

An aerial photograph of a construction site. Two workers in high-visibility orange and blue uniforms and hard hats are working on a grid of steel reinforcement bars (rebar) laid out on a dark, textured surface. The worker in the foreground is using a yellow tool to adjust the rebar. To the right, there is a concrete slab with various construction materials and tools, including a blue bucket, a red bucket, a black crate, a white bag, and a yellow and black bag. The scene is brightly lit, casting long shadows.

ARCHITECTURE BULLETIN

VOL 77 / No. 2 / DECEMBER 2020

CONSTRUCTION

CELEBRATING
90 YEARS OF
THE AUSTRALIAN
INSTITUTE OF
ARCHITECTS

90

As we mark our 90th year,
we'll be looking back on
how Australian architecture
has shaped our cities and
communities, recognising the
rich history and bright future
of the architectural profession.



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ARCHITECTURE BULLETIN

VOL 77 / NO 2 / DECEMBER 2020

Official journal of the NSW Chapter of the
Australian Institute of Architects since 1944.

We acknowledge the Traditional Custodians
of the lands on which we live, work and
meet across the state and pay our respects
to the Elders past, present and emerging.

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2020 is panning out uniquely in many ways, not least on account of major changes in legislation and policy for the construction industry. These fundamental changes to the legislative landscape will have a major impact on the practice of architecture, and you will be pleased to know the Institute is at the centre of all discussions. We have a very hardworking Chapter Council, with the backbone of policy, advocacy and research done with the support of the Built Environment Committee and the Heritage Committee. A special thank you to Paul Walter, Vice President and Chair of the Built Environment Committee, and Jennifer Preston, Chair of the Heritage Committee. Some of the key legislative and policy areas we are involved in at present are:

Housing Diversity SEPP

The Institute has been advocating for many years for increased housing diversity, and earlier this year we joined forces with numerous social housing providers to lobby both the NSW Premier and Prime Minister to boost social and affordable housing options. We see the development of this State Environmental Planning Policies (SEPP) as the first step towards improving the situation.

Design and Place

We are actively contributing to the Government Architect NSW (GANSW)'s work to draft a new principle-based Design and Place SEPP, which is expected to rationalise several existing SEPPs and guides into one document, eliminating contradiction and overlap. A simplified all-in-one document will be easier to use, and the aim is to encourage project specific outcomes rather than tick-box approaches that result in cookie-cutter outcomes. We responded to NSW Crown Lands' draft state strategic plan for Crown land to convey our support for key areas including Aboriginal land rights, environmental benefit, regional development, diverse affordable housing, repurposing to expand green space.



Heritage

The heritage arena is concerning, and our Heritage Committee has been active advocating for the retention of many buildings of significance this year. Along with Angelo Candalepas, I am hoping to develop a stronger discourse in this regard.

Kathlyn Loseby
NSW Chapter President

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This issue's construction theme reflects the current consuming concern for the NSW Chapter. On the one hand, we face a raft of incoming legislative and regulatory reforms to address construction quality failures in NSW. On the other we are in the thick of fast-paced COVID-19 stimulus projects and a critical momentum that has grown around activism toward the transformation of public space in this new paradigm. The opportunity to exert positive influence in both spheres of activity to optimise quality construction outcomes is both tremendous and welcome, but things are moving at a cracking pace.

Accordingly, to ensure the voice of the profession is heard the Chapter has had to call upon many members to volunteer considerable time and expertise. The Institute and all its members, particularly those with work in NSW, are indebted to these generous peers who have gifted innumerable hours and megajoules of mental energy to meet with government, industry and Chapter staff, to engage critically with reams of documents, and to consult with peers. It is only on the back of their rigorous and expert input that we have been able to develop the strategies and articulate the positions that best serve the profession and our values in terms of environmental and public benefit.

On behalf of the membership, I want to express our huge thanks to those individuals and the practices that have supported their

contribution. In many cases they have directly and/or indirectly put the interests of the profession before their own. At any time such a contribution would be remarkable, but the magnanimity they have demonstrated is even more extraordinary in the context of a world shaken up by COVID-19 and demanding considerable adaptive effort – personally and professionally, individually and organisationally.

This advocacy work is the most important and the most powerful we as a professional peak body can and should do. Without an appropriate role for architects in a regulatory and commercial operating environment in which they can sustain businesses and meet professional standards, there is no profession for the Institute to represent – no one to attend the events, no one to celebrate through awards and prizes programs, no one to write or read the publications, and no one to enjoy the 'lighter' member services and benefits that can sometimes be mistaken for the core value of membership and the *raison d'être* of the Institute itself.

It is true that all architectural professionals stand to benefit from the Institute's advocacy work, regardless of whether they choose to be members. And just as our eminent 2020 volunteers have demonstrated commitment to the common good of the profession by electing to invest of themselves, so too do you when you choose Institute membership. So thank you too. Thank you for your support in enabling your peak body to keep striving to do its very best for you and your profession.



Kate Concannon
NSW State Manager

Quality in the building industry – an update

WORDS: GEOFF HANMER

Ever since the Opal evacuation on Christmas Eve 2018, the issue of building quality has been constantly raised in the media, helped along by the Neo 200 fire in February 2019 and the Mascot Towers failure in June 2019.

Concern about building quality in Sydney has a long history and tends to run in cycles following building booms. In the 1990s, following the 80s boom, the Building and Construction Council of NSW became so distressed about the poor quality of multi-residential development that they developed a rating system to guide consumer choice, complete with trained Accredited Quality Assessors and a guidebook. The scheme was unsuccessful due to a lack of funding, much to the frustration of many involved, including me.

The Lambert report prepared for the NSW Government in 2015 was a response to a fatal fire at a multi-residential development in Bankstown three years earlier. It revealed an appalling litany of non-compliance with building regulations. Of the 150 recommendations made in the report few were implemented by the state government.

In 2017, following an unprecedented boom in tall multi-residential construction and the Grenfell fire, the Building Ministers' Forum – the group of federal and state ministers that control the Australian Building Codes Board – commissioned a report into building standards from Peter Shergold, a retired bureaucrat, and Bronwyn Weir, a construction lawyer.

The *Shergold Weir Building Confidence Report* found that:

'problems have led to diminishing public confidence that the building and construction industry can deliver compliant, safe buildings which will perform to the expected standards over the long term.'¹

The NSW government-appointed Building Commissioner, David Chandler, has now passed legislation to support the proposed improvements to building quality. Bronwyn Weir, who has expressed public frustration with the implementation of the Shergold Weir report, has agreed to be an advisor to Chandler. Two pieces of legislation have now been passed by parliament to give the commissioner regulatory power. The first of these is the *Design and Building Practitioners (DBP) Act*.

The DBP Act requires anyone designing or building an apartment building to be registered. Plans must be submitted to a digital registry to ensure that both the plans and the finished building comply with the National Construction Code (NCC). These provisions come into force on 1 July 2021. A key provision of the DBP Act is to ensure that builders and their consultants owe a duty of care to the owners of an apartment. This reverses the situation established in the 2014 Multiplex case where the learned judges of the High Court managed to find that a builder did not owe a duty of care to the eventual owners of a defective multi-residential building. These provisions became operational when the legislation passed into law.

that any changes to the NCC and Standards are based on scientifically verified facts rather than relying on the hodge-podge of self-interest and folklore that has characterised the development of the NCC and its Standards to date.

The Australian Institute of Architects NSW Chapter President, Kathlyn Loseby, has been actively engaged with the Building Commissioner and has been responsible for crucial improvements in the DBP Act. There are still some important issues to resolve, including the need for a head consultant (probably an architect) to coordinate documentation.

The recent transcripts of Part 2 of the Grenfell enquiry in the UK and the Lacrosse judgement in Victoria show that consultants, builders and subcontractors continue to be woefully ignorant of basic regulatory principles, insufficiently aware of their common law duties of care and far too credulous of claims made by the suppliers of building products. Many degree-holders, including architects, who have been called as witnesses to the Grenfell enquiry have demonstrated a startling lack of basic technical competence.

The Institute, the Architects Accreditation Council of Australia and universities should get on the front foot to tackle these issues before David Chandler decides he needs to do more than just encourage change. A good start might be to insist that teachers of architecture are, in the main, registered architects, and have spent time onsite. ■

Geoff Hanmer is the Managing Director of **ARINA**, an architectural consultancy. He is an Adjunct Professor in Architecture at the University of Adelaide and has lectured in Construction and Structures at UNSW for 20 years. He was the lead author of *The Quality Guide to Medium Density Housing* published by the NSW BACC in 1995-96.

Another Act, the Residential Apartment Buildings (RAB) (Compliance and Enforcement) Act will have a three-year sunset clause. It will give Chandler unprecedented power to hold developers, builders and sub-contractors, including private certifiers and consultants liable for any defective works.²

Several key elements need to come together for the Building Commissioner's complex Six Pillars plan to work. One component – is a new Practice Guide for Certifiers, prepared by Michael Lambert. Another – is a rating tool for industry players, which is currently out to tender. This tool is meant to give the building commissioner a way of identifying the combinations of players most likely to cause problems so that enforcement efforts can be targeted. Another component is reform of the NCC and Standards, which will be guided by the preparation of a series of case studies under the aegis of the Office of the Building Commissioner (OBC).

Section F (Health and amenity) of the NCC has been the subject of withering criticism from consultants, builders and subcontractors for years because just about any construction technique or detail could be alleged to be waterproof, despite a lot of contrary evidence in practice. The critics include some of the people who drafted the standards, particularly AS 3740 (Waterproofing of Domestic Wet Areas). There is an urgent need to carry out proper scientific research to determine the causes of waterproofing failure and to devise effective solutions, both regulatory and onsite, suitable for modern techniques and materials. It is important

NOTES

- 1 Peter Shergold and Bronwyn Weir (2017) *Shergold Weir Building Confidence Report*, p.3
- 2 The Design and Building Practitioners (DBP) Act and the Residential Apartment Buildings (RAB) (Compliance and Enforcement) Act were passed by both houses of parliament on June 3, 2020. They can be found at <https://www.legislation.nsw.gov.au/#/search/billsCurrent/exactwords=dip>

Where did all the certifiers go?

WORDS: DAVID WELSH

At times, private certifiers seem to have a thankless task. In light of a string of evacuations due to building defects – the most high profile of which have been the Opal and Mascot Towers – it is the certifiers who, at least initially, seem to be bearing the brunt of allegations to date.

Pre-COVID-19, it seemed that we were already losing a number of our Principal Certifying Authorities (PCAs) for various reasons including de-registration, increasing financial costs and the extreme pressures of the job becoming simply too much to justify practicing. I thought it would be interesting to pose a few questions surrounding the issue to both the group who represent the certifiers in NSW, the Association of Accredited Certifiers (AAC), as well as the government body charged with accrediting and regulating them, the NSW Building Professionals Board (BPB).

I started with a quote taken from an article that appeared in a Sydney Morning Herald article written by Carrie Fellner and Nigel Gladstone (3 August 2019). It quoted AAC Chief Executive Jill Brookfield's agreement that the Building Professionals Board needed to 'urgently improve its auditing and investigation processes to ensure anyone doing the wrong thing is found and tossed out'. From here I posed five questions. The AAC's and BPB's responses are as follows:

Q1.

Since this statement was made by Jill Brookfield, certifiers have faced increased scrutiny, with some sections of the media and politicians calling for immediate action. A number of certifiers have since been investigated, with some practitioners having their licences suspended for a number of years. This has led to significant difficulties, with a number of buildings unable to be certified, building owners left to engage a new PCA (often from the local council), and local councils left with increased workloads as projects are forced to re-engage with public authority certification. How do you see this resolving itself in the short to medium term, if at all?

AAC response:

Accredited certifiers have been facing increased scrutiny long before August 2019. The central reason accredited certifiers are leaving the industry is because of the lack of affordable compliant professional indemnity insurance on offer. Addressing this insurance crisis will work to ensure accredited certifiers can stay in the industry. This requires the building industry, the insurance industry and governments working together to develop sustainable solutions. In the longer term, we want to see more people join the profession and that requires more emphasis in universities and high schools.

BPB response:

The NSW Government has taken a range

of steps to improve the accountability of certifiers in NSW, including auditing around 20 certifiers per month with a stronger focus on disciplinary action. In the 2019-20 financial year, Fair Trading cancelled the accreditation of two certifiers. On 1 July 2020, further accountability enhancements were implemented with the commencement of the *Building and Development Certifiers Act 2018*, and through publication of a certifier practice guide. The certifier practice guide has also recently been developed, in consultation with an industry reference panel which includes the Australian Institute of Architects. This clarification, as well as the effect of certifiers being 'put on notice' through increased disciplinary action, is expected to raise the standard of certification in NSW. Further, the NSW Building Commissioner is leading the delivery of the Construct NSW transformation program. Construct NSW seeks to rebuild public confidence in the building and construction industry through six pillars – legislation, ratings, contracts, education, digital and research. As part of this program, the Building Commissioner is overseeing the implementation of key legislative reforms. More information on Construct NSW is available on the Building Commissioner's website at: nsw.gov.au/building-commissioner.

A property owner may seek to appoint a replacement certifier (private or council) if the accreditation of their certifier is cancelled. Councils may, and do, contract private certifiers to provide certification services on behalf of the council for times of increased workload or staff leave.

Q2.

Architects are increasingly being asked by certifiers to provide a variety of disclosure statements (or signed proformas developed by the certifiers themselves), ranging from the specific to quite general blanket statements. This seems, at least at face value, like a move to take the system even further away from a centrally monitored and regulated approvals system to even greater self-assessment and self-regulation. Given the failures of the system to protect consumers to date, do you think this is a good idea, or is it just shifting the responsibility off the PCAs on to others?

AAC response:

The fundamental issue is ensuring all building

practitioners are accountable for the work they carry out. Currently, accredited certifiers are often the only practitioners properly accredited or regulated and covered by insurance, which means the liability is significantly skewed towards them. This is why the NSW Government's Design and Building Practitioners Act is so important as it will lead to more practitioners being regulated and insured. This is the model that the AAC has been advocating for 15 years and finally it is being acted upon.

BPB response:

When carrying out certification work, certifiers often require additional information and documentation from specialists to assist in their consideration of an application for a construction or occupation certificate. In certain circumstances information is prescribed, such as the statements from architects that are required for certain buildings as a prerequisite to the issuing of a construction and occupation certificate. Regardless of the documentation relied upon to issue a certificate, certifiers are expected to apply adequate scrutiny to the document. For example, to ask if the person who issued it is competent to do so, check the relevant legislative, Building Code of Australia (BCA) and/or Australian Standards provisions are referenced correctly, and (where possible) verify the work by inspecting it in person. Certifiers can make certain assumptions under the *Environmental Planning and Assessment Act 1979* (the EP&A Act) when relying on a compliance certificate issued under Part 6 of the EP&A Act. However, they are not legally protected if they make the same assumptions about other documents. Certifiers have statutory responsibilities when determining applications for construction and occupation certificates. Certifiers generally have a 10-year proportionate liability period under the EP&A Act and are also accountable for their work to Fair Trading under the *Building Professionals Act*. This has not changed, and certifiers cannot abrogate their responsibilities.

Q3.

The Draft Design and Building Practitioners Bill is designed to help deliver better building outcomes? Do you have any key concerns about the Bill?

AAC response:

See above.

/

WHERE DID ALL THE
CERTIFIERS GO?

WORDS:
DAVID WELSH

BPB response:

The *Design and Building Practitioners Act* was developed to significantly improve the accountability of practitioners involved in design, building and construction. Specifically, the *Design and Building Practitioners Act* will introduce the following key reforms:

- requiring that design practitioners who prepare regulated designs issue a compliance declaration to declare that the designs comply with the BCA
- requiring that building practitioners obtain, rely upon and build in accordance with declared designs, and issue a compliance declaration that they have complied with the BCA
- requiring that any variations to declared designs are reprepared and declared by a design practitioner if they are in a building element or performance solution
- requiring any practitioner who intends on making a compliance declaration to be registered under a new registration scheme set out in the *Design and Building Practitioners Act*
- introducing a statutory duty of care that is owed for construction work to new and existing owners of buildings.

Q4.

We have heard that insurance premiums for certifiers have in some instances increased by up to 800%. This will inevitably add further pressure to an industry group already under siege. What would you like to see happen to resolve this increasingly untenable situation?

AAC response

We need governments to wake up to the urgency of this issue. The NSW Government's *Design and Building Practitioners Act* is positive as it will more evenly spread liability and increase accountability, but this won't happen overnight. We need to see more urgency from the Building Ministers' Forum which have been looking at this for two years now and have yet to outline concrete steps. Governments could for example introduce liability caps. We also need a more comprehensive approach to cladding rectification.

BPB response

The NSW Government is aware of the problems in the supply of professional indemnity (PI) insurance. Fair Trading has been working closely with NSW certifiers who are having difficulty acquiring PI insurance cover, helping them to understand their PI insurance requirements and secure a policy that meets their needs. The NSW Government is also considering various reform options and has included amendments mandated for certifiers in the Building and Development Certifiers Regulation 2020. It is also engaging closely with other states and territories on this issue, leading nationwide discussions within the Building Ministers' Forum.

At the Building Ministers' Forum meeting held on 13 December 2019, ministers from all jurisdictions discussed potential responses to this important issue. In those discussions, the NSW Minister for Better Regulation and

Innovation sought to encourage all jurisdictions to adopt a nationally consistent solution. The ministers agreed to convene a meeting in February 2020 with the Insurance Council of Australia to discuss a suite of measures to reduce the cost and improve the availability of PI insurance premiums for building industry practitioners. At the 17 February 2020 meeting of the Building Ministers' Forum, ministers met with the Insurance Council of Australia and certifier industry associations. At that meeting, associations were called on to develop a Professionals Standards Scheme as a matter of priority. A collaborative approach is being taken between interjurisdictional governments and insurance providers in resolving issues with insurance coverage.

Q5.

Increasingly we are seeing certifiers unable to issue occupancy certificates for a variety of reasons, leaving building owners exposed through no fault of their own. Does the AAC see a way of resolving this issue, for example by giving authorised certifiers some practical wriggle room to certify building work under the existing legislation, or do you see the need for more structural change in our legislative framework?

AAC response

It is difficult to answer this, need more detail about why certifiers are unable to issue OCs.

BPB response

The framework for issuing occupation certificates sits under the environmental planning and assessment laws and is broadly designed to promote the amenity, safety and wellbeing of the community. Ultimately, the owner is responsible for meeting the conditions of their development consent, and for communicating with the builder about required inspections, as advised by the certifier. Owners have the power to research what is required of them, and to understand the requirements for the issue of an occupation certificate. Certifiers are regulators who must impartially assess whether to issue an occupation certificate based on evidence and have significant discretion when determining an occupation certificate application.

Certifier discretion regarding the issue of an occupation certificate currently includes:

- the power to require whatever documentation/evidence is reasonably needed to assess an application for an occupation certificate, and to decide what evidence they will accept
- discretion to determine whether a critical stage inspection was 'unavoidably missed'
- discretion to determine whether work is consistent with the consent
- discretion to determine if work is 'suitable for use or occupation' in accordance with the BCA.

Importantly, residential building owners in NSW are protected by statutory warranties on all residential building work under the *Home Building Act 1989*. Owners can claim on these statutory warranties for any defective building work within set periods, up to six years for major defects and two years for all other defects, with this timing commencing from the date when the work was completed. More information about statutory warranties is available on the Fair Trading website at: fairtrading.nsw.gov.au/housing-and-property/building-and-renovating/preparing-to-build-and-renovate/contracts.

Owners can access Fair Trading's dispute resolution and inspection service to mediate disputes over alleged defective building work during the warranty period. Fair Trading's inspectors can issue rectification orders if work is deemed defective. ■

David Welsh is an architect, writer and co-founder of **Welsh + Major**, a modern-ish architecture, interiors and urban design practice he established with Chris Major.

Address to the architecture deans

WORDS: DAVID CHANDLER

In March this year, the deans of the state's architecture schools were briefed on strategies to reform the construction industry in the short term (by 2023), medium term (by 2025) and longer horizon (by 2030). Starting a conversation with architectural educators on how they should engage with the new reforms, and how the schools might adapt their courses to ensure that the architects of the future can meet their legislated responsibilities. Four key discussion points were raised. Potential opportunities where architectural teaching might actively contribute to addressing the potential challenges facing the construction industry were identified as summarised below.

Q1.

What are the deficiencies within the NSW architecture profession identified as needing to be addressed?

- Due to an erosion of professional engagement by clients there are weakness in multi-disciplinary design integration
- Designs in the field lack sufficient detail to properly inform the construction of compliant work
- Designs display a breakdown in professional supervision and authorisation
- There is an almost universal weakness in designs suitable for Design for Manufacture and Assembly
- There is little understanding of the actual digital capabilities of the players
- Building Information Modelling is not the broad tool many think it to be, and it is not well-liked by most
- There exists a gap between vocational and higher education career pathways.

Q2.

What is the data being relied upon to identify and quantify these existing deficiencies?

- Research is more reliant on anecdotes from the major players that quantifiably representative of the facts – hence little change arises
- The commissioner's site visits are identifying the real system weaknesses at the grainy end of the industry where most of the 57,039 firms who employ fewer than 20 people operate

Q3.

What further research is required to define areas for improvement?

- More contract research that has short- and medium-term relevance
- Research that is relevant to the immediate transitional needs of the NSW construction industry
- Research that spans multidisciplines, including engineering, computing and business.

Q4.

What is the desired long-term outcome of addressing the deficiencies?

- Developing a construction narrative for the NSW construction industry that points to the type of work that will be undertaken, the career pathways that will open up and the way future students and those upgrading their skills may navigate more easily
- Developing a set of priority skill areas across the vocation and higher education spectrum and implementing a one-time investment to deliver these to the industry via micro-learning packages that add to a skills passport.

- Engaging directly with students to involve them in the policy and education landscape to ensure they are involved and informed in setting their futures
- Challenging universities to be more transparent with the allocation of undergraduate fee income and its application
- Challenging the dumbing down of degree entry standards with a view to prioritising overseas student uptake
- Building viable career pathways that navigate the importance of vocational skilling and future professional careers built on more applied knowledge and experience
- Developing a NSW construction skills roadmap for 2025 and 2030.

Between the major legislative and regulatory reforms unfolding in NSW and the release of an updated National Standard of Competency for Architects (NSCA), the schools of architecture will be attending closely to questions of how university architecture programs need to evolve to ensure graduates are suitably prepared to enter the profession and uphold its standards. ■

David Chandler OAM is the NSW Building Commissioner. He commenced a drive to point professional industry organisations towards achieving comparable accreditation with the Professional Standards Council. This initiative is aimed at achieving more consistency among those who accredit, govern and hold to account their members as part of restoring confidence and transparency among the industry's professions.

Loss of faith

WORDS: LES REEDMAN

Would you fly if you thought that no-one had checked the plane over? It might be an extreme example, but governments consider air travel to be a high-risk industry and are obviously concerned for public safety and confidence. Even a weld has to be applied for, tested and certified – the greater the risk, the greater the scrutiny.

Obviously, the risks are not at the same level in the building industry, but nevertheless they must be addressed for public safety as well as consumer protection. These are universal principles and it is the role of government to put in place the regulations to achieve these ends. Both the Shergold Weir (2018) and the Lambert (2019) reports investigated the shortcomings in the industry extensively, with definitive recommendations to government. Two issues are evident in contemporary building failures: the inadequacy of the certification process; and instances of non-compliance with the Building Code of Australia (BCA) and other regulatory requirements.

A brief look back at the three-part contract provides some useful context. Client, builder and architect had clear roles. The registered architect was notably the agent of the client and had a professional duty of service in the client's best interests, balanced with fairness to the builder. The architect provided ongoing inspections, and for major projects, an onsite clerk of works was employed under the direction of the architect and paid for by the client. The local government council (LGC) had powers to enter the site and have its own inspections but gave less scrutiny with the assurance of the architect. There were usually no issues once the architect declared the project fit for occupation.

The *Trade Practices Act 1974* thrust commerce into a competitive mode and a trend grew for government to outsource services to speed up the process. Many changes in the building industry were to occur. Highrise buildings and larger speculative developments were responding to a growing economy. Builders backed by finance were offering a one-stop

service as a design and construct contract to clients. Other forms, such as the Management (of subcontracts and consultants) Contracts, with variations, often excluded the architect from direct contact with the client, except if the client were the developer. Traditionally the architect's duty of service is to provide design and documentation complying with the building code and regulations in the best interests of the project, and wider benefit to the public and the environment. With this disconnect, it could therefore be suggested that nobody can be regarded as a full professional agent of the client. The developer has foremost a commercial interest in the client.

The industry is not likely to return generally to the three-part traditional contract. Major clients and financiers are likely to engage developers or builders directly who will offer further contracts for consultants and subcontractors. To this end, architects might refer to an informative article on liabilities by lawyer Bronwyn Wier in relation to the substitution of materials.¹ An alternative material, if offered or instructed, is that it must be 'equal in all respects to' assuming that the item specified by the architect complied with the BCA in the first place. The article also mentions that any verbal dealings should be confirmed in writing as normal business practice.

The deficiencies in the certification process have been well canvassed. Principally, the quality of the certification was too easily corrupted in the relationship between certifier and developer; it had the potential to become a glaring conflict of interest.

There is no alternative now than to recover some regulation lost when the government allowed the outsourcing of certification. The NSW government has already appointed a Building Commissioner as a result of the foregoing reports and has begun implementing new legislation which includes registration of design and building practitioners. The industry would be better regarded if registration was required to the standards overseen and scrutinised by bodies with appropriate disciplinary powers for every sector of the industry including the certification process in particular. We need to see that this legislation does in fact restore faith in the building industry. ■

Les Reedman LFAIA is former Assistant Government Architect PWD.

NOTES

¹ Bronwyn Weir (2019) *Architecture Australia* Nov/Dec p. 17

Icons or otherwise? Values and craftsmanship

WORDS: PETER WEBBER

Once upon a time, the Oxford English Dictionary defined an icon as 'Image, statue, painting, mosaic etc of a sacred personage'. In respected contemporary literature today, although this definition is often expanded, the quintessential meaning remains unchanged. By contrast in architecture, if we are to believe pronouncements from the development industry, every major development will be iconic. But an icon must also be timeless, and a work of literature must be published and survive criticism over centuries to achieve such status. For a work of architecture to achieve similar recognition, not only must its aesthetic qualities be exceptional, but its construction must also be of the highest quality.

Readers of the November 2019 issue of *Architecture Australia* will have admired Sky Trees tower designed by Sydney practice Koichi Takada, which not only 'references California's gigantic redwoods', but also the 'icon Marilyn Monroe and her "flying skirt"'. Meanwhile in Sydney we can ponder the Crown Casino at Barangaroo as it nears completion, assured by James Packer that it will be 'Sydney's third icon', after the Opera House and Harbour Bridge. Never before has there been such vociferous and widespread objection to any development in Sydney, yet such was the influence of lobby organisations such as Urban Taskforce that it was approved by the state government.

Very few large cities in the Western world have emerged unscathed from icon obsession. Consider London where the skyline was for centuries dominated by the dome of St Paul's

Cathedral, and the towers of London Bridge. Despite strong public protest championed by none other than the Prince of Wales, at the turn of the twentieth century, the silhouette of the city became subservient to high-rise icons: commercial towers labelled cynically by Londoners as Cheese-grater, Gherkin, Shard and more. The addiction to monument-creation appears to be ingrained in the psyche of the powerful. As Jonathan Glancy wrote in *The Independent* London in 1990:

'From Cheops through Augustus, to the Medicis, Napoleon and Hitler, autocrats have long enjoyed a love affair with grand architecture,' and 'Stalin, Mussolini, Ceaucescu, and Bokassa – the list is interminable – all used architecture as political propaganda.'

In our contemporary world another manifestation of autocracy has emerged, a development industry with immense resources and powerful influence. If a building can be more spectacular than its neighbours, it exhibits what is known in public relations terminology as a distinctive brand. In the Summer 2012 UK Urban Design Group *Journal* article 'What drives city branding', Barkham and Murray explain that 'the aim of branding is to achieve some competitive advantage by means of product differentiation.' Numerous architectural journalists have contemplated the many dubious outcomes. In *RIBA Journal*, Will Wiles describes a tower designed for the Kushner Companies owned by President Trump's son-in-law as 'a Zaha Hadid Architects–designed rectal thermometer. Phallicism is over-diagnosed in writing about skyscrapers. Most towers do not look anything like that unless there is something seriously medically wrong'.

But there has always been a role for the legitimate icon. In Medieval and Renaissance Europe, cities and towns were dominated by the towers and spires of the city hall and the church. Integrated into the urbane public squares which we so enjoy today, these icons represented the highest civic and spiritual values of their communities. And in medieval cathedrals for example, the exquisite craftsmanship of stonemasons and carpenters almost 1000 years ago resulted in a quality of construction which continues to amaze us today.



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ICONS OR
OTHERWISE?
VALUES AND
CRAFTSMANSHIP

WORDS:
PETER WEBBER

As building technology developed in the twentieth century, some of the earlier high-rise towers too were celebrated, notably the Empire State in New York. It was the tallest ever in the world, but critically also accessible to the people of the city who could enjoy spectacular views from a height never before possible. Many decades later, the new *One World Trade Centre* provides post-9/11 what State Governor Andrew Cuomo described as 'a symbol of the enduring spirit of the city and State of New York'. Sydney's Centrepont Tower for some decades played a similar role as our highest building with its ingenious engineering structure. But these are midgets by comparison with Dubai's 800-metre tall Burj Dubai. The Sydney Morning Herald reported that then supreme ruler Sheikh Mohammed bin Rashid Al Maktoum proclaimed that it was, '...a shining accomplishment... an icon of the new Middle East: prosperous, dynamic and successful.' Whether or not the citizens of the city were in concord with his sentiment was not reported. Whether the values embodied in these buildings and the quality of their construction justify the governor's and sheikh's opinions only time will tell.

Today it is neither the churches nor the commercial towers, but often the new civic and cultural facilities that capture the hearts of our communities. An outstanding example is the forum in the Dutch city of Groningen with its libraries, cafe, cinema, conference rooms and more, which have regenerated the city. In our own Green Square at a modest scale, the new civic library and civic square create a social focus for community; a prize-winning work of architecture, and potential local icon. But why have we not also recognised structures which

symbolise extraordinary achievements in science and technology? Take for example the huge and elegant towers built in Spain and Portugal to heat glycol to 250 degrees in order to generate electricity without producing carbon dioxide. Author Ian McEwan mused in an interview with James Button that:

'these towers are incredibly beautiful. Perhaps they will have the same impact on the imagination as the heroic period of European cathedral building – which was also a project that involved fantastic altruism.'

Perhaps if their construction has been of the highest quality, it is these which will be celebrated as the truly genuine icons of our age, hardly 'sacred personages' but critical to the saving our environment and civilisation. ■

Peter Webber LFAIA, FPIA, ARIBA is former NSW Government Architect, State Planning Commissioner and Emeritus Professor University of Sydney.



Green Square Library and Plaza by Studio Hollenstein in association with Stewart Architecture. Photo: Tom Roe Photography.

Not just a matter of good design

WORDS: MICHAEL LEWARNE

The hero shot says it all.
We design impressive buildings.
Enough said, right?

Too many architects describe their job as designing buildings, with their emphasis on designing. Then follows a monologue on the quality of their design work and the importance of design. All true. However, if you were to ask an architect how their tasks for the week break down, I'd hazard a guess that actual design time accounts for well under 50% of their time. It's certainly true for me. That's not to say we're sitting on our hands, drinking single-origin dark roast piccolos or flicking through the latest glossy architectural publication. There's plenty of important work we do for our clients that doesn't include design.

Here's the thing: it's crazy hard taking that hero shot, because it's crazy hard actually getting a building designed and built well in the first place. That photo is an infinitesimally small and inadequate representation of what it took to bring the building to completion. So why is this the story, literally and metaphorically, that architects persist in telling? The story that starts and ends with how beautiful the building is, how extraordinary its design. Of course, this is an important and integral element of the story but it's only a part of a larger narrative. The question that interests me is this: is this the story that clients want to hear?

What if instead of solely trying to sell the quality of our buildings and the importance of good design, we were to sell what we do in realising a building and how we do it? Not only that, but also how incredibly hard it is to do well and how good we are at doing it? We are generalists, we have a broad skillset; we should own that and declare that. How might we better sell this skillset? These are capabilities that can build a

more assured and emotional connection to the profession of architecture. How then might we do that in such a way that resonates?

Consider the context of recent high-profile building failures – the Grenfell, Lacrosse and Neo200 fires, the structural failures at Opal and Mascot towers, for example. These catastrophes have spawned fear. Fear is emotional, it is a motivator; it wants to be assuaged. Architects need to be more curious and more empathetic. To tell stories better we need to spend more time listening and less time telling. Through better listening we might begin to tell a new story, a story that alleviates people's fears by connecting on an empathetic and emotional level. We can't control the decisions, but we can influence the stories by seeing and hearing what our current clients and future clients want.

What if architects were to describe their job in terms of what we really do when realising buildings, in terms that build an emotional connection to the profession? One example might be to tell a story that meets that fear head on: architects work hard to keep our clients safe. Safe in the process of building, the quality of design, the construction, the material selection and so on.

Architects don't just design buildings. We are highly skilled across all aspects of a building project from conception to completion. With an approach like this we can alleviate our clients' fears of investing in a building that falls apart, burns or leaks.

It's not just a matter of good design. What we deliver goes beyond the hero shot. The story we should be telling is that architects are extremely good at realising buildings, and we add value, including quality and safety across all aspects of this realisation process. ■

Michael Lewarne is an architect and coach on a stroll on the edge of architecture, where he's employing his architecting skills in new ways, working with architects and practices. Recently founding **Unmeasured** to forge better human and professional skills to build a better culture, practice and leadership.

World Trade Center Transportation Hub by Santiago Calatrava. Photo: Michael Lewarne.



Why are quality projects sacrificed for financial feasibility?

WORDS: SARAH BOZIO NELOS

As an architect, I appreciate quality in design and take pride in the designs that I create. I hope that my designs will reach fruition while upholding the original intent that I had for them. However, I am often disappointed by what reality makes of my intent: taking my handcrafted lemonade and turning it right back into lemons.

I started my career in quantity surveying as a bank-appointed consultant responsible for monitoring the successful completion of hundreds of projects of all scales and typologies. Continuing to be involved in this today, it has offered a unique insight into the processes and pitfalls of our industry, from design right through to post-occupancy. Ultimately, too many projects end up sacrificing quality and procedure for the short-term bottom line: financial feasibility.

But can we put the blame on any one person, institution or single overarching factor?

Design and construct contracts

Under pressure of acquiring finance, the developer is more inclined to build using the quickest and cheapest means, sacrificing quality of material and consultant selection, construction methods, appropriate design coordination, detailed documentation, and workmanship. The outcomes of such economising are as follows:

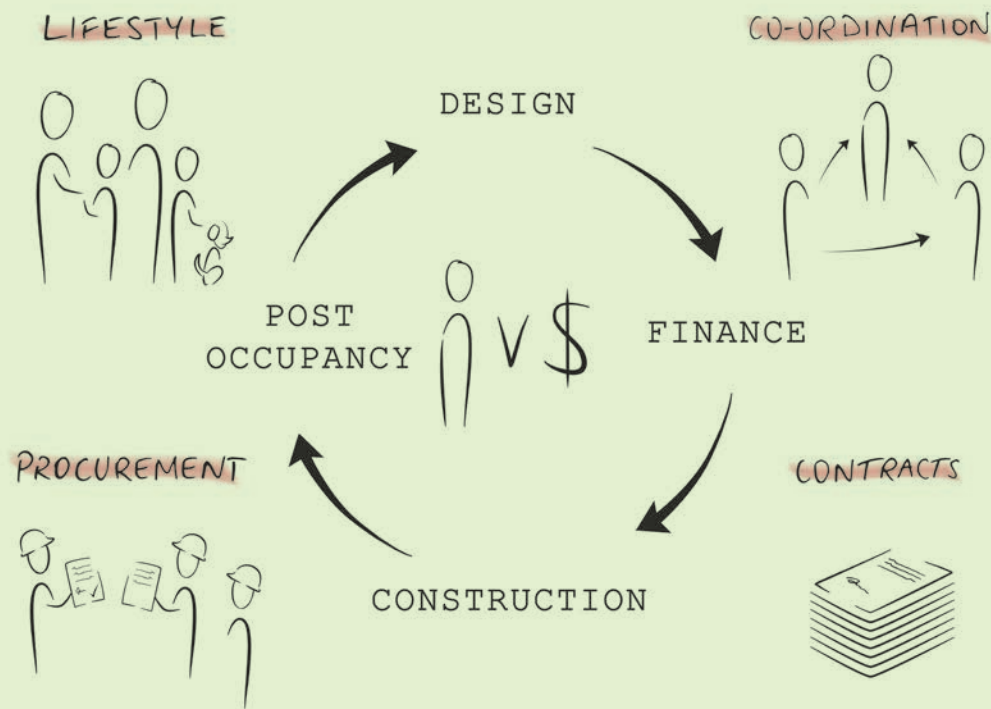
- Specialist services tend to be designed to their minimum standard. For example, air-conditioning horsepower is selected based on the minimum requirements of the building as a whole, instead of being tailored to suit each unit area of coverage and aspect.
- Construction details are skimmed on. For example, a model planter-box detail requires the inclusion of geo-fabric, ballast, waterproofing, floor wastes, concrete topped to cross falls, weep holes, expansion joints, double walling, and a projected cavity for buttressing to an external wall. However, we often see planter boxes constructed with single walling, butting up against external walls with no topping, no floor wastes, no weep holes and the like. As a result, soon after occupation the planter boxes fail and create large lump-sum capital works costs.
- Prime cost items are downgraded. For example, door hardware of a certain price may be specified which is consistent with the quality required, however the contractor will seek a cheaper lookalike which goes unchecked by both the client and the architect who is not commissioned to oversee quality assurance procedures.

This issue is compounded by the fact that most developers require bank funding. Funders view the building as purely a matter of economics and it is hard to blame them; they are obliged to meet their portfolio-funding expectations while mitigating risk.

Difficulty acquiring finance

As such, the requirements of financial institutions continue to tighten, making fund sourcing more difficult and stressful for developers, who see their profit margins squeezed. In addition, the stringent lending conditions can have adverse consequences for the project, such as:

- a minimum 20 to 25% developer's margin
- 120% debt cover on residential projects
- build and temporary hold (minimum of one year following occupation) increasing interest repayments
- borrower up-front part funding – this reaches 50% in some cases, leaving developers strapped for cash.



The sacrifice to fulfil these requirements ultimately diminishes design processes, contract suitability and quality of building.

Process flaws

One of the casualties of these conditions is effective design coordination. Project stakeholders don't spend enough time and money bringing consultants into one room to collaborate on design, address buildability issues, or identify and resolve high-risk building elements. Buildings are pieced together by email coordination, which too often results in a disparate building that does not function as a whole. Practically, how do we expect a podium slab not to leak when the movement joint has been placed running under a planter box?

As architects, we need to keep the project life-cycle front-of-mind during the design process. Architects should be involved in the project from conception through to occupation and be able to assist with procurement and design control. We should encourage clients to build a strong team around them and to allow for regular face-to-face coordination in their budgets. With the help of a quantity surveyor, the project budget should

be carried out and refined at every stage of the project, so that the project is not set up for failure when it comes down to the client signing the dotted line upon finance.

After all, we are all working towards the same goal: delivering a project that will stand the test of time, one that we can all be proud of and one that positively impacts society and the environment. If this shift in mindset can be achieved, and all stakeholders educated as such, then maybe one day there will be homemade lemonade for all. ■

Sarah Bozionelos is Nominated Architect at **Archi-QS** and has experience in residential design, quantity surveying and project management.

Marionettes to speculative capitalism

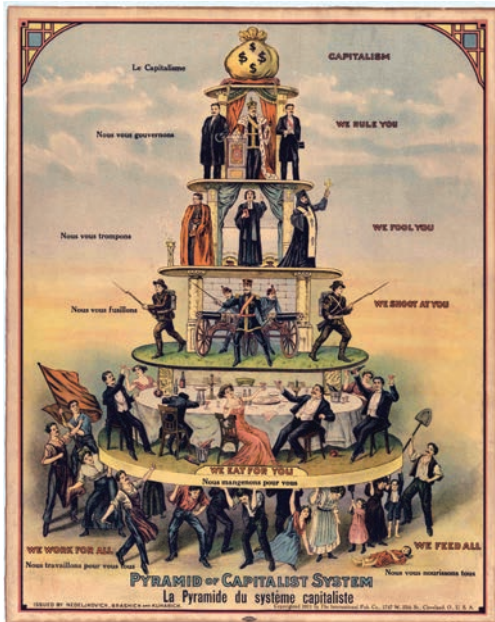
WORDS: HUGO CHAN

'Money makes the world go round', sang Liza Minnelli in her iconic 1972 role in the musical drama *Cabaret*. At the same time, the US Carter administration commenced deregulation of the banking and airline industries which his successor, Ronald Reagan, would expand into extensive financial deregulation, joined by Margaret Thatcher in 1979 with sweeping privatisation and ideological enshrinement of a property-owning democracy. In this, our neoliberal context, quality design has become an exclusive folly and fancy for the wealthy, while the vast array of residences served up for the average punter appears to be driven by profit-hunting developers. An oligopoly controlled by the dominance of suppliers, contractors and the compartmentalisation of our profession into smaller and smaller sub-specialists further corrodes our ability as architects to influence and shape the structures we are supposedly responsible for designing. Through this erosion, architects have gone from governing, to presiding, to now slipping into possibly becoming nothing at all – marionettes, operated by the whims of our venture capitalist masters.

The collapse of confidence arising from the saga of Opal, Mascot and countless other problem-ridden apartment towers exposes a crisis which is not merely regulatory, but existential. It reveals not just the failings of an overcomplex and ineffectual regulatory framework, but also the hollowing out of the discipline of architecture,

where we have relinquished our responsibilities and become subsumed as merely players, complicit in the game of speculative capitalism. Architecture thus becomes increasingly sidelined by an inherent conservatism within the construction industry, where tried-and-tested, streamlined approaches mean that tower blocks become self-replicating machines, barely needing the involvement of architects at all. The American Institute of Architects for example, found in a 2016 study that 57% of architects would simply copy and paste specifications from old projects into new, and a further 16% would reuse entire specifications without any changes. Without innovating and barely thinking, architects maybe reduced to merely branding, where additional profit value is achieved through a signature style or a famous name, rather than any meaningful investment in good design outcomes.

Breaking free from being a cog in the system and restoring confidence in design requires architects to challenge not only the processes by which our visions are manifest, but also the *raison d'être* behind our work. We cannot simply feign ignorance and assume that new legislation or regulatory frameworks will solve the problem. An endless list of statutes, policies and guides already exists in the form of the National Construction Code, Australian Standards, the *Environmental Planning and Assessment Act*, State Environmental Planning Policies, Local Environmental Plans, Development Control Plans, Department of Planning Circulars, the Government Architect Advisory Notes, yet here we are: towers quite literally crumbling before our eyes and buildings turning into ruins well ahead of their time; people forced into the streets homeless, now crippled by mortgages on unliveable apartments. The crisis is a painful wakeup call that architects must take responsibility in tackling the problem and engage in a reflective discussion of the value of quality design with clients and contractors alike. Reclaiming our agency as practitioners will inevitably be fraught with difficult conversations, but the goal must surely be to shift the prevailing attitude away from what architecture has become – a tool for developer's profit. We must be proactive rather than reactive to this crisis, so that we can lay the foundations for a paradigm shift in architectural practice.



In shifting our role and thinking, our new point of departure for architecture should be embedded within the paradigm of ecologically sustainable development (ESD). At its foundation, ESD is underpinned by three overlapping spheres: environment, society and economy. There is no prize for guessing which has taken primacy until now. ESD thinking is an approach which asks us to engage critically and means that we can become more aware of the positive and negative impacts our decisions may have, be it in terms of embodied energy, local communities or the profit margin. Beyond merely practicing architecture, thinking about architecture means delivering better ESD outcomes. For example, up to 20% of a building's carbon emissions can be avoided by changing to less wasteful, more recycled materials, and design approaches that support efficient use of materials can reduce waste by a further 15% according to UK charity WRAP. Thinking holistically in terms of ESD saves us from our current state of relaxed complacency and asks us to embrace habits of learning, innovation and self-reflection. Only then can we begin to develop systems and approaches which deliver better and more balanced outcomes across all three aspects of development.

Adapting our approach towards issues of society, environment and economics is not to deny that capitalism underpins the function of our cities, but rather asks us to evaluate how

much power we must retain in controlling and managing a project. We want to believe that as architects we are at the forefront of leadership within the construction industry. The uncomfortable truth of the matter is that we are currently just one instrument within an overwhelmingly complex orchestra – and yet, the opportunity lies ahead for whether we choose to lead as concertmaster or fall idly back as the triangle player. Ultimately, the question of quality asks us to return to the more fundamental question of what architecture is in service to – people or profit? The current construction crisis is not just about reassessing how we build, but also raises the existential question laid before us – why do I build? ■

Hugo Chan is architect and associate, practice management at **Cracknell & Lonergan Architects** as well as director of his own research-based practice, **Studio HC**. Hugo is also a recipient of the 2020 Alastair Swayn Foundation Research Grant and will be undertaking a reflection of NSW Apartment Design Guide through exploring global challenges and opportunities associated with current design trends in high-density urban residential housing.

Above: 'Pyramid of the Capitalist System' by Brashich Nedeljkovich and Kuharich (1911), published in the *International Worker* by the International Publishing Company, Cleveland Ohio.

Innovation by design:

Technological challenges and opportunities behind the Parramatta Powerhouse and Sydney Modern Project

WORDS: LUCIANO CARDELLICCHIO AND PAOLO STRACCHI

The Australian construction industry has among the lowest rates of investment in research and development in our economy. Innovation in technology and construction requires courage, time, and usually conspicuous investment. Despite being often considered problem-makers by their clients and engineers, architects can contribute to innovation improvements in the construction sector. When architectural design is inspired by non-standard tectonic and materials, the resultant buildings are delivered by bespoke solutions that can develop new systems, new materials, and new manufacturing process. We call this innovation by design.

Above:
Phoenix Central Park
Durbach Block Jaggers with John Wardle Architects
Photo: Martin Mishkulnig



Reflecting on the construction history of specific case studies around the world, we can appreciate how this has occurred in the past and what opportunities new non-standard projects planned in Australia will offer. The Guggenheim Museum in Bilbao (1997), the Centre Pompidou in Paris (1977) and the Sydney Opera House (1973) are some of the most notable examples where a non-standard design not only challenged the architecture landscape but also brought up long-term innovation in the local construction sector. Furthermore, all of these buildings turned into engines for the urban and touristic redevelopment of post-industrial areas, cities, and even regions. After the opening of the Guggenheim Museum in Bilbao, this became a consolidated trend – the so-called Bilbao Effect – quickly spreading in Europe, and then globally.

The formula is simple: flashy, quirky, and pioneering design principles are used to create buildings for a cultural institution that turns



itself into a tourist destination and, eventually, a modern monument. These buildings are the result of an intellectual approach that stretches the architectural narrative to its geometrical and material limit. The visitors, attracted by the iconic appearance of the building and potentially the cultural offer, should represent a long-term source of income for the cultural institution and, by extension, the hosting city. However, when we consider the visitors as the only long-term source of revenue resulting from these structures, we may be underestimating the value these buildings can produce in terms of technical advancement, thereby miscalculating their investment return to the industry and society.

The titanium cladding of the Guggenheim Museum in Bilbao, for instance, opened up the aerospace manufacturing sector – already established in the region – to the building industry. The futuristic design of the new National Museum for 21st-century art – the

MAXXI – in Rome, was conceived to cast the building as a gigantic, seamless concrete sculpture. This pushed the reinforced-concrete-casting procedure to the limit, producing a bespoke formwork system, later commercialised as an off-the-shelf solution, and a new concrete mix, now available on the market. Recent years have seen examples of design innovation feeding new opportunities in the local industry in Australia. In 2014, the convoluted facade of the Dr Chau Chak Wing Building in Sydney provided an opportunity to upskill local bricklayers with a new set of abilities, which have been reused in other projects like the newly completed Phoenix Central Park (Sydney, 2019).

The uncertainty that can often accompany a non-standard design in terms of precisely estimating the budget can significantly affect the success of this type of strategy and the cost-to-income ratio. Legitimately, budget issues might drive the perception of non-standard design, but they could also contribute to losing sight



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INNOVATION BY DESIGN

WORDS: LUCIANO
CARDELLICCHIO
AND PAOLO
STRACCHI

Above:
The design for Powerhouse Parramatta
Image: Moreau Kusunoki and Genton

when it comes to measuring the long-term value of these initiatives. This was the case of the construction cost of the Sydney Opera House, initially estimated at \$7 million. Eventually paid by a state lottery, the final cost of the Jørn Utzon's imaginary design was \$102 million. Despite its skyrocketing budget, the building's construction contributed immeasurably to advancing the Australian construction industry at that time. For example, building the roof shells required the invention and adoption of new techniques such as the use of plywood for the locally developed formwork systems and epoxy resin as structural glue. These inventions were subsequently marketed and adopted by sectors of the construction industry, which then profited from the ground-breaking design of the building. In addition, an uncountable number of young engineers, site managers, and onsite workers received unique and comprehensive training on a site of immense significance. However, a lack of precision in budget evaluation can also lead to

project cancellation, as occurred for the Helsinki Guggenheim Museum proposal by Moreau Kusunoki Architects.

Such budget uncertainty is not always the case – it is also possible to estimate and adhere to an accurate budget. An exemplary case is the Grandview Heights Pool in Canada (2016), featuring a super-thin, wave-like roofline. Costing CA\$45 million, only \$3 million above the anticipated cost, the roof over the pool was the result of a pioneering structural system that resulted in what is claimed to be the world's most slender, long-span timber roof. This achievement opened a new frontier for suspended timber structural solutions.

For better or worse, these pilot projects, often paid for with public money, are drivers of technological and construction innovation. As outcomes of public investments, their financial appraisal is a necessary practice for evaluating government transparency and accountability. However, we argue that it is good practice to evaluate these investments not only in terms of their immediate cost-effectiveness but also for their long-term extended capacity to create knowledge and advance the local and global construction industry. This knowledge is an integral part of any national culture and identity and a strategic economic asset. Public funds become, therefore, a vital means to ensure the country's progression as a whole. Nevertheless, in the history of modern capitalism, the state has not only fixed market failures, but has also actively shaped and created new markets.

Due to their cutting-edge design, the Powerhouse Parramatta and Sydney Modern Project are likely the two next technological challenges that Australia's construction industry will face. The architectural proposals for both ventures outlined projects ready to test the technological limits of the building industry. The zigzagging exoskeleton of the Powerhouse Parramatta, designed by the same architects of the cancelled Guggenheim Museum in Helsinki, will combine new integrative fabrication solutions to achieve the architectural intention with structural integrity. The high level of care that will need to be dedicated to the museum materiality and tectonics will be a testament to Australian domestic ability and building-making skills, as much as to the value of the

collections that will be displayed. The technical development of the NSW Art Gallery extension, conceived by the Japanese firm SANAA, with its minimal roof plates and intersecting glass boxes, integrates structure and building services to their physical limits in the name of slender and transparent building components. In Europe, SANAA's buildings have required the introduction of new facade technology and construction systems, so it is reasonable to assume the same will happen here.

While debates regarding public-funded buildings always fluctuate between budget and architectural performances, the enhanced technological advancement for the local (and, sometimes, global) industry and society tends to remain unacknowledged and undetermined. This is because it is extremely difficult to holistically collect, analyse, and share the technical knowledge created throughout a construction process and its long-term impact on the industry.

The sources of technical and economic challenges that will be involved in the Powerhouse Parramatta and Sydney Modern Project are demonstrated in the artistic impressions provided by the architects. Now that it is time to transform those images into reality, we should expect that third-party studies will be conducted to map the innovation these two projects will drive, and measure it against its potential long-term advantage for the Australian construction industry.

Therefore, when we find ourselves discussing the architectural value of these buildings, we might want to extend our appraisal by asking the following questions. How many construction components will be designed and fabricated in Australia? Will the engineering and construction of these two museums advance skills and knowledge within the Australian construction industry? How innovative will these buildings be from a technological perspective? What will be the cost of that innovation compared to its long-term benefit for Australia? ■

Dr Luciano Cardellicchio is a senior lecturer in Architectural Construction at UNSW.

Dr Paolo Stracchi is a lecturer and program director for the Master of Architecture program at the University of Sydney.

Prefabricated architecture

WORDS: EDWARD DUC

Housing in Australia is in the news, and not in a good way. Two aspects are notable. Firstly, the dubious quality of both high- and medium-density apartment buildings. Secondly, a serious deficit in the supply of affordable housing in the detached genre. Architects' greater involvement in both would improve consumer options.

Involvement in the traditional role of design, documentation and contract administration, would obtain better quality apartments. For the detached model, a less conventional solution for architects is needed – the adoption of methods of prefabrication.

Various agencies count Australia's deficit of available housing stock at around 200,000 homes, and this deficit grows each year as the population increases. Traditional methods cannot make up the deficit and cannot satisfy future demand. This factor, together with unnecessary waste of labour and materials (up to 30%) contribute to increased costs and lack of affordability. The affordability ratio suggests three years' income equals the cost of a house; in the capital cities of Australia ten years' income is required to buy an average priced house. A solution for architects is to increase their involvement beyond the current level (around 3% of new housing), by supporting prefabrication for detached housing and redefining the architect's role.

In order to assess the potential for greater involvement by architects in prefabricated housing design, it is useful to address the perceived barriers. Some architects have already done so, accepting a role with (or leading) off-site manufacturers (OSM). Currently OSM products represent around 3% of the Australian detached housing supply, so the potential is enormous since detached housing comprises

70% of the total market. There are many examples of architect OSM housing projects. Le Corbusier, Gropius, Buckminster-Fuller and Wright all attempted to address the market and failed. Most common failures were attributed to not meeting or attracting the market and overcapitalisation with insufficient orders. It should be noted, however, that many non-architect OSM companies enjoyed success in the US, such as the Sears Roebuck kit houses and Levittown land and kit packages, with both models emulating traditional forms. Currently IKEA progresses with their BoKlok model housing, albeit not a detached model. In Germany and Japan, approximately 15% of detached housing is satisfied by the use of OSM. The major barrier is the reluctance of the Australian housing industry to adopt OSM.

The housing industry's perception of attitudes to OSM is negative. In my doctoral research assessing perceptions and attitudes of house buyers to OSM, the results clearly indicated they would not only accept the model but appreciate the advantages over traditional methods. The participants in the study positively reacted to three current manufacturers' examples of OSM. They were impressed by the variety of design solutions and the quality of the finished product. They certainly regarded the offer of a short procurement timeframe (often 12 weeks) and a fixed cost as a strong incentive to choose an OSM house.

The manufacture of housing will be addressed by disruptive innovators who have little to do with the construction industry. Architects should be part of the disruptive innovation. Recall the Pettit + Sevit example of sophisticated design solutions provided by architects for their project houses. It is clear that the skills of those architects were highly regarded and aided the successful promotion and sales of the product. Architects' greater involvement with the OSM model will have the same effect and result in satisfying the architect's duty of care for the society they serve and at the same time provide personal career satisfaction. ■

Dr Edward Duc FRAIA has been a member of the Institute since 1970 and NSW division councillor. As an architect, he has concentrated on environmentally sensible buildings and design for manufacture and assembly (dFMA).

Seeding alternative housing typologies in Sydney soil

WORDS: IMOGENE TUDOR

In 2015, a group of like-minded architects met after hours with the aim of bringing the Nightingale model of architect-led sustainable residential development to Sydney. Inspired by the recently completed The Commons and Nightingale 1 by Breathe Architecture and the 'call to action' delivered by Breathe principal Jeremy McLeod at the 2015 National Architecture Conference, the architects were united by a vision to upset the status quo and deliver a design-driven, socially, and environmentally responsible housing model. Five years on, the Nightingale of the North has failed to manifest. Despite the generosity, openness, and mentorship of Jeremy McLeod, and the steady success of the model in Victoria, why has the Nightingale model failed to take flight in Sydney?

In these early sessions, the working group was given access to detailed information regarding financing, governance and corporate structure from Nightingale. Instead of the magic formula to guaranteed success, these documents showed an immediate stumbling block; the group simply could not get the figures to add up with the going rates of Sydney property prices. Financing proved to be another significant stumbling block, with the prohibitive requirements of lending criteria, pre-sales and upfront deposits required of the developer-driven development model.

The fact that the Nightingale model didn't find purchase in Sydney should not be seen as a failure. Rather, it is further proof of the

achievement that is Nightingale in Victoria. Nightingale now has extraordinary momentum with architects at the top of their field spearheading buildings and villages, galvanising communities and providing an alternative housing typology. This success, however, has been almost 15 years in the making and is the product of a team of extremely dedicated architects who have been willing to take risks and have been able to weather the ups and downs required to see this vision come to life. The fact that Nightingale wasn't able to be directly translated to the Sydney context hasn't quashed the vision; it has forced us to go back to the drawing board and to build a Sydney-specific model from scratch.

The fundamental aim of the Nightingale model is to create a different sector in the housing market. Alongside private market-rate housing and government affordable housing, there is a space for housing that is lower cost and is community and sustainably-orientated. In Sydney, work is being done in this area from two different approaches. The first approach includes projects that are being undertaken within the current land cost, financing and planning context, but are working to find opportunities to subvert the traditional development model. The second approach involves a policy perspective focused on trying to remove some of the structural impediments to alternative housing models.

To subvert the traditional development model requires finding a way to overcome the obstacle of land costs and/or financing. SJB Architects is currently working with Fresh Hope and partnering with Nightingale Housing as mentors to develop a mixed-use affordable rental co-housing scheme in Marrickville. By developing church-owned land, Fresh Hope is able to eliminate land costs from the development costing, and to offer a different housing typology for a community of likeminded individuals. A different approach was adopted by David Boyle Architects for its Marrickville development completed in 2015. This project for a private client saw the Torrens Title subdivision of a corner block in Marrickville into three allotments. The existing dwelling – a Federation style bungalow – was converted into two semi-detached houses and a new dwelling was constructed at the rear of the property. This





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WRIGHTINGALE

OUTLOOK

FIRE SPRINKLER BOOSTER

award-winning project is a model for urban consolidation that delivers well designed and sustainably sensitive buildings and demonstrates a small-scale alternative housing model.

If we scale down even further, the proliferation of rear-lane granny flat and garage-top structures also provide a form of alternative housing development. Designed as an auxiliary to the main dwelling, these spaces provide flexibility for the changing needs of families and individuals over time. For example, the exceptionally smart and compact Redfern Studio by McGregor Westlake Studio, located on a back lane in Redfern, was born from a detailed study of the suburb's laneway character. The architects see the potential of the project to become a prototype for this type of development, multiplied across hundreds of city lanes to become a large urban project.

In parallel to these individual projects, there is important work being undertaken at a government and policy level to facilitate alternative housing models. The Missing Middle Design Competition carried out by Government Architect NSW (GANSW) in 2017 was a testing ground for the draft design guide for complying development for medium-density housing. The impact of the competition was to give a platform to the possibilities opened up by the new complying development codes and to demonstrate the role of good design in the process. By championing good design, GANSW is actively advocating for a cultural shift in the broader community, which is fundamental to opening up opportunities for alternative housing models.

In 2019, the City of Sydney ran the first stage of the Alternative Housing Ideas Challenge, with the finalists funded to further develop the projects this year. This competition had the express aim to test housing ideas in the areas of financing, design, building, ownership and management. The winning schemes will be developed to inform City of Sydney's strategic 2050 plan with the aim of putting inclusive, affordable and equitable housing at the centre of the vision for Sydney 2050. It is this type of strategic planning that will create opportunities to realise alternative development models in Sydney in the future.



From the small-scale 25-sqm granny-flat to the Sydney 2050 strategic document, architects are engaging with the challenge to deliver alternative housing for our city. Alongside the examples mentioned above, there are countless projects germinating on drawing boards across the city. We are experiencing a unique moment of opportunity in Sydney with a crisis of faith in the apartment construction quality we have seen spectacularly demonstrated with the Opal Tower and Mascot Towers fiascos, which has reignited the debate around construction quality in for-profit developer-driven apartment buildings. The COVID-19 crisis has also managed to stop business-as-usual in its tracks, and with working from home, reduced travel and lockdown measures cultivating a new appreciation for community, locality, walking and shared public amenity, perhaps now is the moment that some of these projects that have been germinating on drawing boards can take root and bloom into Sydney's own alternative housing typology. ■

Imogene Tudor is a Sydney-born architect currently living in the south of Chile with her partner and two sons.



Design of towers with parametric data models

WORDS: MELIKA ALJUKIC

Working as an architect in Australia and abroad, my approach to the design of towers has evolved particularly in the last decade as a result of increasingly sophisticated digital design tools and programming techniques. These provide means for the design and innovation of architectural design. Parametric data modelling as an emerging design process has increased opportunities in the design, fabrication and construction of towers. Given the recent quality issues in Australia have been related to towers specifically, there could be an opportunity for parametric data modelling to improve quality outcomes for such projects. Recent Building Information Modeling (BIM) strategies have had benefits for cross-disciplinary collaboration between architect and engineer, as well as analysis of parametric object behaviour and coordination of project through automated recalibration.

The parametric model developed for the 160-metre-high Morpheus Hotel tower (2019) by Zaha Hadid Architects introduced a new tower typology with an external load-bearing steel structure in the form of a high-rise exoskeleton with glass lattice shell. As part of the Zaha Hadid Architects team in 2013, my role on the Morpheus Hotel project was facade-design development that was pivotal for achieving the desired architectural typology of the world's first free-form high-rise exoskeleton. Parametric data model collaboration for the structure was developed between Zaha Hadid Architects

and Buro Happold. The Morpheus pattern of structural members at tower levels progresses upwards to a less dense grid of lighter members at its summit. This optimal arrangement of free-form geometry and irregular diagrid exoskeleton is combined with structural integrity and form into a design without traditional architectural typologies. Zaha Hadid Architects design team created bespoke scripts and custom codes for Rhinoceros and Grasshopper for the facade geometry. The comprehensive parametric model enabled the integration of all of the aesthetic, formal, structural and fabrication requirements in a way that promises to radically change how the built environment is planned and constructed through the collective form of communication and collaboration. A distinct advantage in integrating parametric tools was the continuous process development from concept design to construction that allowed backtracking, facilitating previously explored options and geometry to be revised.

The geometry rationalisation input involved a reference surface in Rhinoceros and Grasshopper programming language to approximate the external face of a glass envelope using a T-spline polygonal surface tool custom-scripted by Zaha Hadid Architects. The secondary input involved using an algorithm to generate a topological mesh to define the exoskeleton pattern. The primary output by Zaha Hadid Architects was the wireframe used to set out the node points, member axes and

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DESIGN OF TOWERS
WITH PARAMETRIC
DATA MODELS

WORDS:
MELIKA ALJUKIC

Right:
Digital model of the Morpheus Hotel
freeform exoskeleton by
Zaha Hadid Architects.

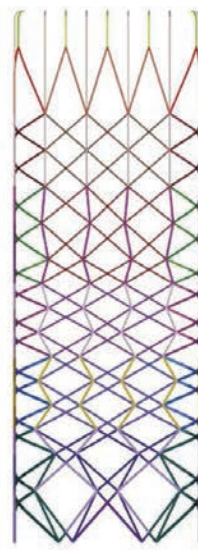
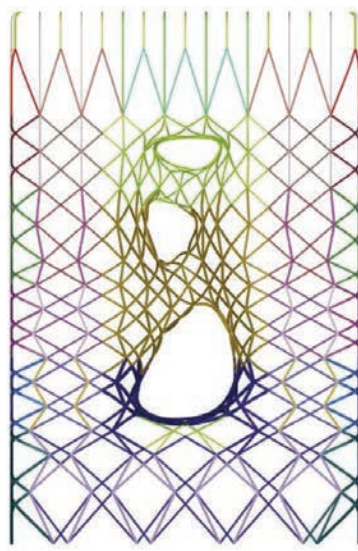
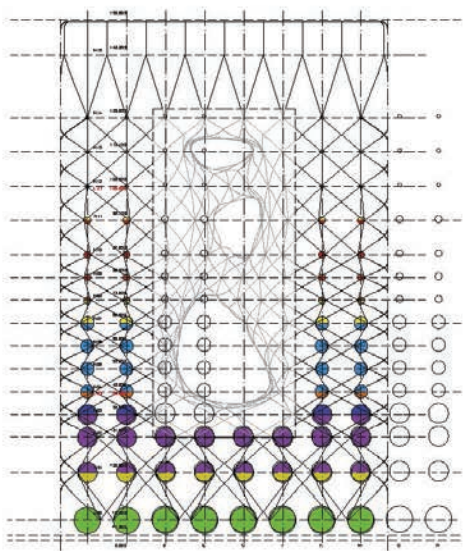
Below right:
Diagram of exoskeleton nodes and
member sizing for Morpheus Hotel.
Image: Zaha Hadid Architects.

mean planes of the exoskeleton frame issued to the structural engineer Buro Happold. The secondary output model defined the 3D limits of the structural framing zone as the secondary support for the exoskeleton cladding located outside this zone. The exoskeleton cladding geometry was rationalised with panels axes on planes. The cladding is an offset of the reference surface, the polygonal T-spline geometry approximating the external face of the glass envelope. The emergence of computer-aided fabrication significantly recast the entire design and construction process. Apart from the introduction of new tools, it required the breakup of traditional role models as a potential for innovation. The implementation of digital design in practice involves the development of specific tools for geometry development and for data exchange between different disciplines. Specific solutions had to be adapted to meet project requirements. Architectural computation is increasingly used to simulate building performance which includes performance analysis and information about material, tectonics and parameters of production machinery. The further integration of engineering and fabrication logics with the plugin tools represents an additional stage in the evolution of non-standard digital design.

Recent realisations of towers integrating the parametric data model identify the difference between possibilities offered by digital technologies in architectural design and the current capacities of the building industry to realise them. The fact is that in practice, fabrication remains constrained by significant technical limits. These limits can be traced back

to Euclidean geometry of standard traditional practices and infrastructure of manufacture that developed from these premises and date to the Industrial Revolution. Hence, to replace conservative methods of construction, it is imperative to reform to new technics and automation. This will require adaptation of site construction technology to the operations of architecture's latest parametric data model. Ultimately, robotic automation in construction will increase the involvement of an architect in the construction stage, which has the potential to increase the quality and precision of architectural construction. Such automation method will reduce construction timeframe removing requirements for any drawing translation and manual operations. ■

Melika Aljukic is the principal architect of architecture and urban design practice **Melika Aljukic Architects**. She is a member of the Australian Institute of Architects NSW Chapter Editorial Committee and Heritage Committee. Melika graduated from the UNSW with Bachelor of Architecture First Class Honours and holds a Master in Architecture (Architecture and Urbanism) from the Architectural Association. She is currently a PhD (Architecture) candidate at the University of Sydney and sessional academic at UNSW.



- E8_350 mm
- A7_300 mm
- A9_406 mm
- E7_350 mm
- E6_400 mm
- A6_400 mm
- B6_368 mm
- B7_406 mm
- B5_406 mm
- A5_550 mm
- E5_450 mm
- B4_406 mm
- A4_600 mm
- E4_500 mm
- E1_700 mm
- A1_700 mm
- B1_600 mm
- B3_550 mm
- B2_550 mm
- A3_700 mm
- A2_700 mm
- E2_650 mm
- E3_650 mm
- D1_350 mm
- B8_406 mm
- D2_500 mm
- D3_700 mm

Rammed earth revival

WORDS: NOEL THOMSON

Simply put, rammed earth is an ancient technique for constructing foundations, floors and walls using raw materials such as earth, chalk, lime or gravel. It has been used to create buildings around the world whose beauty and robustness are still visible today, like the Alhambra in Spain and the Great Wall of China, both built more than 1000 years ago.

The process involves compacting a damp mixture of subsoil that has suitable proportions of sand, gravel and clay and stabiliser (traditionally animal blood, now lime or cement) into an externally supported frame or mould known as formwork. Traditional technology involved repeatedly ramming the end of a wooden pole into the earth mixture to compress it. Modern technology replaces the pole with a mechanical ram. Once the mixture is dry, the formwork is removed with the resulting structure having an aesthetic appeal.

Each state and territory at one point throughout Australia's recent colonial history used rammed earth in some capacity, although it never really took off, except perhaps in New South Wales, where there had been many pisé constructions in the Riverina, due to the lasting influence of the architectural legacy of the MacKnight family.

'It has, he states, many advantages over brick, and as the result of many years' experience I most unhesitatingly say that from all points of view it is superior to any other material for wall building in hot climates.'

Such were the words of prominent architect Archibald Charles MacKnight when discussing the benefits of using pisé, or rammed earth as it is more commonly known, to build houses in the Australian context post World War I. MacKnight built his own house using rammed earth in 1909 and then went on to construct many other Riverina buildings in the same way, including those which still stand at Butherwah, Wirrani, Jillamatong, and Mulwala Station Homestead.

The shortage of conventional building materials during and after World War II gave rise to a renewal of interest. The article 'What is Pise-de-Terre?' was published in the June 1942 issue of *Australian Home Beautiful*. It referred extensively to the architects A C and C H MacKnight, and in April 1943 the magazine published extracts from American and British articles on rammed earth construction and soil stabilisation. The Commonwealth Experimental Building Station in Sydney published on specific practices which had been developed in the Corowa District in New South Wales, undoubtedly by the MacKnights.

In 1923 MacKnight wrote:

'Earth is a much better non-conductor than brick, stone or concrete, and owing to its cheapness, external walls are usually made much thicker than is possible with other materials; so the reason for its coolness is easily understood. ... I always advise the use of concrete foundations and concrete lintels, and plenty of reinforcement in the walls ...



Left & Below:
'Straun' Dr Barnard's Pise House designed by A.C. MacKnight.
Photographer: Unknown. Image Source: Federation Museum, Corowa.



With the conversation around environmental sustainability, rising temperatures and the cost of heating and cooling gaining volume, so too is the need for sustainable methods and practises of building construction increasing. Rammed earth offers a sustainable, locally sourced, cost-effective and high-durability product. The walls are very thick (typically 250-800mm), meaning that rammed earth buildings can easily produce comfortable indoor conditions in hot and arid places, bringing cooling costs down. There are no flammable components in a rammed earth wall and its fire resistance is therefore very good. There is no cavity to harbour vermin and nothing in the material to attract or support them, so its resistance to vermin attack is very high. Put crudely, rammed earth is cheap, tough and green.

Rammed earth also gives back to the local communities. As Dr Daniela Ciancio from the University of Western Australia's School of Civil, Environmental and Mining Engineering stated in 2015:

'Another advantage of this technique is you only need one expert on the construction site but then anyone else working on site doesn't need to be a real expert,... so you can employ local, unskilled people from the community where you are building the house.'

Although currently unregulated in Australia, more and more research into rammed earth within a range of different disciplines – engineering, materials science, architecture, chemistry – to promote this construction technique. The method and its subsequent creations are currently receiving some publicised attention; hopefully we will continue to see an increase in everyday rammed-earth constructions with these projects perhaps even winning awards. ■

Noel Thomson is an architect based out of Wagga Wagga in the Riverina. He is a member of the Australian Institute of Architects NSW Country Division Committee and NSW Chapter Heritage Committee.



NSW ARCHITECTURE MEDALLION

PHOENIX CENTRAL PARK
Durbach Block Jagers with John Wardle Architects
Photo: Martin Mischkulnig



COMMERCIAL ARCHITECTURE

Sir Arthur G. Stephenson Award for Commercial Architecture

Phoenix Central Park | Durbach Block Jaggers with
John Wardle Architects

Photo: Martin Mischkulnig

Architecture Awards

Bankwest Stadium | Populous

Daramu House | Tzannes

Commendations

44A Foveaux Street | Hill Thalys Architecture and
Urban Projects

Sixty Martin Place | Hassell



EDUCATIONAL ARCHITECTURE

William E Kemp Award for Educational Architecture

MLC School Senior Centre | BVN

Photo: Ben Guthrie

Architecture Awards

Electrical Engineering Building | Hassell

University of New South Wales Sir John Clancy Auditorium |
lahznimmo architects

Commendations

Bethlehem College Ashfield | Neeson Murcutt+Neille

Meriden School – Lingwood Campus | Allen Jack+Cottier



HERITAGE

Greenway Award for Heritage

The Signal Box Restaurant | Derive Design

Photo: Alex McIntyre

Architecture Awards

Level 5 Ballarat House | Hill Talis Architecture and Urban Projects

Commendations

Emanuel Synagogue | Lippmann Partnership

Wellington Street | SJB



PUBLIC ARCHITECTURE

Sulman Medal for Public Architecture

Anzac Memorial Centenary Extension | Johnson Pilton Walker
with the Government Architect NSW

Photo: Peter Bennetts

Architecture Awards

Marrickville Library | BVN

Commendations

Metro North West | Hassell with Turpin Crawford Studio and
McGregor Westlake Architecture

Warrumbungle National Park Visitor Centre | TKD Architects



URBAN DESIGN

Lloyd Rees Award for Urban Design

Metro North West | Hassell with Turpin Crawford Studio and
McGregor Westlake Architecture

Photo: Brett Boardman

Architecture Awards

Anzac Memorial Centenary Extension | Johnson Pilton
Walker with Government Architect NSW

CBD and South East Light Rail | Grimshaw with ASPECT
Studios in collaboration with the City of Sydney, on behalf of
Transport for NSW, supported by Randwick City Council
University of New South Wales Science and Engineering
Precinct | Grimshaw

Commendations

Sixty Martin Place | Hassell



RESIDENTIAL ARCHITECTURE — HOUSES (NEW)

Wilkinson Award for Residential Architecture – Houses (New)

Glebe House | Chenchow Little

Photo: Peter Bennetts

Architecture Awards

Basin Beach House | Peter Stutchbury

Breezeway House | David Boyle Architect

East Street | Kerstin Thompson Architects

Palm Beach Blue | Benn + Penna Architecture

Commendations

Bendalong House | Madeleine Blanchfield Architects

One Wingadal Place | Collins and Turner with Temple and Stockwell

The Seed House | fitzpatrick+partners

Tree House | Matt Elkan Architect

Upside Down Akubra House | Alexander Symes Architect



RESIDENTIAL ARCHITECTURE — HOUSES (ALTERATIONS AND ADDITIONS)

Hugh and Eva Buhrich Award for Residential Architecture — Houses (Alterations and Additions)

Bismarck House | Andrew Burges Architects

Photo: Peter Bennetts

Architecture Awards

Grant Pirrie House | Virginia Kerridge Architect

JJ House | Bokey Grant Architects

Redwood | Chenchow Little

Waterloo House | Anthony Gill Architects

Commendations

Courtyard House | Joe Agius Architect

Exoskeleton House | Takt Studio

House RV | Plus Minus Design

Lindfield House | Polly Harbison Design



RESIDENTIAL ARCHITECTURE — MULTIPLE HOUSING

Aaron Bolot Award for Residential Architecture – Multiple Housing

Verve Residences | CKDS Architecture with Hill Thalís
Architecture and Urban Projects

Photo: Brett Boardman

Architecture Awards

537 Elizabeth Street | Woods Bagot

Boomerang Tower | Bates Smart

Studio Apartments | Hill Thalís Architecture and Urban
Projects

Waterloo Apartments | Chenchow Little

Commendations

Blackwattle Apartments | Turner

The Burcham | Allen Jack+Cottier



INTERIOR ARCHITECTURE

John Verge Award for Interior Architecture

Phoenix Central Park | Durbach Block Jaggers with John Wardle Architects

Photo: Martin Mischkulnig

Architecture Awards

Breezeway House | David Boyle Architect

Grant Pirrie House | Virginia Kerridge Architect

Hotel Rose Bay | Richards Stanisich

Commendations

AMP Angel Place Lobby Refurbishment | Hassell

Bismarck House | Andrew Burges Architects

CBA 'Axle' South Eveleigh | Woods Bagot with fjmt

Emanuel Synagogue | Lippmann Partnership



SMALL PROJECT ARCHITECTURE

Robert Woodward Award for Small Project Architecture

Marsden Park Amenities | CHROFI

Photo: Clinton Weaver

Architecture Awards

Lawler Residence | Andrew Donaldson Architecture and Design

Sydney Park Amenities | Aileen Sage Architects with City of Sydney

Commendations

Summer Place | CHROFI

Wicks Park Amenities | Sam Crawford Architects



SUSTAINABLE ARCHITECTURE

Milo Dunphy Award for Sustainable Architecture

Marrickville Library | BVN

Photo: Tom Roe

Architecture Awards

Arkadia | DKO Architecture with Breathe Architecture
and Oculus

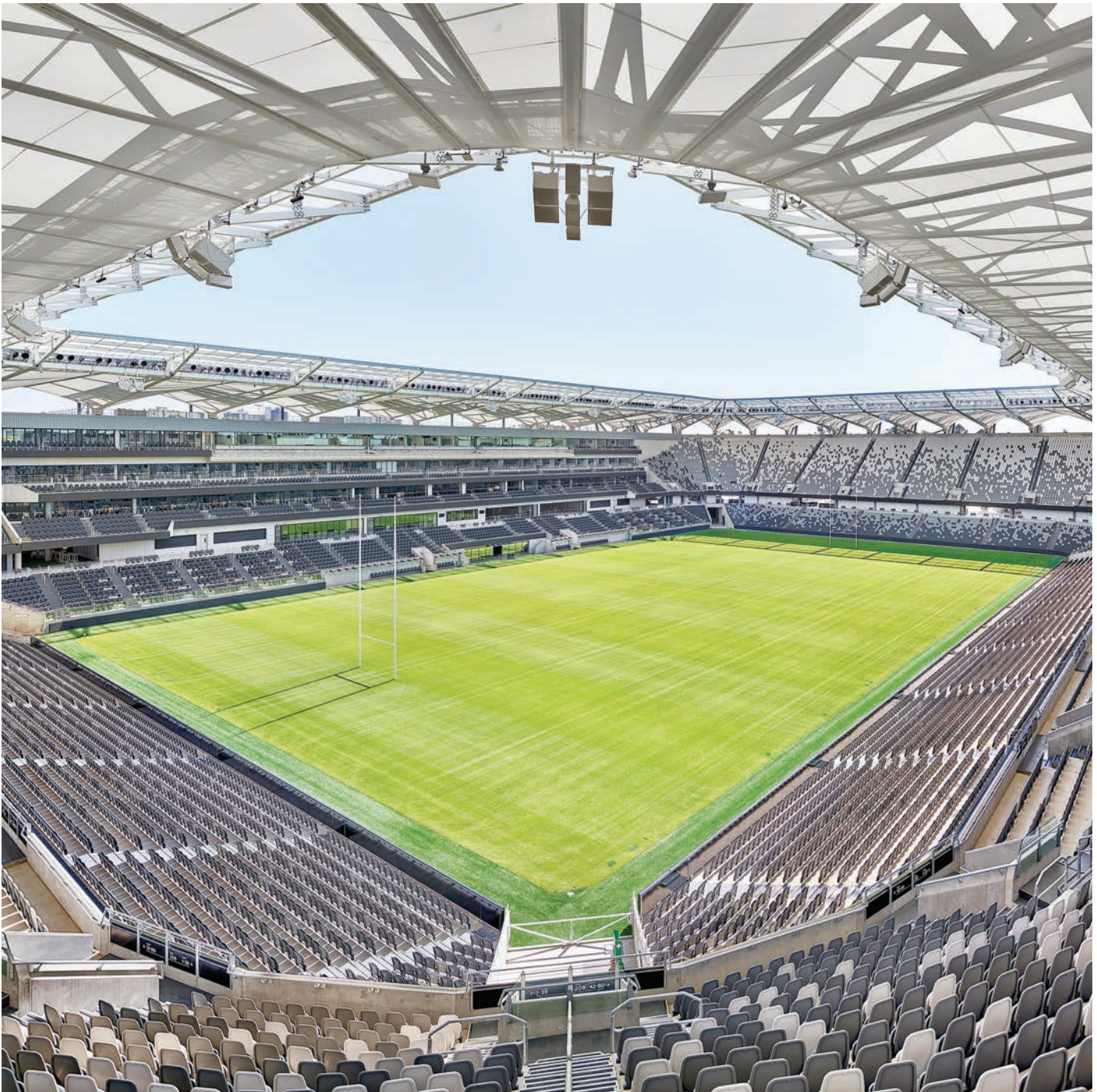
Warrumbungle National Park Visitor Centre | TKD Architects

Commendations

Axle South Eveleigh | fjmt

Daramu House | Tzannes

Wildlife Retreat at Taronga | Cox Architecture



COLORBOND® AWARD FOR STEEL ARCHITECTURE

Bankwest Stadium | Populous
Photo: Murray Fredericks

Commendations

Upside Down Akubra House | Alexander Symes Architect



ENDURING ARCHITECTURE AWARD

Palm Garden House | Richard Leplastrier

Photo: Kathlyn Loseby



LORD MAYOR'S PRIZE

CBD and South East Light Rail | Grimshaw with ASPECT Studios in collaboration with the City of Sydney, on behalf of Transport for NSW, supported by Randwick City Council
Photo: Ashleigh Hughes



2020 NSW PREMIER'S PRIZE

Marrickville Library | BVN Architecture
Photo: Tom Roe



BLACKET PRIZE

Verve Residences | CKDS Architecture with Hill Talis Architecture and Urban Projects

Photo: Brett Boardman



EMERGING ARCHITECT PRIZE

Matthias Hollenstein | Studio Hollenstein

Matthias Hollenstein is the recipient of the 2020 NSW Emerging Architect Prize in recognition for his significant contribution to the architectural profession and the advancement of architecture within the public domain. His practice, Studio Hollenstein, is already the recipient of extensive recognition and accolades through architectural awards. However Matthias should also be commended for his personal commitment to urban design, education, practice and design excellence. In a very short period Matthias has broken down traditional barriers for young, emerging architects – locally, nationally and globally – and redefined the role and relevance of a younger generation of architects.

Ensuring safety and sustainability in Australian buildings

WORDS: EMMA GREEN

Architects and other building professionals will face legal consequences if they neglect their duty of care. Building quality is constantly in and out of the headlines. With state audits and changes to legislation, architects must ensure that they specify appropriate products in each of their projects. Product choice must comply with regulatory requirements and should reflect the project's quality and sustainability goals. Everyone who lives, works and plays in Australian buildings has the right to be safe.

Poor design and construction has made its impact around Australia. The fires at Melbourne's Lacrosse tower and Neo 200 building, dangerous cladding on a Brisbane hospital, cracks forming in Sydney's Opal Tower, allegations of non-compliance in nine multi-storey buildings in Darwin – these are only some of the many incidents that reveal concerning problems of non-compliance and ineffective enforcement of documentation and regulation.

The Lacrosse building fire in 2014 marked a turning point in the construction industry. The Victorian Civil and Administrative Tribunal (VCAT) published its determination of the Lacrosse fire hearing in February 2019. The fire was initially caused by an unextinguished cigarette left on an eighth-floor balcony. It spread up 13 storeys in about 10 minutes because of combustible aluminium composite panels on the tower's façade. Judge Woodward of the tribunal found that the architect, builder, building surveyor and fire engineer ought to have known about the combustibility of the cladding, which totalled approximately 400 square metres. They ought to have taken action to rectify it. The judge determined that the architectural firm involved

had failed to remedy defects in the project's design, making it non-compliant with the Building Code of Australia. The architects were ordered to reimburse 25% of the \$5,748,233.28 in damages payable by the builder. The building surveyor and fire engineer received similar orders. The Lacrosse determination is a reminder that non-compliance is regarded very seriously.

The primary aim of NATSPEC is to improve the quality of construction in Australia. NATSPEC's National Construction Product Register is a searchable online database of building products with verified evidence of conformity. Intended for use in all stages of design and construction, the NCPR assists architects in selecting the most appropriate products, including substitutions, for their projects. Architects can encourage their preferred product manufacturers to make an application to the NCPR so that NATSPEC can verify the products' certifications and list them in the register. Although in its infancy, the NCPR already has over 1000 products and will continue to grow. When architects use the NCPR, they are protecting their practice from potential legal consequences, and protecting the end users of their buildings from risk.

Architects are responsible for delivering quality buildings. A quality building is also a sustainable building. Before 'sustainability' became ubiquitous, there was 'sustainable development,' first defined in 1987 by the UN's Brundtland Commission as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

NATSPEC understands that a building's quality and sustainability are inseparable from its durability. A high quality building is a durable building: fit for purpose, adapted to its context, using appropriate materials at appropriate times. This is underlined with good documentation. As a not-for-profit construction information organisation, NATSPEC provides quality documentation appropriate to a variety of projects. The twice yearly update service means NATSPEC specifications always align with current standards, regulations and practices, which improves durability and fitness for purpose.

Designing and constructing for durability upholds the principle of intergenerational equity. Buildings use 40% of the world's energy, emit 40% of carbon emissions and use 20% of all drinking water. As Australia has ratified the Paris Agreement, it has committed to keeping a global temperature rise to less than 2 degrees Celsius above pre-industrial levels. Architects must use the tools at their disposal to contribute to this goal. Specifying quality with NATSPEC will ensure their projects support sustainable development.

The National Construction Product Register offers advantages regarding durability, safety and regulation and supports the 2018 *The Shergold Weir Building Confidence Report* by Peter Shergold and Bronwyn Weir. By using the NCPR, architects know they are working with conformant products with verified certification. It is the architect's responsibility to use each product in a compliant manner. The NCPR helps architects achieve their design objectives.

Commissioned by the Building Ministers' Forum, *Building Confidence* offers 24 recommendations to improve Australian compliance and enforcement systems. In response, New South Wales is initiating four major building reforms. The reforms include a clarification of the law regarding duty of care so that homeowners will have the right to pursue compensation if they suffer damage due to negligence. This echoes the VCAT division of responsibility for the Lacrosse fire.

An architect is responsible for the safety of their work and must act accordingly. The notion of duty of care extends from compliance and conformance to sustainability, durability and fitness for purpose. The National Construction Product Register and NATSPEC specifications are indispensable in this effort. ■

Emma Green, NATSPEC Communications.

NATSPEC is a not-for-profit, government- and industry-owned organisation. It maintains the National Building Specification for Australia. The Australian Institute of Architects was a founding partner in 1975. Visit natspec.com.au for more information.

Important NSW legislative changes impacting practice

WORDS: WILMA WALSH

After many hours of meetings and debate the NSW Parliament passed two significant pieces of legislation in June that affect architects practicing in NSW: the Design and Building Practitioners Bill 2019 and the Residential Apartment Buildings (Compliance and Enforcement Powers) Bill 2020.

The Institute and NSW Chapter President Kathlyn Loseby are continuing to play a leading role throughout the reform process. This involves numerous detailed engagements with the NSW government, regulators, the opposition, crossbenchers, other building practitioners and the Owners' Corporation Network as we advocate for higher standards of safety and quality in the building process – and an appropriate role for architects within that process.

The changes will have a significant impact on your practice and how you do business and the Institute encourages members to take the time to familiarise themselves with these important changes.

Key features of the new legislation

The *Design and Building Practitioners Act* came into effect from 1 July 2021, however, the new statutory duty of care it introduces is retrospective and immediately applicable.

The Act establishes a registration scheme for design practitioners, requires new compliance declarations, and imposes enhanced compliance obligations on building practitioners.

Currently, the legislation only impacts class 2 (multi-residential) and mixed-use buildings. However, it will be rolled out to other building classes in subsequent years.

The Residential Apartment Buildings (Compliance and Enforcement Powers) Act (RAB) confers new powers on the NSW Building Commissioner and introduces new penalties for non-compliance.

The RAB aims to prevent developers from carrying out building work that may result in serious defects to building work or result in significant harm or loss to the public or current or future occupiers of the building.

The RAB has been in effect from 1 September and it allows the NSW Building Commissioner to enter building sites and demand to see documents, inspect and check that construction is appropriate. The Building Commissioner will also have the ability to issue a stop work order, a building work rectification order and prohibit the occupation certificate from being issued.

These new powers apply both to the construction of buildings going forward, but also to existing buildings built in the last ten years.

Together, these two acts support the NSW government's six-pillar building reform package, constituting its response to the national *The Shergold Weir Building Confidence Report* (2017) and the *NSW Lambert Report* (2015), into the construction industry.

Major wins for architects

We provided expert input to inform the drafting process, advocated for improvements in the proposed legislation, and we remain closely engaged with the NSW government and Building Commissioner in the process to develop supporting regulations, which is currently underway. This resulted in several major wins for the profession, including:

- documents to be declared by designers will be at the issued for construction stage, rather than the construction certificate stage
- variations will be assessed holistically and retrospectively
- any developer or builder who tries to force a designer to sign a declaration will face significant penalties, including up to two years' imprisonment.

Ongoing advocacy

The detail of the legislation will be developed in the regulations over the next few months and the Institute will use this opportunity to address a number of our residual concerns. These include the defining the role of the principal design practitioner, whose function we consider should be elevated above that of declarations collection point as it stands in the current legislation.

Design and Place State Environmental Planning Policy (Design and Place SEPP)

In July, the Department of Planning, Industry and Environment (DPIE) announced that it is developing a new principle-based Design and Place SEPP led by Government Architect NSW in collaboration with the Division of Place, Design and Public Spaces, and Planning Policy branch. An explanation of intended effects (EIE) of the proposed SEPP is being prepared this year, for public exhibition in early 2021. The SEPP will be drafted in 2021. The Institute has formed a taskforce and a working group to provide perspectives from the coalface. If you have any thoughts or concerns, please send comments via email to nsw@architecture.com.au.

Economic stimulus

In closing, thank you to everyone who shared ideas for new and existing projects that could help generate economic stimulus, public benefit and jobs for architects as part of our recreate space program. We received many interesting submissions and have passed the endorsed project ideas onto the relevant government authorities. We hope to see many of these ideas realised. ■

Wilma Walsh is former Communications Officer, Australian Institute of Architects NSW Chapter.

Sydney got the missing middle wrong with town houses rather than mid-rise apartments

WORDS: CHRIS JOHNSON

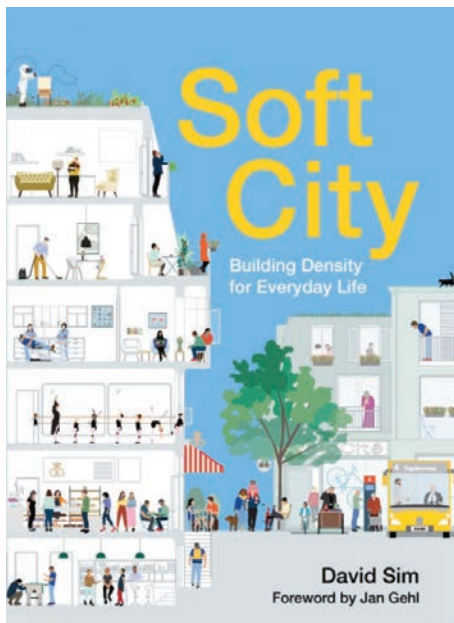
Back in 2018 the NSW government promoted a new planning code for what they termed the 'missing middle' that fast tracked town house and terrace house approvals through a Complying Development Code. The argument was that communities would prefer two-storey terrace houses to apartment towers, but the government did not anticipate a giant negative reaction from suburban communities concerned that the detached house suburbs were under attack. Fifty councils who complained were allowed to put the Complying Development Code on hold and the end result is that very few of the missing middle buildings actually got built. My belief is that the government chose the wrong version of the missing middle and that a far better approach would have been to promote mid-rise apartment buildings similar to those in Barcelona and Paris.

A new book on urbanism by a key staff member of Danish city expert Jan Gehl's office supports mid – rise apartments as a better type of missing middle. Author David Sim's book *Soft City, Building Density for Everyday Life* prefers mid-rise apartments of four to six storeys high over both the high rise tower and two storey houses for a more urban way of living. Sim even has a diagram titled 'missing middle' to explain his approach (p 87).

This approach is a better way forward in Sydney as we plan for inevitable population growth (assuming migration continues post COVID-19). It would certainly remove the threat of dramatic change to the low-rise suburbs that many councils and communities are concerned about. Clearly specified areas would need to be zoned for mid-rise apartments and this would then protect the large areas of low-rise suburbs across Sydney.

Already we have excellent examples of this building type at Victoria Park in Alexandria, at Harold Park in Glebe and across many inner-city areas. Western Sydney is also adopting this building type as a preferred way to increase density and so use land more economically. But it is more than economics that leads to this style of living according to Sim.

The motto of the Gehl office is 'making cities for people' and it is this focus on how people like to live and relate to the city that underpins the Soft City approach. Sim outlines six clear principles for his missing middle. He prefers a shift from large-scale buildings to a smaller scale.; the use of enclosed space over open space; and a move from the simplicity of stacking building floors to a richer form of layering. He also prefers joined-up buildings to standalone buildings; multiuse buildings to mono-use; and



concentrated, walkable solutions to spread out layouts. A strong driver is that mid-rise housing would be closer to the ground so residents feel a connection to street activities.

A few more Sydney principles could be added, including to be within the tree canopy which for our eucalyptus trees relates to a six-storey building. Street trees can shade the road and add value to adjacent apartments. Sydney mid-rise apartments will also need underground parking and lifts, particularly for older residents, and the economics of providing these amenities will work at six storeys but definitely not at two storeys.

What is needed is for Sydney's councils who fought the two storey version of the missing middle to get behind the more urban Danish version that would be located in specific areas. Amazingly, however, a number of inner city councils are frustrating proposals for the Danish approach. I am aware of councils that keep changing the design bar for mid-rise proposals through design review panels calling for change. The clear messaging from these inner city councils is 'we are running the show so we will keep you guessing on what we want.' As we emerge from the coronavirus lockdown these anti-development councils must be overridden

by the state government to help speed up planning approvals.

The NSW government should develop a simple Complying Development Code for mid-rise apartments to be used in areas that councils, state government and the Greater Sydney Commission agree are appropriate for this scale of development. These areas will be around town centres and around smaller railway stations, and at four to six storeys will be a good transition zone between high-rise apartments and two-storey houses.

Sydney needs a rethink on its approach to the missing middle, particularly as so few buildings have been approved as a result of the government's code. We can learn from the Jan Gehl office and from Sim's *Soft City* approach and develop a complying code that supports mid-rise apartments as a way to provide affordable housing in locations close to jobs and transport. ■

Chris Johnson is former NSW Government Architect and former CEO Urban Taskforce. Chris Johnson is currently writing a book *MID-RISE URBAN LIVING - Between towers and houses* for London publisher Lund Humphries.



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