ARCADIS
Design & Consultancy
for natural and
built assets

2020 Australia

International Construction Costs

Foreword

The Arcadis International Construction Costs (ICC) Comparison 2020 is being published as the COVID-19 pandemic continues to accelerate. While the rate of new cases in China has slowed, exponential growth rates are being seen in many countries around the world.

Such a fast-moving and all-consuming crisis threatens, in the first instance, to shut down large sections of the global economy, including construction. Its long-term impacts are likely to upset many widely held assumptions about our economies and societies.

Our research for ICC 2020 was completed before the potential scale of the pandemic was in sight. While China's rapid response may not be possible in other countries, the extent of the disruption caused is now clear to see. This report's market conditions snapshot provides valuable insights into the state of markets on the eve of the crisis and a useful anchor point for future impact assessments.

Within this context, we have chosen to focus our commentary on 'rethinking resilience'. Unlike recent responses to extreme weather events, we are all having to react, respond and find new forms of resilience in public health and essential services, to an extent that has perhaps never been seen. In the short term, we share our clients' and colleagues' deep concerns about forthcoming supply and demand shocks. As economic activity is reduced across markets and isolation of people restricts normal ways of living, the other major reduction is the harmful carbon and other greenhouse gas (GHG) emissions we release into the atmosphere. This highlights the fact that in the long term, the climate emergency is an even greater challenge for this sector.

Right now, we are focusing our wider response on the ability of clients and their project teams to mitigate both the immediate and medium-term effects of the pandemic. Project-based industries like construction will be severely damaged unless collective steps are taken to manage supply-chain continuity and resilience. From protecting the health of the workforce to the effective management of force majeure claims to the safe mothballing and restarting of sites, we all must work together to preserve industry capacity for the very real challenges ahead.

The greatest of these challenges is, of course, the climate emergency. It is well known that construction processes alone are responsible for nearly 12% of global, energy-related carbon dioxide (CO_2) emissions and that heating and cooling buildings is one of the biggest single causes of global warming. Nevertheless, as it currently stands, neither construction businesses nor our clients are collectively making anywhere near enough progress towards the Paris carbon emissions reduction goals. While the potential positive benefits for people and the planet are clear, the shift to lower carbon means of construction poses new affordability challenges, because more stringent regulations or embracing new ways of working both create financial costs in the short-term.

2020 needed to be a breakthrough year for construction and carbon reduction. Now there is a very real risk that progress will stall. As we struggle to keep the industry afloat in the face of COVID-19, we must also ensure that we are ready to play our part in confronting the climate crisis.

Decarbonization is an enormous undertaking, but as the global response to COVID-19 demonstrates, it is possible to take bold steps. A long-term, collaborative response will maximize our chances for success – not only in developing capability but also in gaining the public support necessary for action.

Everyone who builds, owns, operates or refits an asset has a stake in the problem and a responsibility to address it. Just as with COVID-19, the cost of inaction is too risky. And just like we are reconsidering our priorities in light of this pandemic, we should be rethinking and broadening resilience both in the short and long term.

At Arcadis, we work with clients and project teams to design, create, operate and futureproof their assets, while making positive contributions to resolving the climate crisis. We help our clients establish an investable business case for resilience, both short and long term and across ever-broadening risks and uncertain events. The impact of COVID-19 on public health is bringing a new understanding and awareness of the need to make our assets, cities and communities more resilient.

Andrew Beard

Global Head of Cost & Commercial Management - Arcadis

"Resilience is our ability to live and thrive no matter what happens. In the context of the COVID-19 pandemic, it means that the construction industry and society as a whole must withstand the negative impacts and learn from the current crisis, to be better prepared for the future. We must make smart decisions that can position us to bounce back even stronger the next time an unforeseeable calamity occurs. Down the line, as construction markets reopen, there will be a push to make these businesses more resilient. Those efforts should be coupled with sustainability so that we are better able to confront the future together and leave behind a better world for future generations."

Piet Dircke
Global Leader of Water Management & Resilience - Arcadis

The Arcadis International Construction Costs Comparison 2020: Rethinking Resilience

In this year's report, Arcadis is dealing with twin challenges: addressing the short-term crisis of COVID-19 and the longer-term, but equally urgent, impacts of climate change.

Once again, the comparison covers 100 of the world's large cities across six continents. This year's report builds on its strong heritage as the leading reference point for comparing the relative costs of construction in major cities around the world. This is one of the most expansive comparisons of its type.

Arcadis' annual International Construction Costs Comparison is based on industry-leading market knowledge. In addition to providing a comparative index of global construction costs, this report also focuses on emerging trends associated with climate change, highlighting work being done in many markets to reduce the environmental impacts of construction.

This year, coverage has been extended to cities in Eastern Europe including Poland, Serbia and Montenegro. The main change to the index is that the cost of construction in cities is now relative to Amsterdam, instead of London. This change has no direct effect on the relative ranking of cities.

The potential impact of the Covid-19 virus

The research for ICC 2020 was conducted as the COVID-19 virus (coronavirus) has been spreading around the world at an accelerating rate. As this report goes to press, there is a growing risk the virus will have a significant effect on the global economy and the construction industry. Even with the enormous stimulus measures unveiled by many governments, bodies like the International Monetary Fund have warned about the risk of global recession in 2020, with the pace of recovery being determined by the speed at which the spread of the virus is stopped and the resilience of industries during these difficult times.

As a result, unlike previous years, this report does not contain forecasts for construction activity for the coming year (2020). This is because there are two main ways in which COVID-19 could affect construction activity. The first is a supply shock. This is the result of companies not being able to source materials and labor. The construction industry is less reliant on global supply chains than other industries, but some projects will be exposed to sourcing delays – potentially related to long lead-in items including curtain wall or plant. Projects could also be subject to shutdowns as a result of public health protocols being put in place, as well as decisions by people to avoid worksites for fear of contracting the virus.

If such disruptions occur, they will delay the delivery of assets and potentially create cashflow issues for the industry. An increase in insolvency cases and disputes is very likely to affect the industry. Delayed projects will eventually be completed, but a sharp drop in demand, caused by a recession, is a much greater risk. At the time of writing, this risk is increasing. Governments will have a key role in maintaining demand levels in the first stages of recovery, as the Chinese government did with its infrastructure stimulus program during the Great Recession, which began in 2007.

Market risks – looking beyond the turbulence

Looking back to 2019, many construction markets had a disappointing year, after a strong 2018. While very few countries saw a fall in construction output, the growth rate across many construction markets was weak. In Europe, this was the result of a slowdown in housing markets as well as a broader decline in commercial investment. Falling volumes of trade, particularly affecting trade routes between China and the US, placed further pressure on commercial development across Asia, which was already facing over-supply. Many markets in Asia were able to switch the focus of investment to infrastructure and affordable housing. This switch was harder to achieve in western markets, including Europe, where a long-promised increase in infrastructure investment has still not materialized. One bright spot was the UK where, paradoxically, the construction market grew at twice the speed of the wider economy, driven by housing and infrastructure.

Even before the COVID-19 threat emerged, economic conditions looked uncertain. Monetary policy, particularly interest rate cuts in the US and the resumption of quantitative easing in many markets, had stabilized what appeared to be a gathering global slowdown. This background weakness suggests that the recovery from the pandemic will require further stimulus on top of the emergency economic measures being put in place from March 2020 onwards.

One of the consequences of the 2019 slowdown and the coronavirus is that some of this economic stimulus will automatically come into play. In addition to the support from Central Banks and governments, investors fleeing to safety have driven bond yields and borrowing costs to new lows. Furthermore, in early March, oil prices were down over 50%, compared to peak prices seen in 2019. Copper prices have also fallen by over 10% since the beginning of 2020. Lower commodity prices combined with lower financing costs will be positive for both public and private investors focused on the delivery of long-term programs rather than one-off assets.

On top of the pandemic, political uncertainty will also play a major role in the economy in 2020. The US presidential election has already taken center stage and while President Donald Trump will do his utmost to stage a recovery through 2020, it may not be possible to sustain strong growth into the following years. In Europe, many countries, including Germany and Italy, are suffering from an increasingly fractured electorate. The 27 member states of the EU face the difficult task of agreeing on long-term expenditure plans for 2021 to 2027, balancing the redevelopment needs of eastern countries and establishing a €1 trillion euro (EUR) European Green Deal against the constraints of a sharply reduced budget. Climate change also creates a level of uncertainty, as demonstrated by the recent UK Court of Appeals decision to delay the development of London Heathrow Airport's third runway. The court found that the planning process which led to approval of the runway did not account for the Paris Climate Agreement. This opens the door for other lawsuits to delay or prevent other planned infrastructure projects.

For the global construction industry, this all means that 2020 is the year in which construction clients and their project teams need to try to see through the huge turbulence of current markets to focus on longer-term opportunities ahead. In particular, infrastructure shows great promise, with programs like the HS2 rail line being approved in the UK and offshore wind capacity accelerating in parts of Europe, as part of the energy transition.

The Arcadis International Construction Costs Index 2020

London has emerged as the most expensive construction location in the world in 2020. Continuing investment in some of the highest quality residential, hotel and commercial developments in the world has bumped up London's cost range. The latest data from the US, particularly from New York and San Francisco suggests an easing of cost levels – particularly in connection with over-supplied market segments such as mid-town apartments.

This analysis does not account for the recent explosive increase in the value of the dollar. We view this as a short-term phenomenon, albeit one that will be heavily influenced by the scale and duration of the coronavirus outbreak.

Drivers behind movements in the index this year include a reappraisal of cost levels in some markets as well as the well-known relationships between costs, currency and inflation. Construction inflation was less of a differentiator during 2019, although a strong market in Ireland has placed Dublin in the top ten for the first time.

Scandinavian, US and UK cities are well represented in the top 25. By contrast, European cities, typified by Frankfurt, Paris and Brussels are more economic locations to build, reflecting long-established differences in specification standards, combined with high levels of productivity. Southern European construction markets, particularly Spain, Portugal and Greece are some of the most affordable locations to build in the developed world – supporting continuing investment in the residential and hospitality sectors.

There have also been some shifts in the ten least expensive cities, with Bangkok and Sofia being replaced by Jakarta and Bucharest. The cost range at the lower end of the index is narrow with a difference of plus or minus 45% across the bottom 25 cities. As such these differences are relatively minor.

Key factors influencing city positions in the index

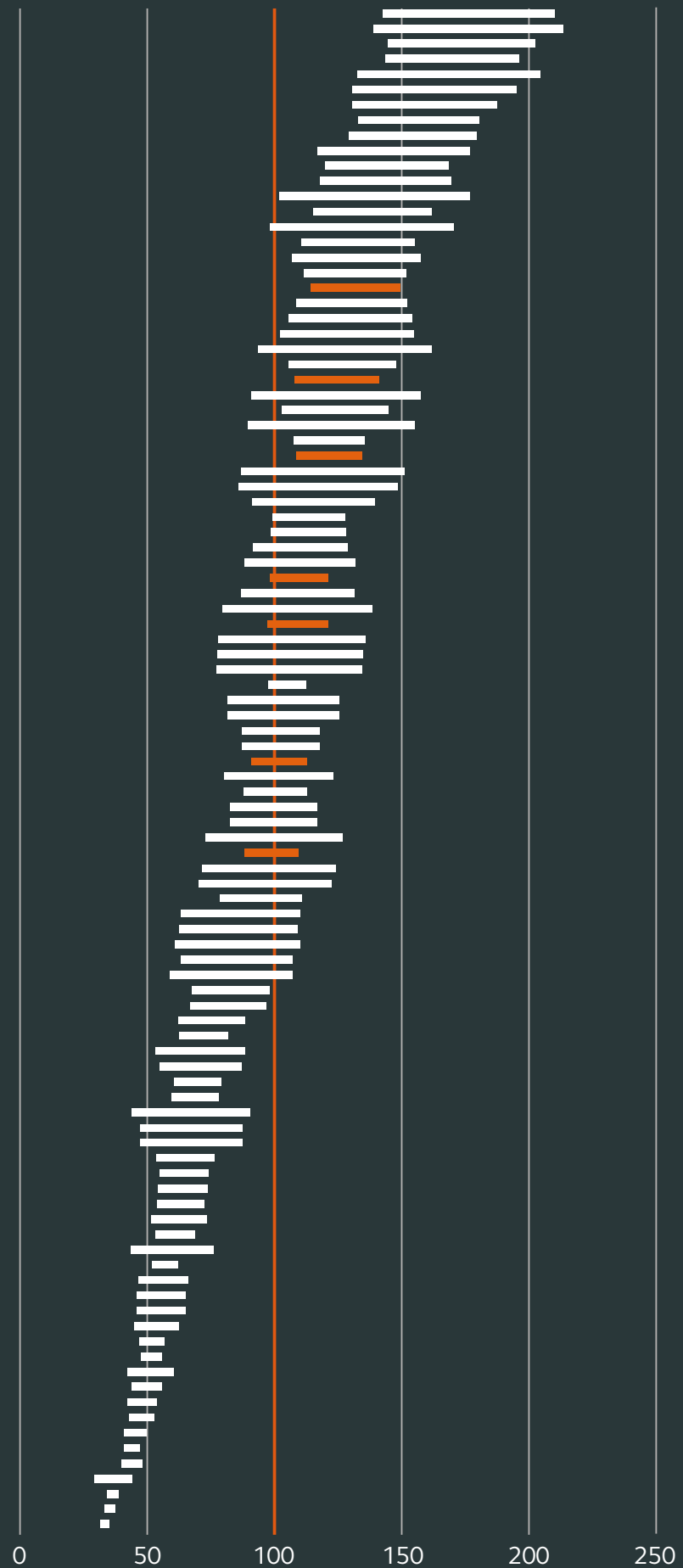
Multiple factors influence a city's position in the index. The main factor is the level of specification and quality, which can vary over time. For example, the costs of high-end hotels and residential buildings have increased significantly in cities such as London, reflecting a global market for luxury developments that only affects a small sub-set of the cities. Looking forward, enhancements to specifications to deliver low-carbon developments are likely to further increase differentials. We expect to see this effect emerging first in Europe, with the universal adoption of the requirement for the delivery of near zero-energy buildings (nZEB) in the public and private sector from 2020 onwards.

Comparing costs across countries such as the United States and the UK highlights that even when specifications are relatively similar, there is still plenty of scope for variation. Costs in Houston, for example, are half the level seen in New York. Explanatory factors include the cost of labor, materials and other construction resources. For example, Texas has a low-cost, flexible workforce in contrast to the heavily unionized New York construction market. Another variable is the cost of management and allowances for profit and risk. Some countries with a fragmented construction supply chain will have many more levels of sub-contractors – each adding extra allowances for 'on-costs', including management, risk and profit. These additional layers of on-cost contribute to premiums in some locations.

Productivity is also an important consideration. Continental Europe has a very productive construction sector, which benefits from a focus on high levels of mechanization and the use of simple, effective construction techniques. Lower-cost, US markets also achieve relatively high levels of productivity compared to some higher-cost locations.

Finally, currency fluctuation and annual inflation will always play a role in determining the relative position of cities. Given recent dramatic changes in the value of global currencies, clients are advised to review currency movement before applying the published factors. Currencies were set on 13 February 2020, before the broader implications of COVID-19 were evident.

International Construction Cost Index 2020



		Annualized TPI Q1 2020
London	1	1%
New York City	2	3% - 5%
Hong Kong	3	0% - 3%
Geneva	4	1% - 2%
San Francisco	5	3% - 5%
Copenhagen	6	2% - 4%
Tokyo	7	0% - 1%
Zurich	8	1% - 2%
Dublin	9	6% - 8%
Edinburgh	10	2%
Macau	11	0% - 2%
Munich	12	2% - 3%
Boston	13	2% - 3%
Bristol	14	2%
Philadelphia	15	2% - 3%
Manchester	16	2%
Glasgow	17	2%
Stockholm	18	2%
Auckland	19	3% - 4%
Liverpool	20	2%
Leeds	21	2%
Frankfurt	22	2% - 3%
Seattle	23	3%
Birmingham	24	2%
Christchurch	25	4%
Chicago	26	2% - 3%
Moscow	27	4%
Los Angeles	28	2% - 3%
Muscat	29	1% - 2%
Sydney	30	0%
Las Vegas	31	3%
Washington DC	32	2% - 3%
Paris	33	2% - 3%
Abu Dhabi	34	2% - 3%
Dubai	35	1% - 2%
Belfast	36	2%
Brussels	37	2% - 4%
Brisbane	38	0%
Salt Lake City	39	3%
Ottawa	40	2% - 2.5%
Melbourne	41	0%
Detroit	42	2%
Toronto	43	2% - 3%
Denver	44	3%
Singapore	45	0% - 2%
Riyadh	46	2% - 4%
Jeddah	47	2% - 4%
Rome	48	0% - 2%
Milan	49	0% - 2%
Perth	50	-2%
Berlin	51	2% - 3%
Doha	52	1% - 3%
Rotterdam	53	3% - 5%
Amsterdam	54	3% - 5%
Phoenix	55	3%
Adelaide	56	-1%
Miami	57	2%
Montreal	58	2% - 3%
Seoul	59	1%
Dallas	60	3%
Houston	61	3%
Podgorica	62	0% - 2%
Santiago	63	4%
Zagreb	64	5%
Sao Paulo	65	5%
Rio de Janeiro	66	5%
Prague	67	5% - 8%
Warsaw	68	5%
Belgrade	69	10%
Istanbul	70	10%
Krakow	71	5%
Poznan	72	5%
Buenos Aires	73	50%
Mexico City	74	3%
Bogota	75	4% - 5%
Malaga	76	1% - 3%
Barcelona	77	1% - 3%
Manila	78	3% - 4%
Madrid	79	3%
Lisbon	80	1% - 2%
Athens	81	1%
Nis	82	8%
Beijing	83	0%
Porto	84	1% - 2%
Johannesburg	85	5%
Nairobi	86	5% - 6%
Bucharest	87	4%
Shanghai	88	0%
Jakarta	89	4%
Sofia	90	3% - 4%
Hangzhou	91	0%
Bangkok	92	1%
Chengdu	93	0%
Guangzhou	94	0%
Wuhan	95	0%
Shenzhen	96	0%
Kuala Lumpur	97	4% - 6%
Mumbai	98	2% - 3%
New Delhi	99	4% - 6%
Bengaluru	100	4% - 6%

The construction industry and the climate crisis

Over many years, the climate change agenda has evolved to become the greatest challenge of the age. However, even after the conclusion of the Paris Climate Agreement in 2015, with its commitment to cut carbon and other greenhouse gas (GHG) emissions by at least 40% from 1990 levels by 2030, progress on many of the changes necessary to eliminate greenhouse gas emissions has been slow.

With the global disruption of the COVID-19 pandemic, there is a real risk that the momentum towards climate action will be lost. Environmental awareness and the need for collective action must remain at the top of the agenda, alongside the recognition that time is running out.

It has long been recognized that buildings and infrastructure are the single, largest contributor of total global, energy-related CO2 emissions, responsible for nearly 40% in 2018. Despite great improvements in the energy efficiency of buildings around the world, the sheer increase in floorspace required to house growing urban populations means that building-related emissions are growing rather than shrinking.

Furthermore, the 11% of embodied carbon emissions related to construction activity, including materials production, are particularly difficult to eliminate, given the energy-intensive processes associated with manufacturing metals, cement and other critical materials.

In 2020, there are positive signs that the construction industry is responding. Regulations in Europe for example are on course to mandate near zero-energy buildings (nZEB) this year. However, wider decarbonization, particularly the elimination of embodied carbon, is not yet being adopted widely.

It will only be possible for the construction industry to play its part in meeting the Paris goals if businesses continue to chart a course toward a carbon neutral future, even as they implement their post-pandemic resilience plans.

And there are many compelling reasons for the industry to accelerate its path towards decarbonization as part of the recovery.

The most important is the sustainability of the business model. If it is unlikely for a business to be allowed to be a big carbon emitter in 10 years' time, then businesses that change secure a sustainable future. This is the opportunity that the automotive industry is already pursuing.

The second issue is finance. Banks, pension funds and other institutions are increasingly concerned that their long-term investments and loans are at risk of accelerated obsolescence as a result of climate change. Projects that are near carbon-neutral will be increasingly more attractive to investors.

Public opinion and consumer sentiment are equally important. Many consumers are already showing a strong preference for low carbon businesses and products. In particular, younger generations are demanding that companies take steps to address climate change and other critical issues. They are the decision makers of tomorrow and they will reward businesses that have gone carbon neutral and avoid the ones that have not.

Finally, the backstop provided by regulation is also changing rapidly. In June 2019, the UK became the first country to set a legally binding net-zero target for 2050. This step is already affecting UK infrastructure programs. Furthermore, the 196 countries that signed the Paris Climate Agreement should be updating their Nationally Determined Contributions (NDCs) during 2020. It is likely that more national construction industries will be brought within the scope of GHG emissions reductions. Tougher NDCs will be reflected in more ambitious regulations such as the zNEB requirement being adopted across Europe from 2020 onwards.

COVID-19 may cause delay, but all of these trends are moving inexorably towards the establishment of a carbon neutral global economy.

A key area which the COVID-19 pandemic has highlighted is the need for resilience against public health crises and the dependency not only on emergency services, but community resilience and the increased awareness and appreciation of public services and key workers. The industry must learn from this most recent unpredictable event to build in resilience for the uncertain future.

So, thinking long term and with all these good reasons to act, why is it so hard to take carbon out of construction?

The main reason is that global construction output has never been higher. With each new building adding both embodied and operational carbon emissions, future projects will need to be even more carbon efficient. Even though building standards have improved a great deal and many high-performing projects are being delivered, there are simply not enough of the best projects to make a difference. Globally, the whole industry, from client and financier, through consultant team and contractor to resident or occupier needs to change fast. Like the European automotive industry that is having to transform its entire product range to electric vehicles by 2035-2040, the construction industry faces fundamental change.

Matters are more challenging in this sector because the construction industry has historically operated with a short-term focus. Asset performance typically improves when regulations or standards mandate action or where markets are providing a specific signal, such as the market premium that can be secured for high-rated Building Research Establishment Environmental Assessment Method (BREEAM) or Leadership in Energy and Environmental Design (LEED) buildings. The temptation to stick to a short-term focus on survival will be strong post COVID-19. However, the industry must adopt a long-term perspective in order to achieve net-zero carbon.

To maximize the chances for a successful carbon challenge response, there needs to be a move to broader metrics of financial, environmental and social returns. It will require all parts of the industry to become more productive, delivering projects with greater levels of cost and program certainty. Investment will depend on all firms being more stable and profitable, to enable a longer-term view to prepare for the transition to the carbon neutral economy.

With the net-zero target being only 30 years away, long-term thinking is needed now. Buildings that are not delivered in 2020 to near net-zero carbon standards will add to the many billions of buildings around the globe that will need to be retrofitted between now and 2050. Given that the structure and fabric of most buildings exceeds 50 years, specifying to older standards poses a significant risk of obsolescence to asset owners and operators. Similarly, owners increasingly need to think about how their asset will be repurposed to extend its life as well as how the asset can be dismantled at end-of life – minimizing emissions throughout the asset life cycle.

So far, the construction sector's response to the climate crisis has been inadequate. A further delay following the coronavirus could make things much worse. This industry needs to embrace future forms of competitive advantage associated with the emerging, carbon-neutral economy. By significantly reducing carbon emissions today, it will be possible to reduce future liabilities and risks while delivering assets that are less at risk of obsolescence. Doing so can also increase this sector's brand value through association with a massive investment to confront the climate challenge.

So, where to start?

As we come out of the pandemic, project teams need three things in order to embrace the forthcoming, carbon neutral economy.

First, they need to adopt smart ways to increase productivity and control costs to create the profits and headroom to invest in sustainability measures and solutions. This means having both the certainty there will not be cost overruns on projects and the confidence to invest in the capabilities needed to play a part in reducing carbon. This is likely to require a much more collaborative approach to project delivery.

Second, clients and their teams need to adopt a broader recognition of value, going beyond capital costs and financial returns. Increasingly a broader set of metrics aligned to the five capitals (natural, human, social, manufactured and financial) will be used to support investment cases for all projects. These assessments are likely to include environmental and societal outcomes, whole life cost and value, as well as wider financial metrics, which include total operations, energy and the costs of talent acquisition and retention. Decision makers will need access to much more information about the carbon performance of their projects and what that can mean, in the long term, for the asset, business operations and their people. This will create further challenges for the industry, with respect to performance management and data reporting.

Third, construction companies need assurances that their investments in carbon reducing solutions are deliverable without additional risk and that they will yield the promised lifetime net-zero carbon results. In particular, early adopters need solutions in which they can invest with confidence. This will require further innovation in procurement to share risk and to incentivize collaboration.

These three actions are not simple, and they do not describe the technologies and business models that will evolve to deliver net-zero carbon. They are however essential preconditions for this sector to be able to invest in the future and in the future resilience of the industry.

Arcadis has a proven track record and tools to help clients control costs, make smart decisions about where to spend money to increase value, reduce carbon and maximize the positive, sustainable outcomes of an asset. Sustainability is not only a core value, it is a fundamental part of the Arcadis passion for improving quality of life. The following case studies highlight how Arcadis has worked with clients and projects teams to address three key aspects of the carbon-neutral agenda:

- transitioning new construction projects and assets towards carbon neutrality,
- decarbonizing the operations of existing buildings,
- enhancing climate resilience.

Towards carbon neutral construction

Triodos Bank Headquarters, the Netherlands *(pictured right)*

Triodos Bank needed a new head office for their expanding workforce: a building that exemplifies the bank's commitment to sustainability and transparency. The new office also needed to be a good fit for Landgoed de Reehorst, the estate upon which it has been built. To achieve this, Arcadis and Architect Bureaus RAU and Odette Ex created an integrated plan, for a modern, highly sustainable office, including the restoration of cultural and historical elements of the estate. The result is a state-of-the-art building, constructed and operated in harmony with the surrounding environment and wildlife. The 135,000 square foot office is an energy neutral building, made of sustainable materials. The modular, demountable, wood-hybrid construction technique employed for this project means the building can be deconstructed and moved to another location, with essentially no waste. Additionally, the BIM-based Material Passport included in this project provides a record of all materials used to construct the building, which will make it easier to reuse them at the end of the asset lifecycle. Arcadis delivered the masterplan and the landscape plan for this project.

Moorebank Logistics Park, Australia

Qube Holdings, Australia's largest logistics provider, sought expert advice on the best way to construct a sprawling logistics facility, with minimal negative impacts on the environment. The plans needed to be developed on a tight timeframe, while minimizing costs. Arcadis prepared a comprehensive sustainability strategy for the Moorebank Logistics Park (MLP), which included a range of carbon reduction measures, across the 850,000 square meter import-export terminal. Arcadis enabled the client to reduce greenhouse gas emissions during the construction and on-going operations of the facility. Arcadis experts also built a carbon emissions model, which was used to clearly demonstrate the environmental benefits of transporting freight via rail instead of via trucks on roads. MLP is also outfitted with long-term carbon reduction innovations such as the use of electric forklifts, instead of diesel, and the harnessing of the regenerative power of cranes used at the facility. As a result of Arcadis' sustainability strategy, the MLP will cut freight truck emissions by more than 110,000 tons of CO2 per year, the equivalent of burning 52,000 tons of coal or removing around 11,000 vehicles from the road for an entire year.

The Art Institute of Chicago Modern Wing *(pictured above)*

The Art Institute of Chicago's Modern Wing is dedicated to modern and contemporary collections, housing new galleries, an education center including classrooms and studios, and a café. Designed by Renzo Piano, the Modern Wing uses sustainable design, as well as architectural and mechanical systems to control temperature, humidity and light. Most notably, the carefully engineered, whole-roof shading device, known as the Flying Carpet, comprises project and site-specific computer-modeled blades, oriented to filter daylight into upper level galleries. These systems save energy costs as artificial light is only used when necessary. As these systems also block a large amount of sunlight during summer months, much less energy is needed to cool the building. Transparent exterior walls consist of a structural double skin glazing system, which meets the temperature and humidity conditions required for the artwork and surpasses energy code requirements. As a result, the Modern Wing uses 50% less energy than the Art Institute's older buildings. As a LEED Silver certified addition, it is a model of sustainability. Arcadis provided project management services for multiple aspects of the modern wing.

Hong Kong's first Smart Green Building Guidebook

Arcadis has been commissioned, by the Hong Kong Green Building Council, to provide business advisory services, smart city thinking, stakeholder engagement services and strategic research, to develop a Hong Kong Smart Green Building Best Practice Guidebook. The guide will be the first of its kind for Hong Kong. It will include a set of practical suggestions and strategies for developing smart, low carbon buildings. There will also be design and operational best practices for optimizing the performance of new and existing buildings. Arcadis is assisting with comprehensive research, benchmarking analysis and stakeholder engagement that will ultimately be used to develop 30 key recommendations on energy performance, as well as building design, operations, occupant comfort, material, waste and water management, and mobility.

CAALA: Unlocking Sustainable Design

The German digital start-up, CAALA, is leading the way in parametric life-cycle optimization, which can be used to drastically reduce the energy consumption and carbon emissions of buildings. For architects, developers, asset owners, and investors, CAALA's software creates unprecedented transparency around the impacts of design decisions on the energy and carbon footprint throughout the asset lifecycle. This includes modelling of the impacts of resource extraction, the production of building materials, constructing the building, operating the building and, at some point, its decommissioning. Considering all these factors from the earliest stages of the planning process provides decision makers with the information they need to make smart decisions to reduce the operational and embodied carbon impact of a building. Geometry, orientation, materials and heating and cooling systems are all taken into consideration at a phase when it is still possible to optimize the building, with an eye towards energy demand, investment and operational costs, as well as carbon emissions. Research demonstrates that using CAALA'S software can yield up to a 40% reduction in carbon emissions over the entire asset life cycle and with the right incentives in place, carbon neutrality can be achieved using this platform. In light of the massive potential CAALA has to help drive down carbon emissions from buildings, Arcadis has invested in the firm through its City of 2030 Accelerator, powered by Techstars.

www.caala.de

Decarbonizing existing buildings

Funan in Singapore

CapitaLand Mall Trust's Funan integrated development, in Singapore, offers a synergistic combination of retail, office and serviced residential areas that are designed to appeal to digitally savvy consumers, while providing a sustainable and creative environment. The transformation of a 31-year-old mall was accomplished using a combination of Building Information Modelling (BIM) and Virtual Design Construction (VDC) technologies. Funan also incorporates an ecosystem of sensors that optimize the building's performance, making it highly energy efficient. More than 6,000,000 kilowatt hours of power is saved each year, giving the building a much lower carbon footprint than similar-sized facilities. This has earned Funan a Green Mark Award for Buildings Gold Plus rating. Arcadis delivered cost management services for Funan, a complex project that required a high level of coordination to manage cost drivers and contract management.

A new city hall for Beringen, Belgium

The City of Beringen, in Belgium, decided to move its city hall back into the city center. A derelict site including an abandoned school and an old chapel was chosen for the new facility. In keeping with the Flemish government's regulations for new and renovated buildings, the city hall needed to have a small carbon footprint. To help Beringen achieve its goals, Arcadis conducted a holistic study of sustainability for the site, with a focus on energy-use resulting from the building design. The old chapel has been retrofitted and incorporated into the design of the city hall, which includes insulation that performs better than current building requirements. Arcadis also employed an Aquifer Thermal Energy Storage (ATES) solution to heat and cool the building. The heat stored in underground water during summer months is recovered in winter with a heat pump and used to heat the building. That same water, cooled during winter months, is then used in summer to cool the building. Together with a solar panel installation, the implemented solutions made Beringen's city hall a nearly zero-energy building. The energy performance is very high, and any additional energy used comes from renewable sources. The city hall's energy use is 50% lower than what is required by the strict governmental regulation. In total, this more sustainable design will save 107 tons of CO_2, each year.

Arcadis Gen: Advanced analytics to optimize decision making across broader metrics leading to reduced carbon emissions

Once asset owners and operators have made the decision to reduce energy use and carbon emissions, they are often unclear about how best to accomplish this goal across their complex portfolios. The smart use of data is the key to optimizing decarbonization expenditures, in order to secure sustainable returns. Arcadis Gen's Enterprise Decision Analytics (EDA) solution enables asset intensive organizations to better understand their portfolios and balance risk, costs, customer service, societal needs and the environment, to create the optimal investment plan.

Yorkshire Water example:

To deliver enhanced business performance and customer service, Yorkshire Water wanted to consider more than just CAPEX and OPEX when making investment decisions. They wanted to be able to capture the full implications of their investment on the natural, human, social and intellectual capitals. For example, opting for more sustainable schemes typically increased the capital costs of some projects, but would use and produce less carbon, plant trees and support good placemaking. The slightly more expensive solution becomes preferable if the customer values these additional benefits.

To help Yorkshire Water achieve their vision, Arcadis Gen developed a valuation framework within EDA capturing the five capitals approach to cost benefit analysis. This was integrated with the optimization engine to enable Yorkshire Water to consider the broader five capitals benefits in their whole life cost. As a result, Yorkshire Water are now able to quantify the benefit of their asset investments to their customers, for example stating that for every £1 (GBP) invested the customer received £4.66 of benefit.

Enhancing climate resilience

Climate Ready Boston

Over the entire Boston Metropolitan Region, communities and assets are exposed to significant risks from climate-related, extreme weather events. In particular, rising sea levels and flooding from storms pose existential threats to swaths of the city. This includes neighborhoods such as South Boston and East Boston, as well as key assets like Logan International Airport. With Boston's iconic, downtown buildings, neighborhoods and attractions at stake, Arcadis is working with the city to help create the future vision for Boston. As part of its Climate Ready Boston initiative, the city selected Arcadis to assess its vulnerabilities related to climate change. Arcadis is leading the project team responsible for technical assessments, design and stakeholder engagement for the initiative. As a follow up to Climate Ready Boston, Arcadis completed comprehensive planning studies for South Boston. This including Fort Point Channel. Arcadis is also supporting the Downtown resilience plan, while developing concrete solutions for high rise properties, office buildings and the New England Aquarium, all located at Boston Harbor.

Resilience retrofitting for NYC hospitals

In October 2012, Superstorm Sandy caused extensive damage to New York's major hospital facilities. Metropolitan, Bellevue, Coler and Coney Island hospitals are all located in the once in one hundred (1:100) years floodplain and were all severely damaged during the storm surge. Basements were inundated with sewage and contaminated sea water and the loss of power and critical services led to the evacuation of many patients and staff. After the storm, Arcadis worked to develop innovative solutions to protect each facility at both a masterplan and critical asset level, incorporating the principle of multiple lines of defense. The result of our work helped secure a record high grant of $1.5 billion dollars (USD) to restore critical functions and construct more robust hospital facilities, up to a one in five hundred (1:500) years storm surge event. At all facilities, critical mechanical, electrical and plumbing systems have been strategically elevated or hardened against floodwater, while the buildings themselves are being protected by perimeter defenses that are seamlessly integrated into the surrounding neighborhood. Besides comprehensive flood protection services for critical facilities such as hospitals, Arcadis performed risk and vulnerability assessments with planning and design work for a large number of high-rise offices in Lower Manhattan, including Verizon Telecommunications and Brookfield Properties.

Americas

CONSTRUCTION AROUND THE WORLD

Construction around the world

This section is a review of activity in selected markets with a focus on in-market initiatives that are promoting the adoption of sustainable construction practices. At the time these reviews were produced the spread of COVID-19 is accelerating around the world. The true impacts of the virus on society, the environment and the economy are not yet known. Nevertheless, these reviews should serve as a reference baseline for assessing impact over time.

Brazil

Brazil's economy entered 2020 at risk of recession, following a sharp decrease in output during the presidential election in late 2018. GDP growth was marginal in 2019 at 0.9%. Interest rate cuts, lower inflation figures and economic reforms were supporting a return to growth prior to the pandemic. In 2019, the construction sector stagnated. There is longer-term potential for growth associated with the government's stated commitment to invest in renewing old infrastructure. The "Brazil's Infrastructure for Sale" policy highlights the priority being placed on privatization, refurbishment and extending the life of existing assets, with new build taking a back seat. Unemployment in Brazil is high, especially in the construction sector, and when demand returns, it is unlikely to result in strong inflationary pressure. Nevertheless, over the long term, the loss of skilled labor, resulting from the country's five-year downturn and low productivity, will likely drive inflation once the long-hoped for recovery is in full swing.

Canada

Canada's GDP growth was 1.5% in 2019. In addition to COVID-19-related stimulus measures, the re-elected national government is expected to increase spending, especially on affordable housing and support for manufacturing. All things being equal, the residential market will be boosted by a scheme for first-time buyers, and industrial construction will benefit from public investment in steel and aluminum manufacturing. Furthermore, over the next two years, large infrastructure projects worth more than $20 billion dollars (USD) will be delivered. Canada is ranked second in the world in terms of the amount of LEED certified square footage. New public sector buildings must be LEED Silver or Gold and many private and commercial developers are achieving LEED Platinum certifications.

Americas

CONSTRUCTION AROUND THE WORLD

Mexico

Mexico fell into recession during 2019, with annual GDP growth falling to 0.4%. The slowdown followed the election of President Lopez Obrador, who cancelled major investments such as Mexico City Airport. The new administration also reversed the previous administration's decision to open up the oil and gas industry to private capital. Trade disputes with the US also took their toll, but with the new trade deal between Canada, the United States and Mexico almost in place, longer-term prospects should improve. Mexico's construction sector shrank by 5% in 2019, leaving it in poor shape to face the COVID-19 challenge. The potential recovery will be driven by investments in infrastructure, such as the $42 billion dollar (USD) national infrastructure plan for 2020 to 2024. The plan includes multiple projects for roads, railways and telecommunications – but relies heavily on private investment. The speed with which the plan can be implemented will depend on private sector willingness to support the current government. Mexico has a robust renewable energy sector, which is focused primarily on large-scale wind and solar farms. The country still has a long way to go in terms of encouraging less carbon-intensive construction practices.

The United States

The interim trade agreement with China is unlikely to eliminate all tensions between the two largest economies in the world. GDP growth decreased in 2019 by 0.5% to 2.4%. With the forthcoming US Presidential election, the sitting administration may well seek to provide even more economic support in the run up to the vote in November. Even before the virus, and despite a strong housing market, construction was expected to cool off over 2020, due to slowing growth, a lack of clarity around public budgets and skilled labor shortages. Looking beyond the election, both Republicans and Democrats claim they want to see significant federal investment in infrastructure, but it is far from certain that the two parties will be able to move a substantive piece of legislation through Congress. This prospect is even less likely given the massive amount of government spending currently being aimed at supporting citizens and the economy during the pandemic. Should investment take-off, the skilled labor shortage will remain one of the main inflationary factors. The uptake of modular construction and prefabrication is increasing but will require more time to stimulate sufficient supply and a broad enough skills base. Once these construction methods take hold, they have tremendous potential to drive down the industry's carbon footprint.

Asia

CONSTRUCTION AROUND THE WORLD

China

The Chinese economy slowed down over 2019, largely the result of the trade war with the United States. GPD growth was 6.1% in 2019, down from 6.6% the year before. Despite an interim trade agreement with the US being put in place at the beginning of 2020, US tariffs and sanctions were expected to continue to place a drag on the Chinese economy in 2020. China is the first country to face a COVID-19 lockdown, which resulted in a widespread demand and supply shock. Even on the most optimistic forecasts, growth is expected to contract to around 5.5% in 2020. The depth of the slowdown will depend as much on the speed at which the global economy bounces back as the success of containment of the virus in China. The Chinese government will likely continue stimulating the economy by investing in infrastructure, and there will be growth in both logistics and data centers.

Hong Kong

The Hong Kong economy contracted by 2.9% in 2019, with ongoing social unrest playing a role in the slowdown. A steep decline in tourism and business travel, combined with a drop in consumer spending, contributed to the economic slowdown. The construction market declined by 7% year-on-year in 2019, largely because of a downturn in public sector output. The value of new, public sector orders fell by almost 30% and this trend is expected to continue, with only a limited number of projects having been approved by Hong Kong's Legislative Council. The outlook for private investment also remains uncertain. Subdued demand will help offset inflation related to the ageing, resource-constrained workforce. The government is actively promoting construction practices that minimize waste, such as granting more generous floor space allowances to developments that use modular, integrated construction techniques.

India

The Indian economy grew by 4.8% in 2019, well shy of the country's stated goal of at least 8% GDP growth. A slowdown in local demand and problems in the non-banking, financial sector are responsible for the disappointing result. Looking forward, high demand for housing, infrastructure and real estate projects should support long-term construction sector growth. In its February 2020 budget announcement, the government proposed adding five cities to the Smart Cities Mission project, further highlighting the role of construction in supporting growth. The public sector contribution to construction demand will decrease, though private sector initiatives may well compensate for this decline. Up to 70% of the buildings and other assets projected to be needed by 2030 have yet to be built. Though most of these assets will be built to low specifications, the high demand creates an opportunity to position India as one of the world's largest green buildings markets. A combination of policy incentives, regulation and access to green finance will determine the extent to which this potential can be realized.

CONSTRUCTION AROUND THE WORLD

Malaysia

Malaysia's GDP was 4.3% in 2019, slightly down from 4.7% in 2018. Household spending, private investment and tourism are the major factors driving the Malaysian economy. Construction activity was flat in 2019, with only marginal growth of 0.3%. Political unrest and subsequent delays to major public infrastructure spending played a role in the lackluster growth. Looking longer-term, greater political stability could usher in growth in both private and public investment, with a shift towards affordable housing and an effort to restart stalled infrastructure projects. Labor costs are expected to be the main driver of inflation, with earnings growth underpinned by a statutory minimum wage. Materials costs could be affected by a disruption of imports from China. However, prices fell by 3% in 2019.

Singapore

Singapore experienced an economic slowdown in 2019, with GDP growth at 0.7%, the lowest figure in the past decade. This was a sharp drop from 3.4% in 2018. The US-China trade war, a slump in export manufacturing and a cyclical downturn in the electronics industry have all adversely affected Singapore's economic performance. Nevertheless, the construction sector grew by 2.8%, buoyed by both public and private sectors construction activities. Singapore is making strides towards becoming a global leader in green buildings. The city-state's BCA Green Mark Pearl Award encourages developers, building owners, landlords and tenants to work together to help buildings achieve better environmental performances.

The Philippines

With GDP growth of 5.9% in 2019, the Philippines remains one of the fastest developing economies in Asia. Growth was mainly driven by services, with the construction sector making a smaller contribution than anticipated. Delays in the country's budget approval process and a ban on election spending both hindered the start of public infrastructure projects. Despite the delays, the construction industry still grew by 7.7% in 2019. This was largely the result of growth in the private sector, including a number of public / private partnership projects, within the current government's "Build, Build, Build" program. Construction costs increased by approximately 10% in 2019, driven by increased demand and rising labor costs. The Philippine Green Building Code, promulgated in 2015, focuses on improvements to the energy performances of buildings. The code recommends specifications such as double-glazed windows and high-efficiency lighting. These modest performance upgrades highlight the scale of the challenge that many developing markets face in moving towards more sustainable construction practices that are already prevalent in many other markets.

Europe

CONSTRUCTION AROUND THE WORLD

Sustainable construction in the EU

The European Union is unique in the world in its role in driving pan-regional regulations. These are being used to promote low-carbon construction through requirements for near-zero energy buildings (nZEBs). Regulations for nZEBs were set in 2010 and come into force in 2020, requiring the adoption of minimum fabric performance standards and the use of low-carbon or renewable heating systems. Standards are set and monitored locally, so sustainable performance levels will continue to vary. Nevertheless, the EU is making noteworthy strides in driving cross-sector improvements.

Czech Republic

In 2019, GDP in the Czech Republic was 2.5%. Interest rates were increased by 0.25% in 2019, in order to reduce inflation, which is currently 3.5%. The construction industry grew by 2.3% in 2019, the third consecutive year of growth. This is significantly lower than the industry's 8.4% growth in 2018. The number of building permit requests was rising, with growth coming in particular from the affordable housing sector. The European Union is set to reduce funding to the country for infrastructure projects, a move which may further hamper longer-term growth prospects. Progress towards meeting EU sustainability standards has been slow but from 2020 onwards, every new building construction permit must demonstrate compliance with near-zero energy building standards. BREEM and LEED building certificate applications are also on the rise, in particular among industrial and commercial asset owners.

Poland

In 2019, Poland's GDP growth was 4.1%, down from 5% in 2018. A further slowdown was forecast before the COVID-19 pandemic. The construction sector grew by 3.6% in 2019, signaling more stability in the market after a massive 20% increase in 2018. In 2020, political uncertainty, stemming from the next EU budget negotiation process and presidential elections in May 2020, is likely to limit the levels of investment. In late 2019, Kraków became the first city in Poland to introduce a ban on burning solid fossil fuels. Poland is also implementing near-zero energy building standards.

Europe

CONSTRUCTION AROUND THE WORLD

The Netherlands

Economic growth is slowing down in the Netherlands. GDP growth was 1.7% in 2019, down from 2.6% in 2018. Prior to COVID-19, the main risks to the Dutch economy were US trade policy and the post-Brexit trade deal between the EU and Great Britain. After a buoyant 2018, the construction sector in the Netherlands began slowing down in 2019, mainly due to skilled labor shortages and problems associated with the implementation of a long-term plan to reduce nitrogen emissions. The latter has severely impacted the construction and agricultural sectors. Stricter regulations regarding the handling of construction materials contaminated with perfluoroalkyl and polyfluoroalkyl substances (PFAS) have also resulted in a number of construction projects being put on hold.

Spain

Spain's GDP growth fell to 2.2% in 2019, down from 2.6% in 2018. This is the result of political uncertainty, which has contributed to a protracted contraction of the manufacturing sector and subdued private sector investment. Construction output increased by 4.7% in 2019, outpacing the overall economy. Highlighting the role that the financial sector can play in the decarbonization agenda, the Green Buildings Council of Spain announced last year that it will partner Santander Bank. The partnership is aimed at stimulating demand for green mortgages, which operate on flexible interest rates that are set according to a building's energy performance.

The United Kingdom

In the UK, the GDP grew by 1.2% in 2019. A substantial Conservative party win in parliamentary elections initially generated a boost to private sector optimism. Yet, the return of long-term private investment will depend on the outcome of the COVID-19 outbreak as well as Brexit negotiations with the EU. Following a stagnant 2018, the construction industry had a year of accelerated growth in 2019, with output up by 3.4% year-on-year. Public investment will increase by at least £175 billion pounds (GBP) from 2020 to 2025 according to recent budget announcements, based on ambitious transport and social infrastructure plans to boost the UK economy. The Future Homes Standard, published in 2019, proposes that from 2025 all new homes will have best-in-class, energy-efficiency performances, incorporating low-carbon heating systems.

Middle East

CONSTRUCTION AROUND THE WORLD

Saudi Arabia

Saudi Arabia's economy grew by only 0.2% in 2019, but construction growth was over 3%. Future diversification plans anticipate that the private sector will make a significant contribution through investments in tourism and entertainment. Saudi authorities have a stated ambition to diversify the economy beyond oil. This includes the Red Sea Development, Amaala, Qiddiya, Al Ula, Diriyah Gate and Neom City projects.

United Arab Emirates

GDP growth in the United Arab Emirates (UAE) was 1.6% in 2019, which is similar to 2018. The expected 12 month postponement of Expo 2020 means that the forecast economic boost will now not happen until 2021. After the expo, the facilities will be converted into a business park, with a number of prominent companies already signaling they will open offices in this space. Estidama is a building design methodology, which is mandatory in the UAE, and has a focus on sustainability. Within the methodology the Pearl Rating system is used to determine the sustainability performance of buildings. All new private buildings must achieve a Pearl Rating of 1 and all government buildings must achieve a Pearl Rating of 2, which is a more stringent standard.

Australia Pacific

NEW ZEALAND OUTLOOK

New Zealand

The New Zealand economy continued to grow in 2019 with GDP hitting a respectable 2.3%, although this was slightly down from 2.8% in 2018. With interest rates low and efforts to stimulate longer-term investment in place, the country's economy was expected to see faster growth in 2020. Obviously, the global impact of COVID-19 will dampen any resurgence in the economy – at least in the short term.

The residential sub-sector contributed almost 60% of the total output for the construction sector in 2019. New Zealand's government has recently published the Construction Sector Transformation Plan, with the aim of increasing workforce retention rates and improving sector productivity. There are some efforts being put in place to promote more sustainable methods of construction, including streamlining the consent process for prefabricated buildings. There have also been amendments to government procurement recommendations, which can help the industry move from a "lowest price model" to a more refined "broad outcome" set of criteria. This may incentivise better environmental and social outcomes, as well as ensure that contractor margins do not continue to be squeezed and lowered to further unsustainable levels.

Auckland's construction market has, up until now, remained buoyant, albeit with some reduction in activity by private developers. Infrastructure spending is expected to significantly contribute to the industry's workload and will likely act as a level of government stimulus to support the construction industry through the current crisis.

Christchurch's rebuild has passed its peak construction phase with some contractors leaving the city and, in some cases, closing their local offices. However, and in the longer term post-COVID-19, resource availability will continue to be an issue as growth in other South Island centres take off. Construction activity has generally been increasing in 'the regions', particularly Tauranga, Hamilton, Queenstown and Dunedin. These increasing levels of activity have contribution to rising construction costs in those areas. Northland is anticipating (or rather hoping for) longer term growth with future projects at the Marsden Point Refinery, the upgrade of the Auckland to Whangarei rail link and the potential relocation of the Port of Auckland to Whangarei. Wellington is seeing an increase in residential activity following recent house price increases.

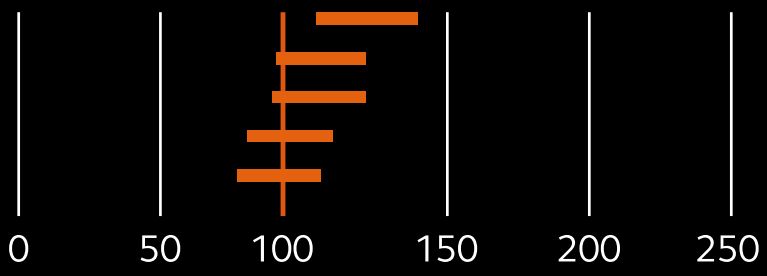
David Mason MRICS
Associate Director

P +64 9 477 4888
M +64 277 888 243
E david.mason@cuesko.co.nz
W http://www.cuesko.com

Cuesko Limited
Level 1, 17/25 Corban Ave, Albany, Auckland 0632
PO Box 301018, Albany, Auckland 0752

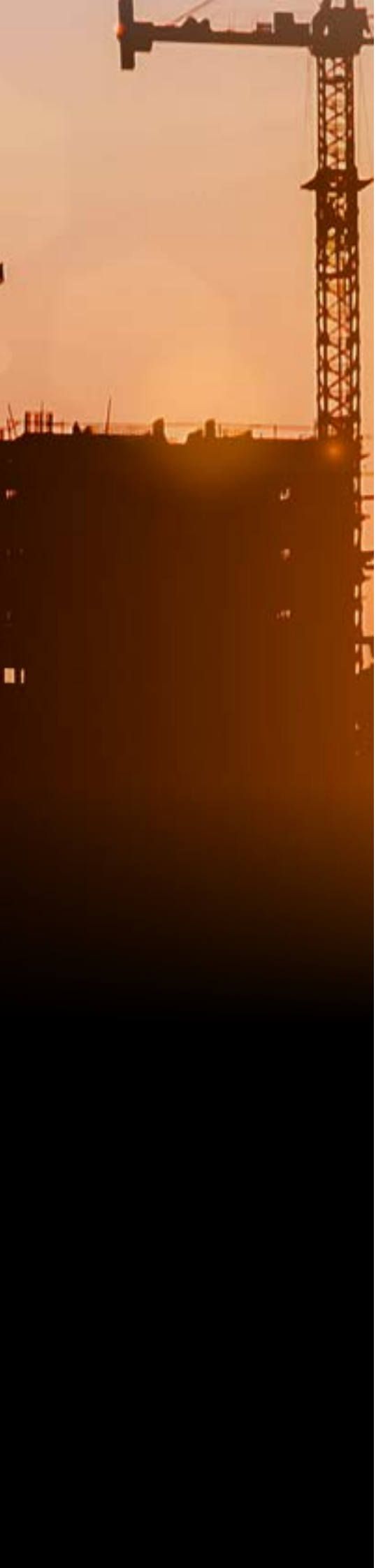
Thank you to our New Zealand partner - Cuesko

Australian Cities Contruction Cost Index



	Global Ranking
Sydney	30
Brisbane	38
Melbourne	41
Perth	50
Adelaide	56

< Less costly to construct Index Base: Amsterdam = 100 More costly to construct >



Australia

Australian GDP growth was 1.7% in 2019. The volume of construction work has been declining steadily over the last three years, particularly in the residential sector and most notably across the Sydney and Melbourne markets. This decline was countered by a significant increase in demand for non-residential and infrastructure projects. Again, this volume of work was particularly isolated to Sydney and Melbourne.

GDP in 2020 is projected to be significantly lower as COVID-19 takes a stronger grip on the Australian economy. The potential impact of this crisis on both the economy and the construction industry is still not fully understood – and will likely not be for quite a few months. To date, global markets have continued to tumble as the crisis and uncertainty continues. Some sources and experts are now predicting that Australia's economy will soon record its first recession since 1991, whilst the Federal Government is forecasting several months of disruption ahead.

Almost every business in Australia has been impacted in some manner by the outbreak. One of the biggest impacts is to business and consumer confidence which has flow on impacts to the whole economy as key investment decisions are postponed and consumption expenditure becomes more conservative. Many organisations have implemented strict international travel bans as well as reviewed domestic travel policies. Therefore, mega projects that may rely on fly-in fly-out expertise may be further impacted by the crisis.

That said, many businesses now have significantly improved their digital connection over the last five years, with many also implementing flexible and work-from-home policies. In addition, those businesses and operations with a more diversified supply-chain find themselves at an advantage to those reliant on single suppliers – particularly those in China. Those businesses that are so enabled will likely not experience the same level of impact from COVID-19.

Should the Australian economy fall into a recession, it is anticipated that it will be brief and that it will bounce back relatively quickly, as government stimulus and interest rate cuts work to support overall conditions. Housing values as well mining and infrastructure investment have been on the rise recently and should weather any short-term impact. A rebound is also supported by the fact that China is likely to implement policies to stimulate its economy and especially its manufacturing sector, which traditionally benefits Australia.

Unlike the conditions that led to the Global Financial Crisis following 2008, the situation surrounding COVID-19 is not about the availability of cash. It is about the ability of the Australian workforce to go and physically attend their place of business and deliver work. It is quite possible, likely in fact, that we will see a number of contractors, at both the managing and trade contractor levels and across all tiers, become financially stretched with some disappearing altogether. Unemployment is likely to soar to levels not seen since before the turn of the century. This will potentially lead to a reduction in competitiveness across the industry and which will, conversely, increase tender pricing.

Again, unlike the conditions following the events of 2008, markets will begin to recover quickly as the crisis comes to an end. This will lead to an abundance of cash and growing project opportunities but with a very real lack of resource availability with which to deliver them. We anticipate, therefore, that there will be a spike of 'super inflation' in certain markets as the construction sector struggles to meet the sudden demand.

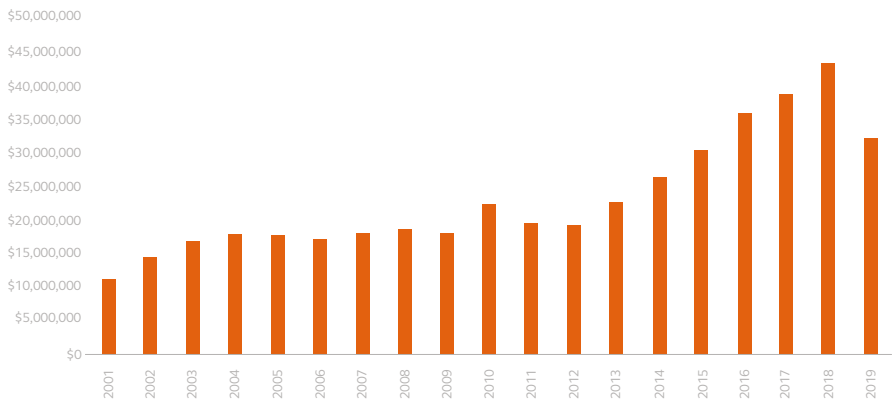
The longer COVID-19 continues, the larger the impact will be on the construction sector and the economy overall. However, in a time of uncertainty, property remains one of the more stable and secure investments.

Sydney – at its peak (still)

Sydney has climbed four places from last year and is now ranked in 30th place. Once again, Sydney is classified as being the most expensive of the five Australian cities that have been included in this year's rankings. A substantial number of infrastructure projects, comprising those that are currently being delivered and those that are waiting to commence in a fully funded pipeline, continue to underpin Sydney's construction market.

Construction activity in 2019 fell in comparison to the previous three years, although total activity was still higher than any other year between 2000 and 2014. The fall in total activity is likely due to significant construction projects being completed, such as Sydney Light Rail, and a delay in new projects starting. Overall, the exponential growth in construction activity between 2014 and 2018 was unsustainable and could not continue for an extended period.

Building Activity - Total New South Wales ($'000's)



Sydney's two-speed construction market

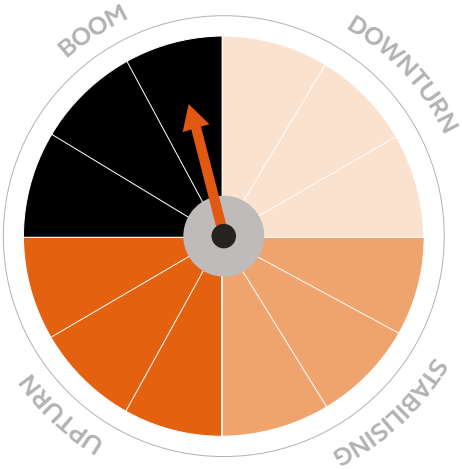
Tender prices are now well beyond long-term averages for several key trades, particularly plasterboard, joinery, concrete, formwork, and structural steelwork. Engineering services trades seem to be particularly stretched with pricing proving to be extremely volatile.

Enterprise Bargaining Agreements (EBA) and increasing labour costs that are well above CPI-levels continue to be a factor in NSW and the Australian market overall.

Ongoing skill shortages and a lack of available resources is ultimately impacting competitive tension. This is a long-term issue not just for Sydney but for Australia as a whole. Trade contractors are now in an environment where they can charge considerably more for the same work and, in some cases, decline work altogether – they can afford to be selective.

Conversely, this does not appear to be the case at the head contractor level (particularly those who are considered a Tier 1). In order to try and retain an element of competitiveness, head contractor margins continue to be driven downwards. Ultimately, this is unsustainable in the medium term and we will likely see a few of the larger contractors at this level become financially strained, with some perhaps collapsing altogether.

This is quite an unusual set of circumstances for a market that is currently in its boom phase, and this is leading to a two-speed construction market. One where trade contractors can be relatively selective about the projects that they tender and where the margins and risk profiles of head contractors are beginning to suffer and are at already unsustainable levels.



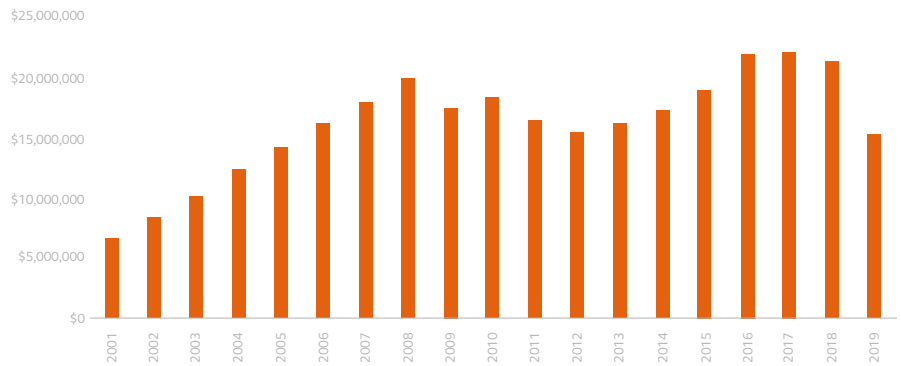
Brisbane – stabilising but still challenging

At number 38, Brisbane is the second most expensive city in Australia for construction costs (albeit only marginally).

In overall terms, the Brisbane construction market has stabilised for the first time since the collapse of the apartment sector in 2017 / 18. This is largely due to returning levels of market confidence as well as several major projects, such as Queen's Wharf, 443 Queen Street, and Cross River Rail, moving forward into a more significant build phase.

However, challenges and cost pressures persist across the market, which is why Brisbane is currently placed in the top half of this year's rankings. Construction activity in 2019 was at its lowest levels since 2006, with apartment oversupply and the resultant collapse of the sector being the largest contributor to this.

Building Activity - Total Queensland ($'000's)



Other factors that are keeping construction costs high comprise reduced levels of competitive tension, low levels of overall market activity and skills shortages. Union intervention and increasing costs associated with Enterprise Bargaining Agreements (EBA's) are also a critical factor, and one of the main reasons as to why construction pricing continues to increase and remain high across the region.

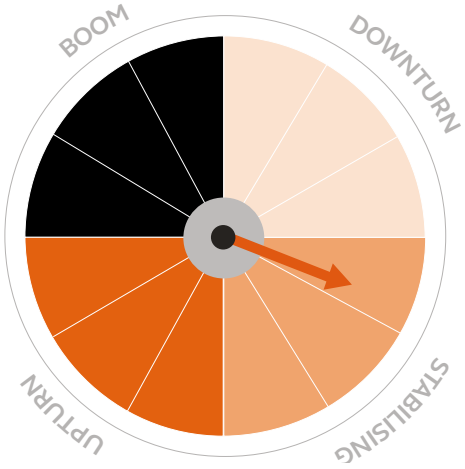
The recently negotiated EBA for Queen's Wharf appears to have set a new benchmark for all government projects across the State that exceed $100M. The State Government are currently exploring options to establish a new set of 'minimum conditions' based upon the Queen's Wharf agreement. Whilst this has not yet been enacted, it is anticipated that any qualifying projects may experience an uplift in labour costs of between 75% and 100%, according to the Queensland Major Contractors Association, (December 2019). This would most certainly ensure that Brisbane would the become the most expensive city in Australia for construction costs.

Stronger pipeline could lead to a sustained period of growth

Notwithstanding the potential impact of these 'minimum conditions', and to further underpin the returning underlying levels of confidence across the region, there is a significantly stronger pipeline of projects now in place. These projects include:

- Brisbane Metro
- Gold Coast Light Rail (Stage 3A)
- M1 Pacific Motorway Upgrades
- Bruce Highway Upgrades
- Cross River Rail Over / Integrated Station Developments / Precincts
- Brisbane Waterfront
- River Reach Master Plan
- 80 Ann Street
- The New Performing Arts Venue in Southbank

Should most of these projects proceed within the timelines that are currently anticipated, it is entirely possible that the Brisbane construction market could move into an upturn phase of growth as early as 2022 and potentially a boom phase by 2023 / 24. Beyond this, future opportunities such as an SEQ Olympic Games will increase confidence further and be a real catalyst for long-term investment in the regions transport infrastructure.



Election uncertainty could lead to certainty

2020 holds two significant elections for both Queensland and Brisbane. The election for Brisbane City Council will be concluded by the end of March and the State election goes to the polls in October. These elections will likely generate a flurry of activity in terms of election promises and early budget commitments. However, there is also the potential for a change of party at both government levels. A change of government policy at either level could prove significant and, potentially and in the short term, negatively impact the recent market stabilisation that has occurred – particularly if such a change puts significant projects like Cross River Rail and Brisbane Metro in delay or jeopardy.

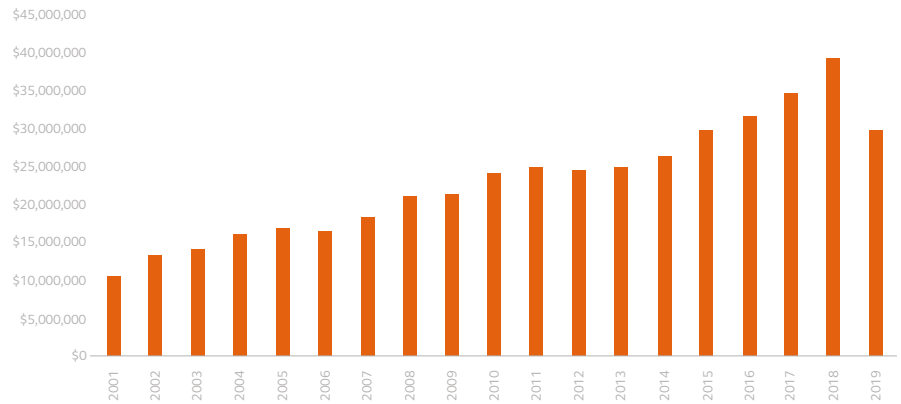
Regardless of the outcome, the results of these elections also promise to bring a period of longer-term stability to the region and particularly if both the State Government and Brisbane City Council are aligned.

Melbourne – infrastructure leading the charge

Of the five Australian cities included within this year's report Melbourne is the third most expensive city for construction costs and sits in 41st place of the 100 cities that have been assessed. Like our commentary last year, Melbourne is now moving well into its own boom phase, mirroring Sydney's growth.

The construction market continues to be dominated by infrastructure projects such as Melbourne Metro, West Gate Tunnel and the Western Ring Road upgrade. This is likely to continue as new infrastructure projects such as Melbourne Airport Rail Link, North East Link and the Inland Rail project all start moving forward and become shovel ready. The current unprecedented level of infrastructure investment will serve to partially offset any economic slowdown and provide much need stimulus to the market.

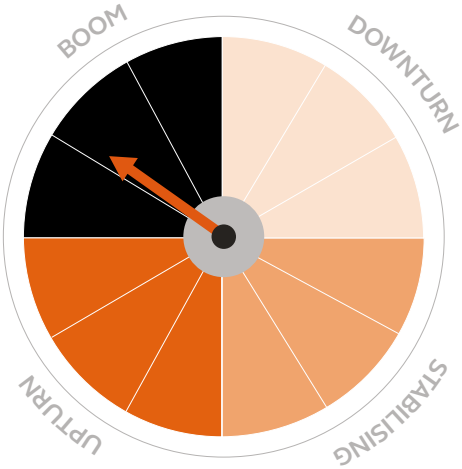
Building Activity - Total Victoria ($'000's)



On a similar basis to that of the other cities, and Sydney in particular, construction activity across Victoria fell in 2019 to its lowest level in five years. This is largely due to the downturn in residential building activity, although the depth of the decline has been offset by increases in other building and construction activities. Whilst it will take some time yet for the full impact of COVID-19 to be realised, the Melbourne construction market is expected to rebound relatively quickly due to the increasing volume of infrastructure projects and public expenditure that is anticipated from the end of 2020.

Melbourne issues similar to Sydney

As is the case with Sydney, and despite the fall in total construction activity last year, any tender price adjustments or reductions will largely be confined to the residential apartment sector. Overall, tender pricing is anticipated to be relatively steady, although a lot depends on how long the current pandemic slow down will last. Once life starts returning to some semblance of normality and economic recovery becomes the new topic of conversation, it is likely that tender prices will begin to rise more rapidly as the larger infrastructure projects begin to take up market capacity.



Whilst, in relative terms, Melbourne is trailing behind Sydney in terms of construction activity, it is anticipated that it will surpass the Sydney market in the next two to three years. However, Melbourne already shares with Sydney several market characteristics and, therefore, the corresponding cost pressures. These include:

- A residential market that is still in decline, despite some recent recovery in price growth.
- A strong and developed infrastructure pipeline which is currently underpinning the construction market.
- Increasing labour costs that are contributing to escalating construction costs.
- Trade and skill shortages as well as a general lack of available resources, which is impacting competitive tension.
- Head contractor margins are at some of their lowest levels, leading to the possibility of significant financial strain across the industry.

Perth – stong headwinds prevail

2019 was the year that promised much but, in the end, delivered very little. The resulting credit crunch from the Royal Banking Commission and the Federal Election had a detrimental effect on the market. House prices, sales and building commencements have all continued to decline from the fourth quarter of last year.

To combat this the State Government has introduced several measures to boost the market. Combined with low interest rates and some marginal improvements in the mining sector and economic conditions overall, confidence was slowly returning to the market.

And then COVID-19 came along.

Like other States across Australia, the impact on tourism, international students and the broader economy will be significant. Whilst anecdotally confidence was slowly returning, recent ABS data indicates that the Perth economy shrank in the last three months of 2019. This indicates that Western Australia was already experiencing serious economic headwinds before COVID-19.

Major infrastructure projects, such as the Perth Airport upgrade and Perth Metronet, are currently underway and are due to be completed shortly. The question though is what will backfill these major projects once they are finished? The private sector continues to be in decline and is showing very little sign of recovery in the medium term. Therefore, any potential future recovery will be the responsibility of Federal and State Governments. Ongoing investment in major infrastructure projects and defence, as well as potential improvements in the natural resources sector, may just be enough to lift construction activity.

From an economic standpoint, COVID-19 may present Western Australia with a silver lining. The significant level of stimulus packages that are currently being proposed and implemented by State and Federal Governments may be enough to ensure that the economy does not go backwards. Had it not been for this it is likely that these levels of fiscal stimulus would not have occurred, which would have potentially placed Perth in a worse economic position over a much longer term

Adelaide – well placed to defend its position

Construction activity in Adelaide was relatively steady across 2019, with the strongest performing sectors being defence, health, and tourism. However, the economic impact of COVID-19 is having a significant impact on the tourism industry, and this construction sector will therefore decline quite rapidly as existing projects approach completion. For example, the $200M Skycity Casino redevelopment and expansion is due to complete later this year and several other hotel developments were in the early design and planning stages. However, it is likely that most of these projects will now be shelved whilst operators try and ride out the current crisis.

Luckily, Adelaide has been the recipient of an extensive amount of public spending and this is anticipated to continue – if the construction industry continues to be deemed to be an 'essential industry'. The Royal Adelaide Hospital expansion is now part-way through construction and there are several other health projects that are being progressed by the State Government. Construction work on the new $690M program for upgrading and refurbishing one-in-five schools is anticipated to start during the second part of this year. It is hoped that the current crisis does not delay this program of work, as it would provide a much-needed shot-in-the-arm for the industry, particularly as the future looks uncertain.

Large naval projects, such as the Future Frigates and Future Submarines program, continue to occupy a large proportion of the local trade contractor market. Further major defence projects that have been announced, including Air 555 and Air 7000 at RAAF Base Edinburgh, will bolster (and potentially lift) construction activity further.

Overall, it appears that the Adelaide construction market is well placed to ride out the economic downturn caused by COVID-19. This is obviously dependent on a number of factors including whether the construction industry continues to operate, whether public spending on defence and social infrastructure continues, and how long the current crisis lasts for.

Australia Pacific

TENDER PRICE FORECAST

Tender price escalation – uncertainty lies ahead

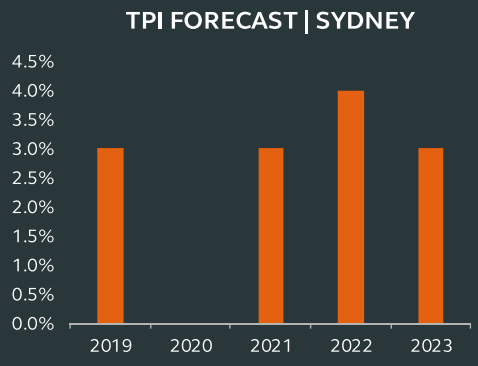
It is anticipated that the COVID-19 pandemic will lead to yet another global downturn. What is still unclear is how long or how deep with this downturn will be and how Australia will be impacted. However, we anticipate that, in most States, the construction industry will be able to operate as an 'essential industry. However, social distancing restrictions will still disrupt construction activities and reduce productivity further. Generally, we therefore anticipate that tender pricing across Australia will flatten for the most part over the course of 2020.

Unlike the last global downturn, which commenced in 2008, the impact of COVID-19 is not about the availability of cash. Rather, it is about our inherent ability to physically go to work and maintain cash flow. Therefore, when our economy starts returning to some semblance of normal, there will likely be a spike of 'super inflation' in some construction markets. This spike will be caused by numerous projects either starting or re-starting over a short period due to an abundance of cash but with little immediate resource availability to deliver the work.

Sydney forecast

Whilst Sydney, like everywhere, will be impacted by the pandemic, it is likely to bounce back quite quickly due to the sheer volume of public spending that has occurred over the last few years. Major infrastructure projects continue to be delivered across Sydney and it is expected that these projects will continue. Long term projects such as Sydney Metro City and South-West, Badgerys Creek Airport, WestConnex, and Sydney Gateway will all act as stimulus boosts for the construction industry and local economy. Beyond the next couple of years, we anticipate that public spending will increase further as more and more infrastructure projects are brought to market including Sydney Metro Greater West, Sydney Metro West and Sydney Trains' More Trains, More Services initiative. Social infrastructure spending in education and health, which has been slower than anticipated during the last few years, will also likely increase to meet growing demands.

Year	Sydney
2019	3.0%
2020	0.0%
2021	3.0%
2022	4.0%
2023	3.0%

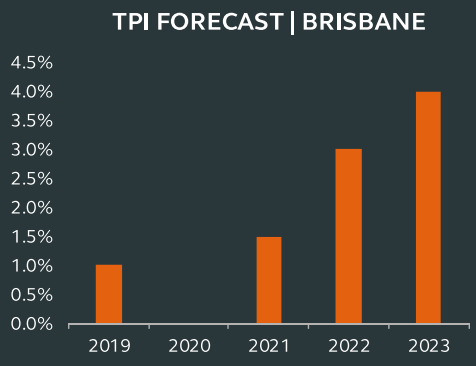


Brisbane forecast

With the imminent start of Cross River Rail and Brisbane Metro, Brisbane was finally showing signs that market growth was on the horizon. Unfortunately, the COVID-19 pandemic is likely to slow the market considerably. There are signs across the market that private investors and developers are putting projects on hold as they look to ride out the current crisis. It is hoped is that existing projects, as well as new projects that are shovel ready, will continue to move forward and act as stimulus packages for the wider industry.

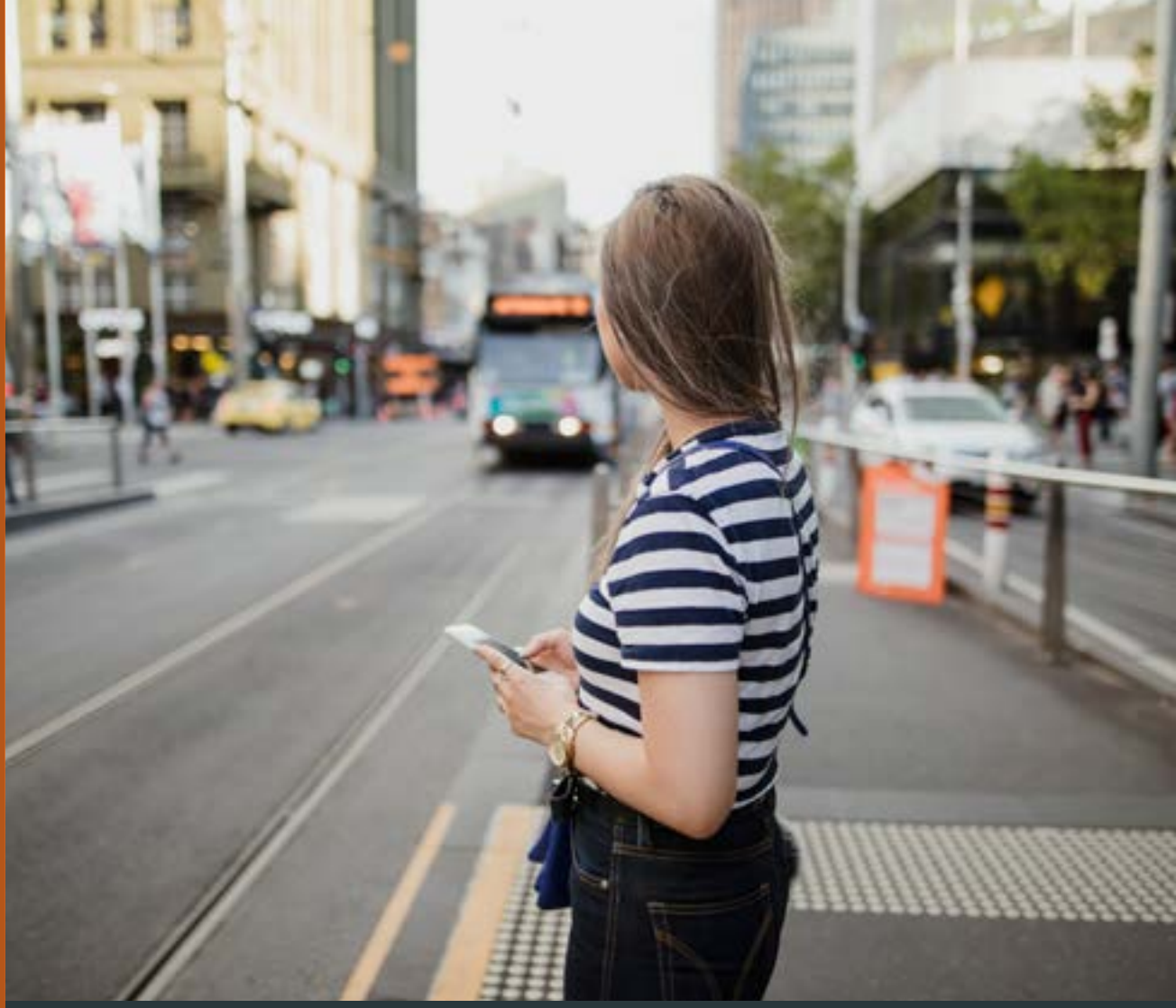
Prior to social distancing being implemented and the impact of COVID-19 being better understood, 2023 / 24 were being forecast as a return to the 'golden years' for Brisbane (2005 to 2008). This is largely due to the number of major projects anticipated to be in delivery at this time. Assuming that there is no material change in the use cases for these major projects, there is no reason at this point to believe that this will not happen.

Year	Brisbane
2019	**1.0%**
2020	**0.0%**
2021	**1.5%**
2022	**3.0%**
2023	**4.0%**



Australia Pacific

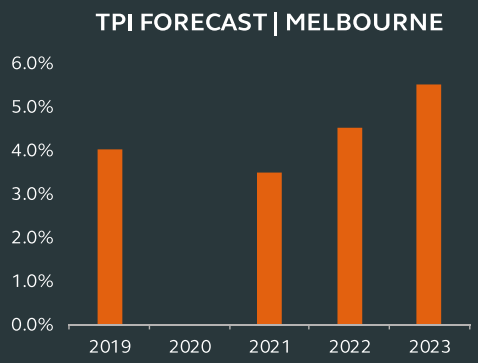
TENDER PRICE FORECAST



Melbourne forecast

Of all of Australia's major cities, Melbourne is the most likely to experience a period of 'super inflation' following the aftermath of the COVID-19 downturn and as the market rebounds. This will be caused by a combination of major projects starting, cash availability, and (most likely) a lack of available resources. Ongoing projects like Melbourne Metro (anticipated completion 2025) and West Gate Tunnel (anticipated completion 2022) will be joined by North East Link (anticipated completion 2025), and potentially the proposed Melbourne Airport Rail Link. These will serve to drive the Melbourne construction forward following any potential slow down caused by the pandemic.

Year	Melbourne
2019	4.0%
2020	0.0%
2021	3.5%
2022	4.5%
2023	5.5%

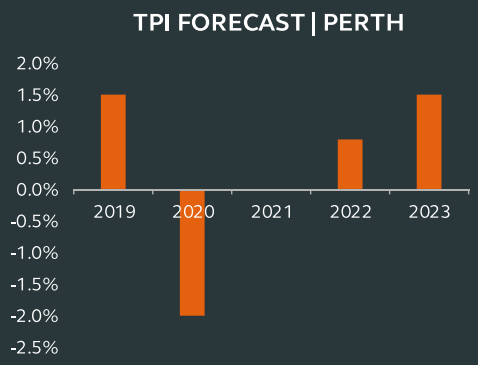


Perth forecast

The Western Australia economy shrank in the last three months of 2019, indicating that the region was already experiencing economic headwinds prior to the onset of COVID-19. We anticipate that the current crisis could set the industry back further and, potentially, back to levels that were similar following the collapse of the natural resources boom. This will ultimately lead to an extended period of recovery and slower tender price growth, which forms the basis of our forecast. This may change due to several factors including:

- Whether the natural resources sector shows early signs of growth and increased production.
- Whether the private sector starts to recover and invest as soon as some semblance of normality returns.
- Whether government spending and stimulus will continue once the immediate crisis is abated.

Year	Perth
2019	1.0%
2020	-2.0%
2021	0.0%
2022	1.0%
2023	1.5%

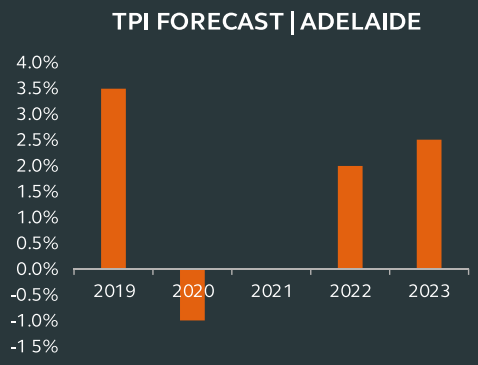


Adelaide forecast

We anticipate that Tender Pricing will continue to rise, albeit much more slowly over the next two years due to the impact of COVID-19. Unless there is a complete lockdown on construction, as has been the case in other industries, public spending in social infrastructure and defence will continue to underpin the market for the next six to twelve months. This is on the assumption that projects that are anticipated to start later this year, including hospitals and the schools upgrade program, continue as planned and without any delays.

One the main aspects of the Adelaide construction market in 2019 was that it was sometimes difficult to obtain trade coverage when tendering projects. This is anticipated to continue in the short term but will begin to diminish as the COVID-19 crisis continues.

Year	Perth
2019	3.5%
2020	-1.0%
2021	0.0%
2022	2.0%
2023	2.5%



The Case to Keep Building

The continuing development of COVID-19 has resulted in uncertain times and despite mounting evidence that this might be the 'new normal' for the foreseeable future, we are all holding onto hoping that it is only a temporary blip. That the beaches, pubs and clubs will be open in a few weeks' time and that investor-driven industries like construction will be able to 'see through' the short-term turbulence to bounce-back later in the year.

Like many of you, I have read about the various models that could be employed in response to the virus – all with the aim of 'flattening the curve'. Some seem to be far more draconian, but no less necessary, than others. Some set out in stark detail the necessity for measures like school closures and self-quarantine, together with the very positive impact they are expected to have – reducing deathrates and pressure on intensive-care units.

The other key insight that is becoming increasingly clear, is that the virus won't go away quickly. Infection rates have fallen in China because of extreme suppression measures which have included the isolation of whole city populations. When business as usual returns, it is possible that COVID-19 will return as well. When the fight against the virus is described as a war, it's likely to be an accurate description. A war is long haul, punctuated by a series of battles. Wars take years. One of the scenarios that has modelled is a one-to-two-year period of disruption, characterised by on-off periods of lock-down and business as usual, as the impact of COVID-19 waxes and wanes.

But how do you manage a business or an economy when market conditions are so volatile and uncertain?

The first priority, as it should be, is that we keep our people healthy and safe. This feels like a short-term response but may well become business as usual if the experts are right. It has been very encouraging to see construction firms and their trade bodies responding quickly with a proactive line on necessary steps to keep sites open. Lessons taken from what has happened in Italy and globally has informed thinking on health protection for workers. Measures that enable people in all occupations to continue to work – for example, adapting site practice to minimise contact risks – will be essential if we are to continue to build.

The second priority – business continuity – is equally urgent. Cash could stop circulating through the sector within weeks. It is important to recall that, in the immediate aftermath of the 2008 financial crisis, nearly 70% of construction business failures in the UK occurred as a result of either reduced cashflow, a reduction in workload, or as a consequence of a slowdown in the wider economy. Through a lethal cocktail of work stopping on sites and the holding of money within the supply chain, untold damage was done to industry capacity – damage that still affects the sector.

Whilst the impact of the 2008 financial crisis was not quite as stark here, COVID-19 could well put the Australian construction industry on a similar path - particularly if cash flow begins to slow or stop altogether. Therefore, the UK industry post-2008 makes sobering reading.

How the industry allocates the risk and pain of COVID-19 disruption is beyond the scope of this piece, but equally must be addressed quickly, so that businesses can concentrate on fighting the virus rather than each other.

Planning for long-term recovery

The area that I am interested in is the planning for long-term recovery. This may feel perverse given that the crisis has barely started. However, lessons learned in 2010 remind us that good thinking gets overtaken by events and that a defining and bluntly applied policy like austerity or bail-out will have many unintended consequences.

Those with long memories will recall that public investment increased in the immediate aftermath of the 2008 financial crisis supported by falling interest rates. The economic stimulus package, which focused on social infrastructure and housing, had the desired effect and kept Australia out of recession. However, the policy was short term, with public construction work returning to longer term trend levels with a few years. Housing levels also dipped but rebounded quickly on the back of low interest rates. It was private business investment, particularly in the mining sector driven by demand from China, that ultimately supported the local economy during this period.

Currently, we don't have the luxury of relying on the mining sector and instead are looking to government expenditure to support the recovery effort and to keep the construction sector (along with the broader economy) ticking along.

Australia Pacific

ARCADIS INSIGHT

Challenges and Opportunities

This time the opportunities and challenges are very different. Borrowing is cheap and politically popular. Construction is seen as part of the solution to levelling-up. The housing market, which was slowly starting to show signs of recovery, is now facing the prospect of another dip with impacts to both pricing and approvals. The question remans of how much will the record low interest rates support this sector in the near term?

The sustained and repeated and negative impacts of COVID-19 shutdown is very likely to effect the confidence of the construction industry and its investors, particularly in the short term. Shares in the Australian REIT (Real Estate Investment Trusts) have fallen by around 69% in the past month and show no sign of finding a floor as the ASX continues well into negative territory. Some of those blue chip ASX listed property development firms have seen their share price fall by as much as 190% at the time of writing.

If Australia's home buyers are starting to put their plans on hold, and builders and construction companies cannot find investment support, then who can break the logjam? Perhaps it is time for government to become the buyer and owner of last resort?

Should the Government in any part of Australia decide to pursue an ownership model, it would hark back to times in the post war period through to the early 1970's. A lot has been learnt since then, and the outcomes would be both palatable to the broader community as well as most, if not all, industry bodies.

Now is the time to remember the lessons learnt from 2008. Just in the way that the public purse is already supporting our stricken consumer-facing industries, soon it will be necessary to stand behind Australia's investment industries. The difference is that underwriting construction will deliver valuable assets as well as sustaining important businesses and scarce skills.

No government wants to buy and build houses. Neither does it want to bail out banks or airlines. It certainly doesn't want to manufacture ventilators. These are all examples of imperfect decisions driven by events that eventually deliver long-term benefits. By making the case to keep building early, clearly and loudly, even in the midst of a crisis, I'd like to think that as an industry we can help Australia to keep investing in our future, even as it seems so uncertain.

Methodology

Arcadis developed its comparative cost index for 100 cities, covering 20 building functions, based on a survey of construction costs, review of market conditions and the professional judgement from its global team of experts. Ranges of indicative prices for each building function are collected for each city. Low and high range costs are converted into US Dollars (USD), normalized and indexed against the price range for each building type for Amsterdam, where Amsterdam = 100. Average low and high index ranges are calculated for each city based on the 20 building types.

The data was collected between December 2019 and February 2020.

Costs used to calculate the index are based on buildings delivered to local specification standards, meeting both functional requirements and quality expectations. As a result, while the index compares the relative costs of delivering the same building functions in a city, it also reflects the different levels of quality expectation reflected in a specification.

The index does not take into account purchasing power parity. The construction cost data used in this index is current as of Q1 2020. The exchange rates used to calculate the index were current on 13th February 2020.

Inflation rates set out in this report were annualized rates assessed in Q1 2020 prior to an assessment of the impact of COVID- 19. They do not represent a forecast of likely price changes in 2020 as a result of the pandemic.

Disclaimer

This report is based on market perceptions and research carried out by Arcadis, a design and consultancy firm for natural and built assets. This document is intended for informative purposes only and should not be construed or otherwise relied upon as investment or financial advice (whether regulated by any financial regulatory body or otherwise) or information upon which key commercial or corporate decisions should be taken.

The cost comparison index represents a snapshot in time and is for illustrative purposes only. While every effort has been made to ensure the accuracy of the index, Arcadis is not liable for any loss or damages associated with the use of the index for decision-making purposes.

This document may contain forward-looking statements within the meaning of potentially applicable securities laws. Forward-looking statements are those that predict or describe future events or trends and that do not exclusively relate to historical matters. Actual results could and likely will differ, sometimes materially, from those projected or anticipated. Arcadis undertakes no obligation to update or revise any forward-looking statements, whether the result of new information, future events or otherwise. Additionally, statements regarding past trends are not a representation that those trends or activities will continue in the future. Accordingly, no one should rely on these statements for decision-making purposes.

This document contains data obtained from sources believed to be reliable, but we do not guarantee the accuracy of this data, nor do we assert that this data is complete. Please be advised that any numbers referenced in this document, whether provided herein or verbally, are subject to revision. Arcadis is not responsible for updating those figures that have changed.

This document should no t be relied upon as a substitute for the exercise of independent judgment.

About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people, active in over 70 countries that generate €3.3 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

Contact us

Matthew Mackey
National Director - Cost and Commercial Management Australia Pacific
E matthew.mackey@arcadis.com

Andrew Beard
Global Head of Cost and Commercial Management
E andrew.beard@arcadis.com

Simon Rawlinson
Partner - Head of Strategic Research and Insight
E simon.rawlinson@arcadis.com

Agnieszka Krzyzaniak
Market Intelligence Lead - Construction
E Agnieszka.Krzyzaniak@arcadis.com

Find out more:

www.arcadis.com

@ArcadisGlobal

@ArcadisGlobal

@ArcadisGlobal

Arcadis

Arcadis. Improving quality of life.