PERSPECTIVE

2022

DATA CENTER DEVELOPMENT 1.0

BROAD-BASED BLACK ECONOMIC EMPOWERMENT IN SOUTH AFRICA

THE POWER OF DATA IN THE DIGITAL HEALTHCARE ESTATE

A Rider Levett Bucknall Publication

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WELCOME

BRINGING IMAGINATION TO LIFE SINCE 1783

The year is 1783. The treaty between the United States and Great Britain is signed in Paris, formally ending the American Revolutionary War. The Montgolfier brothers send up the first hot air balloon. Mozart's Great Mass is performed for the first time in Salzburg. And the firm that is now Rider Levett Bucknall opens its doors for the first time.

A history spanning nearly 240 years is extraordinary, and one which brings pride to every member of RLB's team. But we are not a firm to look back. We are focused on the future – and on the ideas, collaborations and opportunities ahead as we bring imagination to life around the world.

At RLB we deliver proactive and innovative client services and successful project outcomes to shape the future of the built environment. As an independent construction cost consultancy, RLB boasts a team of 4,000-plus that delivers the best outcomes to thousands of clients throughout Africa, Asia, Europe, Oceania, the Middle East and the Americas.

We are a powerhouse of global construction market intelligence. We are trusted partners dedicated to achieving our clients' goals and to making a difference to the lives of people around the world.

Perspective Magazine, our flagship global publication, showcases just some of the ways we inspire fresh perspectives on age-old problems. I am proud to see our team contributing to public discourse as trusted sources of factual information and insight.

This edition of Perspective focuses on progressive and thought-provoking pieces on big picture topics from the power of data to the future of working in a virtual environment. We also drill down into market-specific stories that are applicable around the world. These include trends in residential developments in Hong Kong, the cost of building in Africa and the dramatic rise of design build procurement in Qatar.

We reveal what's ahead for sports venues, examine the role of public art in placemaking and feature the latest trends in data centre development.

RLB's people are powered by a clear purpose: to create a better tomorrow. We have been doing this for well over two centuries. While our future story is unwritten, one thing is certain: a better tomorrow is only possible through flawless execution today.

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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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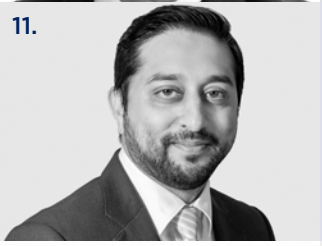
11. 
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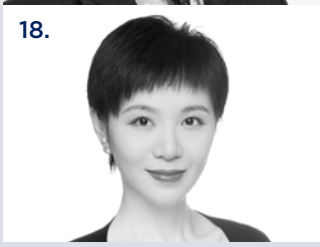
18. 
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BROAD-BASED BLACK ECONOMIC EMPOWERMENT IN SOUTH AFRICA

Its impact on the South African Construction and Built Environment firms

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Construction and Built Environment firms in South Africa face a very distinctive challenge when bidding or tendering for new projects. Irrespective of size, reputation, experience and capability, being awarded a project is not as easy and achievable as in other countries due to the B-BBEE (Broad-Based Black Economic Empowerment) legislation introduced by the Government of South Africa, which is unique and only applicable to firms registered and trading in South Africa.

The B-BBEE Act and initial Codes of Good Practice were gazetted by the Department of Trade and Industry (the DTI) in 2007 to provide a legislative framework for the transformation of South Africa's economy. The aim was to redress the economic inequality that exists as a result of the exclusion of Black people from meaningful participation in the economy during the Apartheid years. It was conceived to advance economic transformation and participation of Black people in the South African economy by providing economic privileges and advantages.

'Black People' is a generic term that essentially embraces African, Coloured, Indian and Chinese South African citizens who were either born in South Africa or became a citizen by descent. Throughout the years, the Act has been amended to correct gaps and inadequacies identified in this empowerment programme, and has become the most significant piece of legislation affecting South African businesses today.

The DTI gazetted Sector Codes in recent years, which were sector and industry specific B-BBEE Codes developed on collaboration with major stakeholders in the relevant industries, addressing sector specific transformation requirements.

Contractors and Built Environment professionals are measured against the Construction Sector Code, which addresses the identified inequalities in order to unlock this sector's potential and enhance its growth through the creation of equal opportunities for Black people and firms. The Construction Sector Code consists of two sub-sector codes for Contractors and Built Environment professionals, each with its own unique sub-scorecard, weighing points and targets, and is the most complex code with the highest targets in the B-BBEE environment. It makes it extremely challenging for firms in this industry to be compliant and remain competitive and sustainable.

While B-BBEE compliance for companies is not a legislative requirement, it is seen as a business requirement. Having an official B-BBEE certificate is compulsory, and the Act requires all JSE listed entities to submit an annual compliance status report. However, the reality is that whether one complies or not, it has become an integral part of being able to do business and to be sustainable in South Africa. The increasing pressure from private clients and Government, together with the disqualification from participation in projects, has made it imperative to have a compliant certificate. Generally, an officially verified 51% Black ownership is required, with emphasis placed on Black women ownership.

Government tenders make use of a Preference Points system where the higher a tenderer's B-BBEE Level, the more points they will score. Ultimately, the bidder scoring the highest points will be awarded the tender. To earn any Preference Points a bidder must

have a B-BBEE Certificate. The B-BBEE Levels range from Level 1 being the highest and best, through to Level 8 being the lowest, and a Level 9, which indicates non-compliance.

B-BBEE compliance is measured against a comprehensive B-BBEE scorecard with targets and weighting points. A certificate is then issued indicating the scorecard points achieved under each element measured and confirming the resultant B-BBEE Level. The certificate is only valid for 12 months from date of issue and firms have to submit to an annual B-BBEE audit measuring the most recently completed financial year, and covering any new B-BBEE empowerment initiatives and spend. Consequently, B-BBEE compliance is an ongoing process and has to be proactively managed and maintained throughout each financial year to ensure you sustain a competitive advantage over your opposition.

There are five main elements measured under the latest Amended Codes:

SCORECARD ELEMENT	DESCRIPTION
Ownership	The percentage Black Ownership and Black Women Ownership (voting rights as well as economic interest) in the company are measured. There are various methods through which Black Ownership can be held e.g. individual ownership, indirect ownership through legal entities, employee share ownership schemes, broad-based ownership schemes, private equity funds etc.
Management control	The percentage Black Executive Management (Directors, Board Members, Top Management) as well as the percentage Black Non-Executive Management (Senior, Middle and Junior Management staff) are measured.
Skills development	The amount spent on training Black People through means of external training, internal training, bursaries, learnerships, internships and apprenticeships, as well as spent on disabled Black people are measured.
Preferential procurement and supplier development	The percentage of the total procurement spend is measured for procuring products or services from companies with compliant B-BBEE Certificates. Supplier development is measured for providing monetary or non-monetary financial support and assistance through initiatives where the beneficiaries are small or medium sized majority black owned companies.
Socio-economic development	Monetary or non-monetary financial support and assistance provided through initiatives where the end-beneficiaries are Black People.

A firm's B-BBEE Level is important to clients when they go through their own annual B-BBEE audit. A supplier with a higher B-BBEE Level will provide more enhanced recognition under the Procurement scorecard, whereas a supplier with a lower level will provide reduced recognition, and a supplier with a non-compliant Level will provide no recognition for the annual spend done with that supplier.

B-BBEE compliance is an expensive programme and a demanding portfolio to manage and maintain, but a B-BBEE Certificate increases commercial credibility and is your ticket to participate and prosper in the economy of South Africa. P

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Confidence today inspires tomorrow

Jointly developed by Sun Hung Kai Properties and Ping An Real Estate, Hangzhou International Finance Centre sits at the intersection of Qiantang River and Beijing-Hangzhou Grand Canal. The project is planned and designed by the renowned Zaha Hadid Architects. It is comprised of two neighbouring riverside sites and set to become a landmark in Qianjiang New City CBD.

This complex features quality offices, high-end shopping malls, premium residences, five-star hotels and serviced apartments, setting against the canal footbridge and Ferris Wheel to create a magnificent urban landmark.

RLB provides full quantity surveying services for the River West plot of this development.

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GETTING BACK INTO THE GAME

What's ahead for sports venues

From reconfigured seating bowls to recalibrated revenue streams, arena design and operations are evolving

With the sporting world emerging from a year that saw grandstands populated with cardboard fans, digitized cheers ring through empty arenas, and basketball played in a bubble, the industry is confronting a changed business model, as well as new design and construction priorities for athletic venues.

The pandemic's effects on the sports sector have been far-reaching. Concurrent with the dramatic slowdown in building activity for stadiums, revenue streams were disrupted. Owners and operators were hard pressed to find favorable financing, as cautious lenders pulled back on extending loans. But the real gut punch came at the gate. In March, Forbes estimated the cost of the shut-down for the four major sports leagues and the NCAA—taking into account lost sales of tickets, concessions, sponsorships, and television broadcasts—at $14.1 billion.

Now, as we move further into recovery mode, the prospects are improving. The construction outlook for the sports sector is solid, as the supply chain is restored, production capacity increases, and material prices stabilize. Stakeholders and communities still have a vested interest in developing these facilities, as they can play a critical role in local economies and cultures. And importantly, fans are ready, willing, and, with attendance limits gradually lifting, increasingly able to attend games in person. The pent-up demand, as reflected by an MRI-Simmons survey, "Sports Fandom in the Age of COVID-19" is considerable; 204 million self-identified sports fans (83% of all Americans) reported feeling sad, frustrated, and disconnected during the pandemic.

RETURN OF FANS, RETURN ON INVESTMENT

To adapt to the changed circumstances, sports venues must commit to ensuring comfort and safety for attendees, while actively enhancing the fan experience. Inevitably, adhering to physical distancing recommendations reduces stadium capacity, and as these guidelines continue to evolve, striking the right ratio between seating design and social distancing is an ongoing challenge. Venues also need to be right sized in terms of seating capacity to better balance revenue with fan experience.

There are multiple ways to address this issue. Keeping alternate rows or seat blocks unoccupied is the most basic approach. Demountable and portable seating sections give facilities a degree of flexibility, allowing them to reconfigure or remove or add seats as needed. Designating more box-style seating can encourage more group or "pod" attendance for guests.

Some venues will opt to forgo capacity limits and seating reconfigurations and will resume full capacity seating arrangements, typically with COVID-19 vaccination or negative test result verification required at the gate. Re-thinking exterior entrance queue layouts and technology requirements at the gate will be important for maintaining a pleasant fan experience.

BEYOND THE BOX SEATS

Beyond the bowl, the revenue potential of premium spaces is ripe for development. Members-only clubrooms, luxury suites, and VIP lounges appeal by offering higher levels of goods and services, albeit at a higher price point. Fans excited about reengaging with the sporting scene may be eager to upgrade from hot dogs and beer to filet and chardonnay, spotty 4G connections to speedy 5G networks, or spine-cracking bleachers to cushy recliners.

TECH: MORE THAN A GAME

Technology can be a significant catalyst to entice crowds back into the arena and keep them there. Making transactions for food and merchandise convenient and contactless, using a mobile wallet app that allows spectators to place an order from their seats, can eliminate queues at concession stands and reduce the number of people wandering throughout the concourses. Incentivizing these purchases with offers for future discounts, upgrades for amenities, or other perks not only rewards loyalty but builds confidence and solidifies the relationship between fans and the venue. Augmented reality activities, esports, online wagering, and interactive player experiences are other tech-based entertainment options that fans have demonstrated they're willing to pay for. Implementing customer-facing features like these may add costs upfront, but the alternative—lost business—is a powerful motivator. And as Deloitte points out in its "2021 Outlook for the US Sports Industry," all the data collected from these ventures is valuable, as it can be readily monetized, as well as leveraged to build new digital diversions, expanding the revenue stream.

Just as it enhances a secure and satisfying fan experience, technology can also contribute to a venue's efficient performance, which can bolster the bottom line. An example of this is the new SoFi Stadium in Los Angeles. It is the first stadium in the country to feature digital twin technology, which converts all quantifiable aspects of the venue into a real-time, virtual replica, providing facilities managers with large amounts of data that can be used to optimize its lighting, air conditioning, and mechanical systems, reducing operational expenses.

FLEXIBILITY IS THE FUTURE

While the pandemic wreaked havoc with both professional and collegiate athletics, it also accelerated advancements that were already in the pipeline. Applying these innovations throughout the sports ecosystem will help organizations rebound from the crisis, keep them competitive, and position them for growth. Whether refurbished or new-build, multipurpose facilities that can be used year-round and transformed for a variety of civic uses, such as polling places, medical treatment/testing centers, or drive-through distribution sites, owners have an opportunity to create resilient, flexible venues that will thrive—functionally and financially—in the future. P

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As seen in:
Sports Travel Magazine, September 2021, "Getting Back into the Game: What's Ahead for Sports Venues"

Building for the future

Located at the harbourfront of Kowloon Peninsula, Victoria Dockside brings in immersive experiences in retail, art, culture, entertainment and gastronomy, all under one roof. Designed by Kohn Pedersen Fox Associates and with the help of over 100 international and local architects, designers and consultants, this complex development is set to transform the iconic Hong Kong skyline. It features a 65-storey tower accommodating K11 ATELIER offices and the six-star Rosewood Hong Kong, a 14-storey serviced apartment tower K11 ARTUS and a 10-storey K11 MUSEA art mall.

RLB adopted a proactive and seamless approach in cost engineering and management. Through successful procurement of more than one hundred construction contract packages, we joined hands with the project team to achieve the smartest solution for cost effectiveness - in both capital and lifecycle costs - for this complex iconic development.

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UNINTENDED CONSEQUENCES

How Owner-mandated vaccination policies can impact construction projects

Over the past 18 months, construction costs have escalated dramatically, with the pandemic triggering tumult in the labor market, upending the supply chain, and sending materials prices to historic highs. Now, while some owners try to keep their projects on track and their jobsites safe by requiring vaccines for contractors, suppliers, and trade subcontractors, they may be inadvertently exacerbating their already worrisome financial risk. A closer look at the situation reveals how these elements are interrelated, and what can be done to offset the negative effects.

The tight labor market shows little sign of loosening up anytime soon. A 2021 survey by the Associated General Contractors of America (AGC) and Autodesk found that nearly nine out of ten contractors are having difficulty in finding skilled craftworkers; this is nearly double the figure from 2020. The Bureau of Labor Statistics takes a longer view, confirming the monthly job openings in construction reached the highest level recorded in more than two decades.

Compounding the worker shortage is the general antipathy towards the vaccine that pervades the field. In conjunction with the Delphi Group at Carnegie Mellon University, the Center for Construction Research and Training (CCTR), an organization dedicated to reducing occupational injuries, illnesses, and fatalities in the construction industry, has tracked the trends and patterns of COVID-19 vaccination and hesitancy among construction workers in detail. The most recent data shows that 38% of construction workers are vaccine-hesitant, compared to 15.6% of people in other occupations. A similarly sized gap, 24.3%, separates the vaccination rate among construction workers (57%) and those in other fields (81.3%).

Taken together, these two factors result in some serious unintended consequences for owners who choose to implement a vaccine mandate that all trade labor be vaccinated (unless there is a medical

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or religious exemption). We are not talking about a policy that those who are not vaccinated need to be tested every week or even twice a week to work on a project site. What we are experiencing are owners who want a totally vaccinated work force only (but for the allowable exemptions).

Considering the shortage of trade labor, coupled with a work force resistant to vaccination, contractors will undoubtedly incur extra costs, whether it's to recruit qualified vaccinated labor (and possibly foot the bill for workers' vaccines), to pay a premium to attract vaccinated labor, or to import vaccinated labor to a project site. The result will be that general contractors will file claims for additional money. And if, as is likely, a smaller work crew is ultimately assembled, it will take longer for them to complete the project. GCs can then make delay claims as the job schedule slows, further depleting the project budget. Even if the workforce was not resistant to vaccination, the time it will take to get the workforce fully vaccinated will cause disruption to progress on site, which in turn is an additional burden on the cost and time to complete the project.

While contractors typically have limited recourse to filing claims for additional fees or delays, this case may be different. When a vaccine mandate is an owner-driven policy, rather than a CDC or NIH guideline, it can be viewed as what's called a "constructive change" to the construction contract. Under these circumstances, general contractors and their subcontractors are entitled to ask for additional funds and/or delay costs in order to comply with the owner's changed requirements to the contract. In different circumstances, when workers are not given access to federal or state sites due to policies that were driven by the executive order from our President, GCs can also look into the change of law clauses in their contract for relief to costs and delays.

This is unlike a standard force majeure clause event—when unforeseen, extraordinary events prevent a party from fulfilling the agreement, and contractors can be awarded additional time (but no money) to complete the project. Owner direction to implement a vaccinated work force can lead to claims for changes to the contract and interference with a contractor's means and methods, giving rise to the constructive change claim.

There's little incentive for the construction industry as a whole to mitigate this situation; it will fall to owners to do so. It's critical for owners to understand the potential cost and delay consequences if they embark on a 100% workforce vaccination policy, and make the difficult decision if it will be too detrimental to the project to implement. Owners need to weigh the potential costs associated with a mandated vaccination policy to the approach of protecting the physical health of workers and the fiscal health of the project by requiring weekly COVID testing for unvaccinated people. If the labor force regularly tests negative, and can keep coming to work, it will ease the pressure on general contractors and trade contractors under a workforce shortage and an under-vaccinated industry population to keep construction moving forward. **P**

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As seen in:
Engineer News Record, October 2021,
"Viewpoint: Vaccine Mandates Can Cost Money"

Taking ambitious projects from an idea to a reality

Aramex consolidated two existing Cape Town facilities into one new and functional, multi-purpose facility, stretching over 9240m . Developed by Atterbury, the premises had to be designed to Aramex's unique specifications. This included a 8000m warehouse for courier and distribution functions, as well as 1200m office space. RLB Pentad provided full scope quantity surveying and cost consulting services.

Aramex is a leading logistics and transportation provider with comprehensive solutions for its global customer base. Aramex employs almost 14 000 people in over 354 locations, across 60 countries. The company has evolved into a recognized global brand and is trusted for its innovative and multi-product offering.

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TRENDS IN RESIDENTIAL DEVELOPMENTS IN HONG KONG

Size, price, standards and cost

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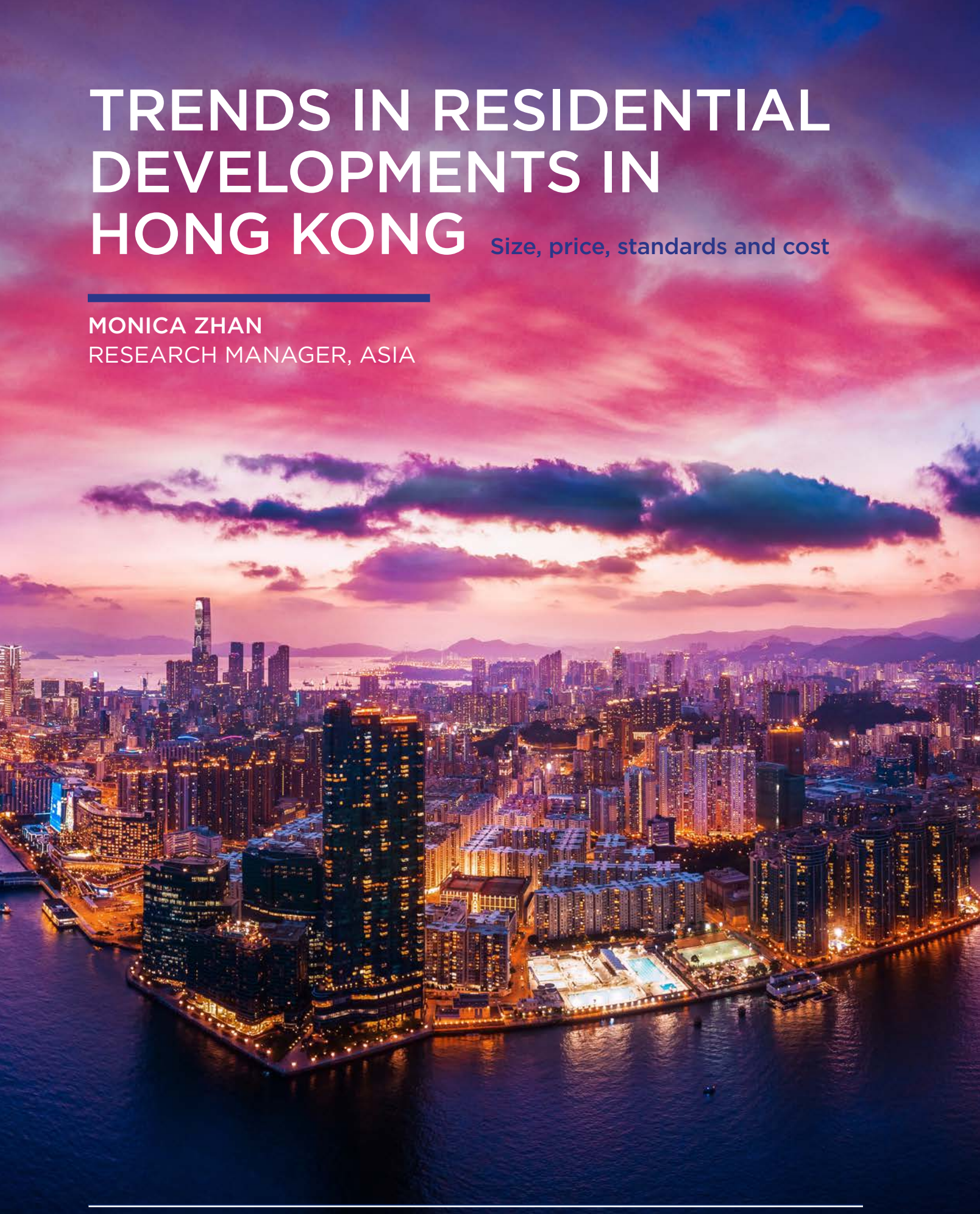

For the past decades, the Hong Kong private residential sector has focused on offering small flats to address the housing supply and demand imbalance. However, the conflict amongst the quantity of housing supply, the quality of living standard and the sustainability of developments is becoming increasingly severe. Focusing on the number, not the quality and sustainability, of the new developments will not be helpful to solve Hong Kong's housing problem.

THE RISE OF "NANO FLAT" IN HONG KONG

When it comes to Hong Kong, we can't help but notice that buildings are getting taller. Apart from pursuing tall buildings to seek more space for living, the market turns to offering tinny, mini-sized flats to satisfy the huge demand of home ownership. Therefore, small flats represented one of the best choices a couple of years ago for some developers in Hong Kong.

From the historical data, the average size of residential flats in Hong Kong has been on a downtrend for the past 16 years (Figure 1). In 2021, the average Domestic Gross Floor Area (GFA) per Unit and Domestic Usable Floor Area (UFA) per Unit were 52m^2 and 27m^2, respectively, which are about 30% and 34% below the average of the past 16 years.

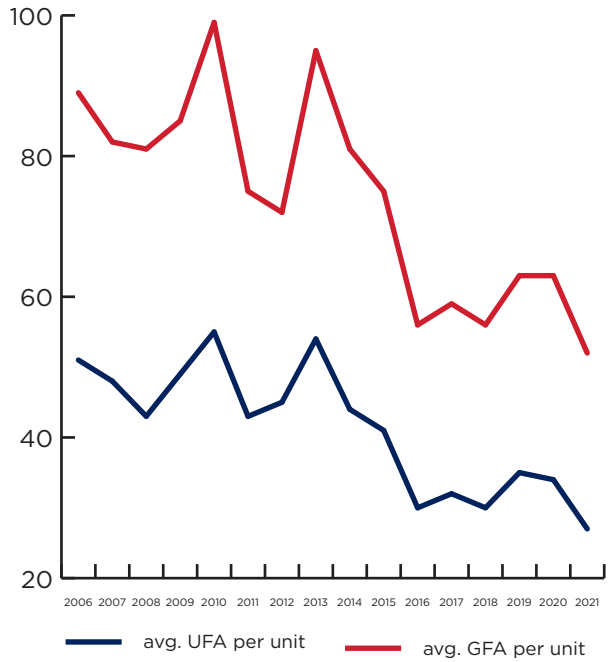

Figure 1 The average size of residential flats in Hong Kong[4]

With the decreasing size of the unit, a new term — "nano flat"— has emerged in the market. Generally, the term "nano flat" refers to residential apartments with a saleable area (including bathroom and kitchen) smaller than 24m^2 (260ft^2) . The rise of such "nano flats" has been partly driven by the relaxation of Fire Safety (Building) Ordinance and Building Ordinance more than ten years ago. After the relaxation, new developments are allowed to have open kitchens, windowless bathrooms and bonus areas by including building balconies and glass curtain walls. The developers have leveraged these measures to build smaller flats at more affordable prices targeted for first-time buyers. Statistically, the private residential developers showed a growing interest in small units (i.e., Class A and B) over the past ten years, especially after 2016 (Figure 2).

Figure 2 Completions of private residential units by Classes (2011-2020)[5]

Developers began to build even smaller units with a domestic floor area less than 20m^2 since then. Such units accounted for only 1.41% of completions of private units in 2016 but grew to 7.2% and 3.83% in 2019 and 2020, respectively (Figure 3).

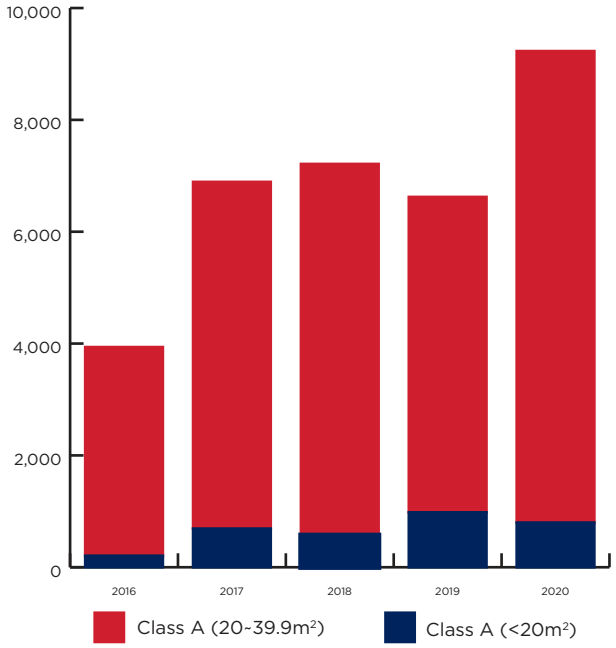

Figure 3 Completions of Class A units by size (2016-2020)[3]

However, on the demand side, the popularity of "nano flats" is beginning to drop. At the end of 2020, the total number of small and medium units accounted for 92% of the total private domestic stock (Figure 4), while take-up dropped by 36% to 10787 units and vacancy rose to 45260 units or 4.0% of the stock.

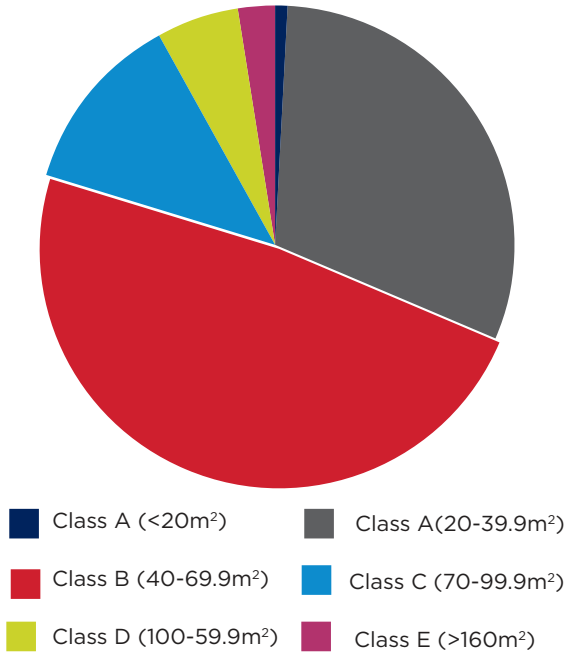

Figure 4 The stock of private domestic units at year-end of 202[7]

On the one hand, speculative demand over Hong Kong's "nano flats" appears to be over, following the city's median home price decline. History suggests that small flats tend to suffer more when there are price adjustments. During 2015-16, the price of flats smaller than 40m² sagged 12 per cent, compared with just a 9 per cent dip for those sized from 70 to 100m² (Figure 5).

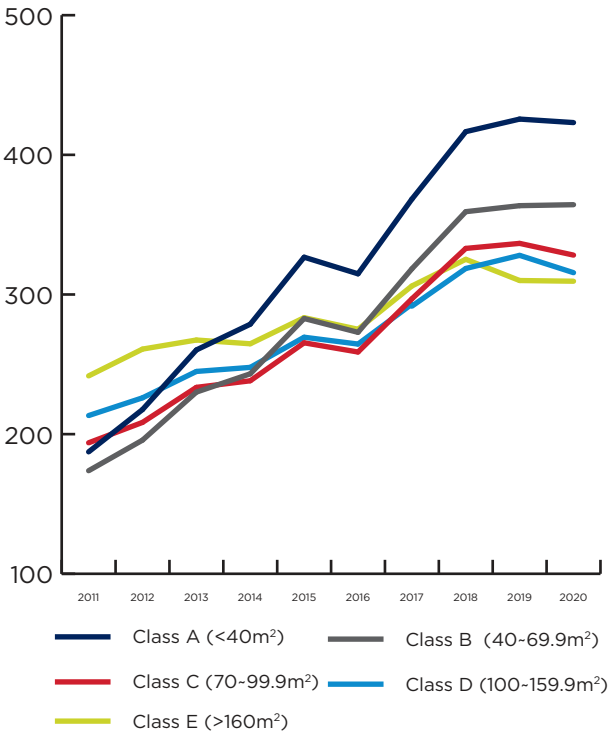

Figure 5 Price indices of private residential units by Classes (1999=100)[8]

On the other hand, when housing prices start to sag, the rigid demand usually plummets as the first-time buyers turn their attention to larger units at the same price point. Practically, price changes make people look for units with similar price tags but more living space. In addition, price indices of private residential units of Class A increased sharply over the last decades and its indices exceeded all types of units after 2013 (Figure 5). This tendency also discouraged first-time buyers.

A BALANCE BETWEEN "NANO FLATS" SUPPLY AND LIVING STANDARD

"Nano flats" have sprung up after easing fire safety guidelines in 2011 and building planning guidelines in 2012. However, the maintenance of ventilation systems (e.g., open kitchens, windowless bathrooms, etc.) had often been neglected in the design stage, posing sanitation risks when it was used. More than 80 per cent of these tiny flats have balconies, utility platforms or curtain walls as the only source of natural lighting, which account for about 10 per cent of the saleable area on average. These areas contribute little to the actual living space of the already-tiny homes.

Unlike the former policy that imposed a minimum number of flats on land sales to encourage the construction of smaller homes and relaxed building rules, the Hong Kong's government said in 30 December 2021 that it will set a minimum home size to counter the trend for "nano flats" supply. A minimum flat size threshold of 26m² in the saleable area will be imposed on developers in a land sale clause . This new measure could help improve living conditions and reduce the number of "nano flats" in Hong Kong in the long run. Hong Kong's movement sets a signal to the market that we are narrowing the gap compared with global levels, like the UK at 37m² and Singapore at 46m², and we are addressing the balance between flat supply and living standard.

COST DIFFERENCES BETWEEN "NANO" AND REGULAR FLATS

We selected two typical residential buildings with different scales to further explore the cost differences between the "nano flats" design and the regular flats design. The "nano flats" design means that the majority of the flat units offered by the project are below 24m². The "nano flats" design project selected by this article offers flats with saleable areas from 19 to 27m² (average 22m²/unit), and the regular one offers flats from 26 to 93m² with an average size of 45m² per unit (see Figure 6). We found that the construction unit costs in terms of structure, façade, architectural works and building services of "nano flats" design project are higher than that of the regular one (Table 1).

Regular flats design

420 m² CFA (typical floor)

"Nano flats" design

160 m² CFA (typical floor)

Figure 6 Typical floor plan of two developments

	REGULAR FLATS DESIGN	"NANO FLATS" DESIGN	DIFFERENCE
Structure	3,300 – 4,200+	4,200 – 5,200+	+ 25%
Façade	5,000 – 6,400+	6,200 – 8,500+	+ 29%
Architectural works	7,600 – 9,200+	8,700 – 10,300+	+ 13%
Building services	7,400 – 8,700+	8,500 – 10,000+	+ 15%
Total	23,300 – 28,500+	27,600 – 34,000+	+ 19%
Construction unit costs of the superstructure (HK$/m2 CFA at 2nd Quarter 2021 prices)			

Table 1: Construction unit costs of superstructure: "nano flats" design vs regular flats design

***Chart Revised 28 July 2022**

The most significant differences resided in the unit cost of façade (+29%) and followed by structure (+25%). From the functional perspective, non-living space (e.g., wall-occupied areas, back of house, lift lobby and balcony/utility platform) of the "nano flats" design project occupied more than the regular one (Figure 7). Besides, the façade to CFA ratio of the "nano flats" design project is much higher than the regular one (i.e., 1.25m² Façade / m² CFA vs 0.74m² Façade / m² CFA, respectively). Such functional areas contribute little to the actual living space of the "nano flats" but increase the unit cost of projects.

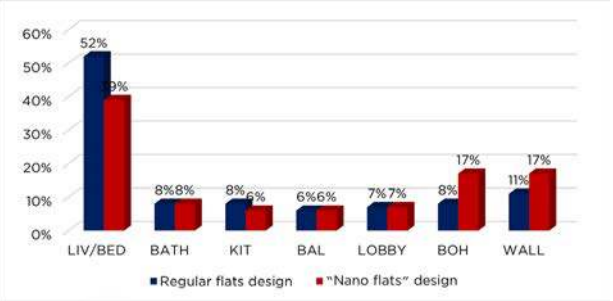

Figure 7 Distribution of key functional floor areas (% of CFA)

MOVING FORWARDS

Maintaining the healthy development of the private residential property market is one of the essential objectives of Hong Kong Government's housing policies. To gradually avert the current supply-demand imbalance in the private residential property market, the Government has formulated and announced Long Term Housing Strategy to stabilise the residential property market through steady land supply and appropriate demand-side management measures and promote good sales and tenancy practices for private residential properties. The supply target of 129,000 units for the ten years from 2021-22 to 2030-31 will be met through various land supply sources.

In addition to stabilising the market from political and regulative aspects, promoting construction innovation and automation, such as Modular Integrated Construction (MiC), would provide economic, social and environmental benefits for the developers, the contractors, the end-users through reducing manpower resources, minimising site accidents, producing high-quality living space, as well as reducing carbon emission and carbon footprint throughout the entire life cycle of the residential developments.

To systematically address the unique challenges the Hong Kong housing industry faces, we firmly believe that quantity-quality-sustainability balance is a practical way to ensure win-win outcomes for all parties, consultants included. P

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Bringing imagination to life

Kamoa-Kakula copper project is a world class, high-grade copper project, currently being developed in a phased approach. It is situated in the Kolwezi District of Lualaba, approximately 25 km west of the town of Kolwezi and about 270 km west of the provincial capital of Lubumbashi Democratic Republic of Congo (DRC). RLB Africa has been appointed by Kamoa Copper SA to provide quantity surveying, contract administration and cost control services.

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WHEN VIRTUAL BECOMES THE REALITY:

Insights into the ever-evolving 'virtual quantity surveyor'

SEB DAVIES
ASSOCIATE DIRECTOR,
MIDDLE EAST

The fear of being replaced by the robot is a modern-day perturbation for any cynical professional. No more so than the quantity surveyor of the future, who faces an able army of robo-surveyors looming impatiently in building information models (BIM), ready to take the industry forward, or perhaps even leave it behind.

The history of the quantity surveyor dates to the time of the ancient Egyptians, when the profession was known somewhat affectionately as "measurer of royal works' .

But what happens when the 'measure in all things' becomes 'the model of all things'? What happens when harvesting mass quantities from a BIM model can occur with a click of a button?

Some suggest the virtual quantity surveyor (VQS) is years away from reality, thanks to multiple obstacles, from interoperability issues to missing geometric properties. To address these issues, buildingSMART, the worldwide body driving digital transformation in the built environment, offers Industry Foundation Classes to bring much-needed standardisation to the current 'free for all' that takes place when the appropriate pre-design stage planning is missing.

Once standardisation occurs, a key role of the VQS will be the pre-design stage of project involvement. The VQS will input and outline BIM requirements for compliance with future digital take-off. Too often this involvement is too late in the project design stages, where retrospective model modifications prove difficult and can lead to tension between project parties. As BIM evolves through enhanced digital capabilities such as 'digital twins', we must develop a competent understanding of basic principles before advancing any further. Let us 'learn to walk before we try to run', by understanding the complexity of BIM.

Online data storage also provides a future prospect and relief from the previously heavy load of pricing books, which are now becoming as light as the Cloud. Security and confidentiality concerns, however, still provide downward pressure on the handling and sharing of online cost data, along with the misapplication of data caused by little to no diligence or context checks. The role and responsibility of the VQS, then, will involve more data-driven analysis rather than data (quantity) production. This will require due care and competency. Consider just one example: We can't apply a cost per car park space to a new project when the historic benchmark increased the total spaces via a double stacking system. This is by no means a recent phenomenon, but the ease of online accessibility and potential for reduced human interaction is likely to exacerbate this.

Similarly, quantity duplication from discipline replication within a model can lead to disastrous quantification results. The necessary design benchmarking and ratio checks are vital to ensure any computer-generated issues are identified and rectified proactively through human-innate common sense. This shift forward, then, should look away from artificial intelligence and instead target augmented intelligence to enhance human intellect.

While the engineering might of the Pharaohs remains at a stretch, RLB has a vast history which can be traced back to Henry Cooper in 1785. Today, this longevity is backed by a dynamic and forward-thinking investment strategy in both people and in-house software. The Global Digital Advancement Committee (GDAC… OK one more acronym) is a diverse collection of RLB professionals across the globe that meet regularly to discuss all things digital and provide a driving force to move the business forward in this digital space. This knowledge exchange across the globe was rapidly expedited by the 2020 shift to working from home. This added a flexibility to both physical locations and digital advancements. This is a wave that the VQS must continue to ride to ensure relevance in an ever-evolving mobile workspace.

While many argue face-to-face interaction can never be substituted, the benefits of remote working and a hybrid workforce add flexibility to a profession simultaneously managing multiple clients in diverse local and cross-border projects. This mobility and hybrid working can also enhance diversity and inclusivity within the profession by providing employment opportunities to those that struggle with the social complexities of the traditional workplace yet thrive in a digital one. Perhaps at the fourth attempt, in this so-called 'fourth industrial revolution', we can align machine and profit-driven efficiencies with a wider progression societally.

We must, however, not exhaust and overwhelm ourselves in this new age of constant connectivity. A project manager recently proclaimed during the weekly design videoconference that these meetings would now be recorded for "good practice". Good practice for what I must wonder? Never again complain when jotting down the key points in the minutes of a meeting. The balance between accountability and independence must be struck to enhance, not kill creativity, in what could be an even wider world web of digital bureaucracy.

Moving now to the spine-shivering winter site visits of London, or the skin scorching summer site trips of Dubai, the conventional desk bound surveyor has often (and rightly) endured the critique of their project management peers for their lack of onsite time. The need for physical site inspection may never be replaced, but augmented reality provides another means to capture real-time project information which can be rewatched from the comfort of one's desk. Drones and timelapse cameras offer further remote insight into current construction progress, the latter providing much-needed automated assistance to the contractor's typically unsuccessful attempts to maintain contemporaneous records. This may even contribute towards more amicable disputes resolutions, as the parties sit and watch the real record of events play back in front of them.

As global markets rely heavily on construction to kickstart their economies, the VQS must be on hand to drive efficiency, value and long-term whole-of-lifecycle costing recommendations. Sustainability benefits will arise from carbon calculations if undertaken during the design stages, as both operational and embodied carbon emissions can be calculated and mitigated. The age old 'steel versus concrete' cost comparison is about to take a new turn as carbon footprints are interrogated along with the source, specification and engineering requirements of construction methods and materials.

Blockchain can also improve efficiency, transparency and accountability with an immutable single source of truth comprising smart contracts, payments, procurement and supply chain management. There is further potential for an Avengers-esque amalgamation with BIM, as application programming interface (APIs) ensure industry programs seamlessly interface. A recent study by GDAC concluded that well over 100 specialist industry programs relevant to RLB service provision are currently on the market. Even with the assistance of APIs, a VQS must meticulously navigate this labyrinth of marketing hype, last season's winners and futile gimmicks to identify exactly where their hard-earned time and money should be invested.

The future is very much the fate of the VQS, so invest in yourself and adapt with these fast-moving times to remain relevant and ensure technology serves you, and not the contrariwise. Lethargy within the construction industry may have slowed the uptake of BIM and other technologies, and the perfect digital take-off may not be ready to take off just yet. But continue to disregard this digital transformation at your own peril... P

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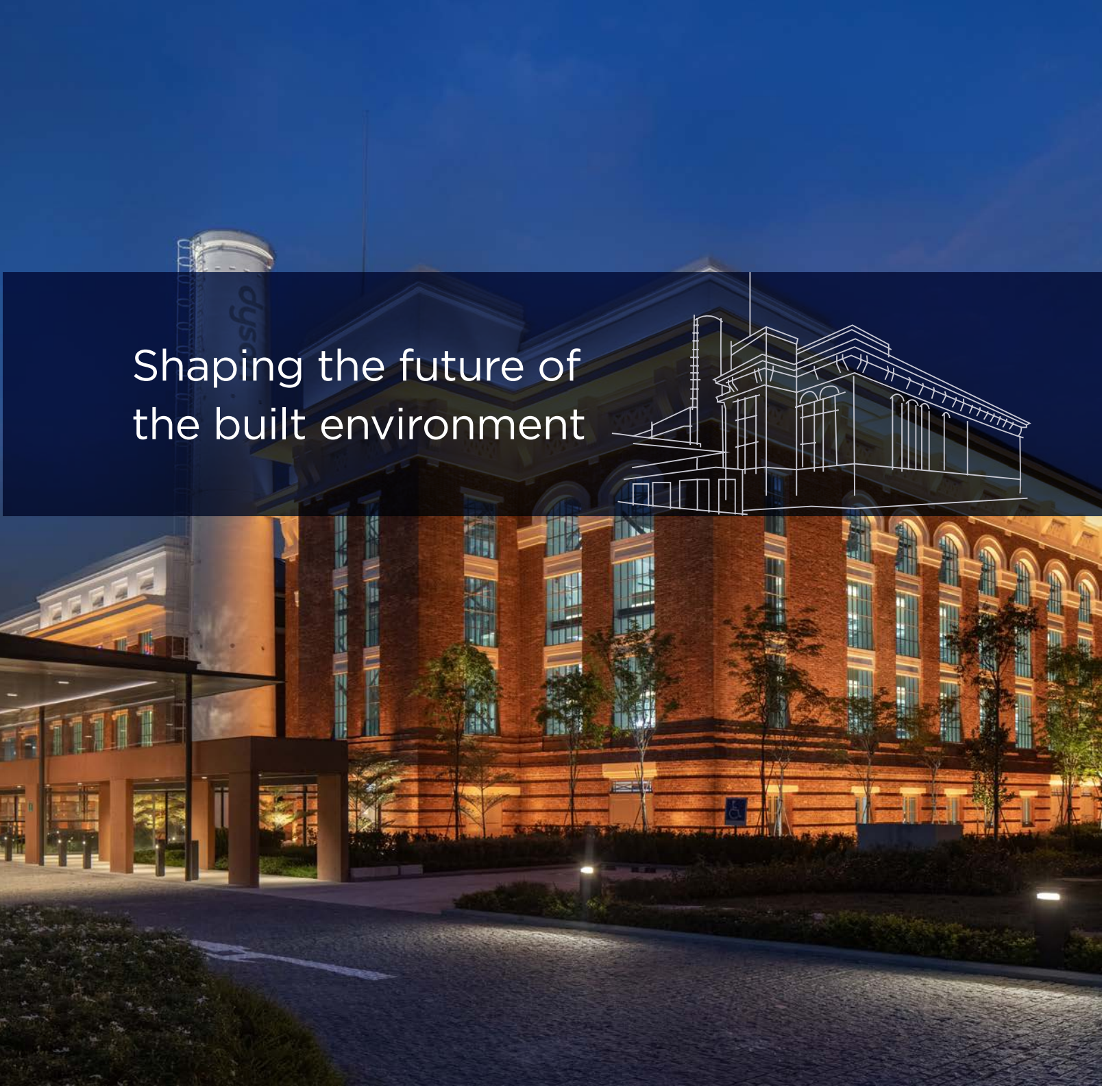
Shaping the future of the built environment



Dyson Global Headquarters, Singapore

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LET'S PAINT THE TOWN

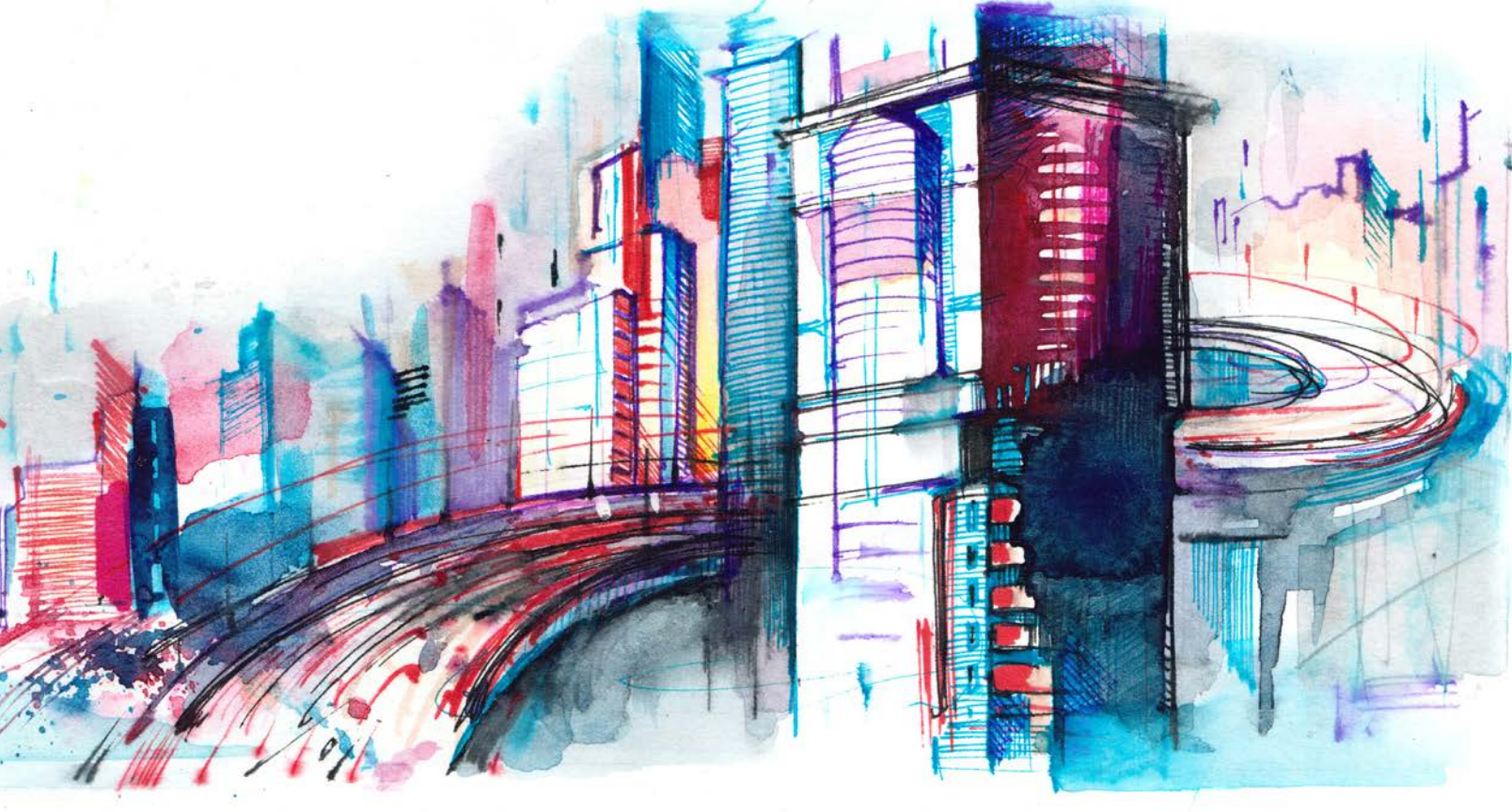
As we look for new ways to attract people to physical spaces, do we need to revalue the role of public art in placemaking? RLB's Managing Director Stephen Mee reflected on this question in an article for the Property Council of Australia in 2021.

STEPHEN MEE
NSW MANAGING DIRECTOR, OCEANIA

Campbell Hanan's favourite piece of public art says a lot about Mirvac's approach to development.

"Art connects communities and creates a destination and a sense of place," he notes. Eveleigh Treehouse, created by Sydney-based artist Nell with design studio Cave Urban, is nestled in the gum trees of Sydney's Eveleigh Green. Commissioned by Mirvac and Carriageworks in 2018, the large-scale installation features two organic, gumnut-like pods connected by a sinuous bridge. The steel and recycled hardwood material reflects the site's former incarnation as the Eveleigh Railway Workshops (at which Nell's great-grandfather worked for two decades). The two pods were made from thousands of forged steel gum leaves, crafted on site at one of the world's oldest surviving blacksmiths by hundreds of volunteers.

"It's a staggeringly-interesting piece of art that was made with the help of the community and is now a space for another generation to play. It touches many things that are important to Mirvac," Hanan, Head of Mirvac's Integrated Investment Portfolio,



says.

Another awe-inspiring piece of public art is Underwood Ark – a 20-tonne mature Blackbutt eucalypt tree hovering 10 metres above the laneway behind the EY Centre at Mirvac's 200 George Street. Created by artist Michael McIntyre, the 35-metre-long installation tells a multi-layered story. It's a pun on the street name, a comment on urbanisation, a nod to the area's ship-building heritage, a marker for the hidden Tank Stream and a reminder of First Nations sovereignty.

Mirvac's pieces are breath-taking, but public art remains something of an underestimated force. While the value of an artwork itself may appreciate over time, the biggest benefits for property developers are usually found in the enhanced visibility, brand awareness and foot-traffic.

But Hanan says the role of art in placemaking has never been more important than it is now, "as we look for new ways to attract people back into our physical spaces".

TALKING POINTS ARE SELLING POINTS

Developers with a big picture view understand that investment in public art adds value to their assets. Art tells stories of place, creates new meeting places and focal points for community. But does art add economic value?

Economist John Kenneth Galbraith once argued that communities "richest in their artistic and cultural traditions are also those that are the most progressive in their economic performance and most resilient in their economic structures".

It is, nevertheless, hard to put a price on art's value to our precincts and places. One research team from the University of Warwick has tried to do so, finding a link between street art and house prices by analysing metadata from geotagged photographs on Flickr. London neighbourhoods with a higher proportion of art photographs achieved greater gains in property prices, the researchers found.

There's also plenty of anecdotal evidence. One property in Nottingham, chosen as a canvas for the world's most celebrated street artist Banksy, sold for 1,401 per cent more than its neighbours in 2020. Anish Kapoor's mirrored bean sculpture on the sidewalk outside a New York apartment building is still taking shape but is nevertheless a big talking and selling point.

Nathan Blackburne, managing director of Cedar Woods and with a portfolio large-scale infill and master planned communities, leans on public art as a "deliberate" strategy.

"While a brownfields development has a pre-existing brand or personality based on the history of the area, we have to work much harder to create a sense of place in our greenfield developments," Blackburne explains.

"We are dealing with vacant land, that may have been a former market garden or a farm. We uncover the site's history and significance and then

use art to create personality that our residents can relate to."

Cedar Woods listens to its customers, analyses buyer profiles and has dedicated team members who investigate each new community's history before commissioning site-specific artwork, Blackburne adds. "We know people want a connection to the history of the place they are moving into. Art becomes a conversation starter between new neighbours that binds people to the place."

The artworks commissioned by Cedar Woods are imaginative and varied. At The Brook at Byford in Western Australia, for example, a statue of a man weighted down by a wheelbarrow of bricks is a regular talking point. "The salvaged bricks from the nearby brickworks tie the artwork back to the site's history," Blackburne says.

Blackburne is particularly proud of the artwork commissioned for South Australia's Glenside. "The project is close to the Adelaide Central School of Art, so we commissioned student artists to create paintings for the foyers of each apartment building," he explains. The lobby of the Grace Apartments, for example, features a monochromatic digital drawing of Grace Kelly by Alex Beckinsale.

"By incorporating art into our communities, we create a strong sense of history and tell stories that would not otherwise be told," Blackburne adds.

EVERY SPACE CAN BE A CULTURAL SPACE

ISPT and Knight Frank have taken a different approach to art curation at ISPT's assets in Canberra. The asset owner and manager were recognised earlier this year at the Property Council's ACT awards for Dream Gallery. This 12-month project at 2 Constitution Avenue in Canberra showcased artwork from Indigenous Australians who have practiced art as part of their rehabilitation after spending time in the criminal justice system.

The gallery used the latest in augmented reality technology, through an app called EyeJack, to create an immersive experience that encouraged visitors to reflect on complex themes of community, social isolation and inclusion, and magnified the message of reconciliation.

Last year, with an entire workforce working from home and the idea of 'workplace' being reimagined, ISPT and Knight Frank were looking for new ways to lure people away from their loungerooms and kitchen benches. A partnership with the National Gallery of Australia to bring the Botticelli to Van Gogh blockbuster exhibition to Canberra proved the perfect solution.

"Our cultural institutions have been doing it tough since COVID. We saw the partnership as one which could support the gallery, enliven the experience of our buildings and create meaningful connections with our tenant customers," says Alicia Maynard, ISPT's general manager for sustainability and technical services.

The lobbies of ISPT's commercial properties, just a stone's throw from the gallery, were adorned with sunflowers. ISPT hosted an exhibition preview for its building customers, and those who couldn't attend were treated to lunchtime art talks by the exhibition's curator. "This project shows how every space can be a cultural space," Maynard adds.

NEW AWARD AND APPLAUSE

But back to value. Blackburne argues there is a "logical connection" between public art and property value "because people enjoy public art, and that increases their propensity to buy in our communities".

Another anecdote is instructive. AMP Capital recently sold its stake in 200 George Street – the home of Underwood Ark – for a price reportedly 11 per cent over its book value. While Hanan doesn't pretend the artwork is responsible for the premium paid, he notes "200 George Street's celebration of place through art sets the tone for a vibrant new urban laneways precinct at Circular Quay."

"And what makes a building iconic? Whether it's Notre Dame or the Empire State Building, iconic art and buildings connect us to history, are accessible and entertaining." Hanan adds.

Stephen Mee, Rider Levett Bucknall's managing director in New South Wales, has spent his career costing ideas to bring imagination to life.

"The value of artwork is not dollar driven – it is social and community driven," Mee says. "But the financial benefits of creating places that are destinations and that facilitate community are obvious – good artwork can support that."

Mee is partial to the work of sculptor Adrian Mauriks, who died last year. Bird Totem, a six-metre bronze, stands sentinel in Sydney's National Bank Plaza, while the bronze sculpture 'Aspiration' garnered an award for public art from the Property Council, RLB and the Art Gallery of NSW in 1991.

RLB and the Property Council are now reviving this award. In 2022 the Property Council of Australia / Rider Levett Bucknall Innovation & Excellence Awards will feature a new category that celebrates the property industry's investment in public art. The award for Best Public Art Project, sponsored by RLB, will showcase the property industry's role as "champions of public art," Mee adds.

Mirvac, Cedar Woods, ISPT and Knight Frank have all supported public art projects worthy of recognition – but with the call for nominations still some months away there is plenty of time for curators and cultural creators to prepare.

"We think this new award can help define the role and value of public art in creative placemaking," Mee concludes. **P**

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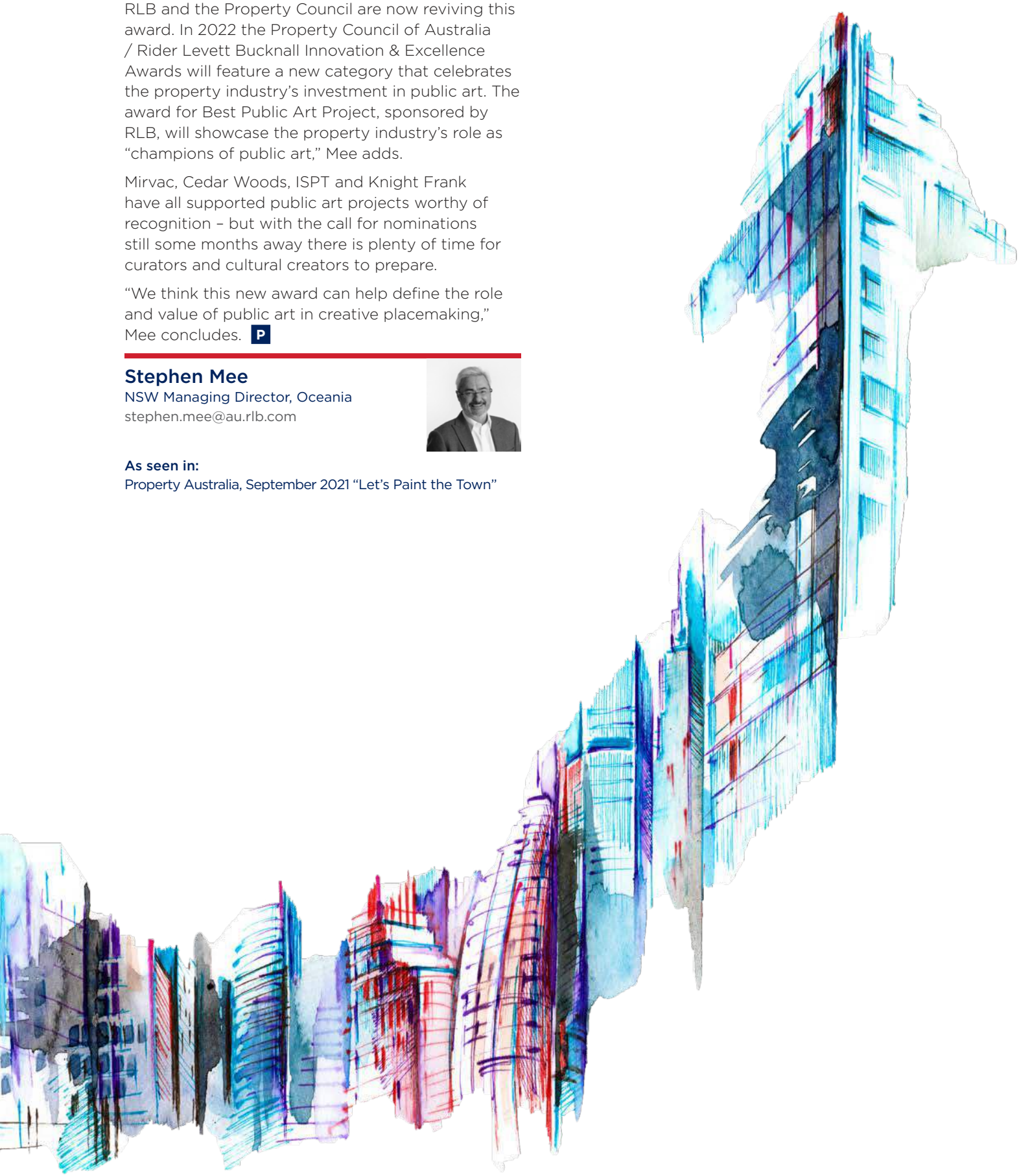
As seen in:
Property Australia, September 2021 "Let's Paint the Town"



Data is critical in informing the rationalisation of healthcare estates and enabling more sustainable outcomes and consequently many healthcare organisations are looking for a leaner and more efficient estate rationalisation strategy that effectively supports their organisation's business activity.

With governments globally committing core funding and investment in healthcare in 2022 there is now more than ever a need for healthcare providers to understand the condition and 'fit-for-purpose' nature of their estates as well as the projected performance throughout the property lifecycle.

Today, to develop business cases into investment, healthcare estates managers need to rely on accurate bases of data. And here comes the rub – the most common theme we hear from healthcare professionals in the UK estates departments is the lack of confidence in their estate information with baseline data requiring significant interpretation to establish their current portfolio position.

TECHNOLOGY AND THE DATA PROCESS

The present state we find most healthcare providers are in is "data rich but information poor". However, this is a short term situation with an opportunity in the long term to rebase asset information and drive for more effective data driven asset management solutions with clear insights and trends on portfolio performance.

The data contained within most property appraisals hasn't changed but the way in which it is collected, presented and engaged has evolved.

BROOK SMITH
PARTNER, UNITED KINGDOM

THE POWER OF DATA IN THE DIGITAL HEALTHCARE ESTATE

Challenges for healthcare estate managers of not having clean, accurate and manageable data:

- No data or out-of-date data that no longer reflects the estate's current condition will more likely result in difficulty in providing independent evidence-based reporting.
- Healthcare providers have access to data, but it exists in multiple locations and is often difficult to interpret and analyse and requires further work to connect the various pieces of information.
- Calculating backlog maintenance profiles and figures becomes a qualitative and subjective task for estate managers and results in a large body of work that is being undertaken by the organisation rather than relying on the analysis of a trusted, robust and accurate data set that defines the current position.
- Lack of internal governance around the strategy for asset management and maintenance of data held by the trust which often means the data doesn't interface as well as it could with the capital programme or the estate strategy.
- Difficulty in ascertaining the relationship between calculating the erosion of backlog when undertaking capital projects.

Even when these challenges are recognised, it is often common that internal governance fails to record any changes on the asset register, that asset data is not maintained, impacting asset and equipment registers that indicate when equipment needs replacing or new equipment installed. Without a systematic way to start and keep data clean, there is no doubt that bad data will happen.

THE SOLUTIONS: HOW TO BEGIN TO GATHER DATA AND WHAT INSIGHTS TO LOOK FOR

Unlocking the power of data for our estates and facilities requires a strategic approach and plan at the outset. The following should be addressed in first defining your data strategy:

Where are we now?

- What is the confidence level in existing data sources?
- How old is the data and when was the last validation exercise?
- How do we interact with our existing information?
- Is information stored in differing formats and media?
- What challenges do we have in creating management reports and setting capital budgets?

Where do we want to be?

- What reports do we need to provide?
- What is the industry best practice guidance?
- What information do we need?
- How will this interface with the overarching estate strategy, master planning or capital programme activities?
- What internal governance do we need to deploy to manage the data?
- How will the data be stored and interacted with?
- Is a Computer Aided Facilities Management (CAFM) system to be considered?
- At what velocity will we need reports?
- What volume of data do we need and how do we make sure it is the right data?

How do we get there?

Once you have answered the previous questions, a simple data collection strategy and brief with action plans and funding solutions is required to allow a brief to be created for potential procurement.

Selecting the right data resolution and volume will play an important role in the future analysis as well as have an impact on costs and programme. Although survey costs will be seen as a significant investment, it is always good to remember the alternatives of not undertaking a survey or conducting an incorrect survey present a far larger risk resulting in higher long term potential costs.

Based on a graph from the UK's NHS estate code risk-based methodology

THE POWER OF DATA

Agile reporting on the property portfolio and not relying on anecdotal information will be beneficial in many ways to all stakeholders:

- It will bring an appraisal of each asset or building within the portfolio in a holistic way.
- Opportunities for intelligent and informed procurement where trends in material can be captured in a more strategic way and potentially procured under one contract.
- Maximising the remaining life existing assets by operating a condition and risk-based approach meaning you can de-risk your portfolio with target capital spend.

(Sub-title): The future of data within hospital estates driving the Net Zero Agenda

Estates' managers will also need to begin to consider the need for data in the drive for achieving their government's healthcare targets and commitments to achieving net-zero emissions. For example, in the UK, the NHS' Delivering a Net Zero National Health Service strategy outlines three key principles aligning digitalisation and data with their environmental ambitions:

- Our innovation: By ensuring the digital transformation agenda aligns with our ambition to be a net zero health service and implementing a net zero horizon scanning function to identify future pipeline innovations.
- Our hospitals: By supporting the construction of 40 new 'net zero hospitals' as part of the government's Health Infrastructure Plan with a new Net Zero Carbon Hospital Standard.
- Our heating and lighting: By completing a £50 million LED lighting replacement programme, which, expanded across the entire NHS, would improve patient comfort, and save over £3 billion during the coming three decades.

Whatever the challenges faced by the healthcare sector across our different regions and geographies, be that coping with another wave of the pandemic or playing catch up with the backlog of existing treatment needed, the condition of our healthcare estates need to be monitored and assessed to allow estate managers to access the funds available. It will be data that acts as the key to unlock this investment, and play a larger and more significant part than ever in the estates' strategy for every healthcare estate manager. P

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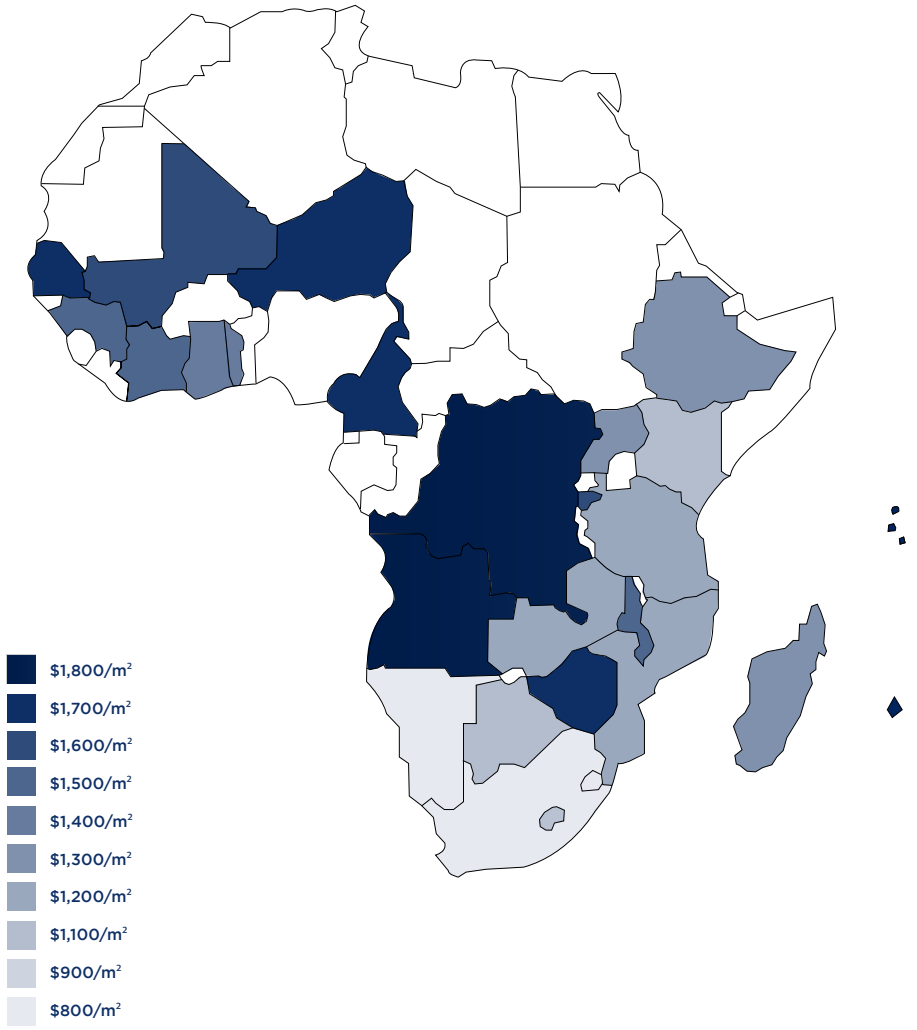
THE COST OF BUILDING IN AFRICA

CHRISTIAAN RADEMAN
DIRECTOR, AFRICA

Africa is a continent with 54 different countries divided into 5 regions, namely: North Africa, East Africa, Central Africa and Southern Africa, with an approximate population of 1.37 billion. This section gives an insight into the varying construction costs of the different countries, key cost-influencing factors and items for consideration when investing in and/or comparing to the local market in Africa.



REGIONS/COUNTRIES IN AFRICA

NORTH AFRICA

Algeria
Egypt
Libya
Morocco
Sudan
Tunisia
South Sudan

EAST AFRICA

Burundi
Comoros
Djibouti
Ethiopia
Eritrea
Kenya
Madagascar
Malawi
Mauritius
Mozambique
Rwanda
Seychelles
Somalia
Tanzania
Uganda

SOUTHERN AFRICA

Angola
Botswana
Lesotho
Namibia
South Africa
Eswatini
Zambia
Zimbabwe

WEST AFRICA

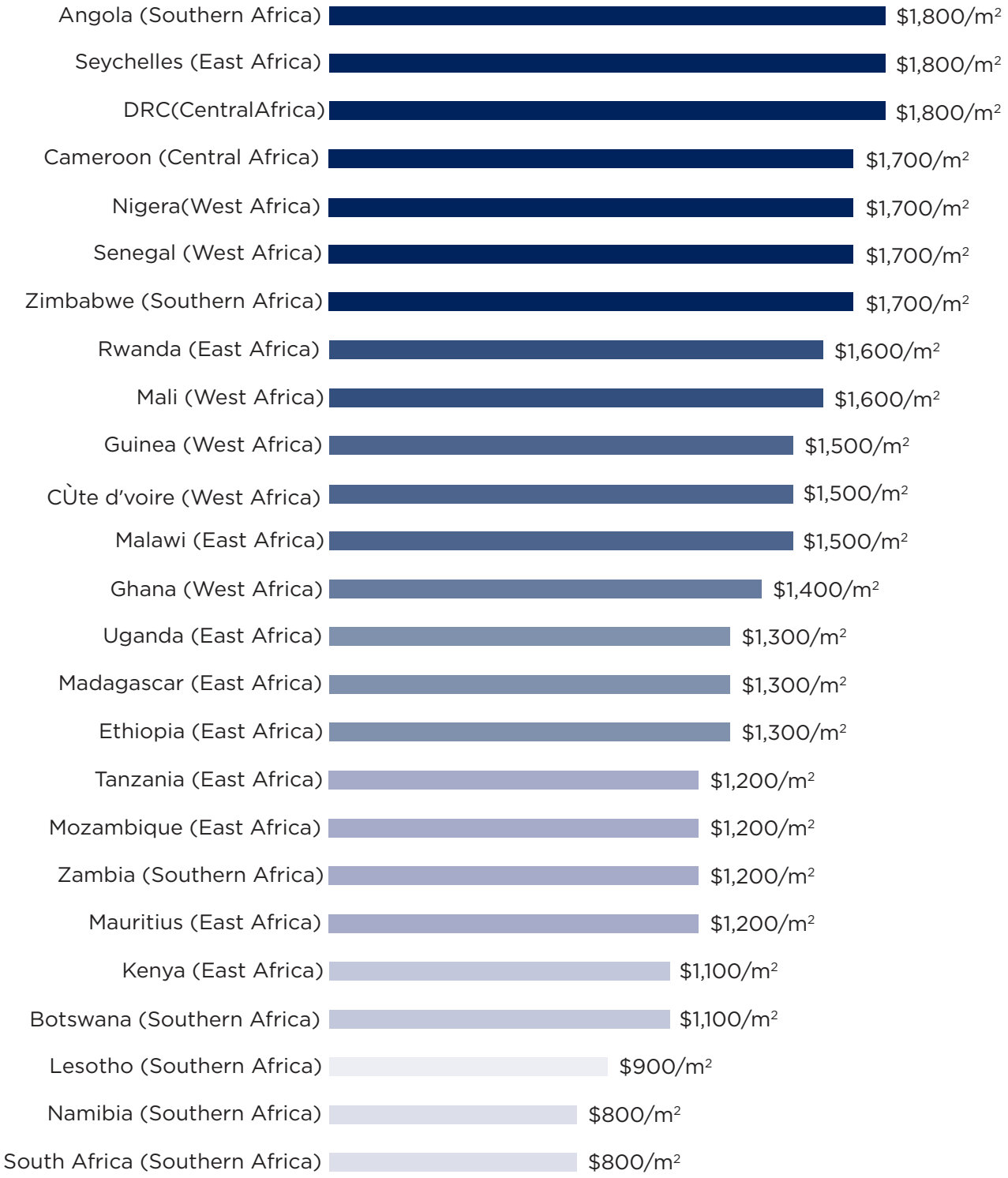
Benin
Burkina Faso
Cape Verde
CÙte d'Ivoire
Gambia
Ghana
Guinea
Guinea Bissau
Liberia
Mali
Mauritania
Niger
Nigeria

CENTRAL AFRICA

Cameroon
Central African Republic
Chad
Democratic Republic of the Congo
Equatorial Guinea
Gabon
Republic of the Congo
Sao Tome and Principe

CONSTRUCTION COSTS IN AFRICA

The table below is a summarised comparison of the varying approximate estimated construction costs in Africa for a prestige high-rise office tower (for ease of comparison) built according to international building standards. Rates are based on 1 January 2022 costs. Rates include the cost of appropriate building services, but exclude the costs of site infrastructure development, parking, tenant fit-out and equipment, any future cost escalation, loss of interest, professional fees, land, value added tax, etc.



As per the table, the most expensive country to build in (from the data we have) is Angola, which is around 225% more expensive than the cheapest country, South Africa.

Ignoring the outliers, the following average costs can be seen in the different African regions (from the data we have):

- Southern Africa: $ 900/m²
- East Africa: $ 1,200/m²
- West Africa: $1,600/m²
- Central Africa: $1,800/m²

KEY COST INFLUENCING FACTORS

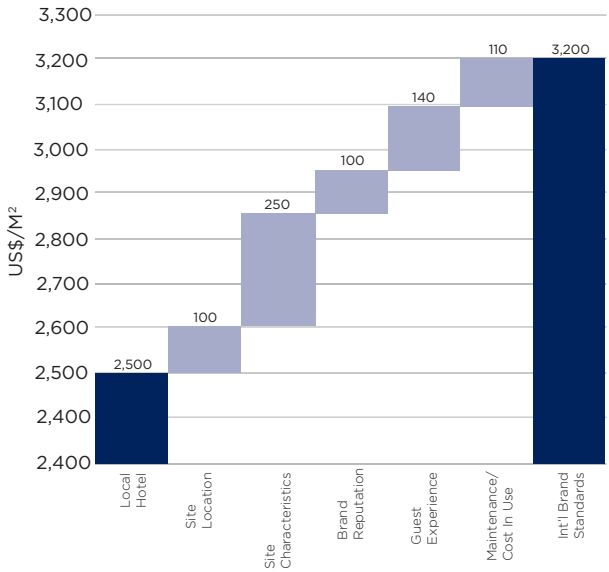
Some of the key cost-influencing factors in the majority of African countries, depending on the site location, etc. that need to be considered by potential investors are summarised below:

- Distance from nearest port
- Local building code
- Availability of appropriate site infrastructure, contractors, suppliers, maintenance teams, building materials and professional services or lack thereof
- Seismic zones
- Cost of land
- Import duties
- Value added tax
- Currency exchange rate volatility
- Climate
- Security
- Political unrest
- Corruption

SITE LOCATION AND INTERNATIONAL BUILDING/BRAND STANDARDS

We are often challenged by our clients when they compare our estimates of construction cost of buildings in Africa with apparent similar local buildings, which were delivered for significantly less. We find it is mostly not driven by individual design decisions, but rather by site characteristics/ location, high-level performance criteria and international client/brand standards.

The example below illustrates in what way and by how much such factors may attract additional costs. The costs are divided into several categories and are examined from the perspective of a four-star business hotel.



Site Location

The location of the site can attract additional costs due to lack of infrastructure, for example (roads, electricity, water, sewer, etc.). Including the cost of developing/upgrading such infrastructure can add anything from US$ 50 to US$ 150/m² to the construction cost.

Site Characteristics

The layout and size (m²) of the site, soil conditions, etc. will influence the following design and other parameters:

- Height of the building
- Shape of the building
- Requirement for foundation piling and/or lateral support
- Number of basement parking bays versus number of on-grade parking bays
- Egress and ingress planning

These design parameters can attract a cost premium of up to US$ 250/m².

Brand Reputation

To protect brand values, enhancements may be made to:

- Key life safety systems (typically fire sprinklers)
- Achieve the particular risk-based security criteria for a defined location
- The locale-specific security driver can have a significant impact on costs ranging from US$ 50 to US$ 300/m².

Guest Experience

Users of international brands may expect enhanced service to that mandated by local rating systems. This can cover the range of facilities on offer (leisure/conferencing), to consistency in service such as arrival and welcome experience, and even through to mandated finishes.

Items like acoustic criteria may be enhanced from being merely code compliant in keeping with expectations.

Often, decisions will increase the area programme and can add 10-30% to the cost per key.

Maintenance and Cost in Use

Experienced owners and operators will typically set planned maintenance regimes to reduce life cycle costs and the risk of services outages. For instance, plant may need increased redundancy built into it. However, consideration should also be given to the maintenance support available locally and the climatic conditions that may affect design life.

In addition, it should also be remembered that design standards are only as good as the execution and having appropriate Quality Control procedures in construction is a necessity.

SUMMARY

Construction costs can differ substantially in Africa and when compared to the rest of the world.

In some cases, the use of international standards will take a property beyond being fit-for-purpose. However, where this adds value, through increased income or lower operating costs, it may still be a sensible investment.

We advocate our clients appoint consultants with the required locale-specific experience to advise on the mitigation of possible risks. They can assist in identifying which elements of standards are costing money, which are adding value and which may be capable of negotiation. Ultimately, the aim is to ensure successful fit-for-purpose projects that are competitive when compared to the local market. P

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Creating a better tomorrow through a flawless execution today

Uptown Arts Residences is a most awaited 45-level high-end condominium project by Megaworld Corporation, a multi-awarded Real Estate Developer. Located in a 15-hectare township development - Uptown Bonifacio Township in Bonifacio Global City (BGC), Fort Bonfacio, with approximately 66, 424 square meters. It is seen that BGC will be the next Central Business District of the Philippines as major of multi-national companies are also located in that area.

Uptown Arts Residences boasts European branded interior finishes, keycard RFID access for units and elevators. It will let you experience a very convenient yet luxurious vibe there are some high-end commercial, institutional, and offices nearby. It is also close to major infrastructure projects of Philippine's government such as subways, new-built bridges and skytrain monorail system.

Uptown Arts is a two tower hotel type condominium with 12 units per floor. It is designed by Design Alliance Architects an American based company. It features different hotel-type amenities on the 6th floor such as day care center and children's playground, multi-purpose halls with pre-function areas, swimming pool and massage areas. Ground floor will also be used for as commercial spaces.

RLB Rider Levett Bucknall

RLB.com

BUILDING PROFITS

WORKING WITH A CONSTRUCTION-COST MANAGER

CASSIE IDEHARA
PRINCIPAL,
NORTH AMERICA

Truth be told, for all parties involved in a construction project, it's the bottom line that's the top concern. Owners and developers, architects and engineers, general contractors and subs, and consultants—every member of the team is ultimately—if not overtly—focused on the project's profitability.

While this is the case, conventional approaches to cost estimating that many owners and developers have come to rely on may not always yield the best or expected results that benefit all parties. Budget shortfalls can often happen when they rely on data that is outdated, or when obtaining costs from a single source without enlisting a second pair of eyes to provide independent assessments and monitoring of budgets.

An alternative—working with an independent cost manager—may be a new concept for some owners, but holds far greater promise of saving them [and their team members] money and time. By treating the client's investment as if it were their own, and actively serving as the client's advocate, an independent cost manager adds quantifiable value to their work. Engaging a cost manager in the earliest stages of a project has a relatively modest impact on the process and timeline and can help to avoid snowballing setbacks as the project progresses.

Here's a checklist of some key go/no-go indicators that cost managers use to put a project on the road to profitability:

- **SCHEDULING.** Hindsight may be 20/20, but in construction, foresight offers greater value. Cost managers use both historical and predictive data to determine the best time to break ground on a project and calculate its duration. Drawing on their knowledge of manufacturing and global logistics, cost managers can chart a reliable course for timely sourcing and procurement, resulting in an optimal schedule that appropriately captures project delivery risks.
- **MARKET CONDITIONS.** To make the most of investment dollars and establish a favorable financing environment, cost managers factor in real estate trends and cost variances for different locations. As part of the due diligence process in the early stages of a project, a cost manager can also advise clients on the programming of a building. Replacement cost estimates can reveal a building's true value in the market, maximizing its selling value. This allows owners to see if the numbers work, and to make a go/no-go decision on the path forward.
- **PROCUREMENT.** A conscientious cost manager can advise their client about the advantages and disadvantages of a variety of alternative construction delivery systems, such as design-bid-build, design-assist, and design-build, helping them select the method that best aligns with their budget and schedule goals.
- **PRICING.** Lately, material, labor, and equipment costs have been exceptionally volatile. Unlike contractors and sub-contractors who draw solely on their past experience from the builder's perspective to guesstimate these prices, cost managers minimize unexpected and unwelcome budget disruptions by using highly targeted, real-time data to accurately project future pricing trends. This forms the basis for creating a provisional budget for the various project-building components [i.e., structural system, exterior wall, lighting, and HVAC systems], an essential tool for developing and analyzing the project construction budget.

WATCHING FOR RED FLAGS

If a cost manager isn't on board for the initial stages of the project, there are still opportunities to enlist their aid; in fact, there are critical situations when reaching out to an independent cost manger can mean the difference between a successful, profitable project and a resource-sapping undertaking. These three red-flag scenarios include:

1. **"Free" estimates.** Often offered as an incentive for prospective clients by contractors, free cost estimates are frequently based on non-competitive data from a single source that may not reflect current dollar values or cost influencers, and therefore may not equate to a comprehensive construction cost. Third-party cost managers work only with fresh data—in many cases, proprietary—that accounts for current market conditions, is tailored to the needs of specific projects, and provides realistic cost information throughout the course of a project.
2. **Doubts from the design team.** If the design team says the budget is inadequate, there is an opportunity to mitigate that before resorting to value engineering. Working directly with the design team, a cost manager can guide them through the process of identifying and selecting alternative solutions that won't derail the design—or the budget.
3. **Rapid cost escalation in design-build projects.** The efficiencies of the design-build delivery method are predicated on an accelerated schedule and a reduction in change orders. If there is a delay in any phase of the process, costs can quickly soar. A cost manager can step in and make new budget projections that can help reduce loss.

Once a cost manager has created the optimal scenario for the project, it's a "Go" to the design phase. Having prepared cost estimates based on the schematic design documents, design development documents, and construction documents, the cost manager can provide guidance to the design team related to the cost impact of design decisions throughout the design process. Armed with this information, a realistic budget can be created, giving the design team a solid foundation on which to build, and minimizing budgetary surprises as the project moves into construction.

With construction costs typically making up about 70% of an owner's budget in a project, there's a lot at stake in a building project. When engaged at the outset of the job, a proactive cost manager will not just protect that investment, they will identify ways to increase the profit margins throughout the process. There's little doubt that engaging a third-party cost manager adds a small cost up-front, but it will yield a larger payback; one that also pays it forward in terms of client service. P

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As seen in:
Building Design + Construction, November 2021, "Building profits: Working with a Construction-Cost manager"

Representing innovation in infrastructure projects

Picture a tunnel 4.5 metres wide and 14.7 kilometres long that snakes its way underneath the city of Auckland. This $1.2 billion pipeline called the Central Interceptor – the largest water infrastructure project in New Zealand's history – will significantly reduce wastewater overflows into central Auckland's inland waterways and open spaces. RLB is providing cost management services including monthly assessment, budgeting and risk support.

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DATA CENTER DEVELOPMENT 1.0

What you need to know

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As seen in:
Mission Critical Magazine, January 2022,
"Data Center Development 1.0: What You Need to Know"

As a result of the unprecedented reliance on technology required by working, learning, and living from home over the last 18 months [think Zoom meetings, online shopping, instant messaging, playing video games, and more], data centers—facilities that house computing and networking equipment that collects, stores, processes, and distributes large amounts of data—saw record revenues. Recognizing this demand, new companies are emerging to spearhead the lucrative field of data center development. But as a relatively new typology, there can be a learning curve in navigating both the opportunities and challenges it poses.

To coordinate and map a path to creating a cutting-edge data center, a proven project management team is essential. The value of this will be maximized if they are brought on board at the outset of the development, when their collective experience can be applied to shape projects from the ground up. Market knowledge, procurement insights, cost estimating acumen, expertise in navigating supply chain issues, and whole-life costing experience are all vital skills throughout the planning phase—and beyond.

Data centers are proliferating across the country, in Chicago, Phoenix, Seattle, Virginia, and New Jersey, to name a few locations. Here's a checklist of the top criteria for developing and designing these specialized facilities:

- **Power.** A significant amount of energy is required to keep networks running and maintain an optimal climate for the IT equipment. Comparing local costs per megawatt can yield significant savings. Nearby rivers may also be tapped to help satisfy server cooling needs
- **Fiber.** A robust fiber network offers compounding network effects due to improved connectivity, backup resources, and disaster recovery options. Access to redundant fiber optic loops (both land-based and undersea) and hardware that connects the various facilities of a data center is key. Known as "cross connections", these provide secure and reliable access to businesses and ISPs
- **Supportive government**. Pro-data center legislation and policy can ease entry into development. Look for financial incentives (for instance, sales and use tax exemption on servers, generators, chillers, and other server-related equipment; and tax deductions for the costs of recruiting and training new workers) as well as operational ones, such as a fast-track program for issuing construction permits for data centers
- **Qualified workers.** Data centers located proximate to metropolitan areas can often benefit from the highly educated population of the region
- **Space to build.** Areas with an inventory of commercial land available for development allow for expansion of new and existing facilities
- **Safe location**. Geographic areas that typically do not experience extreme weather or natural disasters provide a reliable, resilient ecosystem for data centers

An Adaptable Design

Astute owners and developers evaluate potential projects not only with an eye on current market conditions, but those of the future. Do data centers have staying power, or is there an obsolescence factor that should be considered?

While data center use is growing, so too is cloud-based data storage. Originally, it was expected that cloud-only storage would diminish the need for physical data centers. However, it now seems that hybrid designs that combine cloud services and physical locations are shaping the future. While the cloud will not end the need for data centers, it will alter how they are designed, built, and used.

The business model employed by data companies centers on attracting clients to lease space in their buildings for data storage—and it's a competitive field. Data centers need to evolve, upgrading their technologies and infrastructural amenities to attract new tenants. A current selling point is sustainability. Consuming huge amounts of energy, data centers are setting targets and implementing strategies to achieve net-carbon-zero performance. This may incur some upfront construction costs, but in the long run will lead to more efficient life cycles, with lower operational costs.

And it's more than the remote workforce that's driving the demand for data centers. Data centers are becoming relevant for entire established business sectors, as well. Financial institutions, government agencies, healthcare providers, transportation/logistics firms, and more are increasingly reliant on technology, needing to store and manage vast amounts of data. The return on investment offered by data centers remains equally strong for well-informed owners and forward-looking communities, and collaborating with an experienced team of advisors is the first step in capitalizing on this burgeoning opportunity. P

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A GREENER, SMARTER & SAFER DEVELOPMENT GOAL IN CHINA'S CONSTRUCTION INDUSTRY

In China, the Five-Year Plan is a series of social and economic development issued by the government to govern the national major construction projects, productivity distribution, and main proportion of the national economy. By the end of 2020, China has already accomplished 13 Five-Year Plans. In the past ten years, China's GDP saw an average growth of 10% under the plans. Amid the COVID-19 crisis in 2020, China has still achieved positive economic growth. In the 13th Five-Year Plan period, the construction industry expanded 5.1% annually in added value, accounting for 7% of GDP. And the investment in real estate development accounted for 20% average of investment in fixed assets, as shown in Figure 1. It is apparent that China's construction industry has played an increasingly important role in bolstering the economy, preventing and resolving various risks. The outline of the 14th Five-Year Plan launched in 2021 sets forth the China's GDP growth has to be kept within a reasonable range in the next fifteen years. Although the outline does not set a specific annual GDP growth target, we can predict the growth from 2021 to 2025 by analyzing historical data. As shown in Figure 2, the GDP in the construction industry and the investment scale of real estate development are expected to reach USD 1.6 trillion and USD 3 trillion respectively by 2025.

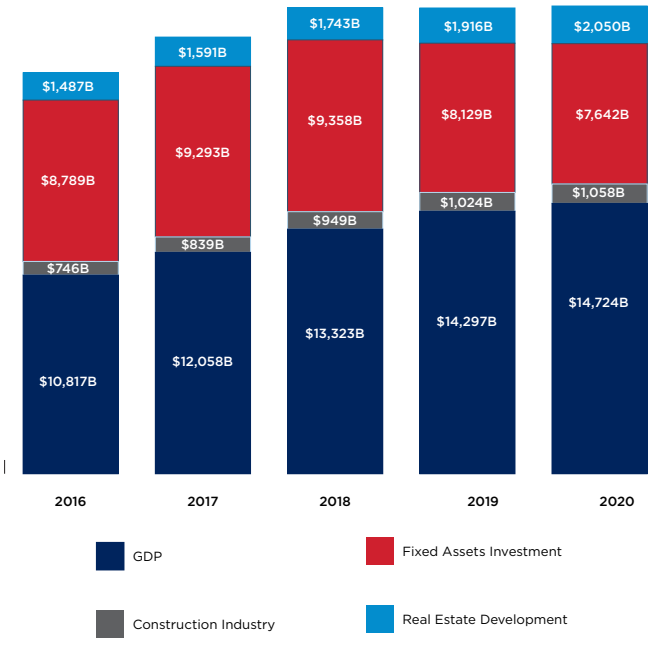

Figure 1: The GDP data and other construction-related data during the 13th Five-Year Plan period from 2016 to 2020

Source: National Bureau of Statistics of China

KATHERINE TAN
ASSOCIATE, ASIA

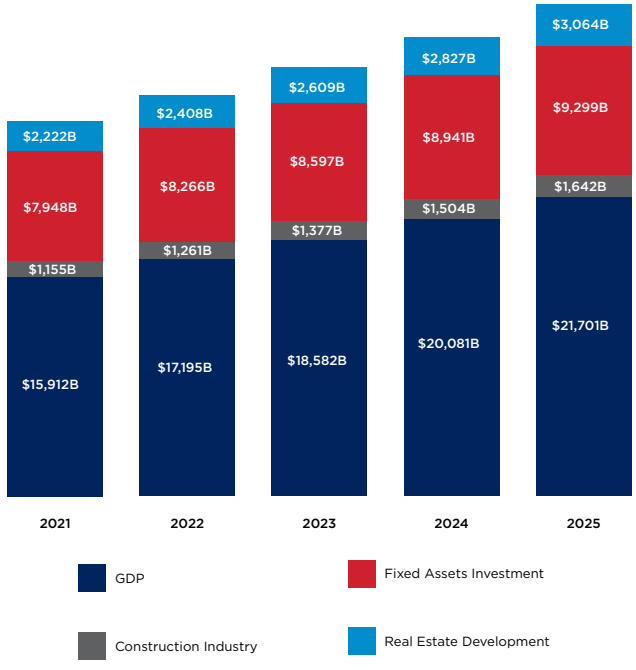

Figure 2: The GDP data and other construction-related data during the 14th Five-Year Plan period from 2021 to 2025

It is worth mentioning that this outline does not give specific growth targets since China is gradually shifting its focus from economic development to high-quality development. The latest Five-Year Plan specifies high-quality development, which is innovation-driven and taken from a sustainable approach, will be one of the underlying themes during China's development in coming years.

PURSUING HIGH QUALITY DEVELOPMENT IN CONSTRUCTION INDUSTRY

As a pillar sector of the country, China has further unveiled a development plan in January 2022 to push construction industry of the country's economy onto a green, smarter and safer path.

The development goals for the construction industry are outlined in Table 1.

CONTENTS	REQUIREMENTS
Added value of construction industry account of GDP	6%
Prefabricated buildings account of the new construction	≥ 30%
Building waste at new construction sites	≤ 300 tons/10,000m^2
Promote the use of information technologies	
Promote the application of construction robots in some fields	

Table 1: The development goals during the 14th Five-Year Plan period

Source: Ministry of Housing and Urban-Rural Development, China

Together with China's sustainable goals to achieve carbon peak by 2030 and carbon neutrality by 2060, the plan adopts a number of measures to promote green buildings and intelligent construction in this industry. The following list highlights some of the key initiatives in this plan.

Implement and promote the use the reflective insulation (silicone molecule) paint system for exterior walls. This system can reduce emissions from electricity generation so as to minimize the building's cooling energy consumption in summer and the annual energy consumption. Thus, it helps lower CO2 emissions and improve urban ecology.

- Implement and promote the use of composite wall panels for interior and exterior to greatly shorten the construction period. It has a longer product life cycle, and thus save maintenance costs.
- Promote intelligent construction. Intelligent construction integrates information technologies (such as Internet, Internet of Things, artificial intelligence and big data processing) with advanced construction technology to provide a wide range of functions at the construction site including information collection, data analysis, real-time monitoring, risk early warning and decision-making assistance. The AI systems not only help optimize construction processes and improve construction site safety, but also increase cost efficiency and uplift the quality for the construction management process.
- Internet of Things (IoT), through information sensing devices (such as video recognition, infrared sensor, GIS global positioning system and laser scanner), allows information exchange between objects and the Internet to achieve a comprehensive range of functions such as intelligent identification, positioning, tracking and management. This technology is mainly used in construction, operation and maintenance so as to uplift onsite safety management.
- The virtual reality (VR) is the use of computer technology to create a simulated environment which can be explored in 360 degrees. The integration of BIM and VR provides a more effective and convenient means for design modification and improvement in construction.

LOOKING FORWARD

With the release of the 14th Five-Year Plan, reform and innovation become the key initiatives of the construction industry. In the future, traditional construction methods will be gradually replaced by intelligent and sustainable methods, thus generating innovative construction materials, new construction technologies and processes. Digital transformation and sustainability, two of the most powerful drivers for the future of the business, will definitely help China meet its pledge to reach carbon neutrality by 2060. P

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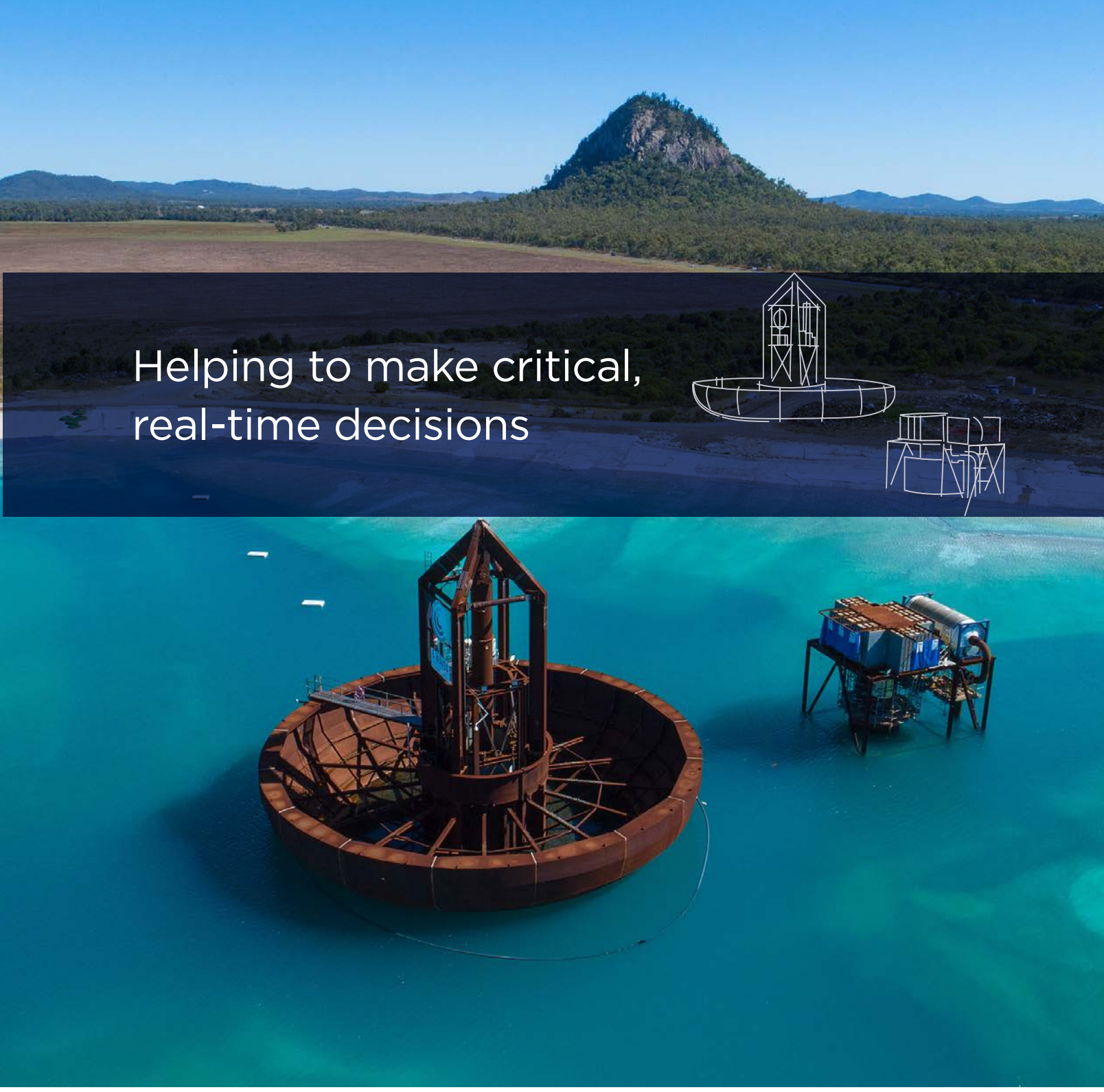

Helping to make critical, real-time decisions

Offering 'the biggest break in surf park innovation' Surf Lakes is an Australia-based company. They have a unique concentric wave generation technology that creates multiple surfing breaks in one custom-designed pool.

RLB is acting as a trusted advisor to Surf Lakes as they break into the North America market. As a construction consultant who can act as an extension of their team, we are assisting Surf Lakes to achieve their desired outcome by providing informed guidance and recommendations on the best procurement strategy. RLB is also providing full quantity surveying services, providing them the level of certainty they need to make critical, real-time decisions to ensure the commercial success of their project.

RLB is proud to assist Surf Lakes by empowering them to bring imagination to life on their world-class wave technology, bringing innovative sport spaces to the U.S. market and shaping the future of the built environment in southern California.

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MOVING AWAY FROM TRADITIONAL ROUTES:

The dramatic rise of design and build procurement in Qatar.

UMESH LAXHMAN
ASSOCIATE DIRECTOR,
MIDDLE EAST

Qatar is a relatively small peninsula in the Persian Gulf, rich in natural gas, measuring approximately 11,521 km2 with a population of 2,659,000, mainly comprised of expat workers. In 2008, the Qatar 2030 Vision was published setting out the Emir's vision based on four pillars: human development, social development, economic development, and environmental development.

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ASSOCIATE DIRECTOR,
MIDDLE EAST

This initiated significant investment across a range of industries and sectors, which was dramatically increased following the historic moment in 2010 when Qatar was awarded the FIFA World Cup 2022. These two key events led to significant opportunities in the construction industry with significant funds allocated for national projects; the national budget in 2020 for major projects was USD25 billion and USD20 billion for 2021 excluding private developments.

Like many other gulf nations, Clients tend to be risk averse and prefer cost certainty from the outset, which until recently, favoured the most popular traditional lump sum procurement route. However, it is well documented that many projects in the middle east run late, with significant claims and counter claims from both parties, all of which tend to lead to significant cost overruns.

Given the significant and immovable start dates for the FIFA World Cup, as well as other international sporting events, which have been awarded to Qatar in recent times, this appears to have forced a change in procurement and delivery approach, with time becoming of the essence.

The reputational risk of not delivering with the world watching closely cannot be under-estimated.

This will be the first world Cup held in the Middle East and internationally, for various reasons, has been met with significant negativity. This only increases the pressure for successful delivery.

The luxury of a fully designed project, a lengthy tender and construction stage is no longer viable, however, the need for cost certainty has remained paramount, particularly as the government is the key source of funding. This provides the backdrop for the recent shift towards the Design and Build (D&B) approach. For clients that want a contractor appointed early, with cost certainty, reduction in programme duration, whilst maintaining a risk averse approach the uptake is not surprising. This procurement route also allows clients to maintain some control over the design by setting out robust employer's requirements and making novation provisions for the design team.

This, however, has not all been plain sailing, particularly in a market that is so engrained with the traditional approach. What is immediately obvious is that making changes can be very expensive. Luckily though, the time critical nature of the projects has meant that there have been fewer client initiated changes post-award and client decisions are being made faster than before.

Contractors have historically been set up for the traditional route with a set up that relies on the client's design team to coordinate and iron out any conflicts in the design. This transfer of obligations has proved challenging for many Contractors, witnessed right from the tender pricing stage – previously being used to pricing complete drawings and specification, and now having to fill in gaps for design development risk allowances. Furthermore, Contractors are finding it difficult in the post-contract stage to navigate the murky and at times subjective nature of design development, leading to unwarranted notices of variations, or stretching the interpretation of design development to incorporate changes to their benefit.

Clients are also not fully geared up to this approach and in many instances taking the design to a level of detail which can at times be too prescriptive with considerably detailed specifications written. Whilst it is the Client's prerogative to develop the requirements to any level, too much detail hinders the Contractors ability to enhance the design and limits the flexibility to seek design solutions within their internal price targets. The Contractor can take this approach with some suspicion that the Client is effectively trying to adopt the traditional approach but transferring the design risk to the Contractor under the guise of "design and build". Such approach gives the Client's post-contract team ammunition to reject the Contractor's proposals which are being developed with an eye on the Contractor's profit and loss, leading to Contractors becoming claims conscious.

Another important issue is the level of amendments that Clients make to the standard forms which can be prohibitive to the maturity of the D&B market as Contractors face varying terms and conditions and risk transfer from one project to the other.

For now, D&B appears to be in trend and working "successfully" for clients who see the benefits of clear risk transfer of design to the Contractor. We see this approach continuing for the foreseeable future and given there is more work to be done to achieve the Qatar 2030 vision, the anticipation is that the local market will learn and mature in D&B. What remains to be seen is if the level of trust between Client and Contractor improves which, can open the possibility to take this procurement a step further and adopt a two-stage approach where the Contractor can be brought on board early to provide input on buildability challenges and de-risk the project leading to lower construction costs . P

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WORLD -CLASS WONDER

Multiple design challenges during the development of the $1.25B Collins Arch project tested the talents of Cbus Property's project team – but the result is a mixed-use masterpiece.

DOMENIC SCHIAFONE
DIRECTOR, OCEANIA

> We knew this was not a normal project. There were many versions of the cost plan. We offered options and advice as design ideas arose – often before they appeared on a drawing."
>
> **Domenic Schiafone, Director, RLB**

Boasting two 40-level tapering towers linked by a 14-metre long, eight-floor sky bridge, Collins Arch is a brilliant addition to Australia's cultural capital. But achieving an ambitious vision required collaboration, commitment and a razor-sharp focus on costs.

Cbus Property has set its sights on net zero emissions by 2030, and this commitment to sustainability was embedded into the building's design.

The Collins Arch precinct brings together 184 luxury residences, a five-star hotel with 294 guest rooms, 49,000 sqm of premium office space, and a colonnade of shops, bars and restaurants. Resort-style residences enjoy a pool, sky garden and breathtaking views over the city.

"Bordered by exclusive retail, dining and coffee experiences, the ground plane of Collins Arch is the unique and versatile meeting point between the east and west towers," says Cbus Property's Chief Executive Officer, Adrian Pozzo.

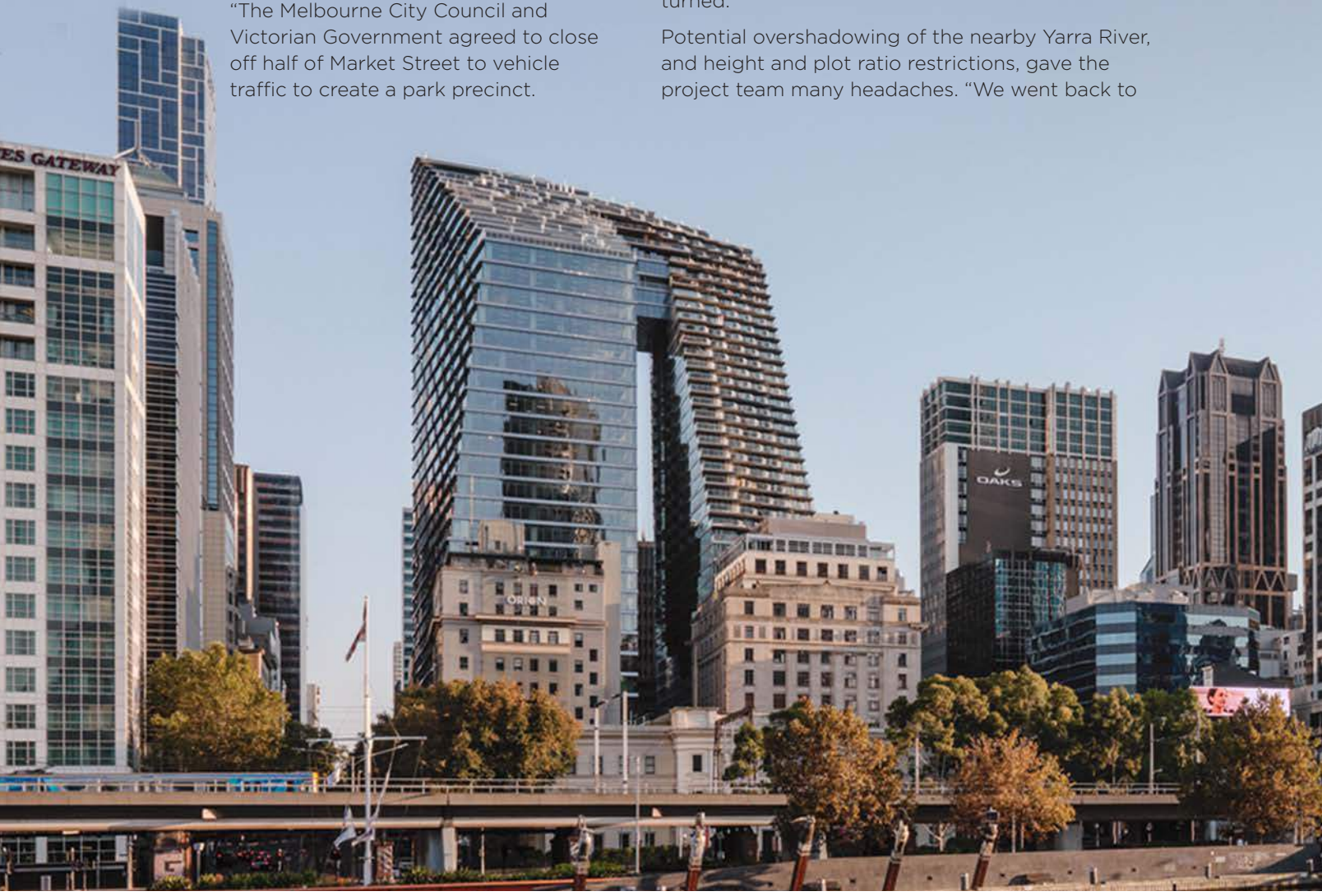
"The Melbourne City Council and Victorian Government agreed to close off half of Market Street to vehicle traffic to create a park precinct. Once approved, in collaboration with the City of Melbourne, we landscaped 1,900 sqm of open space in the middle of the city, creating Melbourne's first park in almost 40 years," Pozzo adds.

Woods Bagot and SHoP Architects won a design competition for Collins Arch in 2014, after Cbus Property sent out the call for a new landmark development on one of Melbourne's most prestigious streets.

Kate Frear, Director at Woods Bagot, says the design optimised each floorplate and building use to return half the site to the city as public open space. It was a "huge engineering feat," she says – one which "enables all-important sunlight to reach deeply into the site and into the building".

The brief was ambitious from the outset: an iconic precinct that would set a new standard for mixed-use development in Australia. But icons aren't always easy to bring to life, and the project team faced several planning setbacks before a sod was turned.

Potential overshadowing of the nearby Yarra River, and height and plot ratio restrictions, gave the project team many headaches. "We went back to



the drawing board several times – and each time we had to start the cost planning, design and feasibility work from scratch," says RLB Director Domenic Schiafone.

"Feeding construction costs into the feasibility process is an endless balancing act – if one area is off balance then the project won't stack up financially," Schiafone notes. RLB's challenge was value management without cutting corners. "It's about doing things smarter."

In just one of many examples, back-of-house areas like plant rooms were economised to maximise every square metre of bankable space.

Collins Arch features high-performance glazing that floods the buildings with light, best-in-class end-of-trip facilities that encourage active transport and electric vehicle charging stations. These features, and many more, earned Collins Arch a 5 Star Green Star Design & As Built (Design Review) rating from the Green Building Council of Australia. What's more, the innovative and integrated approach to sustainability will cut carbon emissions by around 25 per cent when compared with business-as-usual buildings.

Schiafone says RLB's team entered the project with eyes wide open. "We knew this was not a normal project. There were many versions of the cost plan. We offered options and advice as design ideas arose – often before they appeared on a drawing."

Success demands a symbiotic relationship between all the consultants on the team. "There were some weeks when we'd go backwards and forwards with different options until all hours of the morning. We all felt tremendous satisfaction in finally putting the pieces of the puzzle together."

Combining residential, commercial and hotel uses brings extra layers of cost complexity, but RLB's team relished the challenge.

"The building needed to work as one, but four separate design teams – responsible for the building fabric, commercial interior, residential interior and hotel fitout – were on site, all operating at a different pace. RLB's cost plan needed contingency and flexibility so changes to design would not blow the budget," Schiafone adds.

Today, Collins Arch stands proudly on Melbourne's most prestigious street, bringing together luxurious living, future-forward offices and inspiring places for people. As SHoP Architects' founding principal Bill Sharples notes, Collins Arch is "catalytically urban, public-spirited, and fresh" and will transform this part of Melbourne's CBD into an "around-the-clock community". P

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As seen in:
Property Australia, August 2021 "World Class Wonder"

THE NEW HEART OF URBAN SPACES

UNDERSTANDING AND EMBRACING THE VALUE OF LOGISTICS IN COMMUNITIES

MARK GRAYSON
PARTNER, UNITED KINGDOM

Anyone working in the world of logistics pre-2019 was expecting an uptick in online retail and planning for the resulting fulfilment space. However, what no one imagined as we entered 2020 was the exponential increase in online retail driven by the pandemic that saw global online sales go from 3,354 billion US$ to 5,424 billion US$ from 2019-2021, or 18% of all sales globally. We now live in a world where online retail is the norm with next day delivery and even one hour delivery an expectation rather than an exception to the rule.

The resulting impact has meant that industrial investment volumes have risen more than sixfold in 2020 to service this drive in demand - from warehouses to store, to fulfilment centres to distribute the goods that we are all clicking and buying every minute of the day. And as customer behaviour is changing so are our logistics spaces and the places where we house them.

URBANISATION ACCELERATING OUR DEMAND FOR CONVENIENCE

With over 56% of the population now living in town or city centres and urbanisation accelerating as infrastructure and social mobility drive people into city centres for jobs and to boost local economies, we need to rethink our city and town centres and ensure that we have placemaking strategies within our planning policies for logistics. While many town and city planners globally include healthcare, education and other such amenities as essential in our urban communities, logistics is still rarely on the urban planning agenda. A recent study found that in the UK current storage volumes equate to an average capacity of 70 ft^2 of warehouse space per household. A statistic which is only going to grow rather than lesson as we look to build more houses within our cities. As we become driven by convenience around delivery to the doorstep, we need to think how we integrate warehouses and last mile distribution units into our cities and towns.

TRADITIONAL CITY PLANNING NOT FIT FOR PURPOSE TODAY

Many cities were traditionally built with commercial and retail at their heart, then residential and leisure and green spaces and wrapped around with transportation links be it like in London with its orbital motorway M25 that encircles almost all Greater London or other cities with trains, trams, or boats. However, this traditional city and town design no longer works when cities can span across 16,411 km^2 like Beijing or the 6,340 km^2 of Shanghai. These communities now need logistics in the heart of them. For most cities this coincides with the decline of the traditional high street with many physical shops now closed and existing units repurposed into multi-usage or service-related spaces such as cafes or working hubs. With land scarce and rents and rates high in city centres, vast spaces for warehouse aren't an option so the key lies in more and smaller units to service smaller geographic districts, or last mile distribution units.

THE ONLY WAY IS UP (AND DOWN)

Unable to spread out or take over more buildings and with building out wider not an option, new space will need to be created either on top of existing space or sometimes down below ground with multi-level logistics and vertical hubs and solutions that increase loading capacity. New industrial masterplanning incorporates multi-level loading docks and the smart use of automation to increase both the storage and operational density achievable through the building footprint. Such schemes are already being seen with developers such as SEGRO looking to build an 807,000 ft^2 underground last-mile delivery facility in South-East Paris with space to be used by companies using electric vehicles and delivery tricycles.

LOGISTICS' PART IN MEETING SOCIAL AND ENVIRONMENTAL TARGETS

Which brings us to one of the largest challenges at play for those looking at how they integrate industrial and logistics in the heart of cities and town centres – how to combine environmental targets with growth. With many cities having carbon zero targets in place such as London aiming to be carbon zero by 2030, our new logistics infrastructure needs to have sustainability as the golden thread throughout. What better way to stop larger, diesel heavy trucks entering urban areas than by replacing them with electric and hydrogen fleets delivering to and from last mile distribution hubs, reducing both carbon emissions but also working towards decreasing air pollution.

Thinking even more laterally, many cities have rivers and waterways running through them which currently are used for international cargo but not domestic transportation such as the Manchester Ship Canal or the Mersey in Liverpool in the UK. With many able to transport loads of up to 1,500 tonnes waterways could save even more emissions on our roads and in our cities, replacing the impact of 100s of HGVs dealing with bulk deliveries from the already congested road infrastructure. However, we know that the biggest challenge for waterways now is their price point and until we can drive volume through this route it will remain an expensive option for many operators.

Then there is the social value that having industry on our doorsteps can bring – providing economic stability to areas of social deprivation with local employment for those living near to last mile fulfilment centres both within the warehouses and to deliver in that last mile radius. Of course with this increase in employment comes the attraction of more people to our cities, driving with it an ecosystem of new housing and of course, more warehouse space needed, as well as providing the monies to help fund community projects, create green spaces through corporate taxes and business rates.

We know that urbanisation is accelerating and with more people living in town and city centres comes the need to service them. On demand retail will continue to grow and we need to think of innovative and dynamic ways to weave our logistics into places where we live, work and play. And we need to change our way of thinking about living next to these places. Instead of thinking of them as faceless spaces with shelves of boxes, we need to view them as we do other community amenities and places of convenience – as a facilitator of the lives we want to live. When we start to understand the value – economically, societal and from a lifestyle point of view – of having logistics at the heart of our urban spaces then we might start to embrace them. P

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MONEY MATTERS:

The Benefits of Real-Time Cost Estimating

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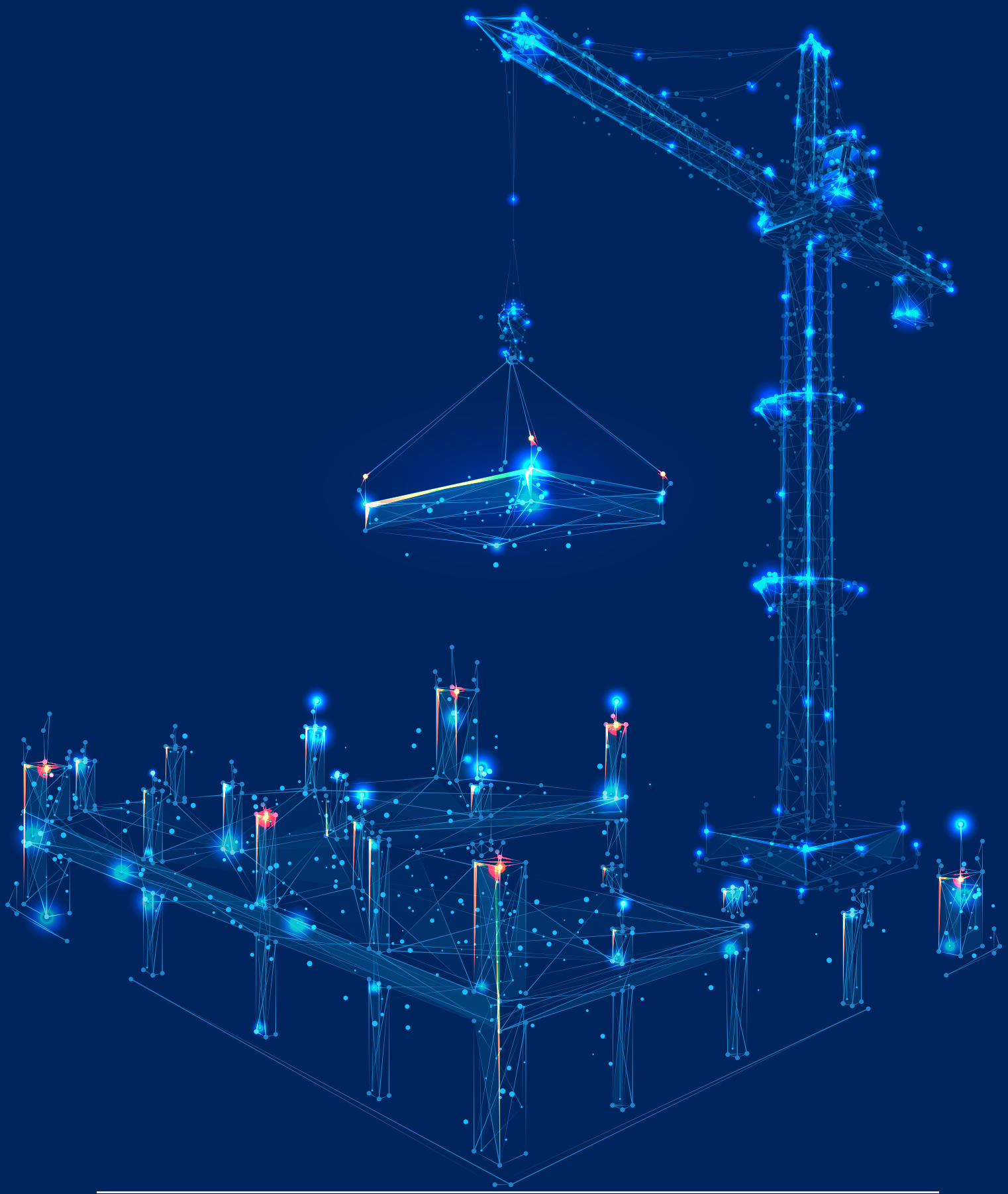
Real-time construction cost estimating offers owners some important advantages over the traditional milestone estimating model. With estimators supplying pricing data quickly and frequently, instead of only at established points in the design process, costs are proactively managed, rather than reactively summarized.



In milestone-based estimating, building costs are developed using historical data, benchmarked expenses, or an overall price per square foot. As the project moves ahead, with specific materials, systems, and details coming into focus at the design development phase, the cost estimate becomes more fact-based and precise, but the possibility of "sticker shock" also looms as the design coalesces. This has its own set of consequences. Budgetary bombshells at this late stage in the process can often trigger a protracted period of value engineering, possibly putting the schedule in jeopardy as the drawings are revised to reflect the redesigned project.

An alternative to the conventional milestone estimating, real-time estimating (RTE) entails making more frequent, albeit less comprehensive, checks on costs. Rather than waiting weeks or months for each milestone to wrap up before running the numbers, RTE takes the pulse of the project at every incremental step.

The design team provides periodic updates (usually in the form of a 3D model, or BIM) for the estimating team to review. With each decision made by the team, it's possible to track their impacts on the budget in real time. Providing owners with this information enables them to clearly see the cost implications of their decisions earlier, helps them balance their priorities, and ultimately make more informed decisions about critical issues before cost-based conflicts become a serious problem.

EVALUATING CHOICES

Real time estimating is extremely flexible. It can be performed on a project as a whole, or it can zero in on a specific segment of the scope that the designer or owner is particularly concerned about, such as materials, building performance, or mechanical systems. This kind of targeting is not possible with ground-up, milestone estimating.

The nimbleness of RTE does have some trade-offs when compared to milestone estimating. Because real time estimating is an ongoing series of updates, essentially snapshots of a design-in-progress, it may not be as comprehensive as a milestone estimate; it may not capture everything, and as a result may be less accurate than milestone estimates. RTE may also incur a higher fee than milestone estimating, because of the ever-moving line in the sand, but its value typically offsets that cost.

TO RTE OR NOT RTE?

Certain types of projects stand to benefit from RTE more than others. Large buildings, where the cost of small details is exponentially magnified due to the scale of the project, are good candidates for the technique. For instance, when a designer adds a light cove running around the perimeter of a sports stadium or airport terminal late in the project, they might be unaware of how large an impact that can have; it could result in a million-dollar surprise as the project heads into the construction documents phase. The same reasoning can be applied to highly repetitive buildings—such as hotels and high-rise office buildings—too, where every design element and decision is multiplied hundreds of times over.

Real time estimating is also useful with complicated projects that require evaluating and comparing numerous design alternatives and options for siting, earthworks, life-cycle studies, or sustainability/performance goals to be assessed.

EARLY INTEGRATION

To implement real-time estimating, cost estimators need to be on board from Day 1 of the project, at the onset of the programming/concept phase. This is when many key decisions are made, and estimators can collaborate and coordinate with owners, designers, and all stakeholders to help establish the parameters of the project; jumping in any later, estimators' roles are dramatically curtailed. Integrating the cost estimator with the team early on will help align project expectations with budgets.

When construction cost estimators are a foundational part of the project team, real-time estimating isn't just a service; it provides clients with cost certainty, enabling them to maximize both their investments as well as their returns. P

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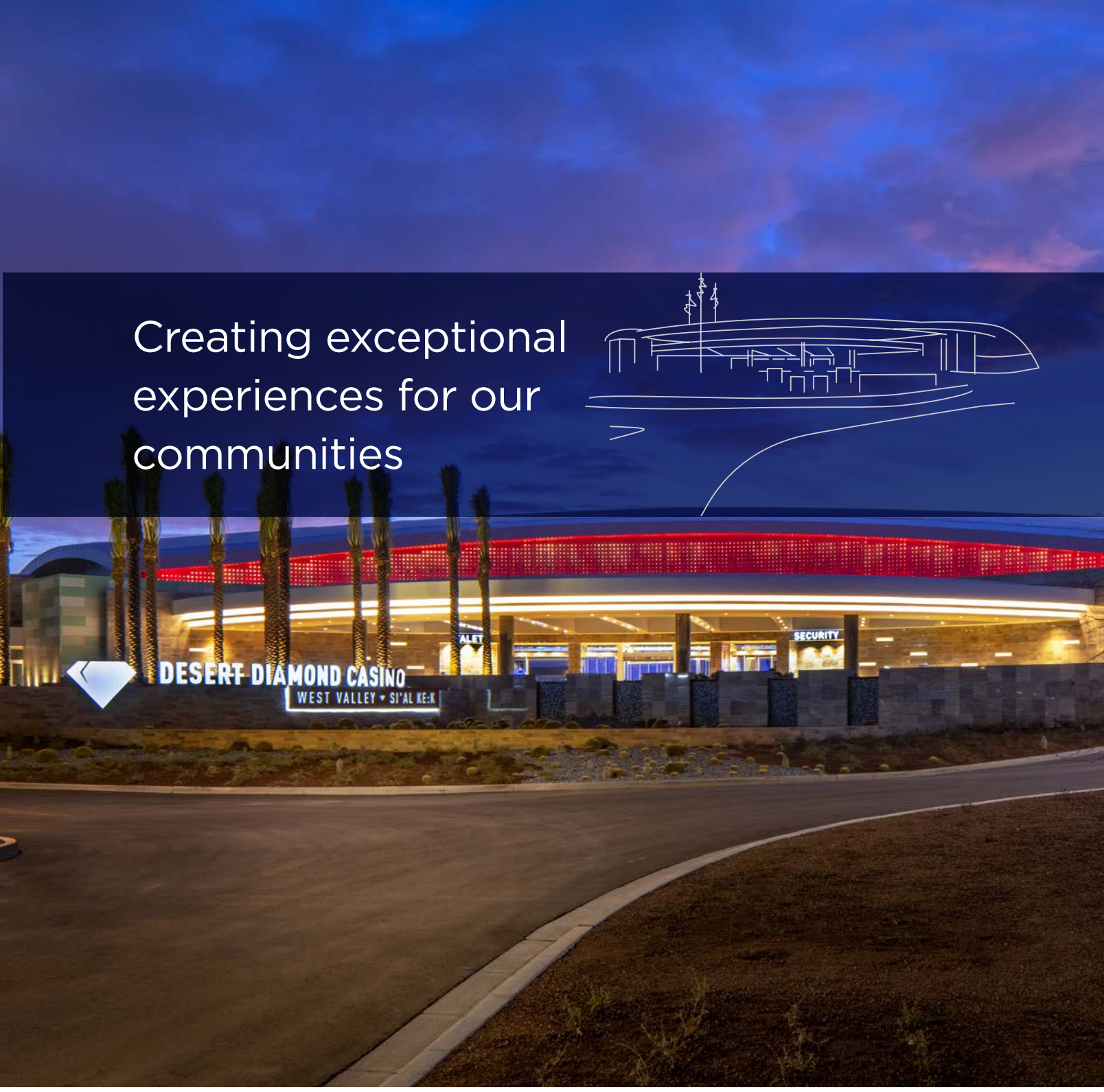
As seen in:
NAIOP, 2022, "The Benefits of Real-Time Cost Estimating"

Creating exceptional experiences for our communities



At RLB, we aim to create exceptional experiences for our communities. One of the ways we do this is by aligning our capability with client needs. In the case of Tohono O'odham Gaming Enterprise, our team of specialists assisted them by creating, evaluating, and managing project controls that addressed the critical issues of time, cost, scope, and quality of their casino. Our efforts, in conjunction with Summit Project Management, resulted in the successful delivery of a new casino in the heart of the West Valley entertainment and sport district.

Just a short drive from the State Farm Stadium, Desert Diamond Casino (dubbed "Jackpot Valley") brings 1.2 million SF of entertainment space to the west valley. The casino was developed around the core concept of a truly distinct entertainment experience, including over 75,000 SF of gaming space, comprising the latest slots, table games, a poker room, and a bingo hall.

RLB – in conjunction with Summit Project Management – provided project management services to the Tohono O'odham Gaming Enterprise. In a unified effort, we demonstrated one of our core strengths: promoting project and team performance through oversight of resource utilization, schedule and risk management, and compliance with health, safety, and building ordinance regulatory requirements.

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THE PAST, PRESENT AND FUTURE OF TECHNOLOGICAL ADOPTION ON LABOUR RELIANCE

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THE BEGINNING

The construction sector has traditionally been a labour-intensive industry and has in the past exhibited an entrenched resistance to technological adoption. Across industries, we have witnessed a paradigm shift in the last decade in terms of productivity, the speed of which has no historical precedence.

Whilst the exponential pace of technological implementation and adoption is like no other point in time, in comparison the construction industry has only seen a global labour-productivity of an averaged 1% per annum over the past two decades. However, this global transformation will inevitably shape the future of the construction industry.

In Singapore, where many initiatives are government-led, the Building Control (Buildability and Productivity) Regulations 2011 came into operation on 15 July 2011. These Regulations tightened the original requirements under the Buildability Design Score and introduced the concept of Constructability Score. The aim was to encourage designers to deliver more buildable designs upstream and builders to switch to more labour-efficient construction processes downstream.

Additional productivity roadmaps and codes were introduced subsequently, including the second Construction Productivity Roadmap in 2015, Construction Industry Transformation Map (ITM) in 2016 and Code of Practice on Buildability. These initiatives were means to achieve a highly integrated and technologically advanced construction sector by 2020.

THE JOURNEY

Locally, a series of social political reasons spurred the nation's move, including:

- Our high dependence on cheap foreign workers;
- Overcrowding with close to 6 million in population; and
- The 2013 Little India riots in a largely peaceful society.

Due to a need to keep up with the demand for high-rise affordable housing for a rapidly growing population, there is further pressing need to increase productivity sustainably.

As with any disruptive workflow, policies were introduced to ease firms and practitioners towards the adoption of new technologies. Disincentives were introduced through the systematic increment

of the Foreign Workers Levy (FWL) and reduction of Man-Year Entitlement (MYE) over time to neutralise the "cheap" component of foreign labour. Incentives were also introduced to encourage the industry to be early adopters of Building Information Modelling (BIM) tools and processes, for example.

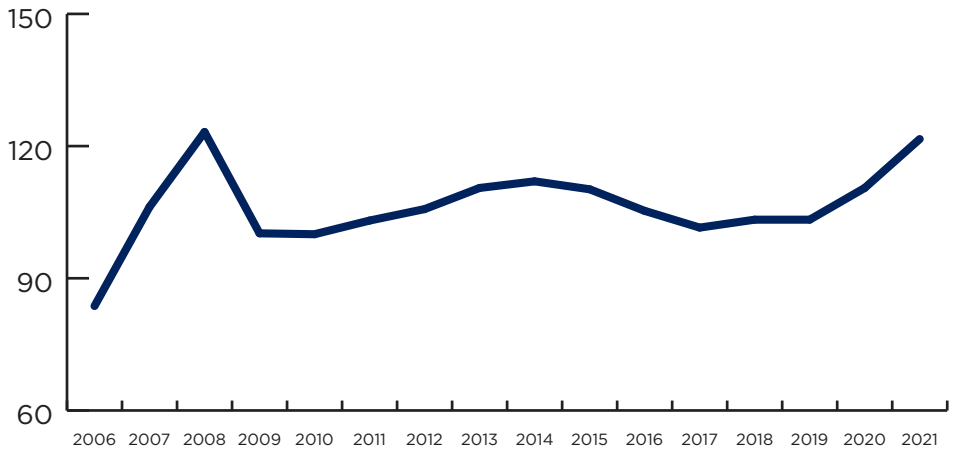
Under the roadmap and ITM, the digital adoption started with government funding for hardware upgrades and software procurement and usage at individual firm level, to mandatory use of BIM model for building plan submissions for approval at government level. With the maturity in proficiency of the industry in BIM knowledge, Virtual Design and Construction (VDC) was introduced as a means to manage a BIM project's process of construction. Integrated Digital Delivery (IDD), which builds on BIM and VDC, was launched shortly afterwards to help BIM-ready firms to build up collaboration capabilities.

The speed at which technology was implemented presented a steep learning curve for players in the industry. Reasonable progress was made – players with suitable projects adopted VDC and IDD, documenting productivity of the processes – but were largely confined to leading firms and early adopters.

At RLB, we embarked on our BIM journey as early as 2012 with the upgrade of hardware and investment in relevant BIM software. By 2014, we teamed up with the designers and developer to pilot the VDC framework for a 1,400-unit residential project. For pre-tender, we were able to reduce time taken to take off quantities and prepare tender documents by 30%. In post-contract stage, utilising the latest BIM model with tagged measurement schedule to certify monthly progress claims improved our productivity by 50%.

For downstream application, with the aid of BIM visualisation, modular construction offsite is increasingly being adopted to shorten overall construction time and improve productivity on-site. Prefabricated bathroom units (PBU), prefabricated prefinished volumetric construction (PPVC), prefabricated systems and MEP modules are cast and assembled off-site, usually in Malaysia and China, before they are transported to site in Singapore for just-in-time installation.

The implementation of the Regulations coincided with the completion of the integrated resorts in 2010/2011 and the concurrent cooling of the tender prices from its peak in 2008. Between 2011 and 2019, the year-on-year tender price movements remained more controlled despite mounting pressure from rising labour costs and an overhaul in work processes including investment in new technology. This points to an equilibrium in supply and demand within the market.



Graph 1: RLB Tender Price Index from 2006 to 2021

THE PRESENT

Tender prices in early 2020 were projected to maintain its equilibrium in the medium term despite geopolitical tensions and civil unrest in the region. However, the COVID-19 pandemic hit the Southeast Asian region in February 2020, triggering a series of lockdowns within and between national boundaries. The COVID-induced lockdown served as impetus for nationwide digital adoption such that the economy could continue functioning even in isolation.

With Information Communication Technology infrastructure and systems in place having embarked on ITM since the early 2010s, the majority of the society, including designers and quantity surveyors, was able to transit immediately to working from home, home-based learning, telecommuting and e-commerce. In contrast, the labour-intensive construction work saw productivity ground to a halt when worksites shut and a slow restart when worksites reopened.

Singapore, in particular the foreign workers who lived at dormitories, was hard hit by the pandemic. With foreign workers leaving Singapore due to a variety of reasons (fear of the pandemic, expiry of their work passes, etc.) and borders restrictions around the world in place, work permit holders in the Construction, Marine Shipyard and Process (CMP) sectors dropped by nearly 20% since the onset of the pandemic.

The manpower crunch has resulted in massive poaching among contractors which were under pressure to make up for the delay in their projects. Labour costs have spiked by 20% to 50% as demand exceeded supply, resulting in a spike in tender prices in 2020. Labour shortages persists even in its third year as waves of COVID-19 variants hit worldwide, causing border restrictions to tighten intermittently and render supply unreliable.

Spikes in demand and cost of labour reaffirmed the need for industry transformation through the adoption of technology such as Design for Manufacturing and Assembly (DfMA) to reduce our vulnerability to manpower disruptions. DfMA promotes offsite fabrication, which helps to reduce the number of workers on-site and make on-site segregation of workers easier, in order to adhere to safe management measures.

With epidemiologists warning of pandemics like COVID-19 becoming more frequent and deadlier, disruptions as a result of this pandemic are likely to recur if the industry does not change. Current solutions include a two-pronged approach of:

1. Better risk management by changing contract conditions to cater for extension of time and cost claim due to future pandemic/ epidemic.
2. More IDD drive to further apply BIM for construction, including developing the Common Data Environment (CDE) data standard.

A CDE allows project teams to create, organise and share information to foster collaboration, make timely decisions and take early interventions during the project's delivery and building maintenance lifecycle.

THE FUTURE

While the pandemic has acted as a catalyst to hasten technological adoption, the momentum will also continue to pilot the shift in the industry faster than in the last decade. Blockchain, Data Analytics, Artificial Intelligence, and Virtual Reality will be the new norm in the industry. A new workforce is needed, some job re-designs required, in order to transform into a more productive industry characterised by high technology and lesser reliance on foreign labour.

Having benefited from the adoption of new technologies within our office, RLB is a strong proponent of staying ahead of the curve to offer more, without compromising on quality. We have set up a digital workgroup to drive our digital roadmap and guide our transition into the new era at the turn of the last decade. Since then, our staff have gone from understand BIM and its benefits to directly benefiting from the change.

We believe that stakeholders and companies that lag behind will lose out in the long run. Change, whilst uncomfortable, does bring forth new opportunities. P

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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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