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About
The Building Economist is the flagship publication of Australian Institute of Quantity Surveyors (AIQS). Produced quarterly, The Building Economist seeks to provide information that is relevant for quantity surveying, cost management and construction professionals.

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FOREWORD

Future Quantity Surveying skills, construction industry forecasts, replacement cost assessments, modular construction, new hospitals, 21st century leaders, delays and disruptions, mine modification works, industrial manslaughter, building a new sports stadium and a centre of excellence are the topics featured in this June 2019 edition of The Building Economist.

During May, Australian Construction Industry Forum launched the 2019 Australian Construction Market Report. This Report, summarised in this edition, provides five-year forecasts for residential building (houses, apartments, and townhouses), non-residential building (offices, retail, industrial, hotels, health, education, and entertainment facilities), engineering construction (major economic infrastructure including roads, rail and ports, and mining resource-based projects). Infrastructure projects are forecast to lead the way.

Delay and disruption lead to time and cost overruns. In this edition, Robert Gemmell discusses why identifying delays and/ or disruptions early and good record keeping are essential in effectively managing corrective action and quantifying financial impacts and demonstrating liability.

Rhonda Kerr writes about the trends in capital funding for public hospitals in Australia, the key factors influencing investment and building and the opportunities and challenges facing public hospital infrastructure posed by technological change. It concludes with identification of the role Quantity Surveyors can take in developing the tools for activity-based capital funding for public hospitals.

Australian Institute of Quantity Surveyors releases *'Replacement Cost Assessments – An Information Paper'* in this edition. The purpose of this Information Paper is to inform on factors impacting replacement cost assessments, establish a common approach to undertaking replacement cost assessments, inform of common insurance inclusions and exclusions relating to replacement cost assessments, and provide a checklist of items.

Efficiency and economy are driving forces behind the modular movement in Australian construction. The article, written by the team at Exactal, integrates sustainability, cost effectiveness, quality control and project management, and future-proof estimating software.

In this edition, we provide you with the final parts of the article *'Leading Agile Transformation, the new capabilities leaders need to build 21st-century organisations'.* To survive and thrive today, many organisations are undertaking the fundamental shift from a traditional organisational model designed for the industrial economy to an agile model designed for today's digital economy. This paradigm shift heralds a new form of organisation that enables innovation, collaboration, and value creation at unprecedented speed, scale, and impact. Agile organisations can develop products five times faster, make decisions three times faster, and reallocate resources adroitly and quickly.

All working mines will require additional construction works at some point. These works can be for maintenance or replacement, upgrade or the addition of new works and capacity to existing facilities. In his article, Keith Keown MAIQS focuses on construction works that result from the modification or replacement of existing facilities.

Our regular legal content provider, Doyles Construction Lawyers, delves into laws specifically relating to industrial manslaughter offences. Doyles summarises the laws currently in force within the Australian Capital Territory and Queensland, and proposed provisions in Victoria, New South Wales, South Australia and Western Australia.

David Chandler OAM provides his insights into these two questions - Is it time to refresh the Quantity Surveyor value proposition in a hyped-up industry? What would this mean for the future skilling of the profession and what sort of new career pathways may result.

Two case studies have made it into this edition. The new Bankwest Stadium, a state-of-the art venue funded by the New South Wales Government that seats up-to 30,000 people with a capacity for 40,000 people in concert mode. The New South Wales Rugby League Centre of Excellence at Sydney Olympic Park was officially opened in February 2019.

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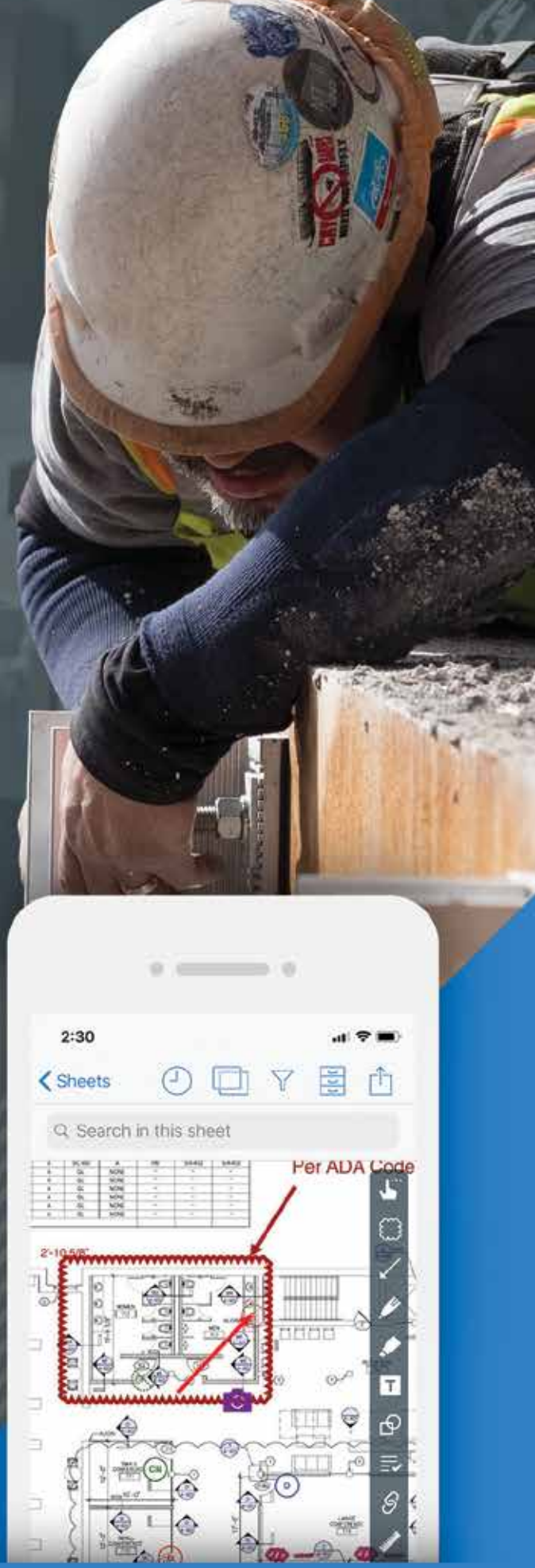

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CASE STUDY

BANKWEST STADIUM

CASE STUDY

The old Parramatta (Pirtek) Stadium, has been demolished and redeveloped into the new Bankwest Stadium, a state-of-the art venue funded by the NSW Government that seats up-to 30,000 people with a capacity for 40,000 people in concert mode.

Bankwest Stadium is now complete and held its opening sporting event, Parramatta Eels v Wests Tigers in Round 6 of the NRL, on Monday 22 April 2019. Five sporting clubs will call Bankwest Stadium home at some stage in 2019 – NRL Clubs Parramatta Eels, Wests Tigers and Canterbury-Bankstown Bulldogs, NSW Waratahs Super Ruby Franchise and A-League football team Western Sydney Wanderers.

WT Partnership (WT), Australia's largest independent Quantity Surveying and Construction Cost Management Consultancy, has been involved in the construction of Bankwest Stadium for Infrastructure NSW since its concept stage.

As experienced stadium specialists, WT assisted with the cost-planning of this $360 million project. WT have worked on a number of the major stadia works across Australia and were able to use their experience to benchmark costs on Bankwest Stadium against previous projects such as the MCG, ANZ Stadium Sydney, Perth Stadium, SCG and Marvel Stadium Melbourne.

"WT was able to keep this immense project on a budget. Our team has proven ability in providing early cost estimates prior to the design being developed, which is essential to deliver the best value within agreed budget parameters," said Gary Mayor, Associate Director at WT.

A game changer for Australian sport, the design of Bankwest Stadium is geared towards creating an incredible experience for spectators by bringing fans closer to the action. The angle of the grandstand is the steepest in the country and the front row is only five metres away from the field of play. This will take the fan experience to the next level and reset the benchmark for tier two stadia in Australia.

The stadium features a 'field club', a first for a rectangular stadium in Australia, where up to 120 club members and VIPs have the opportunity to view the players running out and warming up. Additionally, the corporate suites include innovative technology to project the noise of the crowd through speakers.

The stadium is complete with interactive technology that enhances the fan experience. They can order food and beverage to be delivered to their seats and see the results, replays and stats from their phone, ensuring they never miss a minute of the game.

COST MANAGEMENT CONSULTANCY

WT was engaged by Infrastructure NSW to provide full Quantity Surveying services, from concept design costings through to practical completion in 2019.

When preparing the reference design costings, there were quite a few factors that were driven by the planning and approvals process. Factors such as the overall confines of the site, strict height restrictions, the surrounding parklands and the management of traffic and pedestrian movement around the stadium had to be considered.

In the initial stages of budget planning, there were multiple updates to the cost plan, specifically surrounding the estimates of the final cost due to the

scale of the project.

WT had to ensure the price of the stadium was in line with the expectations from the Government and Infrastructure NSW.

COST PLANNING CHALLENGES

Key project challenges included:

- Understanding the existing ground conditions. The site had known contamination risks. The quantification of this became a key project risk, to ensure all parties were across total extent remedial actions as defined by the Remediation Action Plan. This risk was included and was to be the responsibility of the successful tenderer.
- Providing a robust and independent cost plan throughout the project planning, design and documentation phases in line with the Government's and Infrastructure NSW's expectations.
- Attempting to reflect the true market value when the build was expected to take a period of three years.
- Knowing that only a certain number of tier one contractors would be able to successfully tender and complete the works to the standard and specification required. It was important to ensure this was reflected within the price point provided to the Government.

COST PLANNING OPPORTUNITIES

WT's past work with tier one stadia allowed the team to draw from extensive experience and benchmark costs of Bankwest Stadium with previous stadia works. This allowed the team to provide a full review of costs and ensure budget compliance whilst also maintaining the world-class design and technology within the stadium.

CONTRACT SELECTION AND PROCUREMENT STRATEGY

The procurement strategy for the head contractor was done by Infrastructure NSW. This was tendered as a full design and construct project. The reference design and documentation outlined the scope of work that the successful contractor would be responsible for.

Lendlease were the successful tenderer and contracted to complete the design and take the project to final delivery.

PROACTIVE BUDGET REPORTING

WT took a proactive, solutions-based approach to the management of costs. WT was able to review and rely on a catalogue of previous stadiums and benchmarks gathered over time to price the overall stadium construction.

As the Quantity Surveyors, WT priced all the inherent risks, from design, ground conditions to overall delivery, which eventuated to be under the Government's allowance for the complete development cost.

LESSONS LEARNED

Bankwest Stadium needed to be carefully planned due to the risks involved. Extensive initial planning to align with client vision, robust cost planning, proactive value management and budget forecasting were all thoroughly considered. The initial price received a good tender response on the market and from the client's perspective all the risks were adequately covered.

The project was delivered on time and within budget and it is regarded as a benchmark world-class stadium.

Clients
Infrastructure NSW

Location
Parramatta, NSW

Value
$360 Million

Completion
March 2019

WT Partnership Project Leadership
Gary Mayor, Associate Director at WT Partnership

Owned by
Venues NSW on behalf of the NSW Government

Operated by
VenuesLive Management Services

Building Contractor
Lendlease Building Contractors Pty Ltd

Lendlease Design Team
Populous
Aurecon

COST ASSESSMENT FOR NEW PUBLIC HOSPITAL SERVICES

By Rhonda Kerr, Principal Health Facilities Planner, Hames Sharley Architects and Planners; Ph.D. Candidate in Health Economics, Curtin University; W.A. Director, Economics, Health Services and Planning, Guidelines and Economists Network International (GENI).

HOSPITALS

Quantity Surveyors will be instrumental in bringing the next generation of clinical care to Australians through progressively improved hospitals across Australia.

AUSTRALIANS VALUE OUR PUBLIC HOSPITALS HIGHLY BUT, QUANTITY SURVEYORS WILL BE SURPRISED TO KNOW THAT, THE VALUATION OF THE BUILDINGS AND MEDICAL EQUIPMENT, REQUIRED TO SUPPORT HOSPITALS, IS POOR.

Over many years national reports on public hospitals have lamented the quality of data on hospital assets (SCRGSP 2017; SCRGSP 2018, 2007, 2008, 2009) and the Productivity Commission, when directed to value public hospital capital, acknowledged that "nobody knows exactly how much capital is currently used by public hospitals" (Productivity Commission 2009 p. 303). Consequently the value of public hospital capital assets required for patient diagnosis and treatment are estimated from asset depreciation plus the user cost of capital (Productivity Commission 2009; SCRGSP 2019).

However, public hospitals in Australia are now costed and funded for the specific resources required for individual patient care. Impending clinical improvements including Personalised Medicine, Genomics and Precision Medicine require precision costing for public hospital capital costs.

This article outlines trends in capital funding for public hospitals in Australia, the key factors influencing investment and building and the opportunities and challenges facing public hospital infrastructure posed by technological change. It concludes with identification of the role Quantity Surveyors can take in developing the tools for activity-based capital funding for public hospitals.

BACKGROUND

Australians value access to high quality public hospital services when they need them. Consequently, between $2 billion and $2.3 billion has been invested annually in public hospital projects over the last three years but this is down from peaks of $4.3 to $5.3 billion annually between 2010-11 and 2012-13.

Public hospitals are focussed on activity. Once beds were the measure of hospital size and technical capacity. But now beds are only a portion of hospital activity with 6.6 million patients of whom 53% do not have an overnight stay (AIHW. 2018 - page 15), 3 million procedures in outpatient clinics, 16 million allied health treatments and 12 million outpatient medical consultations. Hospital-in-the-home meant 1,500 fewer beds were required in 2016-17 (AIHW 2018 - Table 5.49). Across the nation the number of patients increased by 4% per year each year (since 2012-13) although fewer than 15% of public hospitals have had building projects over the past three financial years (State and Territory Budget Papers 2015-16, 2016-17, 2017-18).

However, waiting lists for surgical care are increasing annually with 3% of Australians waiting for surgical treatments, some for over a year (Table 4.5 (AIHW 2017; Australian Medical Association 2019). Access to emergency departments is deteriorating with some waiting times defined as clinically dangerous (Whitson 2018; Australian Medical Association 2019). Emergency department waiting times are constrained by access to hospital beds (Australasian College for Emergency Medicine 2018; Australian Medical Association 2019). Mounting evidence suggests that current clinical requirements for patients are not being met by traditional approaches to capital funding (Kerr 2014; Kerr 2018).

FUNDING FOR HOSPITALS

Contemporary public hospitals in Australia are focussed on the quality of care delivered at an efficient cost. Funding for most hospital costs is per patient based on their diagnosis group (DRG) and is called activity-based funding (ABF). Since ABF funding was introduced in 2012-13, the annual cost for operating public hospitals has only increase by an average 1% per year (Biggs 2018).

However, capital funding for public hospitals is prioritised by State and Territory (called states in this paper) Governments based on health service, budgetary and political priorities (Kerr 2018). At the beginning of this century, the value of capital required to support clinical care was estimated to be 8% of recurrent costs (Deeble 2002). By 2016-17, the Productivity Commission depreciation-based estimate for the capital cost per patient had risen to 19% of recurrent costs for public hospitals (SCRGSP 2018). However, State Budget papers showed over the three years, 2015-16, 2016-17 and 2017-18, across all states, investment in hospitals averaged 44%, 40% and 36% of the cost of capital consumed in providing care (Table 1).

HOSPITALS

Table 1 Capital expenditure for hospitals as a percentage of capital costs consumed, 2015-16, 2016-17 and 2017-18

	Total Estimated Cost of Capital	Hospital Capital Expenditure			Total investment as a percentage of capital cost		
		2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
	$'000	$'000	$'000	$'000	%	%	%
NSW	1,762,521	699,172	718,406	611,845	40	41	35
Victoria	1,738,014	247,106	261,598	446,470	14	15	26
Queensland	959,499	752,928	694,196	431,716	78	72	45
S.A.	454,629	92,569	169,997	71,489	20	37	16
WA	542,436	155,113	133,664	219,897	29	25	41
Tasmania	88,643	84,826	113,297	185,410	96	128	209
ACT	124,811	11,704	139,416	88,976	9	112	71
NT	164,000	102,750	121,427	42,701	63	74	26
Australia	5,834,552	2,146,168	2,352,001	2,098,504	44	40	36

Source: Annual Report on Government Services 2018 (SCRGSP 2018) State Budget Papers, (AIHW. 2018)

CLINICAL CHANGE AND TECHNOLOGY POSE RISKS AND OPPORTUNITIES

The progression from funding hospitals per bed day to funding per patient by diagnosis group has changed the focus of clinical service costing. The capacity to cost the treatment of similar patients across all hospitals in Australia has increased transparency and efficiency, reducing waste and minimising risk. The success of this micro-economic costing approach has not been extended to capital valuation as yet.

Clinical change has resulted in improvements for patients and hospitals with implications for hospital buildings. Hospital-in-the-home, telemedicine, robotics, medical imaging advances are examples of improved clinical effectiveness resulting in efficiency dividends.

Further changes in clinical care are expected from new types of medicine and new diagnosis and delivery systems (Williamson 2018) from point-of-care testing for genome sequencing, gene editing, microbiomics and epigenetics to hybrid robotic surgery and imaging (Williamson 2018; CSIRO 2018).

Platforms in hospitals will be required for information and clinical communications systems to supporting electronic medical records, artificial intelligence as a clinical aid (Sampler 2018; Dewey 2018), automatic dispensing, big data (Productivity Commission 2017a; CSIRO 2018), real-time patient monitoring equipment and apps (Productivity Commission 2017b; Phillips 2018; CSIRO 2018), and patient monitoring systems.

Traditionally, adoption of new technologies has been seen as a cost. By analysing costs in terms of the patient and treatment efficiency, cost-benefit relationships can be established to determine cost-effectiveness. Critical to this process is effective and accurate capital cost estimation.

VALUING CAPITAL FOR PATIENT CARE: THE TOOLS REQUIRED FOR FUTURE VALUATION

European research has provided some frameworks to enhance capital cost

estimation in hospitals to the patient and diagnosis level. The Dutch Layers Approach to hospital building costs hospital functional areas into four areas - hotel, 'hot floor', office and industry. They used a property approach to determine the lifespan, technical specificity, flexibility and ultimate marketability or disposal value of hospital components (Netherlands Board for Healthcare Institutions 2007a). Based on depreciation of assets, Germany subsequently developed diagnosis-based estimation for capital costs linked to facilities management systems (Vogl 2014; Lennarts 2009). The adoption of diagnosis-based capital funding in Germany improved the cost effectiveness of hospitals. Detailed hospital information on capital costs have enabled thorough evaluations of individual hospitals, technological progress and regional efficiency (Karmann 2017).

Green costing for sustainability is becoming more significant in the UK, Europe, Australia and America to manage to costs associated with climate change for hospitals to reduce their carbon footprint, water and energy consumption and optimise waste management (OECD Health Ministerial Meeting 2017; WHO Regional Office for Europe 2017; Watts N 2017; Zhang 2018; CSIRO 2018; Hanna 2018; UK National Audit Office 2015). Australian healthcare is estimated to generate 7% of national carbon emission with 34% of that from public hospitals. Expenditure on health buildings has been estimated to generate an additional 8% of total health emissions (Malik 2018).

These dynamics suggest faster rates of redundancy and replacement of hospital assets with greater emphasis on life-cycle costing.

CONCLUSIONS

In Australia, the pursuit of hospital efficiency at the patient level has overlooked the value of effective capital costing. The traditional prioritised, project-based system of funding hospital projects is not delivering clinically-appropriate access to hospital beds, emergency departments or surgical care for all Australian patients. More patients require care each year but only a small percentage of hospitals are funded through existing processes. Emerging technologies are changing hospitals and the types of services they offer. Technological innovations in healthcare require effective capital valuations to determine both the costs and the benefits accurately. Costing capital to the patient level permits appropriate and sustainable capital funding for the expanding range of clinical services in hospitals.

Evidence suggests that public hospitals require larger and more frequent investment to meet clinical and technological developments. Maintaining Australian standards for quality hospital care will require the development of accurate valuations for the capital required to deliver effective patient care, and a more patient-focussed funding mechanism. If the system of capital allocation is linked to the patient diagnosis through activity-based funding, and the Commonwealth cost-shares, a significant number of hospitals will require professional Quantity Surveying services to improve facilities and assets.

Hospitals are changing from measuring the number of beds to measuring the resources required by patient diagnosis. Rather than hospitals being defined by the number of beds, they will be defined by the number of inpatients, outpatients and day-patients seen. Quantity Surveyors can expect to be instrumental in delivering detailed costings for hospital services as they adapt to frequent clinical and technological change. Assessments of capital costs in a technologically dynamic time would benefit from data collection specific to the different costs for functional areas of a hospital (operating theatres, ICUs, procedure rooms, delivery suites, wards, day-only areas, hotel spaces, outpatient functional areas, imaging etc.) expanding on the Dutch Layers Approach (Netherlands Board for Healthcare Institutions 2007b) and the German Facilities Management costings (Lennarts 2010). Appropriate costing for buildings and systems responding to energy, water and waste costs increases and the impacts of climate change will also be valuable (UK National Audit Office 2015).

Quantity Surveyors will be instrumental in bringing the next generation of clinical care to Australians through progressively improved hospitals across Australia. Developing detailed costing data that can be linked to the various elements of patient care is the key. The challenge for Quantity Surveyors is to develop databanks of sufficient integrity to support the inclusion of capital costs in activity-based funding.

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QUANTITY SURVEYING MOVING FORWARD

IS IT TIME TO REFRESH THE QUANTITY SURVEYOR VALUE PROPOSITION IN A HYPED-UP INDUSTRY? WHAT WOULD THIS MEAN FOR THE FUTURE SKILLING OF THE PROFESSION AND WHAT SORT OF NEW CAREER PATHWAYS MAY RESULT.

By

David Chandler OAM, Principal CE Advisory, Adjunct Professor - School of Computing, Engineering and Mathematics Western Sydney University

There is little to add to the conversation about our changing industry. For the purpose of this article lets go with what the World Economic Forum[1] has recently reported. For balance readers might also have a look at what Rex Miller and Dean Strombom authors of 'The Commercial Real Estate Revolution'[2] have to say about all of this. To round out this context the term *Construction 4.0*[3] is also used by those offering an endless set of insights into what is happening around us. It's possible that the industry is hyped out. Our clients seem to be.

PERHAPS IT'S TIME TO GET BACK TO BASICS - PUT QS'S BACK IN POSITIONS OF POSITIVE INFLUENCE

Its hard to find a comprehensive definition of what Quantity Surveyors (QS's) or Cost Engineers do or offer the industry's clients. When challenged some turn to their historical importance of being the honest broker in procuring and transacting the built-world for over 200-years as their reason to exist. My early career recollection was that QS's were the trusted power representative at the client table. But that standing seems to have shifted as new procurement models such as Design and Construct (D&C) and Public Private Partnerships (PPP's) have seen others in the construction value chain ascend to new influence. Increasingly QS's seem to pop up like flotsam and jetsam with far less sway.

The purpose of this article is to discuss the future role of Quantity Surveying professionals and then point to some of the important capabilities they will need going forward. This conversation must however start with by suggesting what the community should expect of the profession today, and then describing some scenarios of what they may expect for the future. For this purpose, let's assume it's all about 'underpinning value in the built world, either in its making, delivering and or transacting. It's like a continuing chain of due diligence that becomes the trustworthy cornerstone of any investment in property or infrastructure and of institutional and public confidence in the built world.' It's a lofty expectation.

ALL OF CONSTRUCTION'S PROFESSIONS NEED FIRST TO DEAL WITH TODAY'S DEMONS

Architects and Engineers are being challenged to be more accountable for what they bring to the table. Constructors and certifiers are also being challenged to be accountable for their role in delivering more assured, resilient and sustainable performances. The public and those who underwrite the investment needed to deliver projects have recently had their confidences challenged by many examples of non-compliant work or sub-optimal design. The investors in new projects are unsettled by the rising cost of construction. And the industry as a whole lament an almost imperceptible improvement in the chaos that should be reducing through the application of new technologies and construction methods. Worse, designers, constructors and manufacturers report poor margins despite their efforts.

These symptoms all have root cause. In my view the industry has lost the integrity that was once instilled by confident, able QS's. Poor project definition and documentation, procurement time-frames that accommodate non-performers, unchallenged construction schedules and on-site overheads, contingencies to cover every risk as opposed to first mitigating them, valuation of non-compliant work, acceptance of work and completed projects that are not fit for purpose, justifying claims for variations or disruption that should have been avoided all create a setting where the less able in construction's supply chain can exploit the system. But let's not place all the blame here at the feet of QS's. The industry's regulators and watchdogs are also complicit. Few are held to account for insolvency, breach of safety, non-payment of workers and sub-contractors or of unfair trade practices.

There are now new overlays that effect construction. They include increasing importation of higher value-added goods and services being sourced offshore more competitively. There is a growing recognition that construction materials consumption, waste and embodied carbon impacts are way beyond sustainable. There is a hastening deployment of new digital technologies that will disrupt previously accepted disquiets. The regulation pendulum is slowly swinging away from the traditional public jurisdictions as their antiquated governance processes further erode public confidence in the built world. Buildings are getting smarter and how they will be procured, made and operated will be different.

At the forefront of pressure to reshape the industry's performance will be its underwriters. These are the insurers that are now confronted with the risks of non-compliant buildings, the consequential costs and assets that are showing less resilience in the face of higher climate impact. Some insurers have stopped supporting practitioners who certify buildings or are carving out risks of cover from the properties they insure. Financiers are being confronted with falling security values when non-compliance or early resilience flaws make

properties less merchantable. These properties will give rise to an impaired asset class. Both insurers and financiers will need to levy higher premiums and lending rates to cover these risks. Insurers have already become active in looking for solutions that they can influence. They will have little choice but to turn to modernised and refreshed Quantity Surveyors.

THE CHALLENGE WILL BE TO REGAIN LOST GROUND AND CLAIM LEADERSHIP ON NEW FRONTIERS

Back to basics is the essential starting point. That means lower tolerance of the shortcomings discussed in this article. And a first principle will involve abandoning the tired practice of screwing low bid consultants and constructors as the only legitimate signal to clients by QS's that they are doing their job. The challenge of assuring value is different.

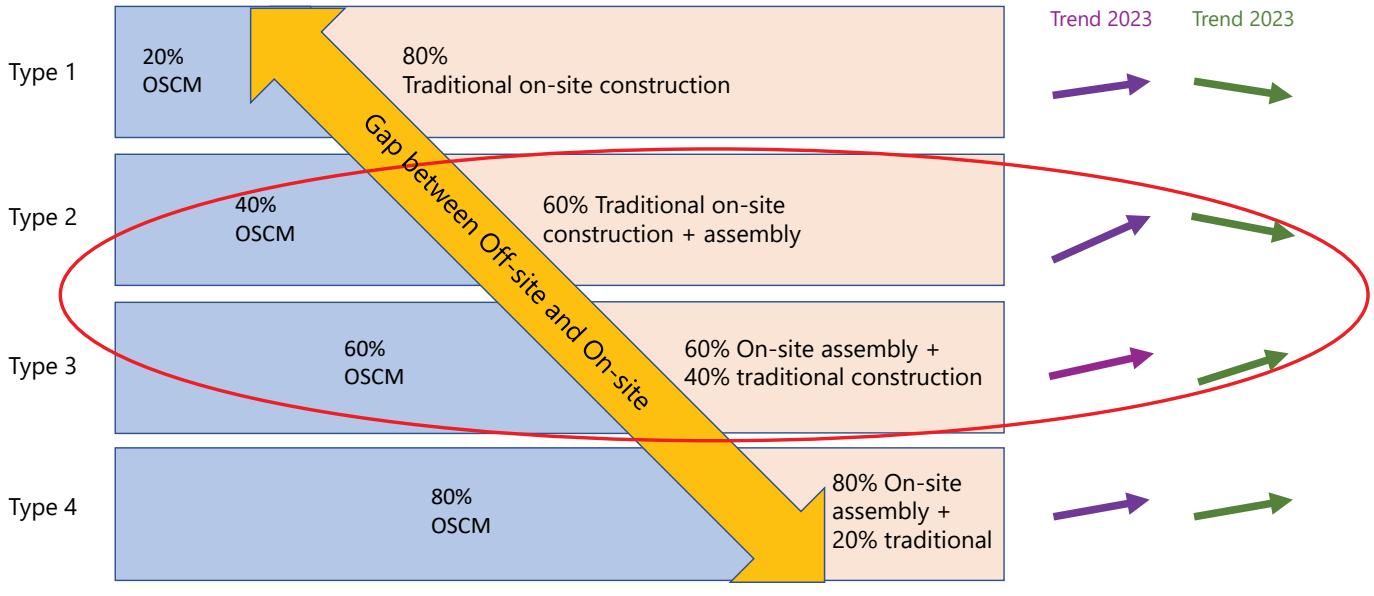
The industry then needs to recognise that there are maturing alternatives to the traditional model of fully designed buildings and their subsequent tendering and on-site fabrication. One only need to see the investment that organizations like Katerra, Amazon and Google are making in pressing for 'construction in a box' solutions to delivering the built-world anywhere. The cost of sea container transportation is now estimated to be about one-percent of the final retail price. It is estimated that ninety-percent of the world's goods and services are carried by sea-containers. As shown in the following diagram the evolving nature of construction delivery enterprises have clear patterns. None are proposed ahead of the other, however it is likely that the greatest number of future buildings will draw from the type 2 and 3 typologies (Graphic 1). Notwithstanding smarter buildings made smarter will prevail.

Few QS's have yet to recalibrate how they will engage with procurement across these typologies either globally of locally. They have yet to develop advisory for clients about the most efficient and assured ways to source new projects. They have not developed the methods they will need to help procurement teams navigate the appropriate design management, delivery leadership, quality assurance, valuation and acceptance protocols.

Most are still struggling with how to translate fifty-year old measurement practices that envisage ongoing trade-based pricing with a majority of work and over-heads occurring on-site. Few have developed the tools necessary to recalibrate procurement when forty to sixty percent of traditional construction and overheads have moved off-site and even off-shore.

Few industry associations have charted the new capability or opportunity

EVOLVING CONSTRUCTION ENTERPRISE TYPOLOGY MIX (DIFFERS NORTHERN V SOUTHERN HEMISPHERE)



pathways that education institutions should be anticipating in their curriculums. Universities in particular have been allowed to dumb down their academic teaching standards to accommodate more fee-paying undergraduates than at any time previously. The industry is describing today's graduates as more theoretical than applied. It is taking longer after graduation to teach them the old ways, despite the new tools at their disposal. Industry has fallen short in tasking the higher education system with re-investing in modern content and delivery capabilities. If the important advisory and implementation standing of QS's is to be re-ignited, then this is a critical time to be re-charting their future. A ten-year turn-around task.

SO, WHAT ARE THE EXCITING NEW FIELDS THAT A RE-INVIGORATED QS PROFESSION MAY LEAD?

The most important first step is re-establishing the standing of QS's at the client table. This position must stand for integrity, capability and assurance. The shortcomings that need to be turned around have been described. A culture of continuing due diligence should help frame the Quantity Surveyor value proposition to its customers and the public. QS's will need to have applied skills and experience to push-back when the suboptimal presents from clients, consultants and contractors. Turning around the proposition that value-for-money is the product of compromised competitive tendering practices is key. Value-for-money is the product of experienced leadership, transparent benchmarking and tackling compromise. These are the fundamentals for re-establishing the value proposition of the QS.

The most profound opportunities on the immediate horizon are those that come from practical application of new digital technologies. Trustworthy platforms shared by the community of surveyors, will enable opportunities in supply chain and building assurance not previously available. The functions of high-quality certification intermediaries will most likely become one of the highest reward risk mitigation jobs of the future. Within the next five to seven years the technologies will exist for every new building to have an individual compliance and resilience rating. This will affect their value for insurance and finance.

The increasing rate of global acceptance that man induced climate change must be abated, now has a momentum of its own. There is no turning back either way. Here modern Quantity Surveyors should carve out a specialist niche in authentically tracking and recording both embodied and operational carbon. Here provenance of all construction inputs, their making and compliance with client purchasing policy will be normalised. Soon new digitally enabled trust tools like blockchain will move past their current immaturity.

Quantity surveyors will need to be at the forefront of understanding what smart buildings will be like, how they should perform and the legal framework that will govern their existence. Commissioning and accepting smart buildings will involve a new approach to due diligence and rigor that is mostly absent in the industry today. Huge opportunities to step up here and advise building owners on how to make and adapt to assure value is open country.

A new generation of consultant and engagement contracts will be needed as the traditional construction supply chain is re-imagined and deployed. These contracts will need to be purposeful in their intent, they will demand single point accountability for performance and outcomes. Modern construction contracts will turn on assured performance, not deemed to comply or on account. These contracts will not be fit for purpose if their drafting is enshrined in out of date defences, demanded by traditional industry bodies or their lawyers. The construction industry has been amongst the last to transform from a self-facing culture to one which is customer-facing. Reinvigorated surveyors will be important advocates at the table to ensure the best outcomes are achieve in this transformation.

The modern value proposition for one of construction's oldest custodians must be driven via capability, leadership and integrity that underpins the value of and confidence in tomorrow's-built world. This proposition needs a single point of custodianship and resolve.

It will be when this point of inflection is achieved that the industry's current trough of disillusionment will start to point towards a new plateau of positive opportunities for all.

[1] "The Fourth Industrial Revolution is about to hit the construction industry. Here's how it can thrive." World Economic Forum article, 13 June 2018 https://www.weforum.org/agenda/2018/06/construction-industry-future-scenarios-labour-technology/

[2] 'Rex Miller and the Commercial Real Estate Revolution' YouTube video https://www.youtube.com/watch?v=AGSPjRXhEUk

[3] The Fourth Industrial Revolution (4IR) is the fourth major industrial era since the initial Industrial Revolution of the 18th century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital and biological spheres, collectively referred to as cyber-physical systems.

AUSTRALIAN CONSTRUCTION MARKET REPORT

Australian Construction Industry Forum (ACIF) has released the May 2019 Australian Construction Market Report.

The Report covers the following sectors:

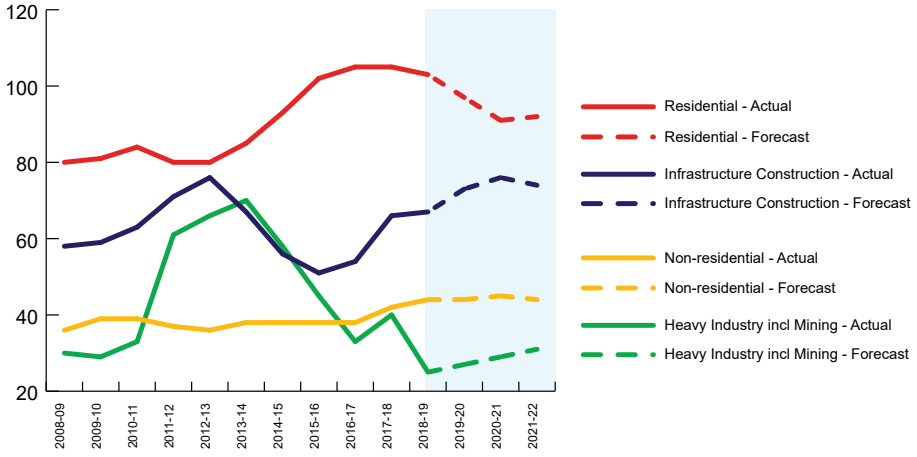
- Residential Building (houses, apartments, townhouses)
- Non-Residential Building (offices, retail, industrial, hotels, health, education and entertainment facilities)
- Engineering Construction (major economic infrastructure including roads, rail and ports, and mining resource-based projects).

Bob Richardson, Chair, Construction Forecasting Council cites the following key points in the Report:

- Major projects had been showing sharp falls in the number and value of Residential Building projects over the last year or more.
- The recent upturn in Non-Residential Building has offset falls in Residential Building activity.
- The recent surge in Infrastructure Construction, is of crucial significance for the building and construction industries — as it is for the economy at large.
- The downturn in the residential market may spill over into the rest of the economy, reducing consumer confidence, eroding already fragile investment intentions and dragging down growth.
- Continued growth in infrastructure depends on State Government finances which may be eroded by falls in revenue due to falling house prices.

BUILDING AND CONSTRUCTION WORK DONE (AUD BILLION)

Source: Australian Bureau of Statistics and Australian COnstruction Industry Forum Construction Forecasting Council



Download the report. Note that AIQS members have been granted free access to this Report and the ACIF Dashboard – login to the AIQS website and follow the links.

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THE GAME-CHANGER

DELIVERING THE NEW SOUTH WALES RUGBY LEAGUE CENTRE OF EXCELLENCE

The New South Wales (NSW) Rugby League Centre of Excellence was officially opened by NSW Minister for Sport, the Hon. Stuart Ayres at Sydney Olympic Park in February 2019. Special guests included NSW Rugby League chairman Dr George Peponis OAM, NSW Blues coach Brad Fittler, Laurie Daley, Wayne Pearce, Andrew Johns, Steve Mortimer, Steve Roach and Paul Sironen. The $30 million Centre of Excellence is a state-of-the-art "game-changer" that provides outstanding support facilities and offices for NSW Rugby League (NSWRL), nurturing the talents of junior representative sides through to the men's and women's NSW State of Origin teams. A key feature of the facility is its inclusive character. As Ayres explains: "This is a home for everyone in NSW Rugby League - men, women, volunteers, professionals, players and officials. It's a centre of excellence for all."

The three storey, multi-use complex includes a full-sized playing and training field adjacent to the building with direct access to a gymnasium, recovery facilities and medical treatment rooms, a hydrotherapy centre with plunge and resistance pools, press conference room, change rooms, lecture rooms, kitchen/dining facilities for players and staff, and administration offices, as well as a Blues-themed café and museum featuring Blues memorabilia. The Centre of Excellence pays homage to the stars of the game, with many facilities named after greats including the Laurie Daley Cardio Room, Brad Fittler Lounge, Paul Broughton Research Centre and Wayne Pearce Gym. The same tunnel iconic athletes walked through during the Sydney Olympics is adorned with the names and images of former Rugby League stars, linking the Centre of Excellence to ANZ Stadium. It will be used exclusively by the players during State of Origin matches.

CONTRACT SELECTION AND PROCUREMENT STRATEGY

Altus Group was engaged by NSW Rugby League in mid-2016 at the master planning stage of the project. The Altus Group Cost Management team was led by Director, David Collins AAIQS, whose role involved pre-construction activities including initial cost planning and budgeting, detailed cost planning, tender review and negotiations. Ben Mules, Senior Quantity Surveyor, delivered Cost Management services throughout the construction period, including assessment of progress claims, variations and provisional sum adjustments, as well as assisting the superintendent and NSWRL with the budget until completion of the project in early 2019.

Altus Group worked with the project team to complete tender reviews, comparisons and interviews in order to select the preferred head contractor. The contractor was engaged under an Early Contractor Involvement (ECI) arrangement, which led to further design to help eliminate project risks, value management exercises and design revisions aimed at keeping the project on budget.

Following the ECI phase, the preferred head contractor submitted a revised tender. ADCO Constructions was awarded the contract to complete the project, with APP as the Project Manager. Altus Group's involvement with negotiations ensured the adjustments to the tender were priced accordingly and the revisions were fair and reasonable.

Once construction commenced, the project was successfully run by ADCO under a Design and Construct contract.

PROJECT CHALLENGES

The high-profile facility presented various challenges during the construction phase. Altus Group dealt primarily with APP and NSWRL, who managed the other major stakeholders, which comprised the NSW Government, Sydney Olympic Park Authority (SOPA), the Australian Rugby League Commission, Country Rugby League, Men of League Foundation, Kari Foundation and the University of New England amongst others.

The unique development features innovative areas and equipment including a medical treatment and hydrotherapy room and a research centre, which meant that previous cost data wasn't readily available. Furthermore, the entire building had to be designed and built on a small, irregularly shaped site. These challenges necessitated close liaison with the client, design team, suppliers and manufacturers to ensure the fit out and equipment for these areas suited all their needs and provided best value for money. Stakeholders were made aware of the various cost implications of changes to the design, as well as material and equipment selection. All site constraints were considered and discussed to ensure obstacles were addressed as soon as they arose, thereby avoiding any major issues further along the project timeline.

KEY OUTCOMES

The NSWRL Centre of Excellence was completed on budget and ahead of schedule in December 2018. It will be the new home of the NSWRL for the next 40 years and will also house the headquarters of key stakeholders

CASE STUDY

including Country Rugby League, Men of League Foundation, the University of New England and KARI Foundation, an indigenous organisation that fosters Aboriginal excellence and community achievement through corporate partnerships.

The facility's partnership with the University of New England will be of great benefit to the community, offering aspiring athletes in regional NSW and Sydney opportunities to become professional rugby league players. "We are excited about the opportunities our partnership with NSWRL will bring for our students, both regionally and in greater Western Sydney and the outreach and development programs for our wider New England North West community," Vice Chancellor of the University of New England, Professor Annabelle Duncan explains.

The facility will also play a performance enhancing role that will give players an invaluable competitive edge. "Through this centre, our world-class sports scientists will support NSWRL with research into player performance and development, and give our students access to research programs linked to elite sporting teams," Professor Duncan says.

LESSONS LEARNED

- Facilitating the Early Contractor Involvement (ECI) process ensured adjustments to the tender were reasonable and the project was on budget
- The cost team assisted with NSWRL's management of key stakeholders, which was critical to the project's success
- Going back to first principle cost planning ensured materials and equipment provided the best value for money
- Identifying site constraints at the onset of the project avoided major issues in the latter stages
- Comprehensive cost data was developed that can be used for similar innovative leisure and recreation projects.

This article has been written by Altus Group. Images courtesy of ADCO Constructions.

COUNTING THE COST OF DELAY & DISRUPTION

HOW ARE COSTS ASSESSED AND WHAT RECORDS YOU SHOULD BE KEEPING?

By
Robert Gemmell, Senior Director, Australia, FTI Consulting, Construction Solutions

DELAY AND DISRUPTION

Delay and disruption are endemic throughout the entire building and construction industry and lead to time and cost overruns. In this article, we discuss why identifying delays and/or disruptions early and good record keeping are essential in effectively managing corrective action and quantifying financial impacts and demonstrating liability.

DELAY AND DISRUPTION THE DISTINCTION

Delay is time related and disruption is productivity and/or production related. A delay may cause disruption, disruption may cause delay, and both may, and often do, occur at the same time.

LOSS CAUSED BY DELAY

A contractor's claim for further payment because of delay is typically made under the following:

- direct additional construction costs
- site overheads
- head office overheads
- loss of profit and subcontractors.

DIRECT ADDITIONAL CONSTRUCTION COSTS

A contractor will usually incur additional site labour costs for working over a longer period, overtime and/or on multiple shifts.

SITE OVERHEADS

Often referred to as preliminaries or indirect job costs, these relate to items such as site huts, toilets, equipment and plant items used to carry out the work. When work is delayed, the contractor may incur additional costs to keep these items onsite for longer. If contract terms permit, the valuation of these claims will be based on agreed rates for site overhead items in the contract. However, most often, a claim for additional payment is based on a loss and expense or a damages assessment and is calculated based on the actual additional costs incurred. This information generally comes from the contractor's cost account and/or cost records.

HEAD OFFICE OVERHEADS: Claims for additional overheads because of delay are rare as most contractors can accommodate the additional work using existing resources. However, because key site resources were tied up on the delayed project, a contractor may be denied an opportunity to take on another project that would have contributed to the payment of head office overheads. To recover for this 'lost opportunity', the contractor must provide evidence that it declined invitations to tender because it did not have the capacity to undertake a new project due to resources being tied up on site on the delayed project.

LOSS OF PROFIT: Contractors may claim for a reduction in turnover or loss of profit suffered as a result of the delay. A contractor must demonstrate that, had there been no delay, it could have used the lost turnover more profitably. Even if they were making a loss on the project, the question is what the contractor would have done with the money had they received it at the proper time. If the contractor's business was making a loss at the time a sum equating to the loss of profit is recoverable if the loss of turnover increased loss.

SUBCONTRACTORS: Main contractors may receive claims for delay costs from subcontractors. These delays can be caused by the main contractor, the employer or both. When the claim relates to delays caused by the employer, the main contractor may submit its own delay claim to recover additional costs paid to the subcontractor.

QUANTIFYING LOSS CAUSED BY DISRUPTION

The most common causes of disruption are loss of job rhythm caused by premature moves between activities, out of sequence working and repeated learning cycle; work area congestion caused by stacking of trades, increase in size of gangs; and increase in length or number of shifts. However, these are also symptoms of a contractor's own poor site management and therefore not recoverable.

There are several methods used to calculate loss caused by disruption, including:

- actual costs
- total and modified total cost
- project comparison studies
- speciality industry studies
- general industry studies
- the measured mile
- baseline productivity
- system dynamic modelling
- earned value analysis.

The measured mile and the baseline productivity methods are generally seen as the most robust methods. Both methods compare production and/or productivity during one or more periods when:

- the contractor's progress on site was not impacted by the employer
- the contractor's progress was impacted by the employer
- avoids any comparison with the tender

– thus avoiding the argument that the tender was inadequate.

The same principles apply to subcontractors who are disrupted by the main contractor and so on down the supply chain. In fact, it is essential for the main contractor to ensure that its subcontractors conduct a proper assessment of loss caused by disruption as that will most likely form the basis of their own claim to the employer.

AVOIDING GLOBAL CLAIMS FOR DELAY AND DISRUPTION

Good record keeping is crucial in avoiding (or successfully claiming) additional costs caused by delay and/or disruption. If not properly tracked over the course of a project, it becomes difficult later to link them to a cause retrospectively and the contractor then lacks sufficient evidence to demonstrate entitlement to those additional costs.

This leads to global claims which are often rejected in negotiations and judicial proceedings because they do not demonstrate the actual cause for the additional costs.

RECORD KEEPING

To support the assessment of delay and/or disruption claims, a contractor's cost recording and record keeping system must capture information that demonstrates:

i. additional costs were incurred

ii. additional costs incurred relate to the delay and/or disruption alleged

iii. why those costs were incurred.

For example, a contractor should be able to identify additional head office, administrative and support costs caused by a delay and/or disruption from those incurred during the non-impacted period. If they cannot, it will be nearly impossible to demonstrate the additional costs incurred as a result of change and/or breach, prove the loss and recover the additional costs for which the employer is be liable.

Records should also identify the functions of the staff/resources being claimed and demonstrate that their tasks undertaken correspond to the cause of delay and/or disruption. It is fairly easy to identify costs relating to staff resources when 100% utilised for a specific period of time, but less easy if only part utilised in functions relating to the delay and/or disruption.

Further, site establishment costs may be incurred for off-site staff and it will be necessary to distinguish them by using appropriate timesheets. Similarly, there may be head office staff based on site but who are working on more than one project. Again, specific time spent on the particular project in question needs to be recorded appropriately.

Labour costs that increase due to delays and/or disruption are generally difficult to monitor and control and even more so when main contractors subcontract much of their work. In this situation, the additional labour costs will most often be the subcontractor's but becomes the main contractor's loss when payment is made by the contractor to the subcontractor. Once the subcontractor has been paid, the main contractor must demonstrate the loss to the employer and show that the payment was reasonable. Therefore subcontractors must also prove their loss to the main contractor who needs to ensure this is done properly in order to be paid itself.

IN SUMMARY

If the costs of a delay and/or disruption are not tracked properly, there will almost certainly be problems in quantifying the loss and apportioning liability. While setting up the right cost recording systems around an existing system is not always easy, it will ultimately assist with identifying delays and/or disruptions early in the project cycle so that corrective action can be taken and the financial effects can be effectively quantified.


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LEADING AGILE TRANSFORMATION

THE NEW CAPABILITIES LEADERS NEED TO BUILD 21ST-CENTURY ORGANISATIONS

Written by **Aaron De Smet, Michael Lurie, Andrew St George**

Parts 3 - 5

INTRODUCTION

To survive and thrive today, many organisations are undertaking the fundamental shift from a traditional organisational model designed for the industrial economy to an agile model designed for today's digital economy. This paradigm shift heralds a new form of organisation that enables innovation, collaboration, and value creation at unprecedented speed, scale, and impact. Agile organisations can develop products five times faster, make decisions three times faster, and reallocate resources adroitly and quickly.

Making this shift can be exhilarating. As one senior leader of a global healthcare company told us, "I've been in business for 25 years, and this is like nothing I've ever done. We're needing to develop a whole new way of seeing the world, our business, and even ourselves. I've never been more excited about what we'll be able to create—and terrified about my ability to do this."

To form and lead an agile transformation successfully, leaders need a new approach. The mind-sets and skills they have carefully honed over years of experience are necessary but not sufficient to lead 21st-century organisations. By evolving their ability to lead, executives can transform their organisations into agile enterprises engineered for the digital economy.

While this paper is written for senior leaders (typically defined as the top three to four levels of leaders), much of it applies to leaders at every level across your organisation. It has the following five parts, each of which concludes with a box of summary takeaways:

1. Part 1 summarises the emergence of agile organisations (for readers unfamiliar with this field) and links to our sister papers for more detail.
2. Part 2 presents our latest thinking on the mind-sets and practices you need to lead an agile transformation successfully.
3. Part 3 focuses on how you can bring a distinctively agile approach to the team, the core unit of agile organisations.
4. Part 4 sets out the capabilities you need to enable agility throughout the organisation.
5. Part 5 discusses how your organisation can build and embed these capabilities among leaders at every level, starting with senior leaders.

Note: Parts 1 and 2 were featured in The Building Economist – March 2019.

PART 3: ON TRANSFORMING THE TEAM

After shifting to new mind-sets and behaviors, the second major set of capabilities needed by leaders of agile organisation is learning how to help teams apply new agile ways of working. Teams are the core unit of agile organisations, so understanding and helping teams implement agile methods are key skills for all leaders of such organisations.

HELPING TEAMS WORK IN NEW WAYS

How might you help teams work in new and more agile ways? And what does this new way of working require of you as a leader? There are three essential leadership requirements that follow from all agile ways of working.

First, leaders must learn to build teams that are diverse, empowered, and connected. Small, dynamic, and high-performing teams are the main organising unit of agile organisations. Leaders must learn to empower and trust team members to work without constant updates, briefings, micromanagement, and approvals—all costly forms of oversight. Rather, leaders should agree on clear end-to-end accountabilities and business goals with teams, leaving it to team members to decide how best to act.

When building such teams, leaders must also learn to build and lead different kinds of agile teams, including multidisciplinary teams that can help break down silos, self-managed "monodisciplinary" teams to provide excellent service, and temporary teams made up of people who "flow to the work" to get key things done. In many cases, the team leader might not be the functional boss, so expertise and organisational knowledge from all members can create both stability and dynamic capability within —and beyond — each team.

Another part of team building is that leaders must make sure their teams have the right people with the right mix of perspectives on a given issue, which may change over time as the team addresses different issues. Leaders must create space for real listening, foster creative collision of perspectives, and make sure every voice is heard, not for consensus, but to take perspective and to ensure true diversity. You must ask, "Do we have the right diversity to ensure perspective and system thinking on the issue at hand?"

Second, leaders must allow and encourage agile teams to work in rapid cycles to enable them to deliver greater value more efficiently and more quickly. Leaders must help teams focus on important and urgent tasks through rigorous prioritization (creating a backlog). This cuts the friction inherent in multitasking. During this effort, leaders must help teams undertake intense, focused work to complete top-priority tasks, judge for themselves whether

these efforts delivered value, and regroup and adjust plans for the next cycle.

Third, all leaders must keep agile teams focused on the customer[17] and on creating value for customers. This includes both external customers and internal customers for whatever product or service the team is providing. Leaders must help their teams deeply understand customers, particularly their unmet and potentially even unrecognised needs. They must help their teams focus on creating innovative, whole solutions for customers, recognising that the value that flows to all other stakeholders starts with value for customers. Throughout this task, leaders must also help teams focus on beginning to deliver value very quickly, producing minimum viable products in close collaboration with, and to meet the distinct minimum needs of, target customers.

DESIGN THINKING AND BUSINESS-MODEL INNOVATION

We have found that in addition to being able to lead in this new agile way of working, it is important for leaders to understand the key elements of two other relatively new disciplines: design thinking and business-model innovation.

Originating in industrial and other forms of design, design thinking is a powerful approach to developing innovative customer solutions, business models, and other types of systems. This begins with understanding the entire customer experience at each stage of the customer journey. Using tools such as the customer-journey map, agile teams explore the full set of customer needs—their core needs for product and service features; their need to discover, learn about, evaluate, test, and buy; their need to install, use, protect, maintain, and enhance products and services; and their need to identify and align themselves with the brand and its purpose. This understanding should then lead to generating a broad range of ideas through divergent thinking, synthesizing these into a rich set of options though convergent thinking, and testing, selecting, and developing options rapidly based on customer feedback.

In organisations that are agile rather than just executors of tasks, each team is viewed as a value-creating unit, or as a "business." And they pursue business-model innovation at every opportunity. Agile organisations are obsessed with their customers, so each team focuses on clearly defined internal or external customers, with a mission to understand and meet fully the needs of those customers. To do so, teams must learn to operate as full-fledged businesses in several key respects, with the accountability to define innovative product or service offerings, define agile processes to produce and deliver these offerings, and secure the input providers and resources they need to do so. As such, leaders at every level need a sound understanding of the key elements of a business model and how any and all of the elements can be reimagined to deliver net value to all stakeholders. The key to value creation is to build business models through which everyone wins. Airbnb, for example, enables people looking for places to stay and people looking to rent out unused space to find and transact with each other easily.

ON TRANSFORMING THE TEAM: TAKEAWAYS

- Build open, diverse, and empowered teams, encouraging plural views and dissent.
- Support working in rapid cycles, with rigorous task prioritization; focused, short bursts of work; and frequent reflection to measure and learn.
- Encourage your teams to focus on your customers, understand their needs deeply, and cocreate win–win solutions with them.
- Explore opportunities to deploy design thinking and business-model innovation.

PART 4: ON TRANSFORMING THE ORGANISATION

After shifting individual mind-sets and behaviors and applying agile ways of working at a team level, the third action for senior leaders of agile organisations should be transforming the organisation. If you aspire to scale and embed agility across the whole organisation, you must develop new organisational-leadership capabilities in three areas: learn to distill and express a compelling purpose (the north star), apply the principles and practices of agile organisation design, and shape an agile organisational culture.

PURPOSE: FIND THE NORTH STAR

The first distinctive organisation-level skill leaders need to develop is the ability to distill a compelling purpose for their organisation in conversation with people across the enterprise. Purpose amounts to a clear, shared, and compelling aspiration: the north star of the organisation. While this has long been important for all organisations, it takes on increased importance and a specific manifestation in agile organisations. Because agile organisations comprise open networks of autonomous units, a defined, common purpose is particularly important as a foundational element of coherence and stability across the system. And in a world where all

[17] Sam Bourton, Johanne Lavoie, and Tiffany Vogel, "Leading with inner agility," McKinsey Quarterly, March 2018, McKinsey.com.

stakeholders have more information and more choices available to them than ever before, it is critical that this shared aspiration is deeply meaningful and resonant to all.

The organisation's north star guides and frames everything that the organisation is and does, from high-level strategic discussions to day-to-day tactical decisions at the front line. Over time, it becomes deeply embedded across the organisation and in its wider ecosystem. Leaders must learn that this unity of purpose, manifest in an organisation's people, is becoming a source of competitive advantage every bit as viable as—and in many ways more robust than—capital, intellectual property, design, technology, and physical resources.

To tap into people and meaning across the organisation in the best manner, the purpose cannot be designed in a day or two by top management at an off-site meeting. Rather, leaders must foster enterprise-wide conversations around purpose, in everything from global, real-time, video meetings to small departmental sessions. They must learn to see and hear when the north star is clearest in their many interactions and discussions across the organisation. And here, the power of simple questions, long recognised by thoughtful leaders, is of particular benefit: What are we really solving for? How will we know — beyond numbers — that we are being successful? And why would this matter? What would become possible? What then?

DESIGN: APPLY THE PRINCIPLES AND PRACTICES OF AGILE ORGANISATION DESIGN

The second organisation-level skill leaders need to develop is the ability to design the strategy and operating model of the organisation based on agile organisation principles and practices. Most senior leaders of traditional companies have a well-honed skill set in this area that reflects traditional company design as a relatively concentrated, static system: one or a very limited number of major businesses, each with a long-established business model, typically coexisting somewhat uneasily with a set of corporate functions that seek to define and enforce common functional policies across the business units.

To design and build an agile organisation, leaders need a very different set of skills based on a different understanding of organisations. They must learn to design their organisation as a distributed, continually evolving system. Such an organisation looks like a network of smaller empowered units, with fewer layers, greater transparency, and leaner governance than a traditional model, with fit-for-purpose decision processes and a rapid cycle-performance model that enables the whole organisation to plan and execute in daily, weekly, monthly, and quarterly cycles. This distributed approach underpins the agile organisation's ability to sense and respond quickly to market changes, shift resources and capabilities to where they will generate the most value, and constantly adjust in a volatile and unknowable environment.

More specifically, leaders must learn how to disaggregate existing large businesses into a much more granular portfolio; transform corporate functions into a lean, enabling backbone; and attract a wide range of partners into a powerful ecosystem.

GRANULAR PORTFOLIO OF BUSINESSES

To change a small number of large businesses into a large number of small, focused businesses ("microbusinesses"),

leaders must think, typically, along three dimensions: markets, products, and value chain. Each of the microbusinesses should align clearly with the organisation's guiding purpose, its north star. For example, Haier comprises over 2,000 such microbusinesses, ITW comprises 84 divisions and over 800 businesses, and ING comprises dozens of microbusinesses aggregated into 13 "tribes."

Leaders must learn to empower each microbusiness to innovate a business model that delivers more value to its specific mix of customers, employees, partners, and other stakeholders as well as to the system as a whole. And rather than seeking to manage the details of each microbusiness, senior leaders should learn to manage them as a portfolio. They should also learn how to move resources from slower to higher growth continually to achieve and sustain growth and profitability.

LEAN, ENABLING BACKBONE

Leaders must learn to design the backbone, or platform, capabilities that support and enable these microbusinesses. Rather than being run by traditional controlling corporate functions, these must be designed in collaboration with the microbusinesses to deliver clear value to them by providing them tools and capabilities that help them accomplish their missions more quickly, effectively, and efficiently. This often includes designing novel approaches to core cross-functional processes, such as strategy, budgeting, capital investment, performance management, and infrastructure support.

PARTNER ECOSYSTEM

Leaders must also learn to design the organisation's partner ecosystem, comprising external supplier, channel, development, alliance, and strategic partnerships and collaborations. Here, the focus is on identifying, attracting, engaging, and cocreating with a wide range of partners. The aim is to foster "open innovation," greatly expand the organisation's reach and capabilities, and shape the evolution of the industry or sector.

A basic approach should apply across all of these elements of agile organisation design. In agile transformations, senior leaders should not be designing all the details of the new organisation. Rather, they should learn to focus on evolving a high-level blueprint to give overall coherence and guidance to the system. Also, they should engage and empower people across to the organisation to cocreate the new elements. The primary mechanism for doing so is through experiments. Rather than implementing exhaustive, detailed design of and for the whole organisation, senior leaders should learn to catalyse quick, low-cost, and low-risk experiments in each of the areas previously discussed to learn what works and what doesn't and to change course quickly as needed.

CULTURE: SHAPE AN AGILE ORGANISATIONAL CULTURE

The third organisation-level skill leaders need to develop is the ability to shape a new culture across the organisation. The culture within agile organisations differs sharply from that of traditional organisations. Given the openness and freedom people experience in an agile organisation, culture arguably plays an even more important role here than in traditional organisations. The culture of agile organisations should grow from the creative mind-sets of discovery, partnership, and abundance and their associated behaviors. And in addition to accruing new behaviors, leaders should focus equally on removing unwanted behaviors. Agile thinkers, such as Eric Bowman, talk of the importance of unblocking, removing friction, and jettisoning today's practice as leaders foster a new agile culture.

To shape this culture, leaders must learn how to undertake a multifaceted culture transformation effort that centers on their own capabilities and behavior. Three of the four components of the influence model, McKinsey's research-based approach to shaping culture,[18] are about leadership: role modeling, fostering understanding and conviction, and building capabilities.

While the influence model can be applied to shift culture in any organisation, it takes on a different and distinct flavor in an agile organisation.

ROLE MODELING

The first step in an agile transformation is for senior leaders to develop new mind-sets and behaviors, as previously described. It is critical that this is an authentic commitment and transformation: leaders need to "walk the talk" and begin personally behaving in different ways. Probably the greatest influence on an organisation's culture is the demonstrated behavior of its collective leaders. While this has long been true, as hierarchies collapse, transparency increases, and position power erodes, people are closer than ever (quite literally) to their leaders. What previously could have been kept hidden on the top floor and behind closed doors is now visible to all — and available to be shared instantly in high-definition video with the world.

[18] Tessa Basford and Bill Schaninger, "The four building blocks of change," McKinsey Quarterly, April 2016, McKinsey.com.

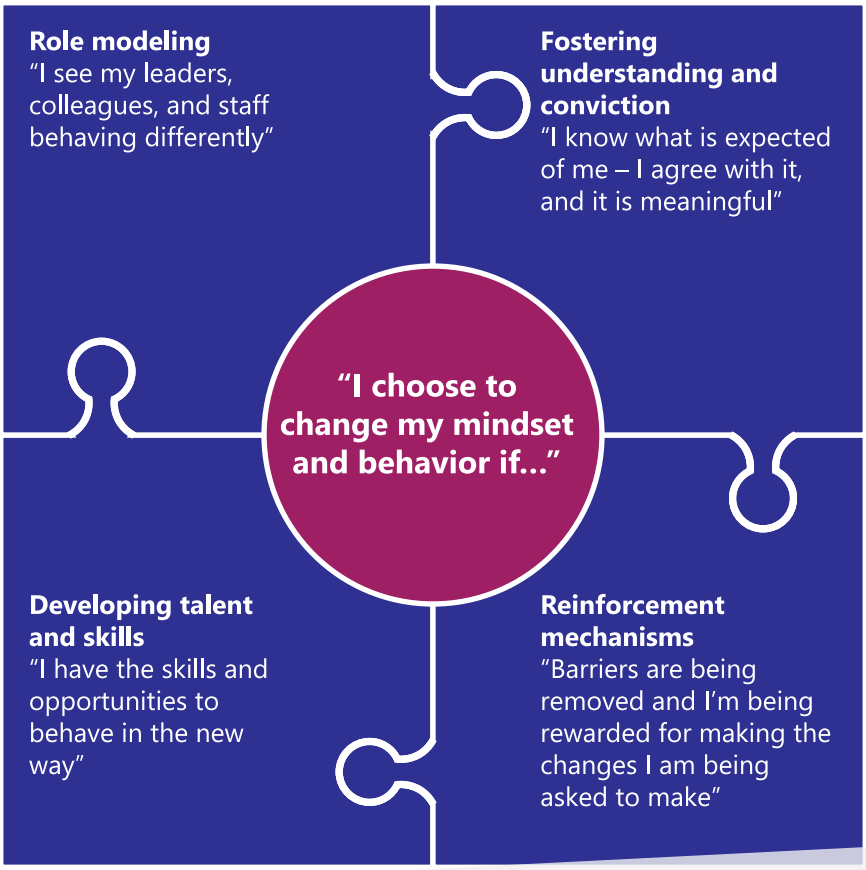
FOSTERING UNDERSTANDING AND CONVICTION

The second way in which leaders can shape culture is through cocreating and articulating the way forward — most importantly, the organisation's purpose as previously described in the agile organisation-design section. In traditional organisations, the top team formulated the end-state vision and message, which then got cascaded down the organisation in beautifully crafted communications. In agile organisations, the focus is on direction, not destination, and it is evolved with people across the organisation in a highly interactive way. Senior leaders might gain as much inspiration from the energy and ideas of frontline teams as the other way around. The emergent story is thus deeply meaningful to people across the organisation.

In agile transformations, leaders must learn to engage with a wide range of stakeholders across the organisation, listening, sensing, and synthesizing different perspectives. As a clear, aligned message emerges, leaders must learn to communicate with authenticity and passion, most powerfully through storytelling. Essentially, leaders must engage the whole organisation in a sustained conversation over time. Buurtzorg, the market-leading home nursing provider in the Netherlands, illustrates this beautifully. Buurtzorg's clear vision and passionate commitment emerges from people across the organisation in large group sessions, inspirational team innovations, and individuals continually reaching out to, and getting meetings with, the CEO to share their passion. The CEO sees his role primarily of listening, sensing, and sharing and by noticing what is emerging and bringing it quickly to people across the organisation to ignite further passion and energy.

EXHIBIT 2
FOUR INFLUENCE LEVERS HELP SHIFT MIND-SETS AND BEHAVIORS IN SUPPORT OF DESIRED CHANGE

Source: Scott Keller and Colin Price, "Performance and Health: An Evidence-Based Approach to Transforming Your Organisation," 2010



BUILDING MIND-SETS AND CAPABILITIES

Just as leaders of agile transformations began by developing their own mind-sets and capabilities, they must foster capability building across the organisation, giving everyone the opportunity to build the new mind-sets and skills they will need in the new environment. This includes building leadership capabilities in those who are not formally people managers (individual contributors) and building new skills, such as the ability to influence rather than direct, manage conflict constructively, work in ambiguity, manage complexity, think creatively, take initiative without being told exactly what to do, and take accountability, even without full control.

Agile organisations go well beyond traditional notions of learning and development by weaving learning into

the fabric of daily activity to become true learning organisations. They embrace a culture in which support of learning forms part of working life and its regular operations, daily routines, and conversations. Every meeting and encounter is simultaneously an opportunity to work on learning goals, pursue business excellence, and help people become more capable versions of themselves.[19]

REINFORCEMENT MECHANISMS

Leaders also play a key role in the fourth component of the influence model, which is putting in place different organisational-design elements as reinforcement mechanisms, as previously discussed in the agile organisation-design.

This agile approach to culture complements and aligns with the design transformation. As senior leaders begin role modeling and cultivating new skills and mind-sets, they do so through initiating and running experiments in various parts of the organisation. The design and culture work begin mutually reinforcing each other, all in pursuit of the organisation's purpose. Here, the opportunity for wholesale transformation presents itself: both leaders and the teams they lead work together to cocreate the agile organisation of the future.

ON TRANSFORMING THE ORGANISATION: TAKEAWAYS

- Cocreate a deeply resonant organisational purpose with participation across the organisation, then broadcast it at every opportunity.
- Explore a holistic new agile design for your organisation, creating it as a network of empowered microbusinesses supported by a lean backbone, working in high collaboration with external partners.
- Shape a new agile organisation culture within your organisation through personally modeling, and developing in others, new mind-sets and behaviors; fostering understanding and conviction around your core purpose; and ensuring the new agile design reinforces the new mind-sets and behaviors.
- Engage people across the organisation in cocreating the new agile organisation design and culture through constant experimentation and learning.

PART 5: AN AGILE APPROACH TO DEVELOPING LEADERS

We have looked at the emergence of agile organisations and explored the three sets of leadership capabilities they require in mind-sets and behavior at the team level and for the organisation as a whole. Now the questions are: How do you go about developing these capabilities among the leaders in your organisation, and is there a distinctly agile way to do so?

Many organisations start their agile pilots in discrete pockets. Initially, at least, they can build agile leadership capabilities there. But to scale agility through an organisation successfully, the top leaders must embrace its precepts and be willing to enhance their own capabilities significantly. Eventually, a full agile transformation will need to adopt the entire senior leadership across the enterprise, typically defined as the top three to four levels of leaders. For large organisations, this represents a population of several hundred leaders, most of whom are deeply experienced senior executives who have spent their careers in the industry. Catalyzing tangible shifts in individual and collective mind-sets and behaviors across this population requires a comprehensive and carefully designed "capability accelerator" seamlessly integrated into the agile transformation. In our experience, five elements are essential.

ENTERPRISE-AGILITY COACHES

The first step is to build a cadre of enterprise-agility coaches supported by a leadership transformation team. Senior leaders need guides on their journey. Such guides can translate concepts and make them practical, help senior leaders make the profound personal shifts in mind-sets and behavior needed, and help them apply their learning to shift the architecture and culture of the organisation. In recognition of this need, a new kind of expert—the enterprise-agility coach—is emerging. These professionals combine a deep knowledge of agile organisations, senior-level facilitation and coaching skills, and expertise in organisational transformation.

To achieve a leadership transformation at the scale necessary, you need to develop a cadre of such experts, able to work closely with your HR and leadership-development group, agile-transformation team, and agile team coaches. To support this group, you will need a core leadership-transformation team that sits within either your HR organisation or the overall agile-transformation team. This leadership-transformation team operates as the stable platform for the enterprise-agility coaches and is responsible for designing and executing the remaining four steps described next.

TOP-TEAM JOURNEY

The next key element of developing agility in leadership is getting the top team engaged in developing their own

[19] Robert Kegan and Lisa Laskow Lahey, "An Everyone Culture: Becoming a Deliberately Developmental Organisation," 2016, Harvard Business School Press.

capabilities. All senior leaders will take their cue from the executive team, so it is essential to engage the top team early on and invite them to initiate the journey for themselves, both individually and as a team. Shifting mind-sets and behaviors can be more challenging with the top team than with other teams, so a high degree of skill by the enterprise-agility coaches working with the top team is needed. All the same, this challenge must not be shirked: the top team very likely needs to undertake at least some level of transformation.

IMMERSIVE LEADERSHIP EXPERIENCE

Creating an immersive leadership experience and rolling it out to all senior leaders is the next step. In our experience, the core of the leadership capability-building effort is an immersive leadership experience, which can be anything from a concentrated effort over three or four days to a learning journey over several months. This experience should help participants develop all the new leadership capabilities we previously described—agile mind-sets and behaviors, agile ways of working, and agile organisation design and culture.

This immersive experience, facilitated by the enterprise-agility coaches, should comprise a wide range of interactive learning modes and activities through which leaders get to experience and explore new mind-sets and skills, learn from each other, and practice application in a safe environment. Simulations and real-life experiments provide the chance to practice leadership skills and try new approaches in a realistic environment that is both safe and challenging. These scenarios can simultaneously exercise and strengthen the leadership of self, team, and organisation.

Just as the organisation has to make an evolutionary leap, so must leaders. As individuals, we are wired for habitual thinking and action. Agile transformation will shake the core identity of the leader: learning to stand and play at the edge of uncertainty triggers many fears. This is why immersive programs rich in experience, reflection, and dialogue focus not only on developing skills and knowledge but also changing how you think.

APPLICATION THROUGH ORGANISATIONAL EXPERIMENTS

The fourth step in developing leaders for an agile organisation is to link leadership learning to existing initiatives and new experiments. All learning sticks best through application. Leaders should be invited to connect their learning to agile-transformation initiatives already under way and to launch new experiments to begin testing out some of their learning. In doing so, they will begin to introduce the new mind-sets and capabilities to their teams and others across the organisation. Existing initiatives can also be scrutinized, reimagined, and redesigned to be more agile. Enterprise-agility coaches should work closely with leaders and their teams to help them apply and deepen their knowledge and skills as well as practice their new mind-sets and behaviors in the crucible of daily reality.

In this way, the leadership capability-building initiative can become a foundation of the broader agile transformation, either in support of the blueprint of a deliberate transformation already under way or as the potential catalyst for a more organic, emergent approach. Either way, as experiments are launched in various parts of the organisation, senior leaders will begin to develop the capabilities of others and shift the culture, and excitement and momentum will begin building across the organisation.

AGILE TEMPO

Finally, you should roll out leadership capability building at an agile tempo. For the core leadership-immersive experience, as well as for the ensuing experiments and broader capability building, it is vital to create a way to bring stability to the initiative without in any way limiting its dynamism and creativity.

A key practice is to leverage the agile approach of operating in quarterly cycles: in every quarter, the leadership experiences, experiments, and culture shifts over the past 90 days are reviewed, and plans and priorities for the next 90 days are finalised. When done with high involvement and transparency, this quarterly cycle helps bring a natural cohesion and alignment to the leadership capability-building initiative, provides opportunities for sustained and shared learning, and enables continuing flexibility to adjust as the initiative quickly grows and changes.

AN AGILE APPROACH TO DEVELOPING LEADERS: TAKEAWAYS

- Engage or develop a cadre of enterprise-agility coaches supported by a leadership transformation team.
- Design a tailored journey for the top team.
- Create an immersive learning experience for all senior leaders across the enterprise.
- Link and apply the learning to existing and new agile-transformation experiments and initiatives.
- Frame and roll out the leadership initiative in 90-day cycles.

Agile transformation is a high priority for a rapidly increasing number of organisations. For many, their survival

quite literally depends on it. Those making the transition successfully are setting and achieving substantive improvements in both performance and health. Our latest research demonstrates they are simultaneously delivering enhanced growth, profitability, customer satisfaction, and employee engagement.

More than any other factor, the key enabler to a successful agile transformation is to help your leaders, particularly your senior leaders, develop the mind-sets and capabilities to design, build, and lead an agile organisation. Doing so will enable your organisation to succeed and thrive in the exciting and ever-changing kaleidoscope that is today's reality.

Aaron De Smet is a partner in McKinsey's Houston office, Michael Lurie is a senior expert in the Southern California office, and Andrew St George is an adviser to the firm and associate fellow of Said Business School, Oxford University. The authors wish to thank Wouter Aghina, Karin Ahlback, Andre Andreazzi, Christopher Handscomb, Johanne Lavoie, and Christopher Paquette for their contributions to this report.

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EFFICIENCY AND ECONOMY

DRIVING FORCES BEHIND THE MODULAR MOVEMENT IN AUSTRALIAN CONSTRUCTION

The current state and future projections for the Australian construction industry are often debated, but some aspects cannot be denied.

Stricter financial constraints mean that productivity and efficiency have rarely been more important. To address these concerns, there has been a significant movement towards innovative project delivery methods that offer value-for-money without compromising on quality.

While a good deal of effort is going into research and development for new technologies such as artificial intelligence, 3D printing, robotics and automation, that's not to say that more established techniques will fall by the wayside.

One such practice that is experiencing continued growth in the global construction industry is prefabrication and modular construction.

Modularisation is nothing new for our industry, but the practice of assembling structural components offsite and then transporting them to the project location for installation is more relevant than ever in our cost-driven landscape.

SUSTAINABLE, FLEXIBLE AND COST-EFFECTIVE

Modern project managers want to be able to effectively control as many aspects of their build as possible, which is one of the advantages offered by modular construction. Because work can be conducted simultaneously in a way that traditional building does not always allow, projects can be completed on a tighter schedule. Weather delays become less of a problem, while safer construction environments mitigate the risk of site accidents.

Prefabrication often produces less onsite waste due to more reliable inventory management, and improved quality control is theoretically possible because work is conducted in a controlled environment. Lean construction principles have become a key consideration for developers in recent years, and the financial advantages of intelligent prefabrication are getting harder to ignore.

The scope of modular construction has grown too – it's now common to see everything from exterior walls to complete bathroom fit-outs built in a factory and delivered onsite for installation. Some major developments with space constraints, such as apartment blocks in cities, are also

MODULAR CONSTRUCTION

turning toward prefabrication over more conventional approaches.

Modular practices represent a significant portion of the construction industry in certain countries, with Europe seen as a forerunner for the technique. Approximately 70 per cent of all construction in Sweden is prefabricated modular housing.

While the modular industry doesn't command anything like this market share in Australia, there are several companies that demonstrate the long-term viability and flexibility of prefabrication.

One such enterprise is Ausco Modular, an Australia-wide supplier of modular services for over 50 years and recent adopter of Exactal's CostX® estimating software.

AUSCO MODULAR: A LEADING AUSTRALIAN PROVIDER OF PREFABRICATED SOLUTIONS

Ausco Modular operates from 15 locations Australia-wide, providing a wide selection of modular services across a broad span of industries including building and construction, mining & resources, aged care, tourism, education, sporting facilities and much more. The company recently adopted CostX® in an effort to further improve their output across Australia.

We spoke to National Estimating Manager Ben White about Ausco Modular's implementation of CostX® and the impact our product has had on their business.

EXACTAL: Tell us about your involvement with Ausco Modular, and what brought about the decision to implement CostX® for projects nationwide?

BW: I was hired in October 2017 as National Estimating Manager and CostX® Subject Matter Expert and tasked with implementing CostX® nationally and improving the state of our estimating processes. CostX® was evaluated alongside other programs by Ausco throughout 2017, with the conclusion being clear in October 2017 when I was offered the position.

At the time, Ausco was performing all project material takeoff using manual methods. The results produced were then relied upon for accuracy by all stakeholders before and after submission; this included estimators, quality control, sales teams, procurement and factory personnel.

Data entry into the configurator module in our ERP software for all projects would take between 30 minutes to 4 hours for an estimator to complete. Our objective in implementing CostX® was to increase the volume and accuracy of projects bid/tendered within the same timeframe by implementing a BIM-capable digital solution.

EXACTAL: What are some of the early benefits the company has seen since making the switch to CostX®?

BW: The short-term improvements have been considerable. Most notable has been the manual measurement time savings; measuring digitally has saved us x5 FTE for the same job to perform quotes, QA/QC checks, contract measurement and factoring ordering/procurement.

The free CostX® Viewer option has also allowed for greater transparency of the estimating work being conducted. It permits anyone who has access to the project to see where and how something was measured and priced. Collaboratively we've also seen improvements, as teams are now able to complete large projects in shorter times without compromising on quality. Live support capability in CostX® enables users to work interactively with managers and other peers to reduce downtime and help with training.

We've gone to the effort of a national training rollout to ensure all estimators understand accepted practice with CostX®, which has made things easier for quality control checking and auditing. We're also seeing fewer errors in selection of rates outside of building factory locations, which CostX® prevents through the Rate Libraries feature. CostX® is also flexible in that it allows users to view estimates in Elemental format, and we are seeing fewer missing measurements and priced items as a result.

Ausco has also implemented a BIM strategy to take advantage of our design team working in Revit. This allows our estimators to quantify 90 per cent of the design within minutes, rather than hours as it had taken in the past. All things considered, the introduction of CostX® has had a marked impact on our business, which we intend to build upon going forward.

EXACTAL: How will the future addition of an API help Ausco Modular with the next stage of CostX® implementation?

BW: Currently, there are a number of manual processes which are carried out by both key staff and every estimator to release a job to the procurement team. We have the potential to save 30+ minutes per day through automatic updates in CostX® System Admin for ERP generated updates, with Standard Dimension Groups, Code Libraries and Rate Libraries all able to be improved.

Data sorting and export of workbooks from CostX® to an ERP system for estimators will also streamline our processes. Workbooks generated from Dimension Groups need to be re-sorted several times to become a flat Bill of Materials at present. An API would reduce the current 50+ mouse-click workflow into a much shorter workflow that automatically sorts the workbook and pushes it into the ERP software for the estimator.

HIGHER STANDARDS OF QUALITY CONTROL AND PROJECT MANAGEMENT

Daemon Zirbel, Ausco Modular's General Manager of Modular Construction & Shared Operations, also cited the logistical advantages of modular construction as a key driver of the recent industry boom.

"While the benefits of speed with offsite construction are self-explanatory, improved quality is realised through the assembly footprint for modular construction being more concentrated [and typically protected from the elements] and therefore easier to monitor and manage."

"Likewise, the concentrated assembly footprint can aid the environmental footprint, which when coupled with the refined material procurement processes and the fact that installation is typically very fast, results in less invasive transport solutions. Another significant benefit that isn't widely articulated, is that as result of the bulk of works being performed offsite in concert with rapid installation of 'boxes' with readily available craneage solutions, end users can often keep operating their business as usual with minimal disruption. This is particularly beneficial to clients who provide important services to the public, such as education and healthcare providers."

Mr. Zirbel has over thirty years of experience in the modular industry, and he has a positive outlook regarding the industry's prospects going forward.

"Overall, we believe the future of modular construction is very exciting, particularly when the benefits of the opportunity to repurpose and relocate buildings become more prevalent. In the long term, we think it could be considered the ultimate form of recycling!"

FUTURE-PROOF ESTIMATING SOFTWARE FOR A VARIETY OF APPLICATIONS

The precedent set by Ausco Modular is a clear endorsement of the need for advanced digital estimating software, regardless of the construction methods being employed.

Exactal's range of solutions is designed to suit the needs of estimators and Quantity Surveyors across the world. Our flagship product CostX® is in a constant state of development to address the feedback of our clients, while our latest offering CostX® Benchmark allows users to analyse previous projects with similar attributes to create accurate project benchmarks and conceptual estimates.

With cost considerations now more influential than ever in our industry, it is vital for businesses and individual contractors to place their trust in the most efficient software available. Exactal's mission is to support industry professionals who are striving for the best possible outcome on their projects.

There's no doubt that advanced construction software can precipitate major costs savings on projects, thanks to improved resource management and reduced estimating time. In a construction era dominated by the dollar, opting for the best available software tools will always prove to be a worthy investment.

This advertorial has been written by Exactal.

INDUSTRIAL MANSLAUGHTER

A look at the laws or provisions relating to workplace manslaughter around Australia

In light of the recent tragic death of 18-year-old apprentice, Christopher Cassaniti when scaffolding collapsed at a Sydney construction site, there have been renewed calls around the country to enact laws specifically relating to industrial manslaughter offences.

Generally, criminal convictions for workplace deaths are encompassed within the offence of negligent manslaughter which is variably dealt with by each state or territory's criminal legislation and the common law.[1] However, this offence is difficult to prosecute, requiring a grossly negligent individual embodying the company whose conduct can be attributed to the corporation.

A recent independent national review of workplace safety laws, led by former Executive Director of Safe Work Australia, Marie Boland, delivered its findings in December 2018.[2] In relation to industrial manslaughter specifically, Ms Boland recommended sentencing guidelines, penalty levels, the introduction of a new industrial manslaughter offence and the prohibition of access to insurance for payment of fines. There has been extensive discussion of this review, with Safe Work Australia releasing the Final Report on 27 February 2019. It is currently awaiting Ministerial response.

Here, we summarise the industrial manslaughter laws currently in force within the Australian Capital Territory and Queensland, and proposed provisions in Victoria, New South Wales, South Australia and Western Australia as safety is an important responsibility of all who work in the industry.

AUSTRALIAN CAPITAL TERRITORY

As the first Australian jurisdiction to introduce industrial manslaughter offences, the Australian Capital Territory made this change in 2004 by amendments to existing criminal legislation.[3]

The standard to prosecute under the Australian Capital Territory legislation requires the employer to be reckless about causing serious harm, negligent about causing death or demonstration that the company exhibited a culture that directed, encouraged, tolerated or led to noncompliance that resulted in a fatality. It should be noted that acts and omissions are equally liable, therefore a failure to act can be prosecuted as an offence the same as a negligent or reckless action.

Resultingly, a company can now be convicted of industrial manslaughter for neglect that is attributable to a group of people. Corporations may be fined up to $5m if convicted of this offence. Additionally, a senior officer who presided over unsafe culture can be fined up to $220,000 and/or sentenced to a prison term of up to 20 years.

[1]Crimes Act 1900 (NSW) s 18; Crimes Act 1900 (ACT) s 15; Criminal Code 1899 (Qld); Criminal Code 1924 (Tas); Criminal Code 1913 (WA); Criminal Code 1983 (NT). In Victoria and South Australia manslaughter is defined by the common law.
[2]Commonwealth, Review of the model Work Health and Safety laws, Final Report (2018).
[3]Crimes (Industrial Manslaughter) Amendment Act 2003 (ACT); Crimes Act 1900 (ACT) pt 2A.

Note that Commonwealth public servants are exempt from these provisions.

Of interest are the statistics - to date there have not been any prosecutions of industrial manslaughter in the Australian Capital Territory under this legislation in its fifteen years of operation.

QUEENSLAND

Interestingly, whilst the legislation of industrial manslaughter offences in 2018[4] were, according to Industrial Relations Minister Grace Grace, a result of the public outcry over the 2016 deaths of four visitors to the Dreamworld amusement park and the deaths of two workers at the Eagle Farm Racecourse when they were crushed between concrete slabs, these offences are restricted to cases involving death of a worker, not visitors or any others. This law also excludes the mining sector.

Notwithstanding this however, Queensland became the second and hitherto only other jurisdiction in Australia to effect legislative provisions in relation to workplace or industrial manslaughter.

The legislation does not specify the test to be used to determine fault although it does set out that the standard is negligence (understood to mean the existing standard in Queensland of criminal negligence to apply). The legislation is also silent on culture and aggregation of responsibility.

Penalties for individuals range to 20 years imprisonment. Corporations are liable for up to a $10m fine.

VICTORIA

At the time of writing, the Victorian Premier, Mr Daniel Andrews, has made a commitment to legislate the issue in the event of a re-elected term. There has been discussion of increasing the penalties currently in force, including a substantial increase to the maximum fine possible and up to 20 years imprisonment for employers found liable for negligence resulting in the death of their workers, visitors to a workplace or passersby.

Given the issue has maintained a strong presence in election promises, it can be expected that further, more comprehensive debate and legislation will follow.

NEW SOUTH WALES

There is presently a spirited debate in New South Wales as to the need for industrial manslaughter offences to be enshrined in legislation.

The lamentable circumstances surrounding Mr Cassaniti's passing have sparked renewed community interest in the culpability of employers, particularly large organisations.

Similar to Victoria, the New South Wales Labour government has made certain election promises regarding specific industrial manslaughter offences to be brought into effect by legislation. Proposed legislation could see employers face up to 25 years imprisonment if convicted of the offence.

SOUTH AUSTRALIA

There have been repeated attempts to pass a bill to make industrial manslaughter an offence in South Australia, however these have been continuously defeated in the Senate.

Such consistent failure to legislate on this issue may be reflective of wider community attitude to the issue and concern that "innocent" persons might be caught in the net.

WESTERN AUSTRALIA

The tragic drowning of Jarrod Hampton off the coast of Broome on his second day of work in 2012 as a pearl diver for Paspaley Pearls led to the development of a legally enforceable safety code specific to that industry in Western Australia.

Whilst there are no industrial manslaughter provisions in Western Australia legislation, there have nonetheless been similar moves to introduce legislation as in Victoria, New South Wales and South Australia.

It remains to be seen if industrial manslaughter will be an issue at the next state election.

CONCLUSION

Despite the seriousness of the circumstances which give rise to an offence of industrial manslaughter, it often becomes a highly politicised topic which gains efficacy depending on the sentiment of the day.

[4] Work Health and Safety and Other Legislation Amendment Act 2017 (Qld).

The general offence of manslaughter under criminal legislation applies universally and is often used as an argument against the need for a separate offence relating specifically to industrial manslaughter.

A key theme of Ms Boland's review focussed on the importance of harmonisation of work health and safety across all Australian jurisdictions. The variance of difference in requisite standard seen in the offences as legislated in the Australian Capital Territory and Queensland attest to the contrasting methods in which governments of the day will deal with the issue.

Given that the federal government has unequivocally maintained its position that the issue of industrial manslaughter lies within state jurisdiction, we therefore await further development in legislation around the country.

This article has been provided by Doyles Construction Laywers.
www.doylesconstructionlawyers.com

MINE MODIFICATION WORKS IN AUSTRALIA

Achieving Value for Money

By

Keith Keown MAIQS, Construction Cost Consultant and Contract Specialist

All working mines will require additional construction works at some point. These works can be for maintenance or replacement, upgrade or the addition of new works and capacity to existing facilities.

This article will focus on construction works that result from the modification or replacement of existing facilities and is based on experience from working on several of these projects in Australia.

Modification works are often more complicated than new works on a green field site. Modification type work must interface with existing mine facilities which may still be operating as mine owners are reluctant to lose the production resulting from a shut down. Mines are also often located in remote locations and therefore subject to logistic issues and harsh environmental conditions. Finally, there are strict health and safety requirements relating to mines. All this must be taken into consideration when planning and pricing such works.

LEADERSHIP AND OBJECTIVE CLARITY

Strong leadership and clear objectives are essential to achieving value for money. Working mines are complex facilities with multiple stakeholders including the mine owner and operating team. The mine operating team can have different concerns and motivations to the mine owner. Therefore it is essential that the project leader can navigate between competing stakeholder needs, establish clear

objectives and can drive them forward.

Mine owners will often state that program is the key objective to minimise interruption to mine productivity. However, this priority can change if project costs increase with additional works. The mine operating team will also want to minimise interruption but often have their own requirements with regards to site repair and modification works. Moreover, the mine operating team will know the mine well and will control contractors brought to site.

It is essential that the project leader agrees the scope and objectives in writing and ensures that all parties are focused on these parameters. Once works commence on site, the project leader must ensure contractors stick to the scope avoiding distractions and interference from the mine operating team. Relocation to site is recommended. Without clear leadership on site, contractor control and productivity can be impacted and value for money lost.

Bearing in mind the logistic difficulties and harsh environment of remote sites, it is important that the project leader has a realistic understanding of what can be constructed in the project time frames including any shutdown of mine facilities. Optimistic and tight programs are likely to result in incomplete design and contractor failure to complete on time. A more limited scope will be easier to control, have simpler logistics and is more likely to result in success.

SCOPE DEFINITION

Establishing the scope of modification works and how this will interface with existing mine facilities is often a major problem. Works such as replacing lagging to pipes or new cladding to an onsite smelter will often be poorly defined because of the difficulties of doing a site survey in a remote location. This problem is compounded if the facility is still in operation during the survey as full access may be restricted.

Relying on existing as-built data is risky as this may be out of date and may not fully describe actual site conditions. For example, there may be limited utilities at the works location or awkward access which may impact efficient construction. A detailed site survey will allow contractors to price accurately and minimise the disruption caused by unexpected scope during delivery.

Allowing tendering contractors to visit the site, giving full access and enough time to review the nature and extent of the works will lead to accurate pricing and identification of practical and logistic problems. All this requires time and must be reflected in a realistic program of works. Tight programs, optimistic program management and limited understanding of the the importance of scope definition means that this vital component is often not given the required priority and rigor during procurement stage. This problem is often made worse by a misunderstanding of what a good scope looks like. A good scope must include drawings and specification that clearly and accurately describes the nature and extent of the works and identifies all constraints on these works. Pictures of the existing works and a brief description of the works is not an adequate scope and must be rejected.

Where a design and construct contract is to be used then the scope must be modified and focused on performance and output requirements. Such scopes are often more difficult to prepare than a construct only scope and requires understanding of the client's requirements as well as what can be achieved by contractors. The distinction between construct only and design and construct scopes is not always understood and clear direction and leadership is required.

Experienced engineering professionals must be allocated to scope definition. The scope of services for engineering professionals must therefore be checked to see that it includes clearly defined scope preparation services. These services must include experienced engineering resources to visit the site, prepare a detailed survey and have adequate time to design and thoroughly proof scopes.

Unfortunately, these services are sometimes seen as an opportunity to save program time and money. If these services are put out to tender, consultants may under bid on these essential tasks. Clients must be warned of the risks of such 'value engineering' and this is the one place where cost cutting must be avoided.

A BIM model of the existing facilities may help with the above issues but, at time of writing, there does not appear to be any such models of existing mine facilities and clients appear to be currently reluctant to invest in such technology. A BIM model of the new works will be of use but must not replace a fully defined scope. It is worth noting that most BIM models are not set up to help with the preparation of pricing documents.

To mitigates these issues, the procurement team must be given training and time to identify a good scope and the authority to reject inadequate scopes.

PROGRAM AND PLANNING

Programs must be realistic and take into consideration the unique issues that come with modification works to mines. The uncertainties relating to the interface with the existing facilities and their condition means there is more risk. The project program and budget must allow for realistic contingencies which may be as high as 20-50%. Alternative plans and scenarios must also be considered to prepare and mitigate unforeseen changes or events.

One mitigation measure that I have seen work is a standby team that dealt with any unforeseen scope and minimised disruption to those working on the planned scope. This resulted in additional cost but helped the client achieve the key objective of minimising mine shutdown time.

Logistic matters and long lead periods (mining equipment is specialised and will often have to be imported) need to be factored in. The difficulties of getting resources to remote locations must be appreciated and not just left as a contractor risk.

Careful consideration must be given to how the mine owner will support contractors in terms of resources as the mine owner will have existing facilities and a supply chain in place. Mine owners often supply fuel, camp facilities, small tools, some plant and scaffold.

Ordering long lead items may have program benefits but can result in additional interfaces and liabilities for the mine owner. Offshore manufacturing, particularly in low cost countries, adds substantial risk. Good quality assurance and onsite inspectors are critical. These inspectors must be available 24 hours a day as manufacture will often continue day and night.

Differences in standards and quality must be appreciated especially on key items such as material quality, welding, surface protections and health and safety requirements. Thorough inspection is required.

Late delivery and poor-quality manufacture of such items will have severe impacts on program, lead to substantial claims and disputes.

Mine accommodation and mess requirements for contractor's workers and staff needs careful planning. Large projects will require numerous workers and it is likely that the existing mine facilities will be unable to cope. Identifying exact contractor numbers and their requirements is critical to successful planning of such works.

New workers will require on-boarding for administration and health and safety purposes. This can take time and add a week or more to programs.

CONTRACTS

In my experience, all mining companies use bespoke contracts that are risk adverse and push maximum risk to the contractor. Most of these contracts have unfavourable payment periods which can be as long as 60 plus days.

Such contracts will generate substantial post tender negotiation as tenderers try to restore some balance in terms of risk allocation. Negotiations can take months and this needs to be factored into the project program. The mine owner's cost in terms of contract staff and lost time as a result of such negotiations also needs to be considered.

Addressing contractors' common concerns, which include caps on liability, design liability and payment terms, in the proposed contract terms can shorten contract negotiations. Using a standard contract such as FIDIC may also result in time and cost savings.

Contractor collaboration can result in efficiencies. Onerous contracts and long payment terms are unlikely to lead to co-operation and increases risk of dispute and legal cost. Long payment terms come with a finance cost to the contractor and will push up tender prices. There must be fair risk allocation and an acceptance that contractors cannot manage all risk particularly where there is an interface with existing mine facilities.

PAYMENT MODELS

The uncertainty associated with modification works to existing facilities means it is unlikely tenderers will accept a lump sum contract. Stand alone and distinct work may be subject to a lump sum but it is likely that the proposed contract will have to be based on remeasurement or a schedule of rates.

Remeasurement has considerable benefits as there is shared risk. The mine owner carries the quantity risk and the contractor caries the pricing risk. A remeasurement contract will require a properly prepared Bill of Quantities (BoQs) using a recognised standard method of measurement. In my experience, the mining industry appears reluctant to prepare proper BoQs. Often simple schedules of quantities or lump sum items are produced which fail to identify key items such as preliminaries, site constraints, builders work in connection, etc and are based

on no clear rules of measurement. Such price breakdowns are of no use to the contractor in his pricing, of limited use for tender analysis and the assessment of change or variations. Poorly prepared pricing documents give mine owners a false sense of security, protect the contractor's tender price from detailed analysis and allow contractors to exploit project change in terms of over pricing.

Schedule of rates contracts are common on maintenance and modification works but they provide limited incentive to contractors to work efficiently. Contracts must be well supervised to reduce waste and include incentives to increase productivity. Establishing effective incentives schemes is difficult and require a good understanding of the nature of the works and how contractors work.

Remeasurement contracts will require staff to prepare and remeasure quantities. A schedule of rates contracts will require extensive record keeping and auditing of payment claims will require additional site and administration staff.

PROCUREMENT

Procurement for modification works requires trained staff, adequate program and good scopes of work. Project managers must be trained to see that effective procurement will set up the project for success.

Procurement staff must have the expertise to consider all the issues of mine related modification works and not just time, cost and quality. With isolated mines, logistic staff will have to form part of the procurement team.

The evaluation of potential contractors must include the identification of both experienced contractors and individuals who have experience, insight and capability. It is important to be aware that contractors sometimes tender with the 'A team' but deliver with the 'B Team.' Contract terms that lock in key contractor staff are unlikely to work in my experience.

The end result of successful procurement must be a contract that is fair to both parties. The mine owner will generally want time and cost certainty while the contractor wants certainty that he will make a reasonable profit. Accepting a bid that is known to be below estimate or the market price is sure to result in dispute and is not value for money.

The benefits of including a program in a contract is debatable, in my opinion. Incorporating a schedule of key dates and completion dates may be clearer and avoid argument. Programs and schedules are dynamic models and incorporating such models into a contract freezes the model and can lead to unintended interpretations and dispute.

DELIVERY STAGE

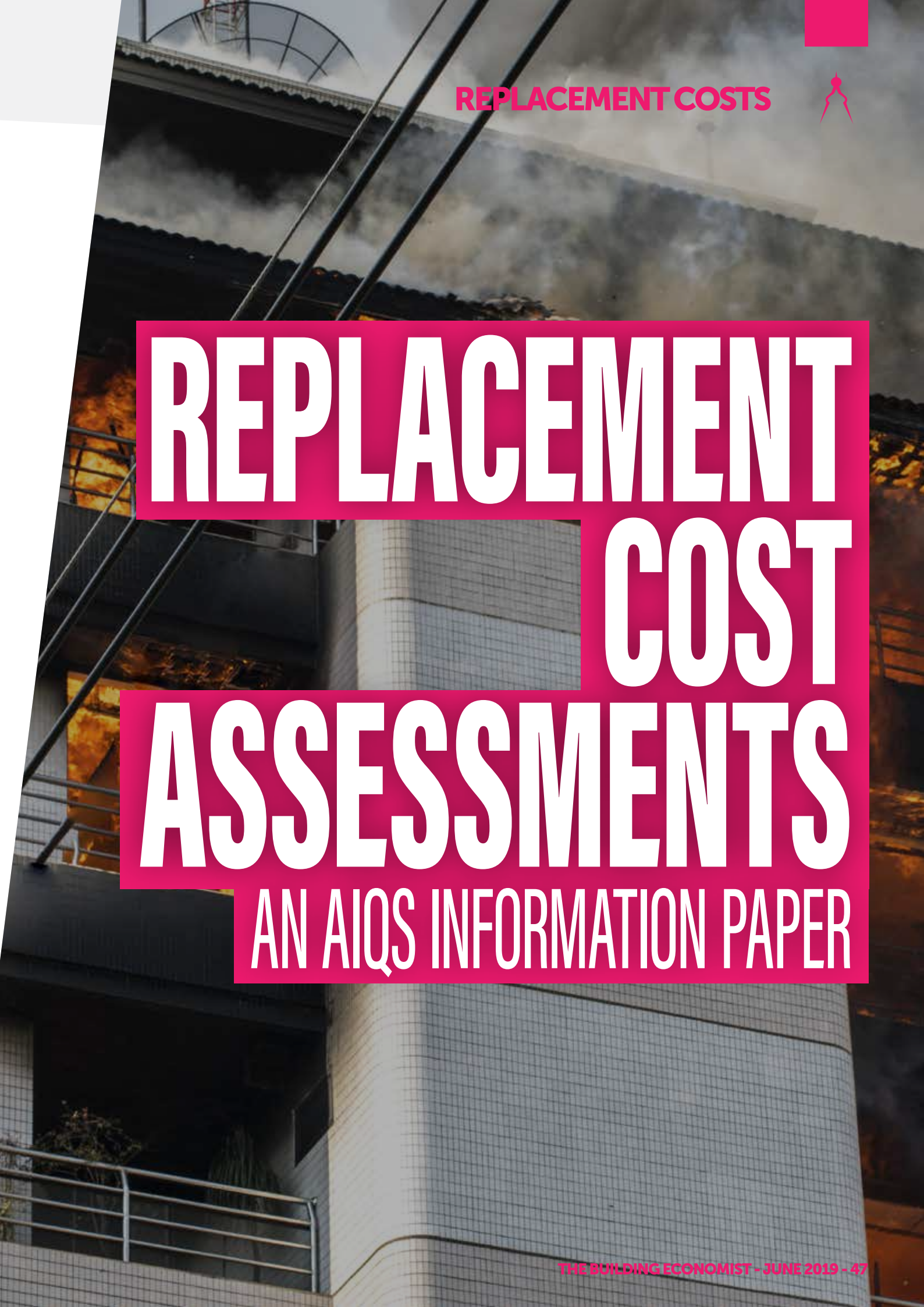
During the course of the works, good site records must be kept and the contract must define what site records be kept. Detailed daily site diaries, regular and progressive photographs plus labour and plant records are the minimum requirements. These records must be kept from the start to the end of the project. Unfortunately, the quality of records often varies as staff deploy and demobilise from site. This results in gaps in the record and will inevitable result in confusion and dispute.

The financial management of the works will often be operated through the mine owners existing electronic cost control system. These systems are not always suited to construction type works particularly the requirements of Security of Payment legalisation and also the cost and program impacts of change. Systems must be carefully checked to ensure they can cope with such works and if not, additional measures must be put in place before the works commence to avoid cashflow problems.

CONCLUSION

Modification and construction work to mining facilities comes with unique challenges and requires expert staff and adequate time to plan and program. The outsourcing of non-critical capabilities, which often includes construction expertise, by mining companies and the boom and bust cycle of the resources sector means that these two key elements of expertise and time are not always available when the decision is made to progress modification works on mines. This can result in poor value for money with respect to such works.

The reverse to this, is that with leadership, careful planning and well-trained staff, efficiencies can be achieved. Key staff must have practical mining experience and a real understanding of the difficulties and limitations that come with such works. Better procurement that focuses on the peculiarities of the works, the expectations of stakeholders and which enhances collaboration will also lead to efficiencies. Once the works commence, there must be a laser like focus on the scope as any distractions will be costly in such remote and difficult locations.



REPLACEMENT COST ASSESSMENTS

AN AIQS INFORMATION PAPER

REPLACEMENT COSTS

INTRODUCTION

PURPOSE

The purpose of this Information Paper is to:

1. inform AIQS Members and their clients on factors impacting replacement cost assessments
2. establish a common approach to undertaking replacement cost assessments (e.g. providing relevant cost advice for inclusion in insurance reports covering events resulting in partial or total destruction/ loss of a building or other asset, in the drafting and notifying disclaimer clauses and qualification statements)
3. inform AIQS Members and their clients of common insurance inclusions and exclusions relating to replacement cost assessments
4. provide a checklist of items that the AIQS Member and their client should be aware of in relation to replacement cost assessments.

STATUS

This Information Paper is intended to embody recognised best practice and therefore may provide some professional support if properly applied.

This Information Paper does not purport to be a comprehensive description of the law and AIQS Members should obtain independent legal advice as required. Particularly regarding strata buildings where relevant State and Territory legislation applies.

While this Information Paper is accurate at the time of publication, readers are advised to confirm relevant legislation and insurance requirements prior to undertaking a Replacement Cost Assessment, as these may change from time to time.

APPLICATION

This Information Paper is pertinent to Members providing advice on Replacement Cost Assessments (e.g. reporting to clients on cost of replacement of building or other assets for insurance purposes).

Consistent with the AIQS Code of Conduct, an AIQS Member must operate within the limits of his or her qualifications and experience and must not accept instructions in a field of practice in which he or she possesses insufficient knowledge and skill to provide competent services to the client, unless the Member obtains fully informed consent from the client to undertake the services in conjunction with a person having the required competence.

Members undertaking Replacement Cost Assessments for insurance purposes require a broad range of professional skills and experience, including an understanding of:

- costs for the construction or supply of assets of a similar size and utility
- demand and supply of building materials and labour, professional services and planning and building approval processes which determine the timeframe for rebuilding
- installation and commissioning costs and timeframes for plant and machinery insurance valuations
- planning scheme provisions which could affect whether a building can be rebuilt in its present form
- heritage issues
- escalation of building costs
- market rental values (for loss of rent or allowance for alternative accommodation)
- the size and extent of all improvements including building structures and ancillary improvements.

MINIMUM REQUIREMENTS OF THE QUANTITY SURVEYOR

EXPERIENCE

The preparation and delivery of Replacement Cost Assessment reports should be undertaken by a Corporate Member of AIQS, holding the Certified Quantity Surveyor (CQS) designation.

Any employees undertaking this service must be supervised by a suitably experienced Corporate Member.

PROFESSIONAL INDEMNITY INSURANCE LEVELS

To ensure that appropriate and not excessive levels of professional indemnity insurance (PI) are not called for, AIQS recommend the following levels of coverage:

Construction Cost (excluding GST)	Level of PI
$ 0 – 5m	$ 1m
$ 5.01m - $10m	$ 3m
$ 10.01m +	$ 5m

CONFLICTS OF INTEREST

Any conflicts of interest (real, potential, or perceived) such as previous involvement in the project or other services being provided for the Developer should be disclosed immediately to the client. These should not necessarily preclude the Quantity Surveyor from undertaking their role unless they are of a nature which may in practice or in perception prevent the Quantity Surveyor from acting on behalf of the client in an independent manner.

LIMITATION OF SERVICE

Recognising that while the Quantity Surveyor is an expert in construction costs, they may not be experts in quality of workmanship or programming, and therefore, should limit their comments to areas in which they are competent to do so. Notwithstanding this, the Quantity Surveyor should make observations with regards to workmanship and programming based on their level experience.

Any change in the underlying land-use, zoning or planning control post the provision of the Quantity Surveyor's assessment will not be included in the Quantity Surveyor's scope of work. Clients should be advised that where such a change occurs, a new Replacement Cost Assessment should be undertaken.

It is not the role of the Quantity Surveyor to provide an opinion pertaining to the value of the site or the expected realisation of the development.

ASSESSMENT

REASONS FOR PREPARING REPLACEMENT COST ASSESSMENTS

Replacement Cost Assessments for insurance purposes are required to be prepared when insurance is being taken out and/or when a disaster has occurred. Preparing Replacement Cost Assessments requires a high level of construction knowledge, use and cost of materials.

Disasters can and will occur to many buildings and infrastructure assets during their lifetime, with fire being the main risk which needs to be insured. However, other risks such as bush fires, floods, cyclones and or earthquakes can cause widespread disasters.

Where the insurance policy (or client's instructions) includes a requirement for consideration to be given to market rental values (for loss of rent or allowance for alternative accommodation), this should be noted as an exclusion by the Quantity Surveyor and referred to the appropriate real estate professional as required.

However, once a disaster has occurred the cost of replacement will need to include meeting the current building regulations and escalation to completion of reconstruction.

The Replacement Cost Assessment report will include:

- reference to the Owners Corporation number (if applicable) and property address as listed in either the Registered Plan of Sub-Division or on "As-Built" documentation for the property
- a description of the building structure, services and finishings
- works external to the building, with the extent of works outside the building to be in accordance with the insurance policy
- building areas
- summary of costs
- photographs.

If there is anything unusual or special about the building this will also need to be noted e.g. car stacking systems, solar panels, and embedded power network equipment.

THE ASSESSMENT

The Assessment will consider the following:

1. location
2. building construction costs
3. additional/updated statutory requirements
4. professional fees, including (but not limited to) Surveyor, Architect, Structural Engineer, Civil Engineer, Hydraulics Consultant, Quantity Surveyor, and Project Manager
5. development application and other authority costs
6. demolition and removal of debris
7. duration of demolition, design, and construction
8. escalation during insured period
9. cost escalation during demolition, design and procurement
10. cost escalation during construction.

The sum of the above is known as the Capital Replacement Value excluding

REPLACEMENT COSTS

GST. GST will be applied as per the current legislation.

A physical inspection of the asset being assessed for replacement insurance should be undertaken as part of the initial Replacement Cost Assessment. In circumstances where this is not possible (e.g. due to geographic remoteness) and in accordance with the client's instructions, a 'Desktop' assessment should be undertaken.

In undertaking a Replacement Cost Assessment in areas subject to widespread disasters such as bush fires, floods, cyclones and or earthquakes which will likely result in extensive damage/destruction to numerous buildings and/or infrastructure, the Quantity Surveyor should take into account higher than usual construction costs due to significant increases in demand for materials and labour.

It is worthwhile noting that some insurance policies may include exclusions covering bushfire, storm, flood or tsunami in the first 72 hours of the policy.

The replacement cost for plant and equipment should be based on the replacement cost of currently available equipment, including costs of transport, installation, commissioning, consultants' fees, engineering, procurement and construction management costs and non-recoverable taxes and duties.

It is important to note that escalation indices will likely vary between types of development projects.

METHODOLOGY

A typical methodology for the preparation of a Replacement Cost Assessment may include the following steps:

- submit fee proposal and obtain client approval
- obtain available drawings
- confirm date for insurance commencement/renewal from client
- seek details of any improvement to original building or client owned fit-out
- visit site and check building against drawings
- prepare measured estimate and price at current rates
- estimate demolition cost
- calculate professional fees
- prepare outline program for the whole of the works
- prepare escalation index for the period of the program
- calculate replacement costs and prepare report
- list items not covered by report for reference.

LEGISLATIVE REQUIREMENTS

It is important for the quantity surveyor to confirm any legislative or regulatory requirements when undertaking Replacement Cost Assessments. This includes (but not limited to):

- ACT Unit Titles (Management) Act 201
- NSW Strata Schemes Management Act 2015 No 50
- Northern Territory Unit Titles Act 2016
- Queensland Body Corporate and Community Management Regulations 2008
- Queensland Retirement Villages Act 1999
- South Australia Strata Titles Act 1988
- Tasmania Strata Titles Act 1998
- Victoria Owners Corporations Act 2006
- Western Australia Strata Titles Act 1985
- Western Australia Community Titles Act 2018
- Insurance Contracts Act (Cth) 1984.

The following are examples of clauses typically found (or similarly worded) in the legislation noted above.

ACT UNIT TITLES (MANAGEMENT) ACT 2011

Building insurance by Owners Corporation

(1) An Owners Corporation for a unit's plan must insure and keep insured all buildings on the land for their replacement value from time to time against all of the following risks:

(a) fire, lightning, tempest, earthquake and explosion

(b) riot, civil commotion, strikes and labour disturbances

(c) malicious damage

(d) bursting, leaking and overflowing of boilers, water tanks, water pipes and associated apparatus

(e) impact of aircraft (including parts of, and objects falling from, aircraft) and of road vehicles, horses and cattle

(f) anything prescribed by regulation.

(2) The Owners Corporation must take out an insurance policy that covers, to the greatest practicable extent:

(a) the risks mentioned in subsection (1)

(b) costs incidental to the reinstatement or replacement of the insured building, including the cost of removing debris and the fees of architects and other professional advisers.

Note: If a Developer is the only member of the Owners Corporation, the Developer must on behalf of the Owners Corporation take out an insurance policy under s (2), unless exempted under s 101.

(3) A regulation may make provision in relation to an insurance policy required to be taken out by the Owners Corporation under this section including for the following:

(a) payment by unit owners of any excess payable under the policy

(b) combining the policy with other insurance policies

(c) notification requirements by unit owners in relation to improvements made to units

(d) the proportion of the premium payable for the policy by particular unit owners by way of a general fund contribution

(e) valuation of the insured buildings.

(4) For all purposes related to any insurance taken out by it under this section, an Owners Corporation is taken to have an insurable interest in the buildings on the land to the extent of their replacement value.

NSW STRATA SCHEMES MANAGEMENT ACT 2015 NO 50

Part 9 Insurance; Division 1 - Owners corporation insurance obligations;

Section 160 - Owners corporation to insure building

(1) The Owners Corporation for a strata scheme for the whole of a building must insure the building and keep the building insured under a contract of insurance, in accordance with this Division, that insures the building if it is destroyed or damaged by fire, lightning, explosion or any other occurrence specified in the policy (a damage policy).

Section 161 - Requirements for damage policy

(1) General requirements

The damage policy for a building must be with an approved insurer, be in the name of the Owners Corporation, and any other person required to insure under section 160 and provide for the following:

(a) the building is to be insured for at least the amount determined in accordance with the regulations

(b) if the building is destroyed, the building is to be rebuilt or replaced so that the condition of every part of the rebuilt or replacement building is not worse or less extensive than that part when new

(c) if the building is damaged but not destroyed, the damaged part of the building is to be repaired or restored so that the condition of the repaired or restored part is not worse or less extensive than that part when new

(d) expenses incurred in removing debris are payable

(e) the remuneration of architects and other persons whose services are necessary as an incident to the rebuilding, replacement, repair or restoration is payable.

(2) Limited sum liability

Instead of providing for work and payments being made if a building is destroyed or damaged, the damage policy may limit the liability of the insurer in that event to an amount specified in the policy. The amount must not be less than an amount calculated in accordance with the regulations.

(3) Parts of building to be covered

The parts of a building to be covered by a damage policy include the following:

(a) owners' improvements and owners' fixtures forming part of the building

(b) a building consisting entirely of common property

(c) anything prescribed by the regulations as forming part of a building for the purposes of this section.

(4) Parts of building not required to be covered

The following parts of a building are not required to be covered by a damage policy:

(a) fixtures removable by a tenant at the expiration of a tenancy

(b) owners' improvements and fixtures comprising paint, wallpaper and temporary wall, floor and ceiling coverings

(c) anything prescribed by the regulations as not forming part of a building for the purposes of this section.

REPLACEMENT COSTS

NORTHERN TERRITORY UNIT TITLES ACT 2016

Insurance by corporation

(1) Subject to subsection (3), a corporation shall insure and keep insured all buildings and other improvements (including fittings and fixtures) on the parcel for their replacement value from time to time against all the following risks:

(a) fire, lightning, tempest, earthquake and explosion

(b) riot, civil commotion, strikes and labour disturbances

(c) malicious damage

(d) bursting, leaking and overflowing of boilers, water tanks, water pipes and associated apparatus

(e) impact of aircraft (including parts of, and objects falling from aircraft) and of road vehicles, horses and cattle.

QUEENSLAND BODY CORPORATE AND COMMUNITY MANAGEMENT REGULATIONS 2008

Section 178: Insurance of common property and body corporate assets

(1) The body corporate must insure, for full replacement value:

(a) the common property

(b) the body corporate assets.

(2) Subsection (1)(a) has effect only to the extent that the common property is not required to be insured under another provision of this part.

(3) A policy of insurance taken out under this section:

(a) must cover, to the greatest practicable extent:

(i) damage

(ii) costs incidental to the reinstatement or replacement of insured buildings, including the cost of taking away debris and the fees of architects and other professional advisers; and

(b) must provide for the reinstatement of property to its condition when new.

(4) The owner of each lot that is included in the community titles scheme is liable to pay a contribution levied by the body corporate that is a proportionate amount of the premium for a policy of insurance taken out under this section that reflects the interest schedule lot entitlement of the lot.

Section 179: Insurance of building including lots

(1) This section applies if 1 or more of the lots included in the community titles scheme are created under a building format plan of subdivision or a volumetric format plan of subdivision.

(2) The body corporate must insure, for full replacement value, each building in which is located a lot included in the scheme, to the extent that the building is scheme land.

(3) A policy of insurance taken out under this section:

(a) must cover:

(i) damage

(ii) costs incidental to the reinstatement or replacement of insured buildings, including the cost of taking away debris and the fees of architects and other professional advisers; and

(b) must provide for the reinstatement of property to its condition when new.

Section 180: Insurance for buildings with common walls.

(1) This section applies if:

(a) 1 or more of the lots included in the community titles scheme are created under a standard format plan of subdivision

(b) in 1 or more cases, a building on 1 lot has a common wall with a building on an adjoining lot.

(2) The body corporate must insure each building mentioned in subsection (1)(b) for its full replacement value.

(3) A policy of insurance taken out under this section:

(a) must cover:

(i) damage

(ii) costs incidental to the reinstatement or replacement of the buildings, including the cost of taking away debris and the fees of architects and other professional advisers; and

(b) must provide for the reinstatement of the buildings to their condition when new

(c) may give effect, in whole or part, to a voluntary insurance scheme.

"building" includes improvements and fixtures (but not including carpet) forming part of the building, but does not include:

(a) temporary wall, floor and ceiling coverings

(b) fixtures removable by a lessee or tenant at the end of a lease or tenancy

(c) mobile or fixed air conditioning

units servicing a particular lot

(d) curtains, blinds or other internal window coverings

(e) mobile dishwashers, clothes dryers or other electrical or gas appliances not wired or plumbed in.

Damage, for coverage under insurance required to be put in place under this part, means:

(a) earthquake, explosion, fire, lightning, storm, tempest and water damage

(b) glass breakage

(c) damage from impact, malicious act, and riot.

SOUTH AUSTRALIA STRATA TITLES ACT 1988

Section 30 - Duty to insure

(1) A strata corporation must keep all buildings and building improvements on the site insured to their replacement value.

(2) The replacement value of buildings and building improvements is the cost of their complete replacement including the cost of any necessary preliminary demolition work, any necessary surveying, architectural or engineering work and any other associated or incidental costs.

(3) The insurance must be against:

(a) risks of damage caused by events (other than subsidence) declared to be prescribed events in relation to home building insurance under Part 5 of the Insurance Contracts Act 1984 of the Commonwealth

(b) risks against which insurance is required by the regulations.

TASMANIA STRATA TITLES ACT 1998

Section 99 - Insurance of buildings, &c., by body corporate

(1) The body corporate for a strata scheme must take out and maintain a policy of insurance for the buildings and other improvements (if any) on the site in accordance with this section.

(2) The policy of insurance:

(a) must cover:

(i) damage from fire, storm, tempest or explosion

(ia) any other prescribed risks

(ii) costs incidental to the reinstatement or replacement of the buildings, including the cost of removing debris and the fees of architects and other professional advisers; and

(b) must provide for the reinstatement of the buildings and improvements to their condition when new.

(3) The body corporate for a community scheme must insure property in accordance with the requirements (if any) of the scheme.

VICTORIA OWNERS CORPORATIONS ACT 2006

(Authorised Version incorporating amendments as at 22 April 2015)

Section 59: Reinstatement and replacement insurance

(1) An Owners Corporation must take out reinstatement and replacement insurance for all buildings on the common property in accordance with this Division.

(2) The insurance required under subsection (1) is insurance for damage to property under which the Owners Corporation insures for:

(a) the cost necessary to replace, repair or rebuild the property to a condition substantially the same, but not better or more extensive than its condition when new

(b) the payment of expenses necessarily and reasonably incurred in the removal of debris and the remuneration of architects and other persons whose services are necessary, being incidental to the replacement, repair or rebuilding of the damaged property.

Section 59(2A) inserted by No. 1/2010 s. 25.

(2A) The insurance required under subsection (1) includes reinstatement and replacement insurance for the Owners Corporation's portion of any shared services.

(3) The Owners Corporation must ensure that the insurance required under subsection (1) includes:

(a) a provision that the interests of mortgagees are noted

(b) a provision that a mortgagee whose interest is noted shall be given the notices that are required under section 59 of the Insurance Contracts Act 1984 of the Commonwealth at the same time that those notices are given to the insured

(c) a provision that the insurer cannot

avoid the whole contract for breach of a condition of the contract unless the breach is by the Owners Corporation or all lot owners, but the insurer has a right of indemnity against those lot owners who breach the contract.

Section 54 – What is an insurable building

"building" includes any building on the plan of subdivision and:

(a) any improvements and fixtures forming part of the building

(ab) any shared services

(b) anything prescribed as forming part of a building.

but does not include:

(c) carpet and temporary floor, wall and ceiling coverings

(d) fixtures removable by a lessee at the end of a lease

(e) anything prescribed as not forming part of a building.

Section 54 def. of shared services inserted by No. 1/2010 s. 24(3).

"shared services" includes any pipes or cables used to provide services including water, electricity, gas and telecommunications to the building that are shared with a person other than the Owners Corporation or any of its members.

Section 61 - Insurance for lots in multi-level developments

(1) If a building on a plan of subdivision is located above or below common property, a reserve or a lot, the Owners Corporation must take out the following insurance in respect of all lots in the plan:

(a) reinstatement and replacement insurance for all buildings on each lot in accordance with section 59

(b) public liability insurance in accordance with section 60, as if any reference in those sections to common property were a reference to those lots.

Section 61(2) substituted by No. 2/2008 s. 14.

(2) Subsection (1) does not apply to:

(a) a single-storey building

(b) a plan of subdivision that was registered under the Cluster Titles Act 1974 or the Strata Titles Act 1967 unless one or more lots in the plan is located above another lot in the plan.

WESTERN AUSTRALIA STRATA TITLES ACT 1985

Division 4 — Insurance

Section 53 - Terms used

In this Division - "building" includes any building on the parcel for a scheme whether shown on the strata/survey strata plan or not and also includes:

(a) proprietors' improvements and proprietors' fixtures forming part of the building including paint and wallpaper but excluding carpet and temporary wall, floor and ceiling coverings

(b) anything prescribed as forming part of a building for the purposes of this definition.

but does not include:

(d) fixtures removable by a lessee at the expiration of a tenancy

(e) anything prescribed as not forming part of a building for the purposes of this definition.

"replacement value" in relation to a contract of insurance of a building, requires provision to be specified in the policy:

(a) for:

(i) the rebuilding of the building or its replacement by a similar building in the event of its destruction

(ii) the repair of damage to, or the restoration of the damaged portion of, the building in the event of its being damaged but not destroyed.

so that, in the case of destruction, every part of the rebuilt building or the replacement building and, in the case of damage, the repaired or restored portion, is in a condition no worse nor less extensive than that part or portion or its condition when that part or portion was new; and

(b) for the payment of expenses incurred in the removal of debris and the remuneration of architects, surveyors, engineers and other persons whose services are necessary as an incident to the rebuilding, replacement, repair or restoration.

Section 53A - Application of this Subdivision

References in this Subdivision:

(a) to "scheme" are to a single tier strata scheme

(b) to "strata company" are to a strata company for such a scheme

(c) to "proprietor" are to a proprietor of a lot in such a scheme.

Section 53B - Insurance for lots in single tier strata schemes

(1) For the purposes of this Act:

(a) whether there is insurance in

respect of:

(i) any building on a lot in a scheme

(ii) damage to property, death or bodily injury for which the proprietor of a lot in a scheme could become liable in damages

(b) the occurrences to be insured against by the proprietor in relation to those matters

(c) the terms on which any insurance is obtained;

are, subject to this section, at the discretion of the proprietor of the lot.

(2) A strata company for a scheme may determine that it is a function of the company to insure in respect of the matters referred to in subsection (1), and may at any time revoke the determination.

(3) While such a determination is in force the strata company shall comply with section 53D.

Section 53C - Insurance for common property in single tier strata schemes

(1) The strata company for a scheme shall:

(a) insure and keep insured any building, or part of a building, or improvement on the parcel that is common property

(b) effect and maintain insurance in respect of damage to property, death or bodily injury for which the proprietors of lots in the scheme could become liable in damages as holders of the common property.

(2) The strata company does not have the obligations described in subsection (1) if:

(a) there is no common property in the scheme except:

(i) cubic space in which there is no building or improvement above or below the horizontal boundary of any lot

(ii) fencing on the boundary of the parcel or any lot.

or

(b) the strata company has by resolution without dissent (or unanimous resolution in the case of a two lot scheme) determined that subsection (1) is not to apply to the scheme.

Section 53D - Strata company's obligations where it has an insurance function in single tier strata schemes

(1) This section applies where:

(a) a determination is in force under section 53B (2)

(b) in accordance with section 53C, a strata company has the obligations described in subsection (1) of that section.

(2) This section also applies where a strata company makes a determination to insure common property that it is not obliged to insure by reason of section 53C(2)(a).

(3) In those cases the strata company shall:

(a) insure and keep insured any building to which its obligation extends to the replacement value against fire, storm and tempest (excluding damage by sea, flood or erosion), lightning, explosion and earthquake

(b) effect and maintain insurance in respect of damage to property, death, or bodily injury for not less than $5 000 000 or such other amount as may be prescribed in place of that amount.

(4) Section 54(2) and (3) apply to a strata company's obligations under subsection (3) as if they referred to that subsection.

WESTERN AUSTRALIA COMMUNITY TITLES ACT, 2018

Part 8, subdivision 2, Section 83 Required Insurance;

(1) A community corporation must ensure that the following insurance is in place for the community titles scheme:

(a) all insurable assets of the scheme must be insured against fire, storm and tempest (excluding damage by sea, flood or erosion), lightning, explosion and earthquake:

(i) to replacement value

(ii) to replacement value up to, for an event of a specified kind, a maximum amount specified in the contract of insurance that is a reasonable limitation in the circumstances; and

(b) the community corporation must be insured against damage to property, death, bodily injury or illness for which the community corporation could become liable in damages to an amount of not less than an amount determined in accordance with the regulations.

WHEN TO CARRY OUT REPLACEMENT COST ASSESSMENTS

1. When considering the initial cost of replacement for insurance purposes it is normal to prepare the replacement cost based on the value of complete replacement at the first day the insurance is taken out, and then escalating the cost to the renewal date

REPLACEMENT COSTS

of the insurance. Costs should also include work external to the building (i.e. fences, pools, paving and any signage).

It is not necessary to prepare a full initial cost of replacement every year, it is sufficient to apply a percentage for escalation, however a full review should be undertaken at least every 2 – 3 years (but definitely not more than 5 years between updates), to track changes in demolition and construction costs, alterations/ upgrades/changes to the insured property, or a change in the property's classification (e.g. to Heritage classification), to ensure that the correct value continues to be insured.

2. To minimise risk exposure, members undertaking replacement cost assessments should inspect the subject property when preparing each annual assessment to satisfy themselves with respect to any changes affecting the property.

UPDATES TO REPLACEMENT COST ASSESSMENTS

Updates to Replacement Cost Assessments are typically undertaken by one of three methods:

(a) Manual Update: where the client/ insurer applies an escalation to the previous Replacement Cost Assessment by applying CPI/ construction indices to the original Replacement Cost Assessment

(b) Desktop Review: where the client engages the Certified Quantity Surveyor who undertook the original Replacement Cost Assessment to undertake a reassessment of functional / elemental rates, and demolition, redesign and reconstruction timeframes

(c) Full Update: where the client engages a Certified Quantity Surveyor (new or original Quantity Surveyor) to re-measure and reassess the previous Replacement Cost Assessment and provide a new Replacement Cost Assessment.

EXAMPLE

The following summary example reflects a post-event valuation, in this case where a fire has destroyed the two top storeys of a 4-storey building on a 'specific date'.

- Documentation, development application and procurement for the new work will be five months.
- Demolition is considered to take approximately three months.
- Construction will take six months.

A copy of the estimated reconstruction costs should be appended to the report.

	Capital Replacement Valuation	**Amount $**
1	Demolition and removal of debris	80,000
2	Estimated reconstruction cost at time of 'specific date'	5,000,000
3	Escalation to commencement of construction (3 months @ 2.5% per annum) (calculated: $5,000,000 / 12 x 3 x 2.5%)	31,250
4	Escalation during construction period (6 months @ 3% per annum x 50%) (calculated: $5,031,250 / 12 x 6 x 3% x 50%)	37,734
5	Professional fees for design and project management ($5,148,984 @ 10%)	514,898
6	Development application and other authority costs	25,000
	Sub Total	5,688,883
7	Escalation over life of policy ($5,688,882 @ 3%)	170,666
	Capital Replacement Value	5,859,549
8	GST @ 10% (2019 value)	585,955
	Capital Replacement Value including GST	6,445,504

ASSUMPTIONS AND EXCLUSIONS

(a) Escalation has been assumed for this example at 2.5% during redesign and 3% during construction.

(b) Typically, 50% is used to adjust for escalation over the contract period, this usually being the average escalation cost over the construction period. This average will vary across differing project types.

(c) Exclusions:

- Structure of two lower levels and foundations, except for rectification of water damage
- External works
- Loose furniture and equipment – separate insurance policy or self-insured
- Tenant's property
- Loss of revenue, temporary accommodation, and any other costs associated with responsibilities to tenants, rental voids
- Pro-longed costs beyond stated construction program.

(d) Cost only reflects the design and construction associated with the new and refurbishment work and does not include council fees or other development costs.

(e) Costs associated with making the property safe after the disaster are included in demolition.

(f) Acceleration of Work.

(g) Temporary protection of undamaged property is included in demolition.

(h) State that the insurance policy has not been seen.

DISCLAIMER AND QUALIFICATIONS

Each project will be different, as the building may be totally destroyed or only partly damaged. Consideration will be given to what can be salvaged and what must be removed.

Common exclusions may include (depending on the requirements of the client):

- Loose furniture and equipment
- Damaged produce
- Tenant's fittings, plant and equipment
- Loss of revenue
- Relocation and/or temporary accommodation costs
- Limitations on external works (if any)
- Finance and holding costs
- Compliance with the Building Code of Australia
- Replacement of footings or inground services (to confirmed by insurer)
- Additional escalation due to delays (for whatever reason).

These items may well be covered by other insurances or at the risk of the client and this should be confirmed by the Quantity Surveyor.

Where the cost for insurance purposes only reflects the design and construction costs associated with delivering the building, and excludes any other development costs, this may result in co-insurance activation.

INSURANCE POLICY RISKS

Members clients should be aware that their insurance policy risks should be addressed by the client's insurer or insurance broker.

CO-INSURANCE CLAUSES (AVERAGING PROVISIONS)

Many insurance policies contain averaging provisions to ensure building assets are fully insured. The full value will vary depending on whether the insurance is for replacement value or market value.

Co-insurance clauses provide that, if at the time of the loss, the cost to replace the asset insured exceeds the amount of cover, the insured is considered to be self-insuring for the difference in value and therefore bears a proportion of any loss (including a partial loss). The Co-Insurance Clause is written into policies principally to encourage clients to make sure they have a sum insured that is adequate to obtain the maximum protection from the policy.

Members should be aware that providing a replacement cost insurance assessment which is less than the actual value in the event of a claim may face significant exposure if an averaging provision applies.

FIDUCIARY INTERESTS

Members should be aware that other parties such as lessors, financiers, trustees, and mortgagees may have interests in the insured asset, and should act in the knowledge that liability may extend to those other parties. Members not wishing to extend their liability to parties other than the person who has

commissioned the replacement cost assessment report, should include a disclaimer to that effect in the report.

SCOPE OF WORK

As with any other service provided by a member, the scope of work, basis of assessment, effective valuation date and any other factors relevant to the replacement cost assessment should be agreed and confirmed with the client, in writing and clearly included in the Replacement Valuation Report.

Ideally the client will provide the Member with a copy of the insurance policy which will detail the basis of insurance and extent of inclusions and exclusions under the policy. In the event the Member is not provided with a copy of the policy, the Member should obtain clear instructions from the client confirming the scope of work and any special inclusions or exclusions that are required. In circumstances where this is not possible the Member should state within the replacement cost valuation report the basis of assessment and the extent of inclusions and exclusions within the insurance valuation.

It should be recognised that in many cases Members will be asked to prepare Replacement Cost Assessments (for insurance purposes) without the benefit of insurance policies.

HERITAGE ISSUES

Most Australian governments have regulations in place to protect specific historic properties or whole areas/ precincts of special architectural or historic interest. Where a building has been officially designated a heritage asset by relevant government authorities (usually the applicable State / Territory or Commonwealth Heritage Council), legislation may prevent or limit redevelopment, renovations, modifications, and additions by imposing restrictions and time-consuming approval processes.

Where a heritage building is substantially destroyed to the extent that none, or very little, of the original building remains, much of the asset's heritage value would most likely be lost. Reconstruction would not necessarily restore those values, and as such, would neither be required, nor necessarily favoured. Consequently, any heritage restrictions on the subject property may be lifted with the owner being able to replace the building or redevelop the site in accordance with underlying planning requirements, unencumbered by any of the former heritage restrictions.

Risks arising from the partial loss of a heritage building may be exacerbated where heritage legislation requires making good damaged areas which may require repairing or reproducing some or all of the building in a style and form of construction consistent with the remaining original structure. Consequently, increased costs may be incurred due to the engagement of specialised trades, including those working in stone masonry, wrought iron, and stained glass.

With the risk of increased costs of reinstatement in the event of partial claims, insurance values are typically assessed by determining the current cost of rebuilding the structure as it exists, including reproducing every component of the building in a style and form of construction most closely resembling the original.

INDEMNITY COVER

It is important that Quantity Surveyors be aware of the type of insurance policy held by their client. Where this is an indemnity policy, both the Quantity Surveyor and the client should be cognisant that this will only cover the value of repairs or replacement based on the value of the property at the time of the loss event. This may not be the same as replacement value.

Where property is damaged, indemnity insurance covers the cost of repair (less an allowance for betterment if the repair considerably improves the pre-loss condition of the property).

Where property is lost or destroyed, it generally covers the market value of the property as at the date and place of the loss (other than for marine insurance, when it is calculated at the date of the commencement of the risk).

REINSTATEMENT AND/OR REPLACEMENT COVER

This insures property on a "new for old" basis. In the event of loss, the insurer will pay the cost of replacing the property or restoring the damage to a condition no better or more extensive than new, without deduction for depreciation. The pre-loss condition of the property is not relevant.

If reinstatement is impossible because of changes in planning or building laws, the loss is usually assessed on the basis of the market value of the property at the date of the loss.

REINSTATEMENT RIGHTS/EXISTING USE RIGHTS

In the event of a total loss, and where a regulatory authority exercises its statutory powers, the reinstatement of a building as it existed prior to the loss may be prohibited or restricted. In such circumstances, the insurer may

pay, in addition to any other amount payable on reinstatement of the building, the difference between the actual cost of reinstatement and the cost of reinstatement if it were not prohibited or restricted.

Any payment made for the difference between the actual cost of reinstatement and the cost of reinstatement if it were not prohibited or restricted, would be made as soon as the difference is ascertained upon completion of the rebuilding works. In some policies this provision is only in respect of a reduction in the floor space ratio index or plot ratio.

In addition, where the building sum insured is not exhausted, some policies may make payment for any loss of land value as a result of government or local authority legislation that reduces the floor area of the building(s) insured.

QUANTITY SURVEYORS LIABILITY

Quantity Surveyors need to be aware of grossly understating replacement costs as they may leave themselves and/or their company exposed to potential claims from their client.

Where a Replacement Cost Assessment is being undertaken for an existing insurance policy, the Quantity Surveyor should note inclusions and exclusions as included in the relevant Product Disclosure Statement.

Members should be cognisant that they are not experts in insurance cover policy details and should provide commentary as such. The Member should advise their clients to engage an insurance broker to ensure the clients insurance requirements are adequately addressed.

APPENDIX

Assessment Period	A period of time immediately following the event of destruction. This time period is intended to allow for authority investigations, safety inspections, and settlement of the site prior to any demolition works commencing.
Building	Any construction, be it a house, office block, hotel, factory or other structure which is capable of being insured.
Contents	Building Contents usually forms part of a separate insurance and should be excluded from the Replacement Cost. Contents can include tenancy fit-out, loos furniture and equipment, specialised plant etc. The scope of work should be confirmed in the context of the applicable insurance policy.
Date of Disaster	The date at which the actual disaster event occurs.
Demolition	Includes the removal of all affected work and debris caused by the disaster (special allowances or exclusion notes should be included for treatment or removal of contaminated materials, preservation of any heritage features, and any temporary protection or temporary supporting to adjacent properties).
Desktop Assessment	A Replacement Cost Assessment based upon information provided by the client which excludes any requirement for a physical inspection of the asset.
Disaster	An event such as fire, water (heavy rain and/or flooding), cyclone, earthquake and other physical damage resulting in total or partial destruction
Escalation	Is the amount that construction costs have moved or are forecast to move in a particular time period.
Extra Cost of Reinstatement Cover	Additional costs which might be required to comply with regulatory upgrades in building requirements (because more extensive or expensive design and materials are required when rebuilding).
Hold Harmless Agreements	Any agreement which prevents the insurer from recovering a loss caused by a third party, without first obtaining the insurer's consent in writing. These clauses are often found in rental agreements, maintenance or supply contracts from burglar alarm or fire protection installers and building or repair contracts. Such agreements may void part or all, of the insurance policy.
Professional Fees	Include any fees required to see safe demolition of the building, the redesign and construction covering all disciplines including project management costs.
Replacement Cost	Refers to how much it would cost to replace a current asset at today's market prices with the same or similar asset. If the replacement cost being calculated is of a damaged asset, then that cost relates to the asset in pre-damaged condition, including demolition.
Underinsurance	Only applies if the policy holder is underinsured. Most policies provide a 10% - 15% error margin. Where the insurance value is less than the cost to replace the asset, the insurer will generally only pay the proportion of the insurance value (Refer section 5.1). For example, if the full insurable value for replacement is $2M and the policy is for $1.5M, the insurance company will only pay 75% of the replacement cost. Underinsurance may breach financing arrangements with financial institutions where the building owner has a mortgage against their property.

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BUILDING COST INDEX

THE BUILDING COST INDEX IS PUBLISHED IN THE PRINT VERSION OF THE BUILDING ECONOMIST.

IT CONTAINS DATA THAT CAN BE USED AS A PREDICTOR FOR THE ESTIMATED TIMES FOR DESIGN AND CONSTRUCTION AND INCLUDES A SUMMARY OF THE PAST, PRESENT AND ESTIMATED FUTURE CONSTRUCTION COSTS.

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BUILDING COST INDEX

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