

EDITION 2 - 2022

# PER SPEC TIVE

HOW SMALL INFRASTRUCTURE  
CAN MAKE A BIG DIFFERENCE

DIGITALISATION IN HONG  
KONG'S HEALTHCARE  
DEVELOPMENTS

REDUCING FINANCIAL RISKS  
FOR THE LENDER  
(YES, IT CAN BE DONE!)



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**Mega mind shift:**  
Building resiliency as a property  
developer in an ever-changing  
South Africa



**Why the future is in  
five dimensions**



**Future skills:**  
Building a better  
built environment

# WELCOME

Since stepping into the role of RLB Global Chairman in June, I have reflected on how RLB operates globally with a single focus. While each region, country and office has unique characteristics, together we work towards a unified goal of creating a better tomorrow.

As I write this introduction, three months into the post, it occurs to me how similar many of our markets are at the moment – dealing with economic instability, the after-effects of the pandemic, labour and material shortages and the energy crisis. And with these macro issues come other localised challenges, opportunities and solutions. Yet, at RLB, how we draw on our pool of global talent to collaborate, how we work with our industry bodies and organisations within each of our regions, and how we talk to other industries to share best practice and innovation is becoming more important than ever.

RLB's history covers nearly 240 years of delivering solutions and successful outcomes within the built environment. We have helped to build roads that bring social mobility, hospitals, schools and other public spaces that service communities, and homes and offices where those communities live and work. We have created inspiring buildings where World Cup and Olympic events are staged. We have helped to build data centres that power our communications and connect across the regions.

*And as our world grows bigger, as we build vertically into the skies and even into the metaverse, it also becomes smaller as time and technology allow us to come together with those far away.*

This Perspective magazine is our way of sharing insights into the important work of RLB, both with external stakeholders and internally within our own teams. It looks to the future of how we navigate the built environment, how we bring imagination to life for our communities, while putting each of those communities within the context of our bigger world.

This issue, the second for 2022, includes insights ranging from how small infrastructure can make a big difference, to the future of skills, to how we shift mindsets to build resilience.

We hope these articles offer food for thought and reflection. I, for one, feel privileged to read these stories of how we are collectively building a better future.



**ANDREW REYNOLDS**  
RLB GLOBAL CHAIRMAN



## PER SPEC TIVE

### **Perspective**

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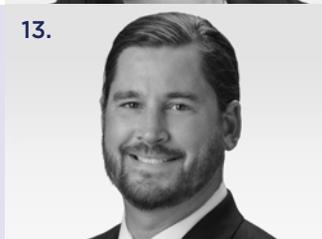
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With a network that covers the globe and a heritage spanning over two centuries, Rider Levett Bucknall is a leading independent organization in cost management and quantity surveying, project management and advisory services. Our innovative thinking, global reach, and flawless execution push the boundaries. Taking ambitious projects from an idea to reality.



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# THE FUTURE OF HEALTHCARE FACILITIES: DESIGN CONSIDERATIONS & COST IMPACTS

By: Jordan Miller  
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There are many factors involved in the recent evolution of healthcare, but one thing is for certain: Covid-19 exposed major deficiencies and sped up the need for innovation. Many of the critical issues healthcare systems are facing today, however, have been looming since pre-pandemic times such as the aging population of the U.S., staff shortages, technology advancements, and resiliency.

Many of the lessons learned over the past two years can be carried forward into the future of healthcare design. From more efficient patient screening, patient flow, and other operational efficiencies, solutions that have reduced cost and saved time are likely to continue, as the money and time saved through these efficiencies can be put towards enhancing the patient experience.

## THE PATIENT EXPERIENCE

The healthcare industry has shifted towards a consumer-driven market: today, consumers have many choices when it comes to how, when and where they receive medical care. Virtual care visits are 38 times<sup>1</sup> more frequent than before the pandemic, as consumers are opting for fewer hospital visits. Improving patient outcomes and overall experience is and will remain a high priority for healthcare systems.

From the moment the patient checks in at the reception desk, and enters the exam room, the goal is for all points of engagement to combine and create a comfortable experience, leading to repeat customers, referrals, and maintained revenue.

There's much to consider when planning the design of internal spaces that contribute to the patient experience, such as corridor



“

It's clear that planning, designing, and building a healthcare facility is complex. The landscape of healthcare is changing and prioritizing one design element over another seems impossible. Healthcare leaders face a great challenge but can incorporate strategies into the built environment that can create better patient outcomes and safer conditions for all.

length or width, room size, and nurse station placement. All of which can have effects on safety, infection control, and patient visibility. In some instances, the patient experience, and most efficient solutions are at odds, as what might be desired by the patient, such as more privacy, might be opposite of the staff's preferred layout. For example, more privacy for the patient may result in less collaboration for nurses, less opportunity for training, difficulty in monitoring patients, and less chance of preventing falls. More privacy for patients could also result in nurses feeling more isolated and less efficient, potentially causing anxiety and burnout. These are difficult design decisions that need to be evaluated from all angles.

### IMPROVED TECHNOLOGY

Staff communication and training has also evolved since the pandemic. Like other industries, we've all had to adjust to alternative communication and training methods, but how has this affected patient care, and what investments need to be made to ensure proper training and adequate care? Healthcare systems now rely on technology more than ever before. Investments in technology and improving IT infrastructure can be costly, but the long-term benefit of easing workforce challenges and the ability to offer user-friendly solutions to patients may be worth the investment.

Another major disruptor to the healthcare industry that has altered how care is being delivered is telemedicine. Keeping up with digital transformation will be crucial for healthcare systems to remain competitive and meet patient expectations. Virtual care may create both opportunities and threats for healthcare systems as competitors continue to grow. As the patient and doctor interaction continues to evolve, the built environment to support these spaces will change as well.

### AGING POPULATION

Healthcare systems will also have to consider the needs of the aging population, the shift towards prevention-based care, and what technologies are available when designing new spaces.

There are more than 46 million<sup>2</sup> Americans age 65 and over, and that number is projected to double to more than 98 million by 2060. Some hospitals are renovating existing facilities to accommodate older patients, including things like custom lighting and temperature controls, improving wayfinding signage, and adding more family support spaces.

Other hospitals are taking the approach of building new specialized geriatric care units dedicated to this specific population.

### BEHAVIORAL HEALTH

Hospitals are also continuing to invest in behavioral health care, by adding dedicated space into existing facilities or building entirely new facilities. In fact, 42%<sup>3</sup> of facilities have behavioral healthcare projects under construction or planned over the next three years.

### STAFFING SHORTAGE

One of the most critical challenges the healthcare industry is facing is workforce related. Even before the pandemic, burnout had reached crisis levels with 35-54%<sup>4</sup> with nurses and physicians, and 45-60% of medical students reporting symptoms of burnout. This report also projects a shortage of more than 3 million essential support staff in the next five years and a projected shortage of 140,000 physicians by 2033.

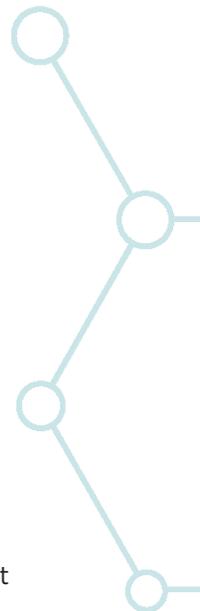
The recommendations outlined in the report touch on the critical issues of workplace culture, safety, prioritizing social connection and community, and investment in public health. Involving staff in the planning and design process of healthcare construction projects could provide the perspective needed to address some of these issues.

Design elements that can reduce stress and improve mental health could aid in staff retention. This could include more respite areas, more natural light, and exterior landscaped areas. Some health systems are going beyond cosmetic design features and offering more robust solutions like on-site housing and childcare assistance.

### SAFETY & SECURITY

Improving safety and security systems may also be necessary to make staff feel safe in the workplace as 44%<sup>5</sup> of nurses have experienced physical violence, and 68% experienced verbal abuse during the heights of the pandemic.

Security strategies can be built into the design of new facilities and renovations. Like the patient points of engagement mentioned above, from the parking lot to the exam room, safety and security should be considered as well. This could affect stairwell placement, exterior lighting, circulation routes, cameras, panic buttons, etc.



## FUTUREPROOFING

Covid-19 has brought several design considerations to light, such as future-proofing hospitals for a mass influx of patients. This could include more modular design components to allow flexibility in the future, or upgrades to allow for isolated units. The challenge is balancing the potential need for pandemic-ready facilities with the financial resources available and determining what is most financially responsible.

## COST CONSIDERATIONS

During the initial planning stages and program development for healthcare projects, cost and schedule typically have a major impact on decision making. The problem we're facing today is that healthcare design is evolving rapidly, coupled with unprecedented inflation, construction cost escalation, lack of materials, and workforce shortages, that historical cost data and prior construction projects don't provide an accurate benchmark.

Developing budgets has become much more complicated at this early stage. Communication with stakeholders is key to fully understanding the design intent and project requirements in order to align the scope with the available funding.

It's clear that planning, designing, and building a healthcare facility is complex. The landscape of healthcare is changing and prioritizing one design element over another seems impossible. Healthcare leaders face a great challenge but can incorporate strategies into the built environment that can create better patient outcomes and safer conditions for all.

- <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/telehealth-a-quarter-trillion-dollar-post-covid-19-reality>
- <https://www.aha.org/news/chairpersons-file/2022-07-11-chair-file-making-health-care-age-friendly-more-important-ever>
- <https://www.healthcarefacilities.com/posts/ASHE-Hospital-Construction-Survey-finds-regulations-create-unnecessary-burden--21012>
- <https://www.hhs.gov/about/news/2022/05/23/new-surgeon-general-advisory-sounds-alarm-on-health-worker-burnout-and-resignation.html>
- <https://pubmed.ncbi.nlm.nih.gov/34344236/>

Below is a list of design considerations that have been mentioned here, along with the relative construction cost associated with each of them. **P**

Design Considerations	ROM
MEP infrastructure upgrades for future flexibility	\$\$\$
On-site housing for staff	\$\$\$
Modular construction	\$\$
Custom lighting and temperature controls	\$\$
Security upgrades	\$\$
Improve infrastructure for telemedicine	\$\$
Separate entrance/exit to direct patient flow	\$
Improve wayfinding signage	\$
Provide more natural elements/landscaped areas	\$
Add respite areas for staff	\$
Improve acoustic properties/mitigate noise	\$

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# MEGA MIND SHIFT

BUILDING RESILIENCY AS A PROPERTY DEVELOPER  
IN AN EVER-CHANGING SOUTH AFRICA

By: Lichelle Neethling  
Director, Africa



In a developing country, economic climate change and compliance with regulations and legislation within the construction industry have proved to be major stumbling blocks for property developers. To exacerbate the natural state of affairs, the Covid-19 pandemic was announced in the first quarter of 2020, which adversely affected the construction sector in South Africa.

Despite operating in one of South Africa's secondary sectors of the economy, with conditions far from ideal, property developers continue to successfully complete world-class construction projects. Over the years, we have identified a key principle to success: An intentional mindset.

## CONSTRUCTION MARKET VOLATILITY

The construction market in South Africa has been anything but forgiving during the past two years. The unexpected spread of the Corona virus in 2020 followed by the beginning of a worldwide pandemic, left the industry in a state of turmoil as a result of construction projects coming to a grinding halt. The consequences were enormous and, unequivocally, detrimental to an industry that already faces many challenges. Deadlines were missed, jobs were lost and evidently, capital expenditure in both the public and private sector took a steep downward plunge.

This set of circumstances, however, is by no means unfamiliar territory to those that have carefully treaded this industry. For many years and more seemingly over the past ten years, the construction sector has been, and remains, a volatile trade. In South Africa, compliance with B-BBEE regulations, fluctuating exchange rates, industrial action, health and safety policies, environmental sustainability, financial liquidity, and community engagement are common risks associated with construction projects<sup>1</sup>. In addition, property developers very often have to jump through hoops to get projects approved timeously by council.

One could easily argue that the sudden and extreme changes are what makes it such an exhilarating industry to work in: the highs are extremely high and the lows are exhausting.

## BUILDING RESILIENCY

The overarching objective for any property developer is to complete a construction project successfully. The definition of success may mean something different from one individual to the next, but is typically a balance of the constraints of the iron triangle so often referred to by project managers: time, cost and scope to reach optimum quality<sup>2</sup>. It is a compromise – and certainly a challenging one. In addition to all the previously mentioned common risks associated with construction projects in South Africa, it is a fundamental success factor that the scope is completed within a given time frame, at a certain level of quality, and doing so cost-effectively.

This is nothing new to developers – in fact, it is part of what makes them good at what they do.

Adamant to pull through the trying times, they have developed a highly elevated soft skill that fuels their persistence: resiliency.

Resiliency has many interpretations. It is the ability to withstand adversity, the capacity to recover from difficult situations and the power to return to one's original form after being, hypothetically speaking, deformed or compressed. It is bouncebackability.

Interestingly, the word resiliency is also synonymized with flexibility and building resiliency in a volatile environment has equipped property developers in South Africa to withstand drawbacks and adapt to the challenging circumstances they face on a daily basis. But, how?

## THE A-TEAM

As a property developer, it is fundamental to appoint a team of professional consultants, for any construction project, that can lead the team to make crucial decisions, manage and mitigate risks and ultimately complete a project to the desired quality, within the required time frame, and within budget. For any professional consultant, steering the client (in this case the property developer) in the right direction in terms of decision-making, prompting a client to identify potential risks and acting in the best interest of the client are fundamental attributes needed to make a good team great.

A great professional team that possess the required knowledge and expertise can ultimately steer a project to success. A pro-active approach and high standard of service delivery by the professional team, can and will make a meaningful contribution to any construction project. This, in turn, will allow the property developer to focus on other important decision-making tasks such as strategic planning and stakeholder engagement.

<sup>1</sup> <https://www.pwc.co.za/en/publications/sa-construction.html>

<sup>2</sup> [https://en.wikipedia.org/wiki/Project\\_management\\_triangle](https://en.wikipedia.org/wiki/Project_management_triangle)

## CALCULATED RISK-TAKING

Property developers have become accustomed to the ever-changing construction sector trends in South Africa and even more so over the past few years. Despite the precarious circumstances, they have maintained focus to seek and investigate various opportunities within the industry, driving the development of projects that range mainly within the residential and healthcare sectors, and commercial sector to a smaller extent.

We have seen many projects come to life over the past 2 years that would undoubtedly not have been pursued had it not been for a number of property developers that recognized the opportunity to capitalize on competitive tender pricing – even though steel prices shot through the roof – record-low interest rates and reduced property stock in the market.

Although bold risk-takers have proven to be some of the best property developers in the country, there is a fine balance that needs to be maintained in order to be successful. A risk management approach and plan are critical tools that aid calculated risk-taking processes and brings a higher chance of success. The ability to take calculated risks is key to long-term success and building resiliency.

## ADAPT AND ACT

You can't teach an old dog new tricks – a saying most of us are familiar with and certainly a state of mind that is not conducive to innovation and new ways of thinking. Having the ability to adapt to an every-changing environment also requires the will to act, and doing so at full tilt.

Adapting to a new set of circumstances and thriving in such an environment really correlates highly with building resiliency. It is fundamental, not only for property developers in South Africa, but also for consultants, contractors and suppliers to react to the demand of the industry and improve on conventional methodologies, allowing the necessary industry growth across all sub-sectors.

## CONCLUSION

The construction sector in South Africa is a volatile market and the global pandemic has caused great uncertainty within the industry: the public and private sectors have both seen a major fall in activity and although we are experiencing improved growth, we are not out of the woods (yet).

Building resiliency is key to the recovery of the construction sector and property developers have been forced to adapt in the face of adversity. Taking calculated risks, acting swiftly on opportunities that present itself, and at the same time having an inclusive, well-experienced professional team, are the building blocks to building resiliency.

Property developers in South Africa have managed to build resiliency in an exhilarating industry, showing incredible effort, energy and mental toughness. **P**

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Located adjacent to London's Canary Wharf financial district, Aspen Consort Place offers contemporary apartment living as well as a restaurant, cafés, bars, and a Dorsett Group Hotel.

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# DELIVERY OF CRUCIAL INFRASTRUCTURE PROJECTS ◀ ◀ ◀ IN A HEATED MARKET

By: Ed Cook  
Director, Oceania



**T**he world's infrastructure gap is growing. It's estimated by the Global Infrastructure Outlook to be in excess of \$15 trillion, driven by growing populations, change in demand, and the need to replace aged existing assets for both public and private clients. Hospitals, for example, have a wide net of stakeholders who rely on the infrastructure, and potential failure has life or death implications. The investment requirements are set to increase further with the global transition towards targeting net-zero emissions. According to McKinsey research, to achieve net zero by 2050, organisations will need to increase investments into low-emissions capital stock by \$3.5 trillion per year. The majority of this increase will need to focus on meeting the growing demand for electricity caused by this transition, while simultaneously decarbonising existing power generation and transmission infrastructure.

## NEW ZEALAND INFRASTRUCTURE INVESTMENT CHALLENGES

New Zealand is facing similar challenges, with \$210 billion required to fund the future needs of population growth and climate change (Treasury's 2022 Investment Statement). Electricity generation capacity will need to increase by 170% to meet net-zero carbon goals, and \$12.5 billion of local and central government infrastructure is vulnerable to sea level rises. To meet these challenges, New Zealand will have to increase infrastructure investment to nearly 10% of GDP versus the current 5.5%. This presents significant challenges in terms of government funding, procuring and delivering successful projects in a climate of increased global investment. This analysis will concentrate on one element of the puzzle - procurement.

## PRESSURE RAMPS UP ALONG WITH COST

The New Zealand market is facing significant pressure delivering the current construction workload with global capacity issues which are further exacerbated by the country's remote location and COVID-19 controls. The market is facing volatility - the cost to build has likely peaked at approximately 10% per annum in 2022 - with some trades increasing in excess of 50% in a year. With cost increases continuing, contractors are unwilling to provide fixed prices to clients. The government is facing up to a growing infrastructure gap - delivering highly complex, high-risk projects in a climate of volatile costs and capacity constraints.

## THE RELATIONSHIP ALLIANCE MODEL OF DELIVERY FOR INFRASTRUCTURE

The response by clients in the infrastructure sector has been to procure through relationship-style arrangements designed to share risks and rewards. This has been implemented on single major projects as an Alliance Model, and across a long-term programme of works as an Enterprise Model. This approach creates a project team built on shared priorities and values, where decisions are made based on what's best for the programme rather than the company. In addition, the relationship approach and clear signalling of upcoming work enables contractors to plan and invest for the long term, building the capability and capacity to deliver better outcomes. Apart from typical construction priorities, this model may also include Environmental, Social and Governance targets such as carbon reduction, social procurement and stakeholder engagement. Where managed effectively, these are clearly defined objectives by which to measure success.

## THE NEED FOR A GOOD FAITH APPROACH

A central principle of the Alliance Model is an approach based on trust and good faith which aims to resolve differences without blame or dispute. This means that the relationships between parties is critical to the success of the model. Partners should work hard to maintain a positive culture with a collective approach to decision making. The challenge for projects in a volatile market is to retain key individuals while staff churn is occurring. This can result in significant salaries being passed onto the client in a bid to retain bonded individuals.

## OPEN-BOOK COST MANAGEMENT

From a commercial perspective, a critical element of the relationship model is determining the pricing of the works in an open-book manner. This requires rigorous cost management, reviewing rates and margins with an accounting approach. This involves a level of scrutiny and transparency that's significantly higher than traditionally procured projects. The client's cost management team needs to be involved early in setting expectations and agreements with respective parties. There is a steep learning curve for contractors unfamiliar with sharing commercially sensitive information and this can extend throughout the supply chain.

## DETERMINING COSTS UP FRONT TO BALANCE PAIN AND GAIN FOR ALL PROJECT STAKEHOLDERS

As New Zealand's largest independent QS business, RLB has found that the relationship-style arrangement is becoming the norm for major infrastructure procurement delivering major road and rail infrastructure and urgent drought resilience. It has also been used for accelerated public realm



works to revitalise Auckland's waterfront in time for the prestigious sailing regatta – the America's Cup. A major challenge is finding the target out-turn cost used to determine the pain/gain share arrangement on a basis that reflects the true risk to the project. It is critical to develop a robust parallel estimation process to provide an independent view, and to have a mechanism in place to resolve disparities of opinion. A target out-turn cost which is unrealistically high or low can lead to poor value outcomes.

## LOOKING AHEAD

The pipeline of infrastructure projects appears strong, with heightened demand currently expected to insulate the infrastructure sector from the anticipated wider market downturn. Market softening should result in reduced volatility due to the relief on resource and supply challenges. The benefit of the open-book process will be increased competitiveness in the market as present day pricing is achieved. In addition, the relationship approach should give contractors and suppliers the confidence to continue investing during a period of uncertainty. As infrastructure demand grows to meet existing demands and new decarbonisation and climate adaptation priorities, the industry needs to adapt to succeed. The relationship-based approach helps provide confidence, flexibility and rigour in delivery while upskilling the wider industry. **P**

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# NAVIGATING UNCERTAINTY IN THE SHORT TERM

By: **Andrew Reynolds**  
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**W**hether here in the UK, or across the world in Oceania, there can be no doubt that those in the built environment have moved from advising clients on certainty of outcomes in the long term to navigating uncertainty in the short term.

Across the world, there are project challenges around volatility of prices, increased price of materials input costs, increased lead-in times for materials and shortage of labour, at times putting project viability into question. Yet we also know that projects need to continue as the demand and need for quality buildings remains.

To the futurists among us, there are often three influences on how the future will shape up -

- **continuation** - tomorrow will be a repeat of yesterday,
- **cycles** - tomorrow will follow cyclical patterns of the past, and
- **de-railers** unforeseen events that impact the course of the future, with COVID-19 being a good example.

There is no doubt that for the last 80 years the future has followed both continuation and cyclical paths. What is becoming clearer is that the future is now becoming much more influenced by de-railers - things that we are less prepared for or at least ill-equipped to deal with, in the short term.

What is also clear is that scenario planning is needed to help navigate the uncertainty we find ourselves in today and we predict this will continue for the next three to five years. Looking at the best, mid and worst-case scenario will give us the ability to test those scenarios and undertake mitigation planning.

## USING VALUE-BASED DECISION TOOLS

However, for us to continue to build and for the long-term future of the built environment to flourish, we need to think of some of the longer-term elements we are facing as an industry as well as some of the short-term challenges. For example, in the UK there has been government guidance and governance recently launched in the form of the Value Toolkit and the Construction Playbook. This guidance is aimed at the public sector, but equally relevant to private sector projects and advocates value-based decision making beyond cost, time, quality and brings together other factors such as social value, environmental impact, whole life performance and risk. Using these tools to offset cost risk/inflation and project risk analysis can optimise value in the long term, helping to mitigate wider project risk that can positively impact the business case.

## PRIVATE VS PUBLIC SECTOR STRATEGIES

Working across private and public sector projects we have also seen a different approach to procurement and an evolving response to the current market situation. Where private sector projects often prioritise financial outcomes coupled with further development criteria such as sustainability credentials and social value added, the public sector is driven by necessity, for example, the need to build a new hospital or school.

In the public sector, there remains a consistent focus on value for the public purse - ensuring public finance expended achieves necessity of outcome needed. There is also a wider level of shared risk and liability across client and contractors. Fixed price contracts are not a prerequisite and there is a high use of the collaborative form of contract where it is accepted that the contractor is entitled to defined cost plus fee and there are secondary option clauses to tailor your contract to project drivers and risks such as price adjustment for inflation.

This often differs in the private sector where many contracts are driven by certainty of cost to drive development viability and return. There might be risk and contingency built in, but this risk is often defined, known and capped, rather than unknown.

So, should our industry look to move to a more contractor/client/developer/funder risk share model? We believe that transparency, collaboration, and openness is more important than ever. To be an industry that works together, in real time to understand project need plus clients, contractors, supply chain and professional teams' needs, internal and external influences and drivers will be critical to navigate these uncertain times.

## BEING OPEN TO DIFFERENT SOLUTIONS

Being open to different solutions to help us meet our design, procurement and build requirements will also be key. There is an opportunity to mitigate material and labour availability challenges through the adoption of DFMA (design for manufacture and assembly) and MMC (modern methods of construction) strategies, or by early ordering or retaining materials off site. Likewise at construction stage, it could be wise to consider project bank accounts to mitigate increased insolvency risk and claims avoidance strategies to avoid increased contractor claims due to project duress on input costs.

What we do know is that the certainty of outcome is absolute, to create buildings and places that form the foundation of our society. Of course, at this stage of the game, certainty in answers may be limited but our industry has a strong heritage in finding solutions and we certainly have the imagination, skills and resolve to navigate all issues that are presented to us.

The time horizon for validity of data may be shorter than ever before, but through collaboration, operating as one industry working together to navigate the uncertainty in the short term, we will achieve certainty of outcomes in the long-term. **P**

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# REDUCING FINANCIAL RISK FOR THE LENDER

(YES, IT CAN BE DONE!)

By: Aled Jenkins  
Associate Principal, North America



**F**inancing construction projects can be a risky business for many reasons. Major risk to schedules and budgets are all too common – amounting to what can be a costly minefield for developers and in turn pose risks for construction lenders. Add the problems stemming from the Covid pandemic, supply chain interruptions and increasing staff shortages being only the tip of the iceberg, it is now more important than ever to do rigorous financial, legal and bespoke construction related commercial due diligence to ensure lenders are fully aware of all risks relating to a project and are therefore in a position to properly underwrite it.

### MONITORING THE CONSTRUCTION PHASE

Having made the decision to finance a project, the focus for lenders will then shift to the construction phase which will include the monitoring of progress by the lender's third-party construction consultant. One of the key purposes of construction loan monitoring (CLM) is to identify potential construction-related potential problems at an early

stage in order to allow issues to be resolved before they become major. CLM helps mitigate the risks inherent in construction lending such as poor contract language, insufficient contingencies, poor cost estimates, unrealistic schedules and insufficient insurance and bonding by the contractor. CLM also monitors construction phase risks like quality issues, schedule issues, overfunding for incomplete work and timing of funding to name a few. The CLM consultant will also review the timely payment of general and sub-contractors to avoid contractual disputes and liens being placed on the property for unpaid work. Lenders are highly unlikely to continue to fund a project where a mechanics lien trumps their security interest.

### IDENTIFYING RISKS EARLY

Being in the construction business, like many any other business, is about growing revenue and profit. Revenue and profit is why key stakeholders are involved in a construction project, such as the developer, general contractor, sub-



contractors or at least those parties with “skin in the game”. The role of the CLM consultant in the past has been performed by quantity surveyors, project managers and project controllers which are typically deemed 3rd party independent consultants who have much less at stake. However, the role has developed into its own unique set of services. It’s not just about selecting a quantity surveyor or project manager for the role; it’s about choosing a CLM specialist who understands and can explain the construction-related risks to a lender on a construction project. Identifying risks to lenders and raising red flags early is critical. This can only be achieved by a strong monitoring role including physical site visits, correspondence analysis such as a schedule and budget reviews, payment application reviews and just having the experience to understand, from an abnormal sequence of events, what raises a red flag.

## DUE DILIGENCE IS CRITICAL

A skilled CLM consultant starts with a very strict set of due diligence tasks while the loan agreement is being drafted. A CLM consultant will require certain markers be met before the loan agreement is executed. All these requirements are presented to our lender team in the form of a detailed due diligence report and this usually happens just before the preconstruction process. Within the due diligence report, we use our expertise to analyze and comment on items that include but are not limited to: a developer’s project team, consultants, general contractor and major sub-contractors, budget and estimates (including contingencies and allowances) from the developer and general contractor, the form of the construction contract, insurances applied on the project, proposed construction schedule, development permit status and any subcontractor trade awards already procured. All this information then translates into a project risk section in which the CLM consultant will identify risks associated with schedule, budget, the construction team, environmental considerations, permits and any other general risks that may pose a threat to the project.

## MONITORING THE PROJECT LIFECYCLE

Once the lender team is satisfied that all due-diligence checks have been made and the loan agreement executed, the role of the CLM runs through the pre-construction phase (design and procurement) to the construction phase and close out and typically ends when the loan is paid back in full. During pre-construction, constructability checks are made once each of the design stages have been achieved. Budgets and estimates are reviewed, and any major scope increases and overruns will be identified

to the lender through the issuance of an updated due-diligence report. In a lot of cases the loan agreement is executed midway or near the end of the design phase so most of the pre-construction analysis gets identified during the due-diligence reporting stage of the loan agreement drafting. Each project is different, however.

Construction phase CLM is equally as important for lenders, because as the project moves through the cycles of trade specific buyout, budgets and schedule are tested against actual progress. The construction phase CLM role is identified by two integrated activities:

1. CLM inspection: this involves a cost review of the monthly payment application to verify that all costs are in line with the draw requirements and progress of work is complete, that they are in line with draw requests, change order reviews and requests that have been met, as well as timeliness of payment. Technology now plays a bigger role than ever during the CLM inspections and can now include drones and handheld software on iPads.
2. CLM reporting: this involves the submission of a monthly report after the CLM inspection for a particular month has been completed. The report includes, but is not limited to, cost checks, schedule reviews, risk analysis for any critical issues, contingency reviews, change order review and attachments of developer and contractor documents.

## SELECTING THE RIGHT CLM PARTNER

In summary, it’s imperative that lenders select the right CLM partner with the appropriate expertise, such as having knowledge of all national architectural and engineering firms and contractors, contractual understanding, labor supply, sub-markets, and trades. Sector experience is also critical because, for example, an airport has different requirements, specifications and project risks to say an office or residential tower. A CLM partner must have a proven track record of seeing projects through until loan closing. A national footprint is an advantage so the CLM work can be centralized. This saves time interviewing for new partners in new locations for every project. **P**

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As Seen In NAIOP’s Development Magazine, Summer 2022, [“Reducing Financial Risks for the Lender on Projects”](#)

# Building for the future



The Bank of China Shanghai International Financial Building in Lin-Gang Special Area features the 200m-high twin towers with a floor area of more than 170,000m<sup>2</sup>. Upon completion, the towers resembling a grand doorway will be the headquarters of financial institutions.

PEI Architects leads the design work of this 39-storey building, reminiscent of the Bank of China Tower in Hong Kong that designed by the late IM Pei. RLB is pleased to provide quantity surveying services for these two exciting developments in Shanghai and Hong Kong.

A vibrant, futuristic cityscape at night, featuring glowing skyscrapers and digital overlays. The scene is dominated by a central, tall, glass-clad skyscraper that reflects the surrounding lights. The sky is a mix of deep blues and oranges, suggesting a sunset or sunrise. The overall aesthetic is high-tech and digital, with various lines and grids overlaid on the image.

By: Ricky Chu  
Deputy Director, Hong Kong

# DIGITALISATION IN HONG KONG'S HEALTHCARE DEVELOPMENTS



## THE FIRST 10-YEAR HOSPITAL DEVELOPMENT PLAN

The prevailing pandemic is a wake-up call for governments around the world. The healthcare infrastructure in most if not all countries or regions is grossly inadequate or outdated to cope with the impact of any major healthcare crisis. Even before the pandemic, the Hong Kong SAR government had plans to upgrade hospital hardware, equipment and space of public hospitals in Hong Kong. In 2016, the government earmarked HK\$200 billion (about US\$25.6 billion) to implement the first 10-year Hospital Development Plan (HDP) which includes:

- Construction of one New Acute Hospital at Kai Tak Development Area,
- Redevelopment/Expansion of eleven existing hospitals,
- Construction of three new Community Health Centres, and
- Construction of one new Supporting Services Centre.

On completion, the first 10-year HDP will have delivered:

- Around 5,000 additional hospital bed spaces,
- Around 90 additional operating theatres,
- Around 430,000 additional annual capacity of general outpatient clinic attendances, and
- Around 2,800,000 additional annual capacity of specialist outpatient clinic attendances.

### Ten-year Hospital Development Plan



Figure 1: Map of Hong Kong with Locations of Hospitals under the 10-year HDP.

## BUILDING INFORMATION MODELLING (BIM)

The Hospital Authority (HA) of Hong Kong has been entrusted to manage the design and construction of the majority of the projects under the first 10-year HDP. It has engaged consultants of various specialties to carry out the design with the goal to achieve the best international practice, innovative designs, efficient and effective planning and state of the art technology. To further utilize resources in an effective manner, HA has taken a step forward with the implementation of various innovative technologies to enhance the design and planning of hospitals and to secure that the hospitals would be delivered as scheduled.

One of the major tools introduced is the use of Building Information Modelling (BIM) for design, construction and ultimately for the facility management of the hospitals after project completion. With the implementation of BIM, it is fundamentally transforming the way how the industry operates. It is a paradigm shift from the traditional way of designing separately by each discipline to working together and collaborating through the Common Data Environment (CDE).



Figure 2: BIM of hospital interiors in 3D view

From the design and planning perspective, the use of BIM would be beneficial in the following ways:

- Facilitate end users engagement process with better visualization and precise location of provisions;
- Facilitate simulation for end users under various conditions;
- Facilitate spatial coordination to reduce clash and discrepancies;
- Facilitate cross discipline coordination with real time updates through the Common Data Environment (CDE); and
- Facilitate quantity take off for tender preparation.

From the construction perspective, BIM would facilitate the following:

- 3D coordination of various trades and 4D simulation for constructability;
- Phase planning (4D Modelling) of works to identify critical path, comparing between planned and actual work progress and review any updated construction programme;
- Digital fabrication for prefabricated units, Modular Integrated Construction (MiC) and Design for Manufacture and Assembly (DfMA);
- Site monitoring of works and materials through Digital Work Supervision System (DWSS) by site staff; and
- Facility Management by end users with the development of the As-Built BIM model

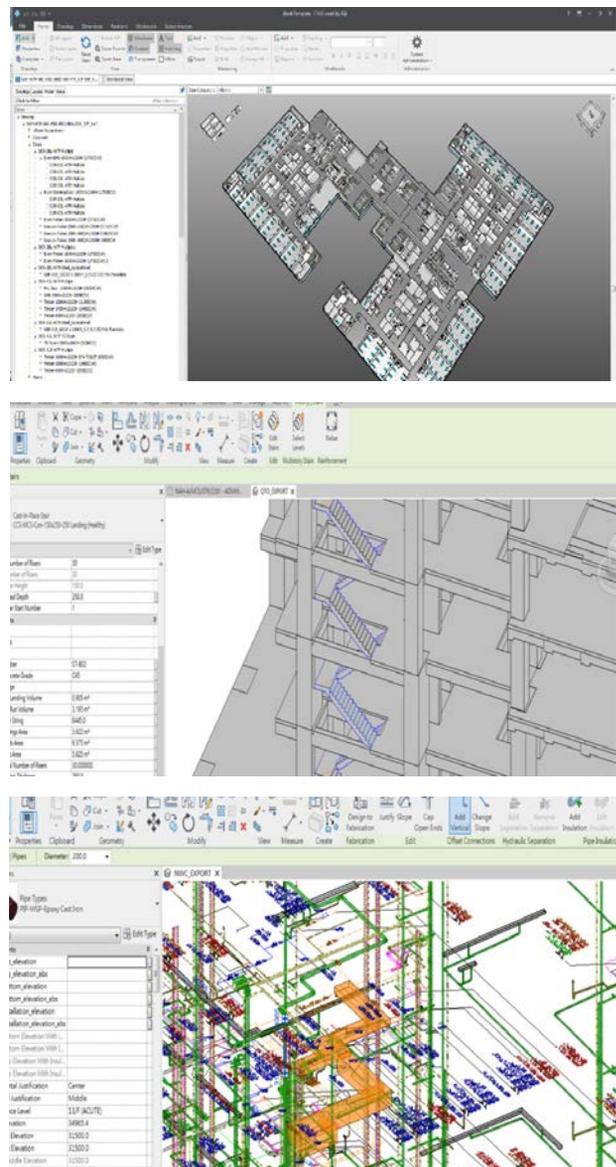


Figure 3: Quantity Take-off Through BIM

## DIGITISING QUANTITY TAKE OFF

As the cost consultant for a number of projects under the first 10-year HDP, RLB embraces the digital transformation with full 5D BIM application. Take the New Acute Hospital at Kai Tak Development Area as an example. This is a mega-sized hospital providing around 2,400 hospital beds with a total construction floor area of over 500,000 m<sup>2</sup>. As the cost consultant, we provide full 5D BIM service from the design and tendering stage to the construction stage. From the onset of the project, we had early involvement and collaboration with the consultant team. At the early design stage, we had regular collaboration workshops with design consultants to understand various aspects of the model including how it was built, information contained, progress and timeline for design development. At the same time, we provided feedback on the information contained in the model and shared with design consultants the requirements for quantity take-off. We shared with the design consultants the “RLB 5D BIM Standards for Use in Hong Kong” which was launched in 2020. It facilitated information exchange and enabled the whole consultant team to have mutual understanding and set out the framework for our quantity take-off at various stages of the project.

Tenders of this project were invited in early 2021. In a retrospective review of the tender preparation stage, with the coordinated models we were able to take-off approximately 70% of the items in the Bills of Quantities through the BIM models which led to a reduction of approximately 40% of human resources and 90% of paper.

At the construction stage, all project participants including the contractors could refer to the model for progress tracking, data checking and design collaboration. All the information or data in the models would be shared among all parties. It is also used as the payment model and variation model in this stage, to enhance the quantity take off, cost checking and agreement processes meaning that time and resources will be optimally used.

## THE NEXT WAVE

In 2021, the Hong Kong SAR government set aside a budget of HK\$300 billion (about US\$38.4 billion) for the second 10-year HDP to further upgrade or expand existing hospitals and construct new hospitals, in particular, taking into account the experience in dealing with COVID-19 to incorporate designs and provisions in order to convert general wards to isolation wards when needed. It is estimated that more than 9,000 hospital bed

spaces will be provided upon completion of the second 10-year HDP in 2036. This is clear evidence that while the world is adapting to cope with COVID-19, the development of healthcare facilities would not slow down. In contrast, the public expects healthcare facilities to be completed in a faster pace in order to be ready whenever the next pandemic strikes. With this in mind, Hong Kong's first 10-year HDP has already taken a step forward with technology advancement and digital transformation, aiming for a complete paradigm shift for the next wave of healthcare infrastructure works in the coming decades. **P**

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### Ricky Chu

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By: Cameron Smith  
Director, Oceania

# HOW SMALL INFRASTRUCTURE CAN MAKE A BIG DIFFERENCE

A new hospital or a highway attracts headlines and political headspace in Australia. Institutional investors are increasingly on the hunt for childcare, student accommodation and social housing assets. But other types of social infrastructure are often overlooked, despite being the glue that binds our communities together.

As Infrastructure Australia's 2019 Audit<sup>1</sup> notes, social infrastructure "helps us to be happy, safe and healthy, to learn, and to enjoy life". This is the infrastructure that contributes to community identity, inclusion and cohesion – and all that happens at the local level. It's the scout or soccer hall, the museum housing precious community memories, the men's sheds and women's refuges, and the halfway house for young people who need a helping hand.

But in the words of Infrastructure Australia, much of our social infrastructure is "ageing and not fit for purpose". While governments pour billions into large-scale infrastructure projects, smaller-scale social infrastructure is often left in the hands of community organisations or not-for-profits who are reliant on donations, grants and public goodwill.

## HOW DO WE REVALUE SOCIAL INFRASTRUCTURE SO COMMUNITIES CAN REAP THE LONG-TERM REWARDS?

As a member of the Property Council of Australia's newly-established Social Infrastructure Committee in Queensland, this is a question that keeps me up at night. But RLB has a growing portfolio of small projects that illustrate the power of social infrastructure to build community, enhance economic opportunity and create value far beyond the bricks and mortar.

More than 1,100 kilometres and a 14-hour drive from Brisbane, deep in the red earth country of western Queensland, lies the town of Winton and the first museum in the world dedicated to a song. The Waltzing Matilda Centre<sup>2</sup> was named after Banjo Paterson's 1895 bush ballad and housed the author's memorabilia and other historical treasures before it was destroyed by fire in 2015.

With only ashes and a blank canvas, the project team led by award-winning Cox Architecture captured the spirit of the song through experiential design. Despite a budget of just \$13 million, RLB helped the project team stretch each dollar as far possible – a task made all the more challenging by the constraints of a remote site. But when the new centre opened in 2018, the community was awe-struck by a building that echoes the rock formations and rivers of an ancient land, creates

jobs and opportunities for a small community and retells Patterson's story for a new generation.

About eight hours south of Winton lies Cooper Creek, home to the largest dinosaur discovered in Australia. The length of a basketball court and the height of a two-storey building, *Australotitan cooperensis* was unearthed by a teenager who tripped over its bones while mustering cattle in 2004.

The 67-tonne titanosaur has sat in boxes stored in a shed for more than a decade. Backed by government grant funding secured with RLB's assistance, the Eromanga Natural History Museum<sup>3</sup> opened in 2021 with a new visitor's centre, and a place to display at least part of Cooper's gigantic skeleton. The museum now supports important scientific investigation, has created a destination for a town further from the sea than any other in Australia and has put Eromanga on the international paleo tourism map. RLB is also assisting the museum, alongside principal consultant Architectus, with cost planning services to package up the next stages of the development in alignment with additional grant funding applications or philanthropic donations.

Logan Youth Foyer, meanwhile, provides safe and stable accommodation and connections for young people in a socially disadvantaged community just south of Brisbane. In a collaboration between the local council and non-for-profit Wesley Mission Queensland, 40 self-contained studio and one-bedroom units, as well as communal indoor and outdoor spaces, were constructed to a tight budget. RLB and Bark Architects maximised value for money by also maximising usable space. Logan Youth Foyer fills a gap of vulnerability in the community and helps upskill young people who are committed to earning and learning but need extra support to help them achieve independence.

Then there's the McKinlay Shire's Smart Hub, which services a community across 41,000 square kilometres at the gateway to the Gulf of Carpentaria. The hub, which reimaged and refurbished an old medical centre, offers digital access, co-working space and meeting rooms that are freely available to the local community. When it opened in February 2021, the hub became an invaluable tool to boost local business capacity, encourage property owners to use digital technology to improve their farming operations and to support students – both young and mature – with their learning and research.

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<sup>1</sup> <https://www.infrastructureaustralia.gov.au/sites/default/files/2019-08/Australian%20Infrastructure%20Audit%202019%20-%206.%20Social%20Infrastructure.pdf>

<sup>2</sup> <https://www.matildacentre.com.au/>

<sup>3</sup> <https://enhm.com.au/>

RLB's cost planning approach and option analysis provided the client and principal consultant Vabasis with quick and efficient feedback to support timely decisions.

I'm proud of RLB's role on each of these projects because each demonstrates how, with a lot of effort and a laser focus on costs, we can deliver the bricks-and-mortar that not only becomes the backbone of communities, but also offers new and diverse driving holiday destinations in western Queensland.

A cornerstone of any successful construction project is robust and reliable cost management. But when it comes to social infrastructure, ensuring that demonstrable value is achieved builds public trust and reduces local community discontent. With skilled early cost planning and forward-thinking fiscal planning, we can empower more governments to invest in social infrastructure and to deliver the small-scale projects that make a big difference to our communities. **P**

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Taking ambitious  
projects from an  
idea to a reality

Barlow Park, situated along the renowned Katherine Street, is an exciting new mixed-use development, that encompasses the meaning of mixed-use developments.

The site was previously the home of Barloworld's Corporate Head Offices and has been jointly redeveloped by Atterbury Property Development and Divercity Property Fund to add another world-class building to the famous Sandton strip along Katherine Street where RLB has also completed the office buildings for Sasol, Discovery, Bidvest and others. Phase 1 and 2 will include 1630 apartments, ranging from bachelor units to two bedroom units and convenience retail of 5500 m<sup>2</sup>. The second building will also house a primary school amongst other amenities.

The development is certainly the first of its kind in the vicinity known as the richest square mile in Africa.

RLB is providing full quantity surveying services.

[RLB.com](http://RLB.com)

**RLB** Rider  
Levett  
Bucknall



# ENERGY SECURITY:

## THE LATEST CHALLENGE FOR THE POWER-HUNGRY DATA CENTRE SECTOR

By: Andy Fettes Brown  
Partner, Head of Data Centres,  
United Kingdom

**E**nergy security', i.e. access to reliable, continuous and affordable power supplies, was a concept that didn't demand a huge amount of attention prior to the Russia/Ukraine conflict. However, with the ongoing instability in the energy market and concerns around over-reliance on gas and oil from Russia, it has shot to the top of the agenda, particularly within Europe.

For the energy hungry data centre market, access to power has always been at the core of its existence. Unsurprisingly, the instability in the energy market is driving discussions ranging from which locations might be best to site new hyperscale facilities, to how to fast track innovations around renewables energy, to examining options around power supplies previously thought to be off-limits. Necessity is often the mother of invention.

## ACCESS TO RENEWABLE ENERGY IS IN HUGE DEMAND

The global market was valued at \$187.35 billion in 2020, and is projected to reach \$517.17 billion by 2030, registering a compounded annual growth rate (CAGR) of 10.5% from 2021 to 2030 according to Allied Market Research. The demand for new builds is only ramping up as is the debate about where they are best located. Renewable energy and sustainable sources are hugely in demand and have been a contributing factor to the increased popularity of locations such as Spain, Greece and Portugal where these power supplies are more available. For example, in Spain the country currently runs on 53% renewable or green sources.

Switching to new green energy technologies is often a multi-layered decision that brings with it new challenges and opportunities. Working with our clients, we know implementing greener solutions, such as moving away from diesel generators, needs careful planning. Potential risks need to be assessed from the impact on project design to consideration of any delays to the build programme and whether there are any factors that could affect the building operation.

For example, in the Netherlands the use of wind is an obvious source of energy but with wind turbines requiring nickel, 60% of which is sourced from Russia, building new turbines at the rate needed will be significantly impacted.

## THE RISE OF “EDGE” COMPUTING FUELS LOCATION DEBATE

With their prevalence of power generated from wind, hydro and cool climates, Nordic countries have been popular data centre locations and may well see increasing demand for cloud-based data centres. However, siting of remote, “centralised” data centres does not suit rapidly growing technologies such as driverless cars and IoT (Internet of Things) applications, where low latency, high bandwidth, real-time “edge” computing is essential to ensure safe and reliable operation. The edge computing market is predicted by some analysts to be growing at about 20% per annum, being valued at \$36billion USD in 2021 and growing to \$87billion by 2026<sup>1</sup>.

Energy security is also influencing the way the industry enters new developing markets such as Africa. In many instances the infrastructure in these locations is simply not there. So that brings with it the opportunity to create and design sustainable and resilient energy solutions right from the start for the data centre facility and the wider community. As things are less fixed to start with, we can put in the roadmap to build future-fit data centres and the infrastructure they sit within.

<sup>1</sup> <https://www.marketsandmarkets.com/>

## ALL ENERGY SOURCES UNDER REVIEW

As well as running the rule over new locations for the data centre pipeline, the push for energy security is also encouraging the debate about alternative power supplies. New energy sources alongside those that have previously been discounted as they were seen as too expensive, too dangerous, or too controversial are now back on the table.

We are certainly hearing the discussion around the use of nuclear energy. In the UK it has been interesting to see that the government has approved the go-ahead for a new nuclear power plant that could generate 3.2 gigawatts of electricity and there is also talk of removing the ban on the contentious practice of fracking for shale gas.

The good news is we are also seeing a real impetus behind the development of zero-carbon technologies such as hydrogen fuel cells. Although there are still many challenges to overcome, vehicle manufacturers are now prototyping (and selling to the public) hydrogen fuel cell electric vehicles and with increasing scale, efficiencies will no doubt follow. Implementation of large-scale hydrogen emergency power supplies into data centre infrastructure would also significantly contribute to the greening up of the data centre market, reducing reliance on gas and oil into the bargain.

This is particularly encouraging as there is a concern that the volume of energy needed by data centres could push back their sustainability agenda as solutions are disrupted. The conundrum for data centre clients could be, do they pivot away from sustainable targets they have set or invest heavily? We have seen for example in Germany, which has a huge reliance on Russia for gas, that coal fired stations are back on the rise. With the aspirations and goals set out on climate change at COP26 less than a year ago, this feels like a backward step. So, it is vital we carry on investing in these new technologies, particularly around renewables, not just for energy security, but for the sustainability of the planet. **P**

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### Andy Fettes Brown

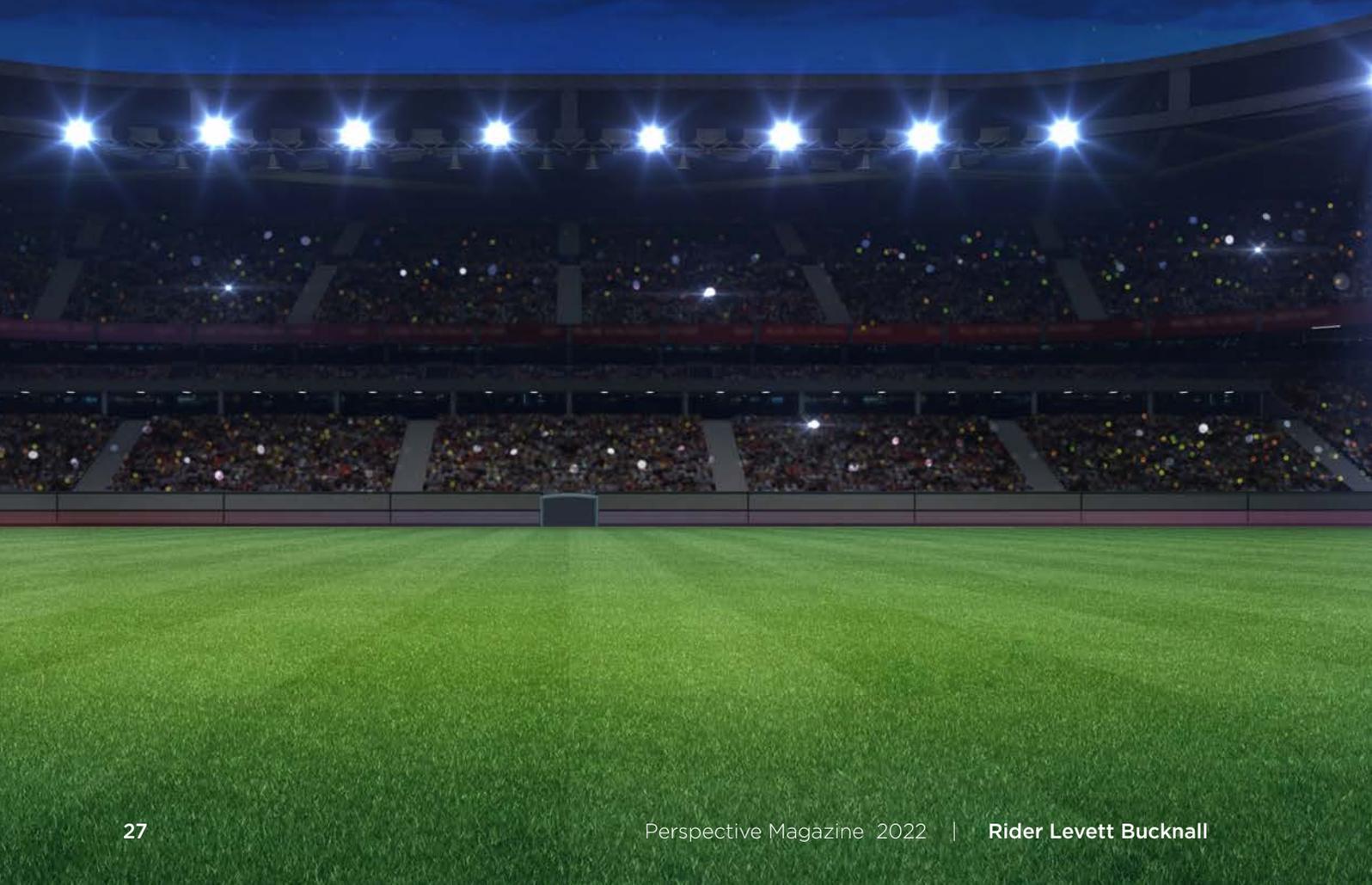
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# RETHINKING STADIUMS

TRENDS POINT TO SMALLER, MULTI-USE  
VENUES THAT ENHANCE COMMUNITY  
LIFE, SURROUNDING LANDSCAPE

By: Jesse Zunke  
Associate, North America





**A**lmost 50 major league stadiums will turn 30 by 2030, leaving team owners, municipalities, and investors to decide whether to renovate or replace, as has been the case for six of them already. But whether it's new from the ground up, as proposed for the Oakland Athletics, or refurbishing an existing stadium, like the New England Patriots' 20-year-old Gillette Stadium, the community outside the stadium walls is just as important a consideration as the stadium itself.

The proposed new stadium for the Oakland A's is an example of what stadium construction should look like in the future: it is a coordinated \$12 billion, mixed-use project with a sports stadium at its center, built entirely with private funds. Key to the success of this project was the reclassification of the port facility, Howard Terminal, as mixed use so the stadium project could be built on it, thus removing a major obstacle to the project which has long been on the table.

Construction costs for the project, which includes a 35,000-seat arena, 3,000 housing units, office space and a hotel, will be borne by developers who would in turn reap the profits. The only cost to the taxpayer would be infrastructure improvements around the development, money worth spending given the long-term benefits to the public.

Like the A's stadium, a new or improved arena should be an exercise in urban planning, with goals for both the municipality, and the facility owners. Some goals may include improving access with local roads and bridges, adequate parking, and being well served by public transportation and airports. Other considerations need to include hotel rooms and hospital beds nearby, in addition to more entertainment choices for visiting fans to drive spending in the area. Green spaces should also be a consideration for any plan.

Building new stadium-centric communities like that in Oakland are quite a departure from how stadium projects have historically been constructed. In what has long been the standard with sports venues, public funds build the massive structures, but all subsequent profits go to private stakeholders. There is little trickle down and no collateral projects to improve the surrounding landscape. Team owners and investors pocket all revenues from ticket sales, broadcast revenues, concessions, and merchandise as they have done historically.

At 35,000 seats, the proposed A's stadium is also part of a growing trend toward smaller venues that is beginning to take hold. That number is roughly half of the 72,000-seat capacity of the Las Vegas stadium where the Raiders, formerly of Oakland,

now play. Both the SoFi Stadium in Los Angeles and AT&T Stadium in Dallas can be reconfigured to accommodate 100,000 spectators, the Buffalo News reports

True to the spirit of Nimbyism, few people want an 80,000-seat sports stadium as a neighbor so public opposition can be strong. Smaller venues are friendlier to urban neighbors and easier to build. The best part about them is that they are flexible and multi-use, rotating sporting events with concerts, farmers markets and holiday events. They are great neighborhood tenants because they can be made to reflect the local culture with the events schedule or with lucrative sponsorships by local businesses. They also lend themselves to space sharing, either by alternating teams and leagues by season or figuring out a way for teams to use them concurrently. Outside consultants are useful here, too as they can be brought in to create a schedule that seamlessly accommodates all users.

These small stadiums also cost far less to develop. Often, multiple teams can forge partnerships to share in the cost of a stadium, for example, a community college, a local high school, or youth sports leagues who could come together to host tournaments and other events to subsidize the venue cost. Thoughtfully executed with the help of the right, multi-disciplinary consultants to oversee everything, these projects enliven wide swaths of urban neighborhoods with the rotation of events that bring restaurants and other kinds of entertainment to the surrounding blocks. And they are active year-round.

Major League Soccer is leading the charge with smaller stadiums, falling between the 22,500-seat, multi-use privately funded Centeme Stadium in St. Louis and the planned 25,000-seat privately funded Miami Freedom Park. At Centeme, where the MLS will officially begin play next year, officials had urban planning as a prime motivator when they chose to locate the club in an area of the city in need of an uplift.

Centeme is also a local healthcare company invested in the community and therefore the stadium's success. In that vein, the stadium's surroundings are being transformed into a year-round, mixed-use entertainment hub for concerts and community events. Many stadiums have enough available land around them to add healthy green space or, like the plan for the new Oakland A's stadium, affordable housing for which there is acute need in cities across the country.

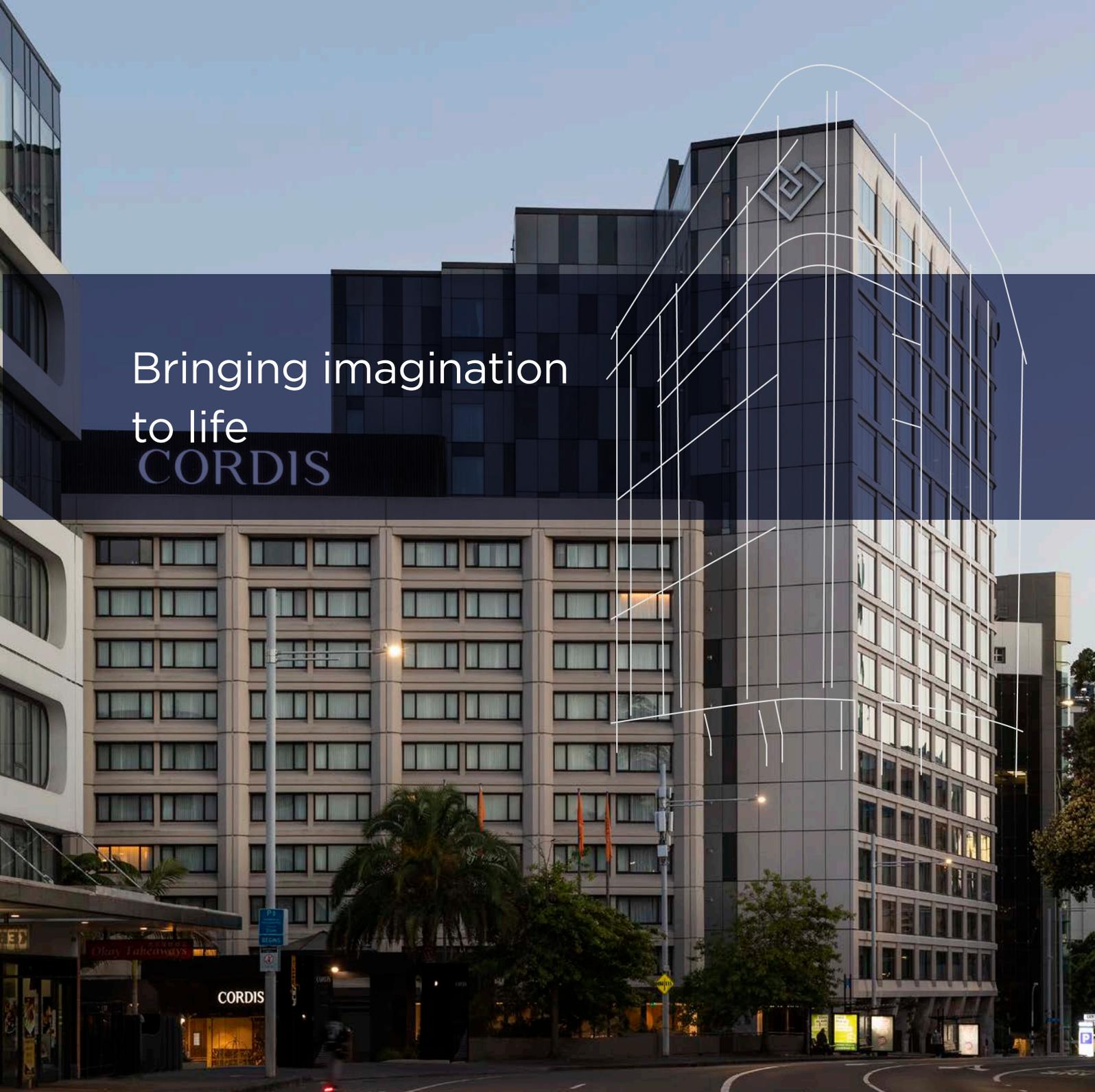
As they rethink stadiums, NFL and MLB teams might do well to look at the smaller stadiums, like the one in Oakland. The new community-focused, smaller stadiums are proving to enliven urban areas by investing in transit, for example, which is fueling economic growth. It's no accident that the top six markets for venture capital investment are also the top six regions for transit user growth, according to the Urban Institute. These stadiums also have pedestrian-friendly downtowns that are walkable and busy year-round, and an active street life is better than a hot, vast desert of blacktop and cars crowned by a glass and steel stadium that only sees activity on game day. **P**

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Bringing imagination  
to life  
**CORDIS**

The new 17-storey landmark Pinnacle Tower, Cordis Hotel, completes the redevelopment of Cordis Auckland, making it the largest hotel in New Zealand with a total of 640 rooms and suites. The prominent site on the Karangahape skyline plays a defining role in the design, which draws inspiration from the distinct identity of Tāmaki Makaurau, while showcasing the global brand's world-class hospitality.

# MANAGING CONSTRUCTION INFLATION IN THE KINGDOM OF SAUDI ARABIA

By: Thomas Hunt  
Associate Quantity Surveyor,  
Middle East

The Kingdom of Saudi Arabia's ambitious Vision 2030 is building entire cities in a bid to future-proof its economy. Yet, when Vision 2030 was announced in 2016, nobody could have imagined events that would unfold. COVID-19 has been far reaching combined with the energy crisis caused by conflict in Europe and sanctions on Russia are several factors exacerbating the fastest rise in construction materials costs seen in decades.

RLB professionals are currently providing advice to multiple Public Investment Fund (PIF) entities on several Vision 2030 giga projects with work worth approximately 1 trillion US Dollars. These giga projects are facing a significant challenge: inflation coupled with significant supply and demand issues.

In the latest RICS Global Construction Monitor for Q1 2022, 91% of respondents agree the increase in building materials is holding the industry back. Furthermore, 71% of respondents indicated that basic availability of materials is also an issue.

## CAUSES OF INFLATION IN KSA

The Public Investment Fund's large-scale investment in the Vision 2030 plan is significantly stimulating the economy. Demand outstrips supply, and contractors have their pick of work.

If a contractor has reached work capacity and has a healthy pipeline, there are two ways to continue increasing profits:

1. maintain resource level and start bidding more projects at reasonable competitive rates, or
2. maintain current resource level, safe in the knowledge of a secure pipeline, and increase bid profit margins.

Given the KSA's high level of available work and the restricted supply of labour, plant, and materials, contractors are likely increasing profit margins.

Wider global factors such as high oil prices, instability in major producing nations, and logistical problems are also increasing basic raw material prices. Lack of sufficient staff and KSA's Value Added Tax (VAT) have also caused price increases.

Anecdotally, we understand that contractors have expressed concerns about working with international Project Management companies. The perceived risk leads to:

1. increased pricing as they anticipate more management resources are required or
2. pricing the risk of delay if it will be harder to achieve practical completion on projects.

RLB continuously surveys contractors to determine if this factor is impacting pricing.

## Recommendations to Address Inflation

Traditionally, the KSA's default position has been for the supply chain to bear the costs associated with inflation risks. Today's volatile market could see contractor cash flows squeezed to the point of insolvency. Without large cash reserves or lines of credit, a single project could threaten a contractor's survival.



It is time to consider who is best placed to take this inflation risk and provide best value for the client. Clients with deep pockets may be better placed to carry this risk and provide the supply chain with confidence to submit more competitive tender returns as described in the following six strategies.

## 1. ADOPT FLUCTUATION CLAUSES IN CONTRACTS

Cost professionals provide valuable advice during volatile markets, including adopting risk sharing provisions in standard contract forms. JCT, FIDIC, and NEC all have contract provisions that allow parties to manage the risk of cost increases during the project's duration. FIDIC and JCT often use fluctuation clauses based on indexes to fairly adjust costs to align with industry-wide cost increases, although the JCT removed this option from their 2016 suite of contracts it may be time to put them back in. Generally, FIDIC is the contract of choice in the middle east, so Cost Managers should become accustomed to utilising the necessary provisions.

Fluctuation clauses could be used to fairly share the risk of cost increases over the life of Vision 2030 projects. The KSA market's challenge is the lack of available and robust indexes. Establishing and maintaining an index would require an independent and centralised data gathering exercise. Most KSA projects are publicly funded government projects, and the PIF could work directly with organisations including the British Cost Information Service to establish and maintain a Saudi alternative, the Saudi Arabian Cost Information Service. Establishing a KSA cost index would also benefit Cost Managers to more accurately forecast costs on future projects.

## 2. PRIME COST SUMS

Another method of allocating the risk of material increases to the client, is by utilising Prime Cost Sums. The contract will be setup to enable fixed costs for some costs (labour, plant, OHP etc) whilst allowing the material costs to be adjusted at the time of purchase.

This could be a simple method that would be easily implemented into existing contracts, but still managed by the Cost Manager.

## 3. ADVANCE PAYMENTS TO REDUCE FEAR OF FUTURE PRICE INCREASES

Inflation is cumulative and persistent, and one method of reducing its impact is to purchase materials earlier.

An agreement to pay for materials in advance allows the contractor to secure current prices to allay their fears relative to price increases. This tactic's success is dependent on the contractor's ability to agree to prices in advance within their own supply chain. For example, raw structural steel members could be pre-purchased based on initial designs, with an off-site payment and vesting process put in place to protect the client's interests (advanced payment bond, vesting certificates etc.).

This practice is commonly used throughout the middle east, so it is important the Cost Manager manages payments according to contract requirements.

## 4. ADAPT PROCUREMENT AND CONTRACT STRATEGIES

Vision 2030 owners should be pragmatic with contract strategy and explore risk sharing options to encourage tenderers to prepare more competitive lower bids, knowing they will be compensated if prices rise. Other strategies include reviewing potential package sizes with supply chain contacts to understand which sizes are most valuable. Also, opening procurement to wider markets may attract new contractors and improve the competitive landscape.

Centralized procurement teams could also take advantage of large quantity orders and put pricing framework agreements into place with major material suppliers. Owners could realise buying gains by agreeing to a set of rates and favourable payment terms, which could be passed onto contractors.

## 5. REVIEW AND ADAPT PAYMENT PROCESSES

Cash flow is paramount to contractors, and reliable and fair payment processes are critical. Contractors know it can be difficult to receive prompt payments from clients, so they often demand large advanced payments, or factor in slow payment risks into their tender.

Late payment practices could also be preventing established contractors from abroad from entering the Saudi market. When more contractors tender the work, the marketplace becomes more competitive, resulting in decreased tendered prices.

Payment processes could be addressed with Project Bank Accounts/Trust Funds, where an objective third party manages and approves release of funds. Contracts could specify international arbitrators to enforce potential disputes, which would give contractors faith that payments will be dealt with fairly. Smart contracts could also be explored by executing payment processes in line with terms distributed on a blockchain, allowing automated payments when a certain set of criteria are matched.

Ultimately, these practices could make the KSA market more attractive and give potential new entrants confidence to join the market.

## 6. USE MODULAR AND OTHER CONSTRUCTION METHODS

Modular or off-site construction is not a new concept. Currently, there are few established and suitable companies working within the KSA market, and most modular construction is carried out in other countries and then shipped to the Kingdom. Off-site manufacturing could also see contracts being secured earlier than with traditional procurement, which would help stave off inflationary impacts.

If procurement teams expanded their reach to companies with different construction methods, then more companies would tender bids, and the competition would naturally result in lower prices, provide transparency, and give all suppliers a fair opportunity to win business.

## SUMMARY

KSA is not alone as it faces inflationary challenges to its Vision 2030. RLB is fully on board to advise, equip, and help Saudi owners navigate this global crisis. **P**

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# WHY THE FUTURE IS IN 5 DIMENSIONS

By: Syidah Arnold  
Associate, Digital Lead, Oceania

**W**ay back in 1962, engineer and internet pioneer, Doug Engelbart<sup>1</sup>, painted a clear picture. The architect of the future, Engelbart wrote, would begin each project by entering “a series of specifications and data – a six-inch slab floor, twelve-inch concrete walls eight feet high within the excavation, and so on”. As the architect works, “the revised scene appears on the screen. A structure is taking shape. He examines it, adjusts it... These lists grow into an ever more-detailed, interlinked structure, which represents the maturing thought behind the actual design”.

Engelbart’s work sparked the invention of the mouse, the development of hypertext and networked computers. But his vision for a computer program that could spit out a fully-costed design remained elusive in his lifetime.

The evolution of building information modelling, or BIM, has been more fits and starts than leaps and bounds. Designs moved from drawing boards to two-dimensional CAD in the late 1950s. 3D BIM arrived in the 1990s, and by the year 2000 the revolutionary Revit added the time dimension in 2000 to give us access to 4D. 5D – with financial costs – became the next natural step.

But construction remains among the least disrupted sectors. Despite talk of digital twins – the next evolution of BIM – one recent report tracking technology uptake<sup>2</sup> finds just 37% of Australian construction companies have adopted BIM.

When I started my career as a quantity surveyor, I came to the profession with an unusual perspective. I’d spent four years studying architecture and a few years drafting, and I could see the gaping chasm between the two disciplines.

The way people design is very different to the way people measure. Because of that gap, quantity surveyors rarely trusted the information extracted from designs.

A successful construction project is achieved on the margins and project budgets rarely have spare capacity to undertake data-matching exercises. So, quantity surveyors have continued to rely on the tried-and-true methods of measurement and clients continue to pour over PDF reports.

But RLB is determined to continue building our capability as an expert in 5D BIM, so recently teamed up with Investa and Willow to refine the data deliverables that everyone could trust.

Willow<sup>3</sup>, a technology company that constructs digital twins for the built world, could offer insights into policies, framework and systems. RLB brought technical cost. Investa<sup>4</sup>, one of Australia’s largest commercial office landlords, provided the pilot site at Sydney’s 151 Clarence Street and offered valuable feedback from a client’s perspective.

<sup>1</sup> <https://www.dougenelbart.org/content/view/138/>

<sup>2</sup> <https://www.procore.com/en-au/how-we-build-now>

<sup>3</sup> <https://www.willowinc.com/>

<sup>4</sup> <https://www.investa.com.au/>





As part of the pilot project, RLB's team – which included the supremely talented Kai Rala McKinnon-Barbosa, Jennifer Wallace and Matthew Han – rolled up their sleeves to prepare various reports. These ranged from DA cost plans to pre-tender estimates, interim cost updates to embodied carbon pricing. Willow, as engineering project manager, validated the process.

So, what did we learn? 5D BIM delivers many benefits, but here are the top five...

- 1. Real and right time monitoring:** The 5D BIM process relegates static reporting and reactive cost management to the past. Proactive analysis – with reporting weekly or even daily – allows us to capture cost movements and discrepancies as they happen and to make adjustments long before budget black holes open and value engineering becomes our only option.
- 2. Costing in many currencies:** Cost is just one metric of value. The data produced in a 5D model transcends standard costing and allows us to expand our measurements into other metrics, like embodied carbon or wellness.
- 3. Infinite options:** Where once we may labour over two or three design options, now we can scrutinise 10 in a matter of minutes. Clients can see the design in context with an overall picture of the project budget in a few clicks. This isn't about slapping up buildings faster and cheaper – but about building smarter and better.
- 4. Devil is in the detail:** We asked Investa's team what they needed at each point of time in a project – from the earliest stage of design right through to operations. Is this enough data? Not enough? Or too much? Insights from Investa proved invaluable. Investa's board didn't need the granular costs of, say, each doorknob like the quantity surveyors did. But a big picture understanding of the per square metre costs of façade options, for example, can support more informed decision making.

- 5. Augmented intelligence:** 5D BIM frees quantity surveyors for the thinking that only a human brain can do. We can investigate new construction materials or methods, undertake the detective work to uncover new areas of value, or spend more time connecting and collaborating with our teams. When we spent less time on manual measurement, we have more time to create value for our clients.

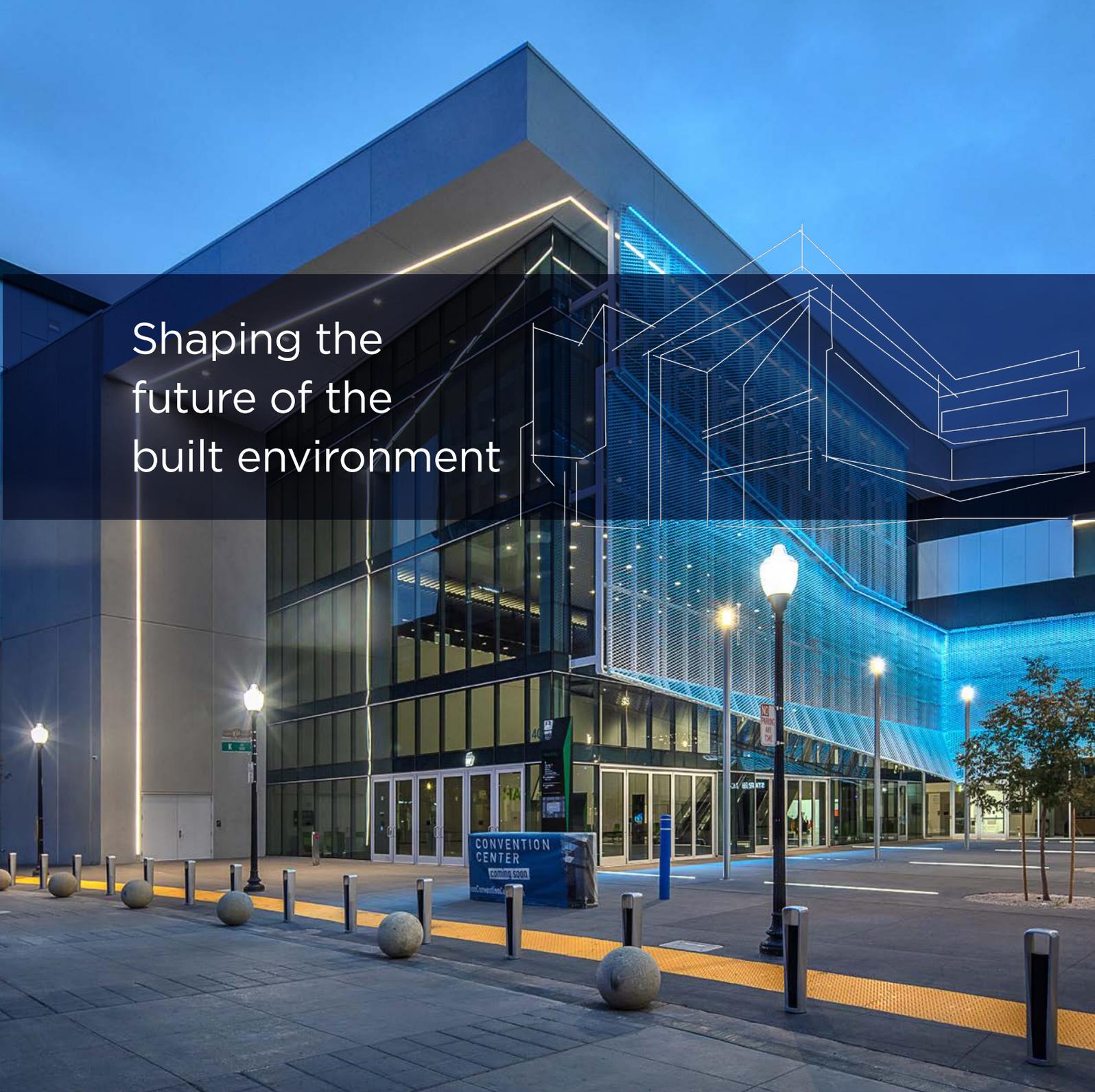
RLB's next step is to enhance how the 5D BIM workflow process is visualised on dashboards and to expand the scope beyond the construction phase.

What does the future look like? Englebert's vision may be a few years off. But we think PDF documents – much like set squares and spreadsheets – are already a thing of the past and the future will be captured in five dimensions. **P**

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# Shaping the future of the built environment

The SAFE Credit Union Convention Center Expansion and Renovation project is part of a \$350M landmark program, enhancing and transforming aging cultural facilities into modern and synergistic public congregation centers with refreshed character and improved guest and patron experiences.

A main goal of this project is to revitalize downtown Sacramento's Entertainment District, hence active and regular community involvement and support for this program has been playing a particularly important role.

RLB, in association with Conventional Wisdom, are providing a variety of services to the City of Sacramento for the renovations of the Memorial Auditorium, Convention Center and the Community Center Theater. RLB is responsible for overseeing the integrated planning, design and some construction processes as an extension of the City staff. RLB's management approach includes extensive stakeholder and City Council participation, coordination and presentations.

The newly renovated SAFE Credit Union Convention Center boasts over 500,000 SF of prime event, convention, lobby and support space.

[RLB.com](http://RLB.com)

**RLB** Rider  
Levett  
Bucknall

# FUTURE SKILLS:

## BUILDING A BETTER BUILT ENVIRONMENT

By: Sarah Draper  
Head of People & Culture,  
United Kingdom

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This is the next step change in our industry  
- to build more efficiently, to build with  
heart and to truly understand the impact  
of the built environment in the future.



The skills required in our industry are evolving daily and with digitalisation, many jobs are now being replaced with more efficient ways of working. However, unlike in other sectors, the built environment will always be dependent on people and as our industry takes the lead in constructing a better society, we will always need expert judgement, imagination and a balance of views, to continue to help us achieve our outcomes.

## THE NEED FOR FUTURE PROOFING

We live in a world where agility and adaptability are essential. However, our industry is one that is built on a 50-year change - where the foundations we lay down at the beginning of a build might take 50 years, or even longer to have an impact on its society and its surroundings. This means the next generation need to be even more agile in their thinking and be able to create buildings that are inclusive and adaptable not just for today but tomorrow.

As our industry increases alignment with the communities it builds, so does the skillset we need to deliver these outcomes. So yes, it is about digital natives bringing their natural intuitiveness to technology into our world, and about process engineering and manufacturing for the future and understanding materials technology and nanotechnology. However, it is also about understanding carbon skills (not just sustainability), energy mitigation (how we use less) and whole life safety for buildings that show how these skills will add value to that building and the communities they live in over its lifetime. Critical to this understanding is the need for a workforce that is representative of those communities.

This is the next step change in our industry - to build more efficiently, to build with heart and to truly understand the impact of the built environment in the future.

## PROMOTING THE INDUSTRY MORE WIDELY

To ensure we have the right skillset as an industry requires lifelong learning. It is also about attracting those outside the traditional routes into the built environment. Showing them that construction has a purpose and a positive part to play in society, that it can help make a difference to the way we live, work and play. It's having pride in our industry, passion about the positive impact our industry can have on the world, purpose to deliver social, environmental, and economic impact,



professionalism within our skillsets and progression to creatively contribute to the changing world.

It is therefore imperative that, as employers, we create inclusive workplaces - the office, site, home or elsewhere - for all employees to be able to develop and grow. We must also look at how we attract people to the industry, whether that involves more active engagement with schoolchildren, people returning to work after parental leave or career break, refugees, or ex-service personnel. We need to create a welcoming and inclusive workplace for all.

We must open our industry so it is accessible and welcoming to the communities in which we work, so they can see themselves represented in the workforce. We need to demonstrate that inclusivity remains firmly at the top of our agenda as an industry. Like many employers, at RLB we strive to foster an inclusive workplace culture where diversity is not only accepted but valued and built in, creating opportunities for all.

It is important that diversity and inclusion is about making genuine changes - doing the right thing rather than carrying out a tick-box exercise. While we may start initiatives to mark a particular day or month, such as International Women's Day or Black History Month, these initiatives and changes should inform everyday life in the business. For example, June is the official Pride month in the UK, however our activities and awareness campaigns run throughout the year.

At RLB, we have been working on a programme to bring inclusion to life in our business and data is key. We need to know where we are starting from to monitor progress and see whether we are making a difference. Education is key to achieving this change. Providing the business with learning and development - from e-learning at induction to ongoing inclusive behaviour workshops - is also fundamental in helping colleagues improve

self-awareness about their beliefs and behaviours and how these manifests at work. This has helped increase understanding of unconscious bias across our business.

## **BENEFITS FOR EMPLOYEES, BUSINESS AND INDUSTRY**

It is also important to recognise that diversity and inclusion, well-being and employee engagement are all aligned when it comes to creating opportunities for employees to thrive.

This helps increase productivity, while a clear vision and purpose enables a level playing field for all: we know that people are happier, more motivated and perform better when they can bring their whole selves to work.

We have also learnt that consistency is key. If you have a business across a number of sites, the culture should be the same in every workplace location. This applies equally across the built environment. In our bid to build a more inclusive industry where everyone can thrive, and we have the skillset to create the best buildings for the future, our greatest challenge may lie in providing consistent opportunities and positive experiences. It's clear we are making progress but it is up to all of us to play our part in creating the future industry that we need and one we want to be part of. **P**

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### **Sarah Draper**

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# PROJECT MANAGERS: KNOW YOUR WORKFORCE

*KEEP ON TOP OF LABOR SUPPLY  
AND MATERIALS TO MAKE  
SURE THE JOB IS FINISHED  
ON TIME AND ON BUDGET.*

By: **Paul Belshoff**  
Resident Manager, North America

**T**he number of considerations that go into starting a construction project are almost too numerous to count. Contracts, materials, labor, deadlines, even weather, to name a few. They vary from project to project and any one of them can change in an instant, whether it be materials suddenly in short supply, labor that isn't available for your particular kind of project (is it luxury hospitality or affordable residential?), or an unexpected phenomenon like Covid that makes everything suddenly screech to a halt.

Key to surmounting any problems that arise is being up to date on the state of each of the variables and where to go for replacements or replenishments if necessary. Be aware of added costs for any scenario that might play out—for example, if the funds will be needed (and available), or if the design might have to be changed.

At the top of that list is the local work force. The design and construction team needs to know if it is robust enough and whether available workers have the requisite skills to get the job done. That means anything from hanging drywall to doing something specialized like pouring terrazzo or the unusual task of fabricating a dome for a new mosque. One-offs like massive art installations in commercial or hospitality projects can be particularly problematic without enough lead time.

Labor needs shift with booms and busts in the economy and projects can suffer if they get caught short of skilled labor. Hawaii, for example, experienced a huge boom in luxury high-rise construction in 2014-2015 when towers were popping up all over the place. Developers found themselves in a tough situation where drywall labor was capped out.

In other words, there was a back-up of projects and only a finite number of drywall installers available locally. Same thing with installers of windows and curtain walls – there just weren't enough to do the jobs on schedule. Labor had to be flown in from inland locations, paid more and put up in hotels.

In such instances, project managers have to be flexible and knowledgeable enough to do what they have to do, which is hire labor from elsewhere. In Hawaii, for instance, this means getting labor either from one of the other islands or the mainland. This can have an environmental as well as financial impact, especially in a place like Hawaii where the shortage can be particularly acute.

There are unseen and unanticipated problems that come with this kind of demanding work schedule. While it's good for the economy and laborers' incomes, it often results in serious worker



burnout. Everyone working longer hours, including weekends and holidays, leads to shortened careers while others make dramatic career path shifts based on burnout. It's a real challenge that needs to be managed better industry-wide and especially significant during the "Great Resignation".

Increased cost is sometimes the hardest thing to reconcile. In the 2014-2015 example, the total cost of construction goes up as much as 10% if you fly workers in from the mainland or from destinations that are more than four hours' drive time away. Project managers also have to calculate the cost of housing the workers, which can be substantial, and the fact that they might be slower given the lack of familiarity with the local market.

Situations like this don't happen that often but when they occur, it becomes a huge topic of conversation and a huge concern among project managers and workers. There's no question that a lack of available labor means the cost of the project is going to go up; you'll be paying premiums on overtime until you hit a point where not even that will satisfy demand.

Project managers know that incurring additional costs where specialty projects are concerned is a given. Hiring workers with special, costlier skills

is acceptable, as long as the cost is built into the design budget, like an art installation in a two- to three-story-high glassed-in lobby, or a golden dome for a mosque project in Louisville that was fabricated in Cincinnati, Ohio, and completed just weeks before the start of the Ramadan holiday. Labor can be even more complicated if you need to find a fabricator who could build to strict religious standards as well as the client's.

Terrazzo flooring is another unusual material that requires a special skill set to lay down properly. Terrazzo specialists are rare in some locations, so the design team needs to be aware of the potential costs involved. But most designers and architects who know local markets rely on concrete aggregates that are attractive in their end use and readily available. The local labor force may be familiar with alternates, narrowing the margin of error.

They are also aware, for instance, of how cement can be manipulated to mimic other finishes with more of a high-end look. Same material, just a different way of polishing it. What workers and project managers know is that it's about achieving a look with what's already available and doing so at a reasonable price.

Perhaps peculiar to coastal regions, workers know code required designs for windows or curtain walls that give way in a flood. They're rarer in Hawaii than in other coastal spots in the US, but that technology saves millions of dollars in damages when done properly, as the local work force knows how to perform the scope.

The local work forces in some states are also up on environmental concerns like solar panels which most agree are not as common as they could be. There have been government backed incentives to install them on residences creating savings on electric bills. The environmental impact of construction benefits by making the best use of locally available product and labor in any project.

Money savings from energy conservation initiatives in any kind of project generally get funneled back into the project to add more curb appeal to anything being built in what is an extraordinarily busy and booming residential and commercial market. Any money saved on commercial projects will likely go into upgrading mechanical or electrical plants to enhance efficiency. New methods tend to scare people - no one wants to be the guinea pig. But a sure thing is a product or technology that blows people away or carries a cost savings, either up front or long term, that is enticing enough to get them to take on the risk of the unknown or new technology. Project managers must be on top of new developments to know how to sell them. **P**

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As Seen In *Building Design + Construction*, October 2022,  
“[Project Managers: Know Your Workforce](#)”



Creating a better  
tomorrow through  
a flawless  
execution today

Sunny Coast Residential Resort is a three tower residential-resort, 21 floors each that offers 1,309 residential units. It is strategically located along the Promenade with unobstructed views of the famous Manila Bay sunset, at Westside City, Bayshore Boulevard, Parañaque City.

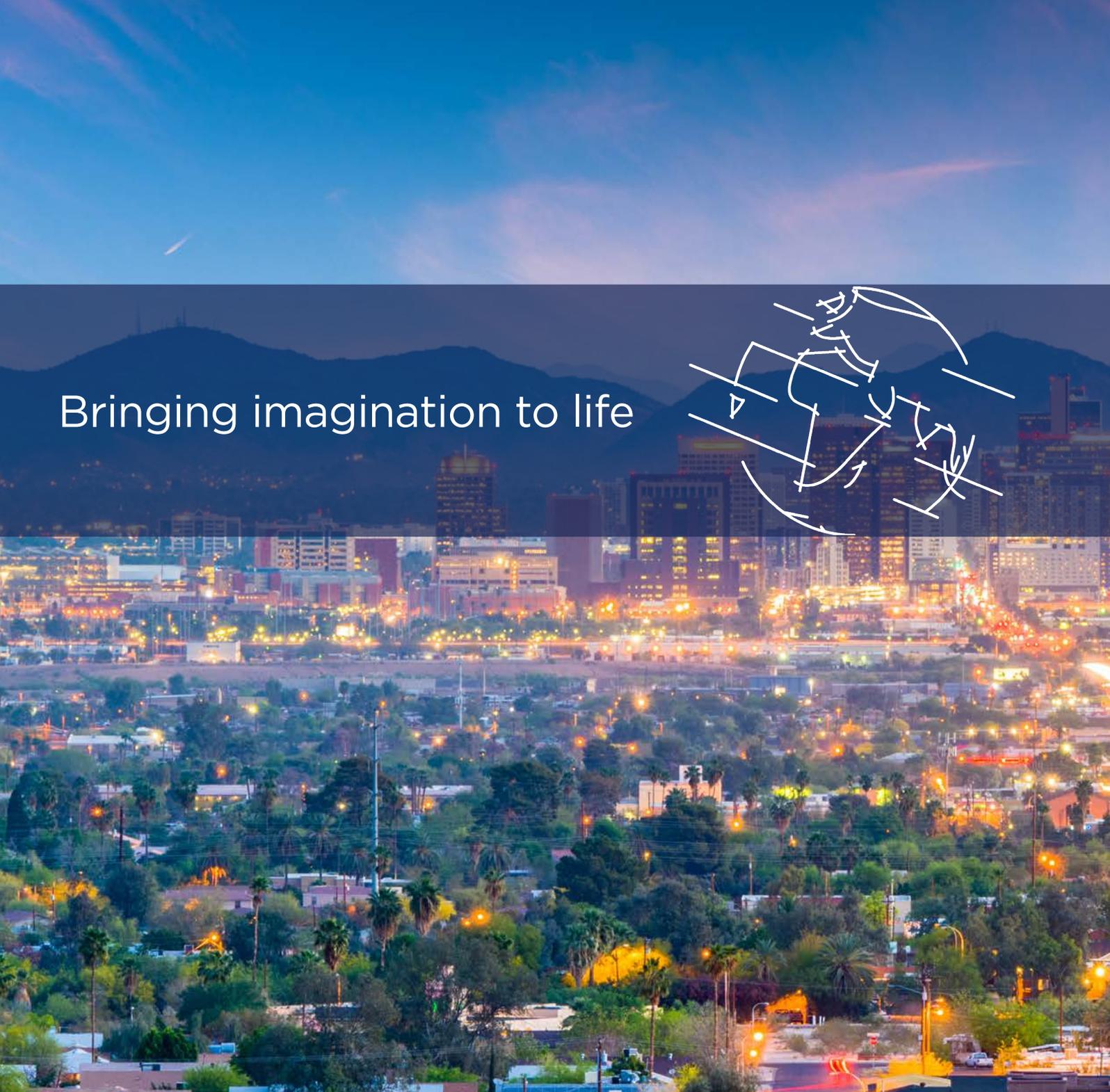
Sunny Coast is one of the 19 residential towers that Megaworld Corporation launched in Westside City. Westside City is a 31-hectare township of Megaworld Corporation in Entertainment City.

Sunny Coast offers units ranging from 41 to 111 square meters with balconies each unit. It's amenities includes infinity pool, children's pool and playground lounge and meditation deck, fitness center, and function rooms.

RLB Philippines is providing full quality assurance and quality control services for Sunny Coast Residential Resort. It is expected to be completed in 2024.







Bringing imagination to life

RLB is an independent global construction and property consultancy providing management and advice throughout the built environment.

We are committed to creating value for our clients, achieving commercial certainty, project and program success and optimised assets to projects across the world. We do this through our extensive expertise in cost management and quantity surveying, project and program management, asset advisory and specialist consultancy.

Throughout our long history, our 4000 people, working across 40 countries, have made a difference to our clients by combining fresh perspectives with sector expertise. Together, we're creating a better tomorrow through flawless execution today.

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