help New Zealand to create a more-sustainable and efficient procurement model that will promote a healthier industry better able to deliver the infrastructure New Zealanders will rely on in coming decades?

The UK experience

The UK has experimented extensively with new forms of procurement and developed one of the most-flexible and innovative procurement cultures of any major country in recent decades.

One of the key issues the UK has addressed concerns reforms to contracts. The UK brought a high degree of standardisation

to contracts, and its experience in doing so has demonstrated that they create a more-efficient procurement process, resulting in a lower burden on firms bidding for work (and thereby enabling greater competition among contractors for tenders, since a larger number of smaller firms are better able to compete for a wider range of contracts).

The UK is also at the forefront of promoting collaboration through alliancing among firms. Alliance structures provide for a more-equitable sharing of risk across project proponents and between the alliance and the client organisation. This form is just regaining traction in New Zealand, such as its use for the City Rail Link, and we hope to see more of it, as it addresses a number of the deficiencies of current procurement practices in New Zealand, and ultimately enables alliance partners to bring the best of their organisations to bear on a project.

Another key model introduced in the UK is 'integrated project insurance', in which a client obtains a package of insurance built around a specific design. Too many, especially smaller, organisations in New Zealand struggle to obtain the right insurance for their projects at a price that is affordable.

Lessons from across 'The Ditch'

Governments in Australia have recognised that there have been problems with procurement there and some are taking action to create a better foundation for the massive infrastructure boom that country is currently undergoing.

For example, in June 2018 the New South Wales government released a well-considered '10-point commitment' to improve conditions for the construction industry (see: www.infrastructure.nsw.gov.au/media/1649/10-point-commitment-to-the-construction-industry-



final-002.pdf). The 10 points are explored in more detail in the NSW report, but they are worth listing and reasonably self-explanatory:

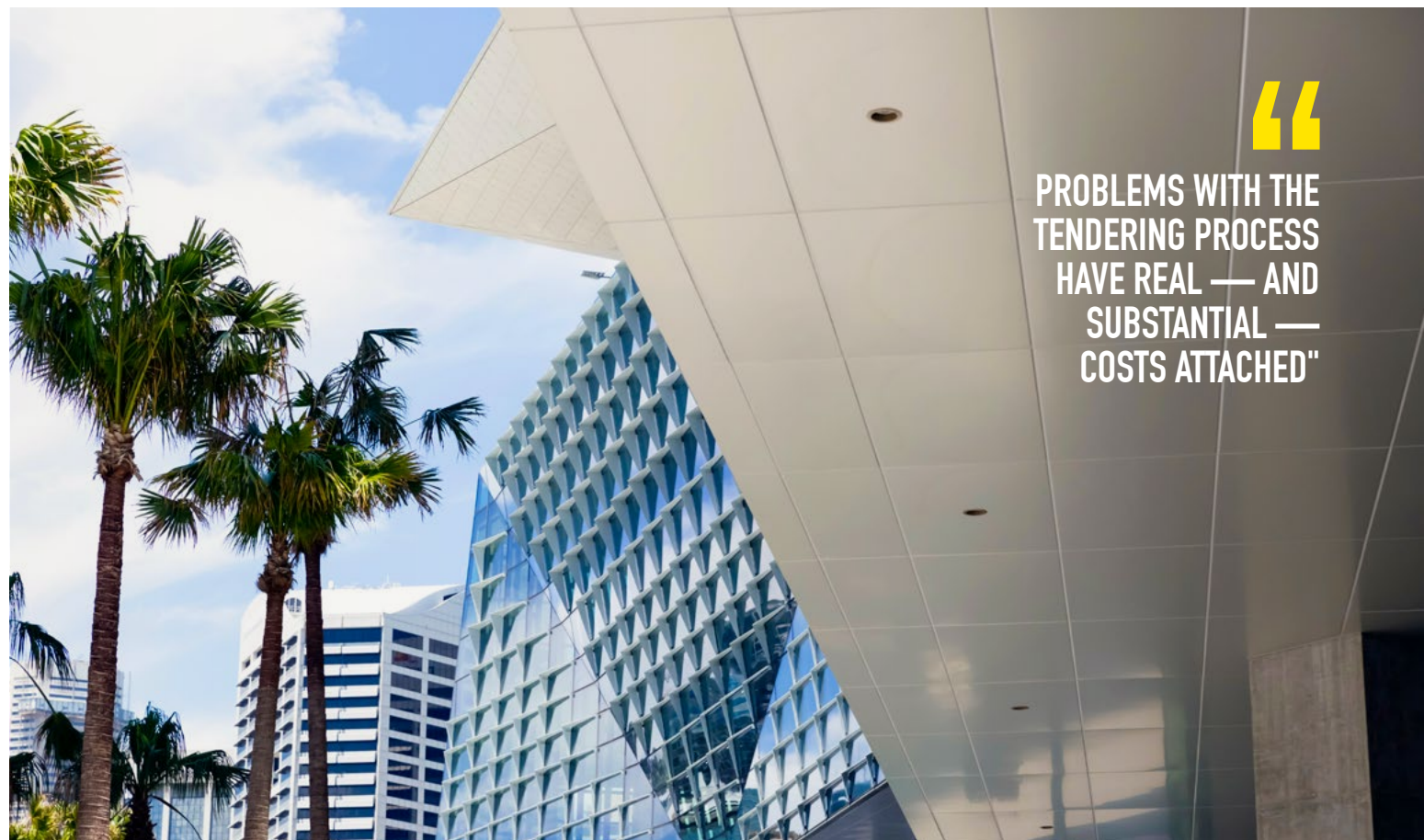
- Procure and manage projects in a more-collaborative way
- Adopt partnership-based approaches to risk allocation
- Standardise contracts and procurement methods
- Develop and promote a transparent pipeline of projects
- Reduce the cost of bidding
- Establish a consistent NSW Government policy on bid cost contributions
- Monitor and reward high performance
- Improve the security and timeliness of contract payments
- Improve skills and training
- Increase industry diversity.

Australia has, of course, had its own difficulties in this area. The Sydney light-rail project, for instance, has seen significant delays and cost overruns, as well as high-profile litigation between the lead contractor and the state government. This experience was perhaps one impetus for the 10-point commitment.

It is worth remembering that a healthy construction market is in the public's best interest, as it is the best guarantee that capacity will continue to be available to build essential infrastructure, which further creates employment for New Zealanders. This, of course, requires a reasonable return to capital invested in the sector, which can be reinvested in additional capacity, including in upskilling the workforce. Governments in Australia have mandated targets for local industry participation and social procurement to ensure industry is upskilled, but this requires

an appropriate margin for engineering and construction firms.

Ultimately, it is vital that public-sector clients and their contractors have the same end-goal in mind. Adversarial relationships are counterproductive and costly. Working together using a partnership approach offers benefits to both sides in terms of efficiency, cost savings and better outcomes for projects, meaning a better result for New Zealanders.



“
PROBLEMS WITH THE
TENDERING PROCESS
HAVE REAL — AND
SUBSTANTIAL —
COSTS ATTACHED”

THE FUTURE OF INFRASTRUCTURE

AN INFORMED, ENGAGED PUBLIC IS KEY TO MODERNISING INFRASTRUCTURE

Most of us take for granted the infrastructure systems that make our modern lives possible. We've become accustomed to infrastructure occasionally falling short of what we need. It doesn't have to be like this. AECOM Chairman and CEO Michael S. Burke believes a knowledgeable and engaged public can be a key partner in delivering modern infrastructure.

Michael S. Burke and Clive Lipshitz



Too often, we only notice infrastructure when something goes wrong.

Apart from being an inconvenience, congested roads, overcrowded rail services, power outages, flooding, and cyberattacks cost us billions of dollars every year.

There is an urgency in finding new, creative solutions to deliver modern infrastructure systems, but it can only happen with an engaged and supportive public.

A market-based approach to infrastructure investment presupposes an informed and active electorate. Working with the private sector and government, people must have access to data and tools to help them better understand how infrastructure ‘works’ and is financed. Our cities are too dependent on infrastructure systems for those most affected by them to just accept things the way they are. This is especially true when service levels are subpar or when urbanization poses new stresses.

What’s more, as our Future of Infrastructure report findings point out, the public is interested in being more fully engaged.

Providers can best address long-term infrastructure needs by better involving the public in three key ways: knowledge — providing greater transparency, primarily by making infrastructure data widely available; understanding — of infrastructure broadly and of how it is funded and financed, and engagement — encouraging the public to join the discussion through planning, advocacy and politics.

PILLAR 1: KNOWLEDGE: AWARENESS OF THE PROBLEM

Infrastructure data abounds, and there’s a need to leverage this rich material to improve our networks and systems, to inform public discussion about needs and procurement, and to improve government decision-making and accountability.

Infrastructure agencies should make as much data publicly available as possible so constituencies including academia, think tanks, and the private sector can convert it into actionable information. Areas where access to wider data can make a positive difference include the following:

- **Quality of life.** Performance reports on critical infrastructure can provide public sector officials, planners, and the public with a reference point for measuring impact. For example, traffic data can be analysed to quantify the true economic cost of road congestion, possibly supporting the case for investment in new transit or road infrastructure.
- **Budget clarity.** Governments face growing obligations, such as debt service and pension funding. This means that less capital is available for infrastructure operations and maintenance, which leads to reduced service levels. An informed public needs to know this, as well as the available solutions.
- **Project governance and accountability.** Too often, and for numerous reasons, major infrastructure projects come in over

budget and late. With meaningful data from previous projects, accountability would be enhanced and everyone involved in delivering new projects would be able to make realistic assumptions.

- **Innovation.** Entrepreneurs have developed smart city technologies using data collected about critical infrastructure systems. More data leads to innovation. For example, flow rates through water utility mains have been used to develop leak-detection systems, while transmissions from internet-of-things sensors on LED street lights can alert cities to outages.
- **Private investment in public infrastructure.** Investors in large-scale, privately financed developments need sufficient data to calculate the risk and reward inherent in their projects. For example, inferences from interpretation of road- and air-traffic data encouraged private investors to develop new inter-urban and high-speed rail and Hyperloop systems. Similarly, historical traffic data is a prerequisite to private investment in toll road concessions.

PILLAR 2: UNDERSTANDING: HOW INFRASTRUCTURE IS FUNDED AND FINANCED

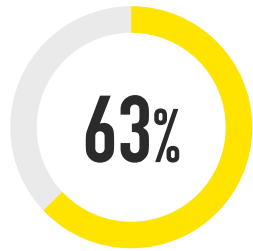
At the heart of most conversations about infrastructure is how best to pay for it.

With price tags for major transportation, power, and wastewater projects running into billions of dollars, it is important to understand how infrastructure is funded and financed. Most citizens only confront these questions when they see their utility bills rise or are asked to approve infrastructure funding measures at the polls.

For governments, translating complex funding and financing models for the public can be daunting, but it is a critical step in boosting understanding as new models gain traction. Transparency, in particular, is an important concern. For example, any public-private partnership discussion must include the true implications for lifetime costs and risk-transfer characteristics. That’s not an easy conversation.

“There is an urgency in finding new, creative solutions to deliver modern infrastructure systems, but it can only happen with an engaged and supportive public.”

Michael S. Burke, Chairman and CEO, AECOM



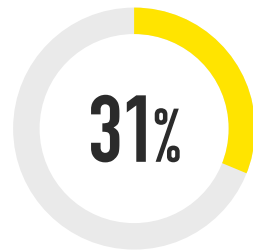
63% of global survey respondents believe the private sector should be more involved in infrastructure development.

It is very difficult to introduce private financing to infrastructure that does not have a secure source of funding in the form of tolls, tariffs, or other user fees. Sometimes, such as in the case of a seawall, there is no obvious revenue source and innovative financing techniques need to be considered.

Greater understanding about financing options expand the toolbox of potential capital solutions, including the following:

- **Asset recycling**, which uses proceeds from the sale of existing assets to finance new development. This model is understood in Australia where it is used. It is not yet used in the U.S.
- **Value capture** is another under-appreciated and misunderstood financing technique. It leverages the value of property made viable by new infrastructure, such as a subway-line extension, to finance that new infrastructure.
- **Tax-increment financing** earmarks incremental property tax revenues to service debt incurred to develop new transit infrastructure.

- **Better asset management.** Municipalities own substantial properties that are often underutilised. With more proactive asset management, cities could extract significant value that can be invested in infrastructure.
- **The Canadian experience.** There is much value in learning from Canada, which has established an infrastructure bank and has been a pioneer in direct investing by public pension plans into infrastructure, even greenfield projects.



When asked about improving infrastructure, some 31% of respondents agree that they would be willing to pay higher fares for transportation — and 37% would pay higher taxes for infrastructure improvements.

PILLAR 3: ENGAGEMENT: POLITICS, PLANNING, AND PUBLIC ADVOCACY

While infrastructure delivery depends heavily on leadership from the public sector, there is an inherent conflict between the interests of those who control infrastructure assets (and public sector finances) and the interests of citizens whose lives are impacted by these assets.

In my view, a long-term perspective is essential in the case of capital-intensive, monopolistic assets whose development is often irreversible. The physical location and layout of entire cities is effectively unchangeable once inter-urban and urban highways and local roads are developed.

One way to ease this conflict is through long-term planning by organisations independent of government that include representatives of major stakeholder groups. These municipal planning organisations can take an unbiased perspective, create long-term plans, and educate both the electorate and elected officials. New York's Regional Plan Association is a great example of an informed public advocating for change. A similar body could be established in other large metropolitan areas, and could share best practices, to everyone's benefit.

Another example of knowledge leading to change is in Los Angeles County, by far the most populous county in the U.S. with more than 10 million people. In 2016, after a three-year effort that placed a premium on public education, voters overwhelmingly approved Measure M, a dedicated sales tax that provides up to US\$120 billion for future transit and road infrastructure needs.

An important consideration for long-term planners is the need to be realistic with the time horizon and the public's ability to project into the future. It is inadvisable to make plans based on population trends and — more controversially — environmental models that peer too far into the future. For example, projections of coastal cities being under water 100 years from now are less likely to lead to

action than are calls for coastal protection for the coming 20 years.

Cities that meet the needs of their residents and listen to their voices are more likely to thrive than those which do not. This is as true with respect to infrastructure as it is with other urban systems such as public safety, healthcare and education. An informed population can take a long-term perspective, will advocate for its infrastructure needs, and is likely to be supportive of new development.

And finally

It's time for a truly knowledge-based and interdisciplinary approach to infrastructure.

For too long, government, financiers, engineers, and policy experts have operated in independent silos, and often without the benefit of an involved and educated public. Effective policy development and implementation require breaking down these artificial boundaries and bringing everyone around the same table to operate from a common base of knowledge, develop integrated plans, and ensure complete accountability. This way, we will make sure that the combination of infrastructure innovation and delivery leading to positive benefits is everyone's business.



Big Data and Smart Technology

Globally, technology is being considered for and integrated into a wider range of areas in the engineering and construction sectors. However, not all organisations in New Zealand are making the most of the productivity-enhancing new technologies that are available. Given the shortages of skills and materials our industry is experiencing, this is potentially a damaging own goal. We asked respondents to what extent they have considered applying smart technology on projects in the last 12 months, and the results were decidedly mixed, but pointed the way to an acceptance of new technology, provided that its use is justified in the circumstances and that sufficient attention is being paid to ensuring it is being used correctly and appropriately.

BIM/digital design, drones (for surveying) and virtual reality presentation technologies were the most-commonly cited technologies in use, though other technologies included apps for site work, GPS/phone location data, smart traffic lights/dynamic traffic lanes, and collaboration/project management software (e.g. to share files). Interestingly, one comment we received read, “Technology uptake variable with some clients not valuing it while others expecting it as a Business as Usual service”, and we received other indications of similar sentiments; a couple of comments even argued that new technologies ran the risk of being counterproductive due to the high cost associated with learning them.

But some respondents stated that technology has to be used deliberately and carefully to be effective, such as this one: “I see far too many people jump on the technology bandwagon, while

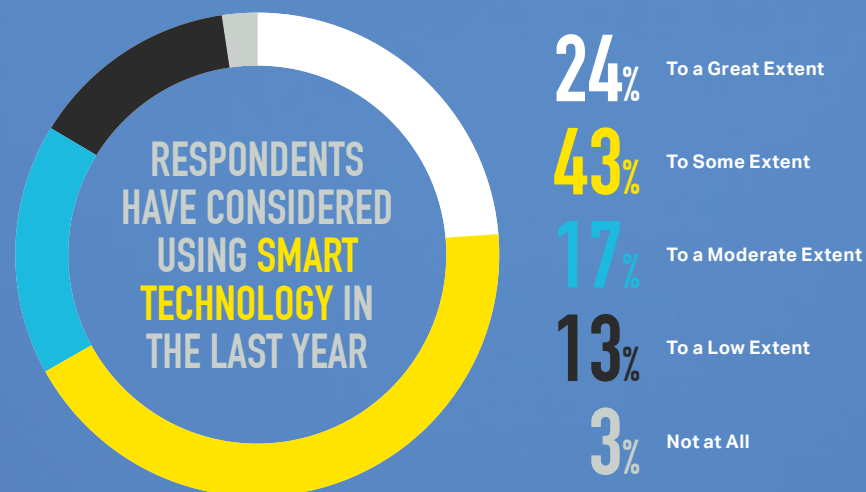
completely dismissing high-value, tried-and-true methodologies. The high cost of every learning curve is rarely considered ... Leaky buildings debacle is proof of this. The eagerness of many players to reap short term gains on unproven ‘solutions’ is justification enough to be wary of technology as a solution for every problem.”

“Looking at smart online technology for water quality, pressure transients, seismic movement, traffic patterns etc.”

“New modelling software. Much improved performance and user interface. 3D software on projects to present concept designs to clients.”

“Drone technology for measuring earthworks quantities — very impressed with outcomes.”

“Improved technology in traffic signals and traffic counting/monitoring have reduced costs and improved the quality of outputs.”



FOCUS ON CITIES

Local Government

Strong, capable and efficient local governments are vital to ensuring that communities throughout New Zealand continue to enjoy the exceptional quality of life our country is famous for. But like any organisation, local governmental authorities are often prone to doing things the way they have always done them. New Zealand is certainly not unique and indeed may not even be particularly bad in this regard, but there is no question that a commitment to continuous improvement is important to deliver services we all rely on and to avoid overburdening the taxpayer.

Survey respondents this year said that the most-significant barrier to achieving economically efficient outcomes from local government in their areas of responsibility was the lack of in-house expertise. This is hardly surprising, given the current skills shortages across most fields and also that most council areas in New Zealand are relatively small organisations, and therefore do not have the scope to employ full time all of the specialists needed by a modern city government. Only Auckland really has a scale approaching that of other global cities and accordingly it has significantly more bench-strength than our other cities and towns.

Another area of concern among respondents was the three-year electoral cycle. New Zealand is fairly unusual in having such a short electoral cycle, with most similar countries mandating

at least a four-year term, which allows more time to develop and implement policies and programmes, and perhaps even iron out the kinks before councils have to face the voters again.

Many of the comments we received about how to make local government more efficient focused on the insufficient access to both funding and staff with the requisite skills, as well as the poor morale among staff that results from this lack of resources and support. More funding and better logistical support is needed from central government to help local governments to provide necessary infrastructure, such as through a share of the GST. Other areas highlighted included poorly defined vision, slow approval processes, and a bias towards risk-aversion among councils and city authorities.

Amalgamating councils, or at least organisations delivering front-line services, and greater centralisation were cited by several respondents as changes that could make local governments more efficient. Several respondents proposed the Infrastructure Australia model as an example that New Zealand should follow. The New Zealand Government established the independent New Zealand Infrastructure Commission in April 2019, tasked with identifying and assessing the quality infrastructure investment that New Zealand needs to improve long-term economic performance and social well-being.

The commission will also have procurement and delivery support functions and will produce an infrastructure pipeline. When fully developed, the pipeline will help to give the infrastructure market greater certainty about future infrastructure projects, to help it gear up capacity and capability to deliver. It will also inform the commission's thinking as it develops a 30-year strategy to address New Zealand's infrastructure needs.

"National funding/subsidy of infrastructure, especially for smaller councils who often have a significant programme of work to complete to meet standards, but a limited ratepayer base to fund."

"We constantly see projects released where there is no co-ordination between corridor users (utilities -water, wastewater, stormwater, telecommunications, power, gas, etc.). This leads to inefficiencies in construction and loss of opportunities."

"Why not have a national pool of experienced folk available to advise all councils on engineering matters?"

"Local government needs a secondary source of revenue, possibly a fixed share of GST or a capital investment pool that they can draw from to get large-scale projects across the line."



Increased optimism is being felt across the industry in this year's survey. This contrasts with the sentiment last year following the 2017 election. Industry discontent is common when centre-left governments are elected to office. However, Budget 2018 and subsequent government announcements have eased concerns industry had about a reduction in infrastructure investment intentions.

"The concern for 2019 is the amount of funding available in the government's budget to deliver the government's investment intentions. The National Land Transport Fund is heavily oversubscribed, and some major infrastructure projects are being re-evaluated by billions of dollars over previous assessments; though in the case of City Rail Link, at least, it is not just a case of being re-evaluated, it has also been re-scoped to deal with the projected increase in passenger numbers and to provide additional network capacity."

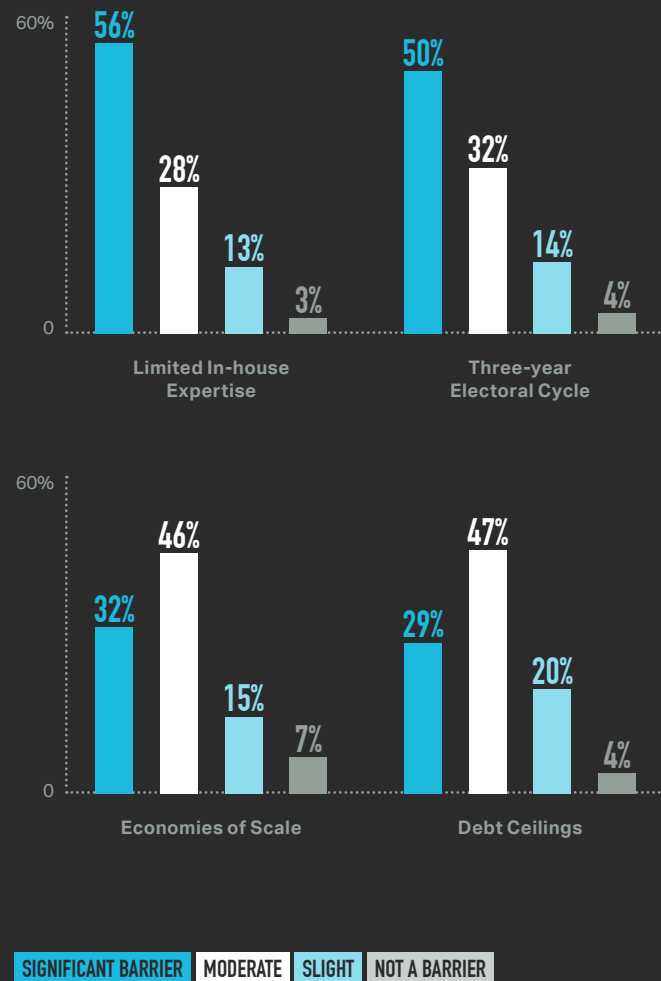
"The government's finances are in good shape. There is a lot to be said for arguments that the Budget Responsibility Rules are unduly constraining the ability of government to act on some of New Zealand's most-pressing priorities. The government should give every consideration to loosening its fiscal policy to invest in the vital infrastructure New Zealand desperately needs to realise our economic and social potential."



Graeme Sharman

Manager – Government and Industry Affairs, AECOM

Barriers to Achieving Economic Efficiency from Local Government



Partnership and Collaboration

There is broad consensus on the value of partnerships and collaboration within the construction and infrastructure industry. Sharing risks and responsibilities, leveraging combined strengths and industry sustainability are among the benefits that support the industry to achieve more together than can be achieved independently. The challenge can be in building effective partnerships.

We asked respondents what they felt the biggest barriers were facing their organisations in building effective partnerships. Cultural issues, especially lack of trust (on both client side and consultant/contractor side), as well as difficulties inherent in competitors collaborating, and staff not used to a collaborative working style, were the biggest theme that emerged. In addition, staff turnover is a significant problem as it makes it hard to build and maintain good relationships; a lot of time and effort goes into building up relationships between staff working for clients and contractors, but the skill shortages plaguing the industry mean that people are often moving on for other opportunities much sooner than they would otherwise. There is also a common perception, highlighted elsewhere in this report, that risk is not being shared equitably between ‘partners’, with some clients, particularly in the public sector, being very risk averse. Some comments suggested that this was

feeding through in a preference among many government-sector clients to deal with large contractors, potentially stymieing the ability of smaller contractors to win work. In addition, it was felt that some decision-makers are not sufficiently involved with, or do not understand or recognise the pressures on contractors resulting from, the procurement process.

“A general nervousness from the client side to enter into a relationship for the delivery of a project. Other barriers include decision-makers being separated from the procurement process, in particular boards who exert significant influence in decision-making.”

“Risk aversion of clients and owners particularly government and local government.”

“One barrier is a shortage in strong leadership/ project management roles in the infrastructure industry and staff turnover.”

Infrastructure Funding

There is a huge appetite among respondents for more Private-sector Investment in infrastructure in New Zealand, which was the most-popular option chosen by respondents, and which represents a very important opportunity for the government to pave the way for building more of the essential infrastructure that New Zealanders rely on every day. This year, 4 percent more respondents than last year want to see additional private investment, and the respondents wanting less private funding declined by a corresponding 4 percent.

Last year, with a new government in place, there was a clear dip in industry optimism. We believe that this year's rebound in optimism is a positive development and that the government can take advantage of it, if it chooses to, to partner more closely with private funding sources to get on with building New Zealand. The government's announcement of an infrastructure pipeline in May of this year was a good start in signalling to the industry that it is open for business.

Respondents this year, were less inclined to want more User Pays funding (down 12 percent to 68 percent) initiatives, though is still a high figure and the amount of people wanting fewer User Pays funding initiatives is miniscule. This perhaps indicates that people have become used to and are at least sanguine about, if not wildly in favour of, the user-pays principle. Moreover, in the question (discussed in more detail in the Traffic Congestion section later in this report) concerning types of funding to address traffic congestion, respondents made clear that None (i.e. doing nothing) was by far

the least-favoured approach. A fuel tax was introduced in Auckland without too much fuss.

The popularity of using Income Tax revenues to fund infrastructure has dropped, with a 7 percent increase in respondents who wanted to see less reliance on this sort of funding. It is now at similar levels to Partial or Full Sale of Existing Assets (i.e. asset recycling), which is still not a very popular choice this year and, in fact, shows the highest percentage of respondents wanting to see less of this type of funding.

Despite the overall themes outlined above, there was more support in the comments we received for asset recycling and 'public-private partnerships', for 'all of the above', as well as for 'user pays' and 'long-term debt financing' (e.g. bonds). Several comments displayed an impatience to get infrastructure built no matter what the method of financing chosen.

"There's no one silver bullet. Combination of all is required."

"There are examples in NSW where the government is recycling their capital. They sell existing assets to a private operator and build new assets, get them established with known demand and then sell them off before using the capital again for the next asset."

"Public Involvement with a Public Bond Issue related to Auckland Infrastructure. This will allow interested public to be partners and also have a payback for their investment."

"We need to do more PPP projects — we get the infrastructure up-front, and users pay over an agreed timeframe."

Infrastructure Funding



Funding and financing New Zealand's infrastructure requirements are areas that urgently need greater attention from policy-makers, as it is the key to allowing the private sector to unlock investment. The industry is calling out for more certainty around the pipeline of work and impatient for more of it to commence. Creative and cost-effective solutions to delivering infrastructure exist and need to be tapped."



Craig Davidson

Managing Director – New Zealand
AECOM



Sustainability and Resilience

Given the importance of sustainability and resilience to players in both the infrastructure and building sectors, we wanted to know to what extent they feel that current investment planning in the buildings and infrastructure industry takes resilience into account, and specifically with reference to three areas; namely, resilience to: natural disasters; a changing climate; and technical failure.

While there has been essentially no change year over year in respondents' views in respect of the Natural Disasters and Changing Climate options, there has been an 11 percent increase in concern (to a moderate or a great extent) about Technical Failure. Delving deeper into the comments on this issue highlighted some concerns about clients' willingness to pay for redundancy or any features above code that would enhance the resilience of a given building or piece of infrastructure. Two typical comments were:

"Is this code or above code is always the question. If above then client almost always requests it to be brought down to code."

"Clients have focused on capital cost primarily. Any resilience quickly gets 'value engineered' out to save project cost."

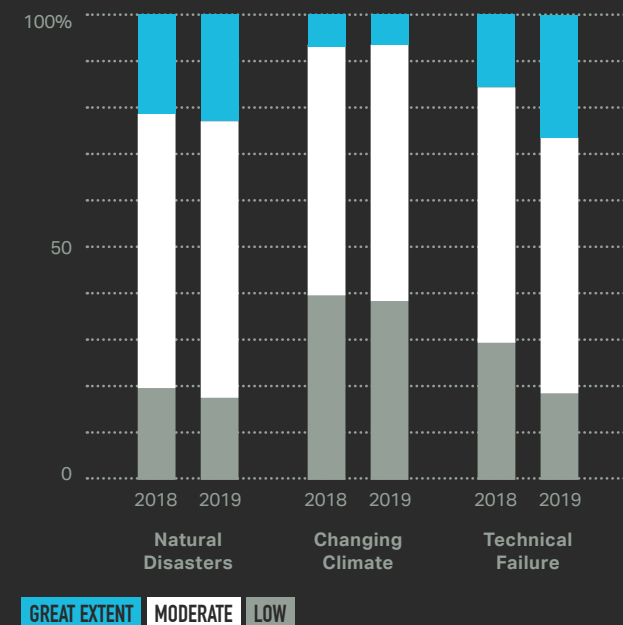
Furthermore, the general consensus among the comments received seems to be that more action is taking place in relation to making buildings resilient to earthquakes, which is unsurprising given our recent experience of earthquakes, than mitigating the effects of climate change. In addition, it was felt that while standards are being tightened, they are not being tightened to a sufficient extent. An example is that developments are being allowed to proceed in potential coastal inundation zones.

"I have seen little investment in sustainable construction techniques."

"Recent failures on the west coast indicate natural disasters are difficult to account for. Climate change and its effects are being considered in some way for new infrastructure (the sizing of storm water pump stations is a good example). Technical failure is something everyone knows and is comfortable with so we always ensure it is considered."

"Developments are still being promoted in coastal inundation areas."

Consideration of Resilience in Buildings and Infrastructure Investment Planning



This year's survey showed that respondents felt a rather low level of consideration is currently being given to resilience in planning buildings and infrastructure. With the emergence of the zero carbon bill stipulating the development of New Zealand's first national climate-change risk assessment and a national climate-adaptation plan, we expect to see more consideration given to both climate change and climate-related natural disasters over the coming years."



Maurice Marquardt
Team Leader – Sustainability and Resilience, AECOM

Water

Against the backdrop of the terrible circumstances in Havelock North in 2016, it is only right that there has been a renewed focus on the safety of New Zealand's 3 Waters systems, and especially drinking water.

The options for water reform offer different advantages and benefits, and have different disadvantages and costs. Bearing in mind that all of the following three goals are extremely important and that there needs to be a balance, we asked respondents to consider where the greatest amount of effort should be directed: to Safeguarding People's Health; to Safeguarding the Environment; and, to Minimising Costs.

The clear favourite option, chosen by almost two-thirds of respondents, was Safeguarding People's Health. Safeguarding the Environment also had a strong vote of confidence at just over 30 percent of respondents, with only Minimising Costs receiving minimal support (less than 5 percent), which demonstrates perhaps that there is likely a strong public consensus that bringing drinking-water systems in particular up to scratch, regardless of the cost, is an essential policy aim.

In addition, as there are diverging views over the right balance between local control of local systems and a more-centralised, or at

least regionally structured, water system, we invited comments on the importance of Local Representation and Knowledge versus Access to the Best Skills and Best-practice Approaches. Most comments said both were important, but a significantly larger number said that Best Skills and Best-practice Approaches were more important than Local Representation and Knowledge. Baseline national water standards were thought to be essential by a number of respondents, and one suggested that local councils could mandate even higher standards provided they were able to pay for them.

Water quality standards were introduced into Parliament earlier this year via an amendment to the Health Act, but sector reform has gone quiet. The waterway water quality work is still progressing, but has been hindered by the focus on the Zero Carbon Bill, which is currently out for consultation. We look forward to further progress on these important issues.

"While local representation is important, the current arrangement of water controlled by a myriad of councils across the country is inefficient and unsustainable. Consolidation is required to raise the skill level of decision-makers and ensure holistic thinking is applied."

"You need a combination — they aren't mutually exclusive. Iwi representation is very important."

"Government needs to set minimum human safety standards (i.e. hazardous materials, drinking water). Councils can set their own environmental standard — however, they need to get ratepayer agreement to the cost (i.e. stormwater quality, climate change, etc.)."



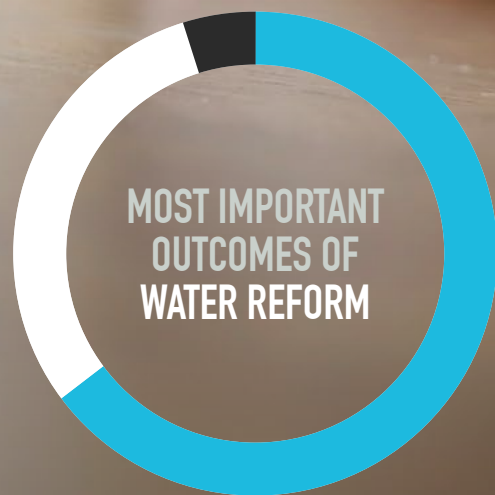
All of us — regulators, consultants, contractors, non-governmental organisations, researchers and owners — must work together to provide New Zealanders with clean, safe and affordable drinking water. We must meet that need not only for today but also to help prevent a reduction in the reliability of supply and a deterioration in water quality that could result from climate change."



Kerry Griffiths

Technical Director – Sustainability and Resilience, AECOM





MOST IMPORTANT
OUTCOMES OF
WATER REFORM

65%

Safeguarding
People's Health

30%

Safeguarding
the Environment

5%

Minimising
Costs

REGIONAL FOCUS

FOCUS ON AUCKLAND

Given the number and scale of infrastructure projects in train in Auckland, it is not surprising that respondents from the nation's largest city were the most positive of any surveyed across the country. Auckland continues to experience and expect growth, both in terms of the economy and also its population. Auckland Council's Auckland Plan 2050 quotes Statistics NZ forecasts that the city's population will increase by 720,000 to more than 2.4 million in the 30 years from 2018 (Auckland Council, Auckland Plan 2050, June 2018). So there is a solid basis for the optimism about the infrastructure and building industries in Auckland.

But with growth comes challenges. This Focus on Auckland section discusses two topics that will be integral to how the city rises to the challenge of accommodating this growth. First, the supply, cost and affordability of housing are perennial concerns in New Zealand generally, and in Auckland in particular. Second, Auckland is already experiencing significant challenges with respect to traffic congestion. We examine a few options that could alleviate much of the worst effects of congestion, but they will take a strong governmental and public commitment to see their benefits flow through to Aucklanders.



Housing

Auckland has the dubious distinction of being listed as a ‘severely unaffordable’ housing market in all 15 of Demographia International’s prominent *Housing Affordability Surveys*, including the 2019 edition, which finds that in 2018 Auckland was the seventh-least-affordable housing market among the 91 largest markets in the countries surveyed, which are Australia, Canada, China (Hong Kong), Ireland, New Zealand, Singapore, the United Kingdom and the United States. This news will come as a surprise to almost no one who lives in Auckland. But the same edition contains a piece of good news; specifically, it states that the reforms the government is contemplating (i.e. removing the urban growth boundary; freeing up density controls; and funding new infrastructure through infrastructure bonds) constitute, in its view, “the best approach” to creating a responsive housing market and goes on to say that the international community is watching with interest whether this will have an impact on Auckland’s very high ‘Price to Income Ratio’. (Demographia International’s *Housing Affordability Survey*, p. v).

Our survey once again this year asked respondents to rate the importance of nine factors listed in the accompanying graphic. It shows that respondents this year saw a significant increase in three factors: ‘Consents fast-tracked’ (up 0.7 points); Restrict Foreign Ownership (up 0.7 points); Ease Planning Regulations (up 0.5 points). It also shows that the three most-important overall were

rated as: Increase the Quality of Urban Intensification (8.8 out of 10 possible points); Consents Fast-tracked (8.2); and More Diversity in Housing Sizes (7.8). However, overall there was relatively little change in most categories compared to last year, indicating perhaps that industry players have a reasonable consensus on the importance of the various potential reforms.

In comments, however, a number of themes emerged. In particular, respondents were largely of the view that KiwiBuild was not being well run and has been too slow to get started; the government itself has expressed its belief in the importance of speeding up delivery. There was also a view that more effort was needed to make higher-density housing more attractive. The cost of (and length of time needed for) consenting was identified as a significant obstacle to providing additional housing. In addition, the scarcity and expense of building materials, which is partly attributed to regulations, land and labour are impediments to more-affordable housing.

It is important to remember that housing and planning reforms will take time to implement and even longer for their benefits to be felt in the market. One potential quick win would be for the government to allow more flexibility to import overseas products and to simplify approval processes. It is certainly a possibility (and one we hope for) that future editions of AECOM’s *Sentiment Survey* will find less angst about the costs of providing housing

and about housing affordability generally. Like Demographia, we will have to wait and see whether this turns out to be the case, but it would be a significant, positive achievement if Auckland is able to find a way to better balance its housing supply and demand.

“We will only be able to build enough houses when the consenting process is made simpler, ... the cost of materials comes down and there is a skilled workforce to build. I have seen little progress on these three fronts.”

“KiwiBuild skews the market, commits/consumes resources that may be better deployed elsewhere, and does not address the fundamental drivers of housing costs, namely the lack of cheap land and the punitive regulation of cheap building materials from overseas.”

“The new Government hasn’t moved fast enough to unlock land. KiwiBuild should be targeted on greenfields near transport corridors to generate pace and scale.”

“Hobsonville Point is a great example of compact form designed for the community. Replicate that!”

Key Factors to Help Meet Auckland’s Housing Challenge



Note: Houses indicate a rating scale out of 10. Figures to the right represent points change since 2018.

Traffic Congestion

Auckland is growing strongly, and with strong growth typically comes more traffic, unless attractive alternative travel options are in place. Auckland's unique topography, straddling as it does a narrow isthmus with a limited number of transport connections to and from commuter suburbs to both the north and the south, makes travel at peak times difficult. While great strides are being made (think, the Waterview Tunnel and the City Rail Link) to make it easier to get around and to and from central Auckland, and huge sums are being expended in support of that goal, it is going to take time to put new infrastructure in place.

What can be done in the interim to manage travel demand and congestion? We asked our survey respondents again this year, and they have very definite ideas in mind, though not all are going to be easy for the government, or the public, to accept. However, international experience has shown (see the accompanying article) that when the benefits of traffic management are explained, and when pilot schemes are tried, grudging public acquiescence blossoms into acceptance and then blooms into actual support, since for most people the benefits of less traffic and more-efficient travel outweigh the inconvenience of the additional charge. Examples like London, Stockholm and Singapore have shown this to be the case, and other cities, including New York City, are embarking on this journey.

Survey respondents were most positive about the idea of introducing Area/Cordon Charging, which is what is used in London and Stockholm. This is essentially a fee to drive within a defined (usually central) zone of the city. Hefty discounts are normally applied for residents of the zone itself, so as not to overburden them, since they literally cannot escape the charge (except by giving up their cars) like non-residents can choose to do (at least in theory) by not driving into the zone. Corridor/Route Charging had the second-highest level of support; this is simply a traditional toll for driving on a particular road and familiar to most people.

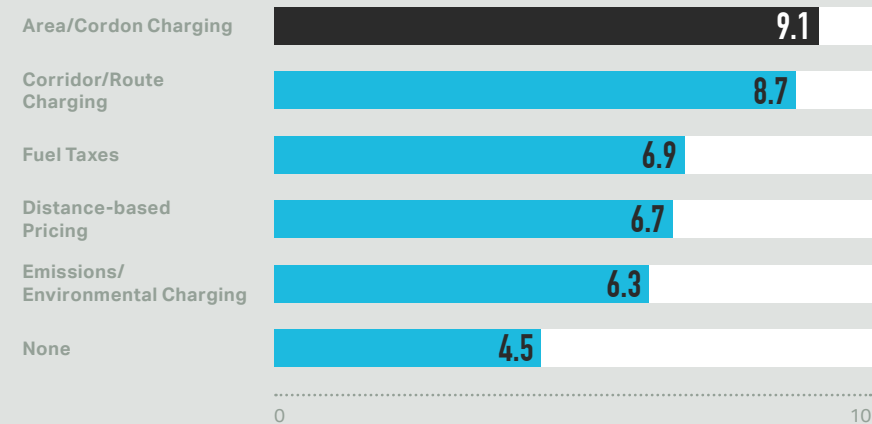
Intriguingly, the lowest level of support was given to None; that is, doing nothing about Auckland's current congestion problems (never mind the snarls we will have a decade from now when the city has grown significantly) was viewed as a relative non-starter by respondents to this year's survey.

A number of comments we received highlighted the importance of putting whatever additional funding is received, from whichever method is chosen, to work by ensuring it is dedicated to transport infrastructure to ease the burden on commuters.

"Congestion charging and tolling of roads. Increase subsidies for public transport travel."

"Increase user pays so infrastructure becomes an asset rather than a burden on councils."

Auckland Traffic Management Solutions



"Tolls on new roads. Spend the fuel tax on fixing the roads and building new ones. Heavy trucks are having the largest impact on destroying our roads. They should pay more road user charges (RUCs)."

"Government should not use funds collected for transport to fund other infrastructure projects."

HOW CONGESTION CHARGING COULD UNCLOG AUCKLAND

Simon Buxton and Chris Ballantyne



Auckland faces a crucial choice about whether and how to make use of a short window of opportunity: get to grips now with its growing traffic-management issues or suffer far worse, even crippling, congestion in the future. What is really at stake is the kind of city Aucklanders want their city to be. The case for such an intervention is outlined in various recent publications, including the report, *The Congestion Question: Could road pricing improve Auckland's traffic* (Ministry of Transport et al, 2019) and the *Benefits from Auckland road decongestion* report (New Zealand Institute of Economic Research, 2017). Benefits of demand management initiatives, such as cordon charging, generally include faster commute times, safer roads that are also less costly to maintain, increased productivity across the economy, and improved quality of life and satisfaction among residents.

So how could congestion charging unclog Auckland and what can the city learn from other leading international cities with experience at managing travel demand and congestion?

Let's look at the example of London and how it manages traffic demand. London has implemented a 'cordon-charging' system, which aligns with the most-popular choice of method among our survey respondents, whereby the central city is zoned to require payment of a small fee to enter and traverse it in a vehicle (with some exceptions, such as for emergency vehicles). Discounts on the fee are given for residents living within the cordon. The initial response to the cordon charge was a reduction in traffic levels of 15 percent, along with a 30 percent increase in flow speeds; these tend to reduce over time with the growth of a city, so active monitoring and management is necessary to maintain the benefits, which also include economic benefits to local businesses and

an increase in productivity (due to less time being lost in the transportation of goods). In addition, while there is a common perception that businesses within the cordon might lose custom, this is typically not borne out by the facts on the ground as pedestrians and cyclists spend more money in city centres than drivers and the attractiveness of a city centre is increased by less traffic.

Importantly, London had executive leadership, political direction and some social licence for its cordon-charging scheme due to an extensive consultation and a strategic plan for delivery of the scheme that was agreed in January 2001. A key aspect of its success was its preparation, which included an extensive public information campaign and a willingness to listen to local residents and businesses and incorporate their feedback. Equally importantly, alternative transport measures need to be in place to give commuters a choice of travelling by other means. The government's spending and current construction of new transport infrastructure, from City Rail Link to new busways like the Auckland Manukau Eastern Transport Initiative, opens the door to more people being able to contemplate leaving their cars at home.

What of the politics of introducing a cordon charge? Will it be too thorny for any government to support and implement? The evidence suggests it would not be. The experience of Stockholm has shown that it has in fact proved to be popular with residents precisely because it improves the quality of life in the city and frees up the flow of traffic, saving people time and frustration. Indeed, Stockholmers even voted to keep the charge in a referendum. Furthermore, the 2009 CURACAO *State of the Art* report into the implementation of urban road user charging as a demand-management tool in urban areas

showed that acceptability in cities that have implemented such schemes dramatically increases post implementation; in Stockholm support from 21 percent before implementation to 67 percent after, whereas in London it rose from 39 percent before to 54 percent after. The Norwegian city of Bergen saw support rise from only 19 percent before to 58 percent afterwards.

Another key area that Auckland Council should look at before it considers bringing in a congestion charge would be to improve its land-use planning, concentrating more housing near transit hubs and encouraging people to change the way and time they travel to reduce the impact on the peak.

One important point is that any fees collected should also be ring-fenced for reinvestment in better transport, both roads and public transport, enabling more vehicles to be taken off the road altogether and better circulation of those that remain. This will increase satisfaction with travel times among people in Auckland and its suburbs, further cementing support for a cordon-charging system.

In the end, the choice is up to Auckland Council and other stakeholders, including central government, whether to implement a traffic-management system. But international experience has shown that such systems are not overly difficult to design, or to implement, provided careful consideration is taken to ensure a fair and appropriate charge, and that sufficient communication with the public at large is carried out to educate them on the benefits of the new system.

FOCUS ON WAIKATO AND THE BAY OF PLENTY

The story of the Waikato and Bay of Plenty regions this year is a focus on growth. This is evident from the 93 percent of respondents who identified Investing in Infrastructure to Support Growth as a high or medium priority, a higher combined score than for any other option. Tourism, Residential and Healthcare were the top three areas in which delivery was expected to increase in these regions. Maintaining and Repairing Aging Assets are also seen as high priorities to ensure a high quality of life and cope with the additional people and businesses coming into the regions.

From 2015 to 2018, *Sentiment Survey* respondents indicated the highest-growth factor was Property Investment As a Result of the Heated Auckland Housing Market. In 2019, this has been overtaken by a 20 percent jump, from 68 percent to 88 percent, in respondents who felt that Local Authority Policy is having a strong or moderate influence on investment. This was followed closely by Government Policy on Regional Investment, which jumped from 71 percent to 86 percent.

Local authorities continue to focus on maintaining and repairing existing assets, while managing and enabling growth within tight fiscal conditions.

There have been record levels of new residential building consents over the last three years. There has also been a significant increase in the planned renewal of water assets, which is being driven by national policies such as the *National Policy Statement for Freshwater Management* and

Ministry of Health drinking water standards to ensure security of supply following 2016 Havelock North water contamination.

Local authorities are investing in different ways to support growth in the Waikato and Bay of Plenty regions, and are exploring new models, such as collaborative arrangements with central government. The Waikato Sports Facilities plan promotes shared leisure hubs, and the success of “The Peak” as part of Rototuna Junior High School demonstrates the great outcomes that can be achieved through collaboration between council, the local community and the Ministry of Education.

Expectations for residential housing have improved in the Waikato region, as the Labour government foresees the Hamilton–Auckland corridor as a way of solving the housing shortage. The plan focuses on opening a southern growth corridor from south Auckland into the northern Waikato region, which may involve removing the urban growth boundary and reforming planning rules. Hamilton City’s recently adopted district plan promotes inner-city living and increased density within established neighbourhoods. The city has accommodated over 50 percent of new residents within the existing city area, with the balance provided in greenfield areas, supported by the \$290.4 million share of the Housing Infrastructure Fund (HIF). The HIF funding will help to underwrite infrastructure supporting more than 3,700 new houses over the next 10 years and 8,100 in 30 years, within the Peacocke development south of the city.

Optimism for improvements in the industrial sector has increased from 40 percent to 60 percent — the transport and logistics sector continues to grow in response to the Waikato Expressway, North Island and East Coast Main trunk lines and proximity to the Port of Tauranga. Investment in improved connectivity between Auckland, Hamilton and Tauranga continues to be a high priority for the Waikato and Bay of Plenty regions to improve economic performance.

The optimistic investment outlook is also improved by the idea of better connecting the Waikato region with Auckland by rail and by an increase in optimism in the energy and telecoms sectors this year, owing perhaps to a sizeable amount of windfarm construction and the fact that the advent of 5G may be driving optimism for increased investment in the telecoms sector at both national and regional levels.

When asked to name priorities for these regions, survey respondents suggested a number of ideas, including: supporting tourism and small-scale industry; completing road links such as the Waikato Expressway and Auckland–Hamilton–Tauranga links; expanding airports and airfreight; reducing development contributions; and improving public transport and connectivity between rural areas and large regional centres (e.g. Hamilton and Tauranga). The Waikato and Bay of Plenty regions continue to drive improved national economic performance and are well placed for further growth in the next five years.



Significant national and community impacts result from bold visions being delivered through collaborative partnerships. Signature regional projects, such as the Avantidrome in Cambridge, the Peak indoor court facility at Rototuna Junior High School, and the global success of Hamilton Gardens, showcase what collaboration between government, the private sector and the broader community can achieve. Housing Infrastructure Fund projects underway in Hamilton and Tauranga demonstrate we can increase the scale of this collaboration; however, challenges remain between local governments on the one hand and central government on the other.

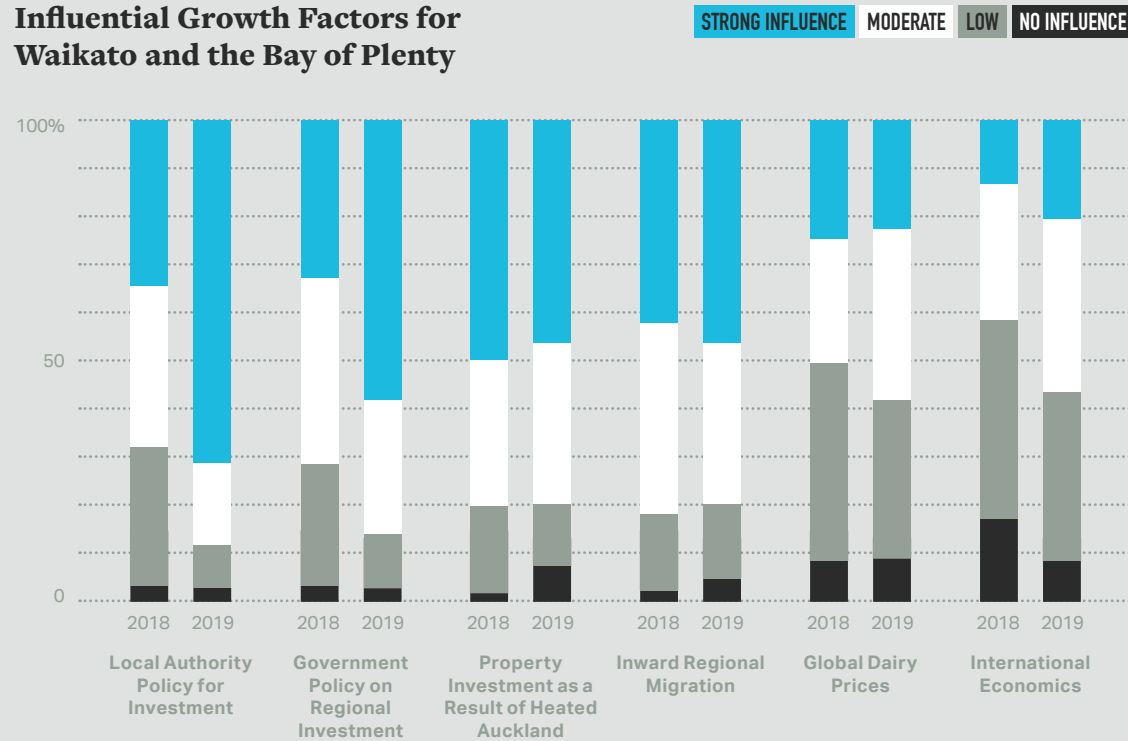
“Disruption within the NZ Transport Agency, for example, has reduced confidence and the ability to partner and deliver effectively over the last year. The recent Hamilton to Auckland Corridor Plan provides a cautious optimism that central and local governments can move beyond planning and deliver a bolder vision for the benefit of communities.”



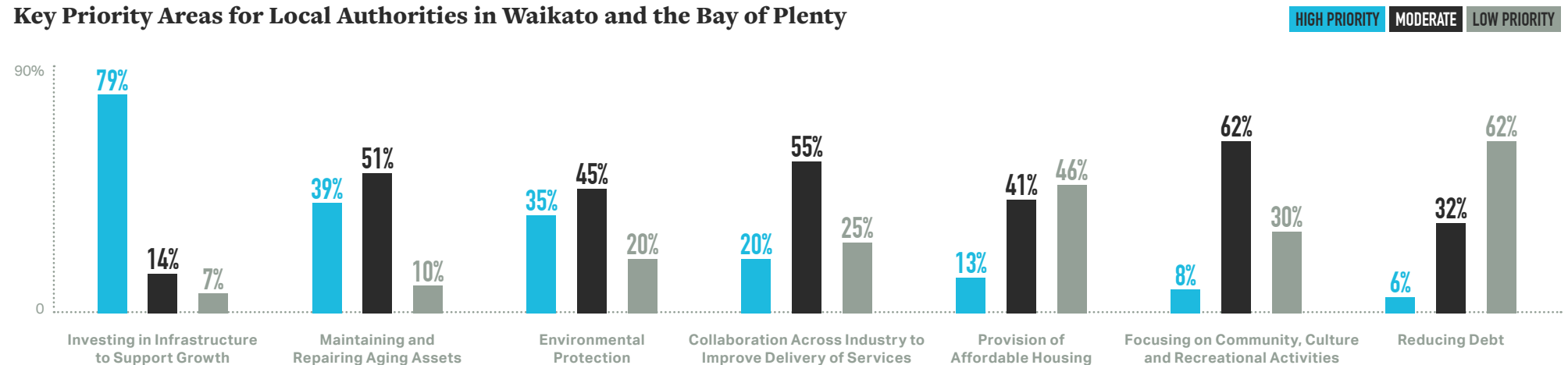
James Bevan

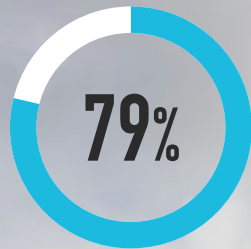
Area Manager – Waikato and Bay of Plenty, AECOM

Influential Growth Factors for Waikato and the Bay of Plenty



Key Priority Areas for Local Authorities in Waikato and the Bay of Plenty





EARTHQUAKE STRENGTHENING

Top priority for resilience

FOCUS ON WELLINGTON

This year, in addition to our questions on delivery and investment already discussed we asked Wellington-area respondents two questions concerning their priorities for infrastructure. The first was to name their top priorities with respect to resilience and to rank them according to whether they were high, medium or low priority. Perhaps unsurprisingly, given the amount of work going on to strengthen buildings in Wellington and the obvious visibility of this project, Earthquake Strengthening was the top priority, being chosen as a high priority by 79 percent of respondents, followed by Flexible/Distributed Services (e.g. Alternative Water Supplies), which came in at 65 percent; however, this latter category actually had the lowest rate of 'low priority' rankings, with just 1 percent of respondents assigning it that rank.

When asked about how to 'get Welly moving' through needed improvements in transport infrastructure, Reducing Traffic Congestion/Journey Times was considered to be the most-important goal, with nearly 4 in 10 respondents choosing it, while a further 28 percent chose Improving Levels of Service. Surprisingly, given the overall concern about earthquakes identified in the previous question resilience, Improving the Resilience of Infrastructure to Unplanned Events (e.g. Earthquakes) was the option chosen least often, highlighting the importance Wellingtonians place on the need for overall improvements to current transport in the city.

At the time of writing, the New Zealand Budget is only a short time away. It will be interesting to see whether — and potentially how much — money the budget allocates for transit improvements in the Wellington region. Mooted projects include: mass transit from the rail station to Newtown and the airport encompassing a number of inner suburbs; improvements to pedestrian, cycling and bus infrastructure, and highway improvements/tunnel duplication to improve critical links to the airport and port.



With central government endorsement, Wellington is eagerly awaiting the commencement of the programme to reshape the city. Providing choice of how to get into and around the city centre, and transforming this centre into a place focussed on people will start the step-change Wellington seeks. The importance of weaving resilience into the programme cannot be overstated."



Ian Martin
Area Manager – Wellington
AECOM

Priorities for Resilience



IMPROVING
WELLINGTON'S
TRANSPORT
SYSTEM

38% Reducing Traffic Congestion/Journey Times

28% Improving Levels of Service

22% Safeguarding Cyclists and Pedestrians

13% Improving Resilience of Infrastructure from Unplanned Events (e.g. Earthquakes)

FOCUS ON CHRISTCHURCH

As earthquake recovery work continues to be completed, we asked respondents about their intentions to continue pursuing work in the Christchurch area and whether they are looking at other markets for opportunities. The good news is that 76 percent expect to remain focused on working in Christchurch and the South Island (with 46 percent looking to Christchurch specifically) and, when removing responses indicating a desire to work overseas, 81 percent of those who will continue to be focused on New Zealand will remain focused on the South Island (and 54 percent of

this group will keep Christchurch as their main focus, with a further 22 percent citing Dunedin and 5 percent Queenstown). This indicates a good level of confidence that there is still plentiful opportunity in the Garden City. Of the respondents who said that they will look elsewhere, 40 percent suggested they would look at 'overseas markets' (with half of those specifying 'Australia') and 20 percent said 'nationwide'. Other responses included 'All of the South Island' as well as Otago, Nelson and Tauranga.

Competition among infrastructure professionals and builders is increasing in the Christchurch region, according to 36 percent of respondents. Only 6 percent thought it was decreasing, while 26 percent thought it had remained about the same and 32 percent were unsure.

We also asked respondents to comment on what should be the future infrastructure priorities for Christchurch and the surrounding region. The clear favourite among those who commented was roads.

"The roads being totally fixed up, the daily disruption is affecting many businesses."

The next-most-cited priority among commenters was the 3 Waters. Others of note included: inner city rejuvenation; resilience (e.g. climate change); business as usual/operations and maintenance (i.e. maintain what we have appropriately); sports and recreational infrastructure; a stadium; preparing for electric vehicles; light rail; and port/marina development at Lyttleton.

"1. New and improved participation sports and active recreation infrastructure — Keeping active is proven to aid in mental wellbeing, and the city has had a bad run recently. 2. Maintenance and upgrade of basic water management (waste water, storm water and drinking water). The city needs to focus on maintaining and operating all the new infrastructure it has efficiently after a period of expedited construction."



While the largest number of respondents see competition as increasing, this response is relatively neutral. This plurality suggests the Christchurch market is still buoyant, and like many organisations, we look for growth opportunities in other regions, such as Dunedin and Queenstown, to supplement this base workload. This is an outcome of a rebuild tail that continues to 'wag' long past any projections."



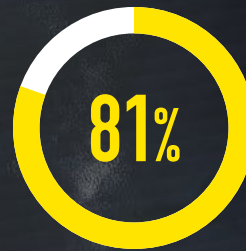
Chris Hemphill

Area Manager – South Island
AECOM



Image courtesy Christchurch City Council

Where Christchurch Industry Professionals
See Opportunities Within New Zealand
Over the Next Three Years



SOUTH ISLAND

14% AUCKLAND
5% WELLINGTON
54% CHRISTCHURCH
22% DUNEDIN
5% QUEENSTOWN

NASA image courtesy Jeff Schmaltz, MODIS Rapid Response Team at NASA GSFC

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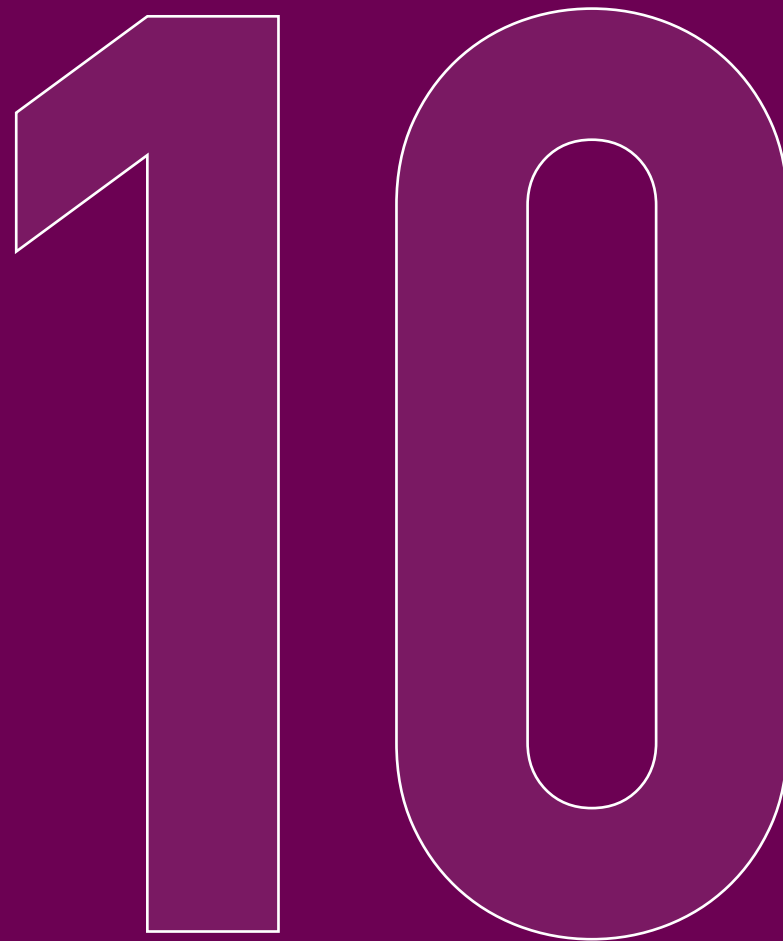
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10th Anniversary Edition

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Image courtesy the NZ Transport Agency

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