



Government of Western Australia
Department of Mines, Industry Regulation and Safety



Consultation Regulatory Impact Statement

Reforms to the approval process for commercial buildings in Western Australia

December 2019



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Glossary

The following is a summary of key terms frequently used in this document. The definitions listed apply, unless otherwise indicated.

ABCB	Australian Building Codes Board
BMF	Building Ministers' Forum
BSR Act	<i>Building Services (Registration) Act 2011 (WA)</i>
builder	A person (natural or body corporate) registered under the BSR Act to contract for the carrying out of builder work.
Building Act	<i>Building Act 2011 (WA)</i>
Building Regulations	<i>Building Regulations 2012 (WA)</i>
Building and Energy	Department of Mines, Industry Regulation and Safety – Building and Energy Division (merger of the former Building Commission and Office of Energy Safety)
building approval	The process of applying and granting a building or demolition permit in WA
Building Commissioner	Statutory office created under section 85 of the <i>Building Services (Complaint Resolution and Administration) Act 2011 (WA)</i>
<i>Building Confidence</i> report	Professor Peter Shergold AC and Bronwyn Weir, <i>Building Confidence: improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia</i> (February 2018)
building permit	A permit granted under section 20 of the Building Act that authorises the carrying out of building work
building surveyor	A person (natural or body corporate) registered under the BSR Act to contract to carry out building surveyor work
CCC	Certificate of Construction Compliance
CDC	Certificate of Design Compliance
commercial buildings	Class 2-9 buildings, as defined by the NCC, including apartment, hotel, office, retail, warehouse, factory and public buildings. (See Appendix A)
CRIS	Consultation Regulation Impact Statement (this document)
DFES	Department of Fire and Emergency Services
DMIRS	Department of Mines, Industry Regulation and Safety
FES Commissioner	Fire and Emergency Services Commissioner, as defined by the <i>Fire and Emergency Services Act 1998 (WA)</i>
FRL	Fire resistance level
Government	The Government of Western Australia
IFEG	International Fire Engineering Guidelines 2005
NCC	National Construction Code, being volumes 1 and 2 (Building Code of Australia) and volume 3 (Plumbing Code of Australia)

non-compliant building product	Products and materials that are used in situations where they do not comply with the requirements of the National Construction Code.
non-conforming building product	Products and materials that: <ul style="list-style-type: none"> • claim to be something they are not; • do not meet required standards for their intended use; or • are marketed or supplied with the intent to deceive those who use them.
permit authority	A permit authority for a building or incidental structure in WA as defined in section 6 of the Building Act, including all local government authorities and designated state government authorities.
WA	Western Australia

1 Executive Summary

This Consultation Regulatory Impact Statement (CRIS), prepared by the Department of Mines, Industry Regulation and Safety – Building and Energy division (Building and Energy), is a first step to fulfill the McGowan Government’s commitment to improve processes to enhance the quality and standard of commercial and apartment buildings in Western Australia (WA) by implementing the recommendations in the *Building Confidence* report. It is the second consultation document released by Building and Energy.

This CRIS proposes 27 reforms to improve building compliance for class 2-9 buildings in WA. The reform proposals are wide-ranging and seek to address issues identified in the *Building Confidence* report, such as documentation requirements; performance solutions; fire authority consultation; engagement of building surveyors; third-party review of high-risk designs; variations to the design during construction; inspections of building work; material compliance; and the Building Commissioner’s powers.

Many of the reforms are expected to have minimal or no long-term cost implications.

The two reforms that will result in the highest cost increases are third-party reviews of high risk designs, and inspections during construction. It is estimated that together, these two reforms will increase the cost of construction for all class 2-9 buildings in WA by an average of 0.8 percent, or \$33.5 million per year. (See Appendix D – tables 13 and 14). This proposed cost increase must be weighed against the cost of non-compliant building work to individuals, businesses and the community, including:

- risk of fire safety to occupants and users;
- risk of life safety from structural failure;
- risk of fire spread to adjacent buildings;
- rectifying defects, and any additional damage for example from water ingress;
- lost rent, difficulty retaining tenants, and reduced property value;
- lost revenue due to disruption to commercial tenants;
- owner-occupiers have to continue making mortgage repayments while also paying rent for emergency accommodation;
- lengthy and expensive legal proceedings to recover costs; and
- increased insurance premiums, excesses and exclusion clauses.

Cost-benefit analysis indicates that avoiding rectification work to just 44 buildings per year would offset the 0.8 percent increase to construction costs in WA. That is, avoiding low (4-5 percent) rectification costs to 22 buildings, and avoiding high (10-15 percent) rectification costs to 22 buildings (see Appendix D – tables 15 and 16).

The proposed reforms will improve the compliance of new buildings, raising confidence that buildings are safe and fit for purpose. While not every building owner will necessarily benefit directly from the reforms, the additional cost to implement the reforms can be justified for the community in the expected improvement in the standard of buildings and the reduction in life safety dangers and other costs that arise from non-compliant buildings.

This CRIS poses questions on the proposed reforms. Building and Energy is keen to hear comments from as many stakeholders as possible from all sides of the industry.

2 About this paper

2.1 Purpose of this CRIS

The purpose of this CRIS is to seek feedback on proposals to reform the approvals process for class 2-9 buildings in WA. Building and Energy will analyse all the information gathered through this consultation process and will publish a Decision Regulatory Impact Statement recommending a final policy position. The Government will then decide which reforms to adopt, based on feedback from the industry and community. The proposals presented in this CRIS do not represent the Government's final policy. The objectives of the reform are to:

- improve compliance with building standards; and
- partially fulfill the Government's commitment to implement the recommendations in the *Building Confidence* report.

The CRIS discusses various possible reform proposals, and presents questions that Building and Energy would like respondents to comment on to help better design the new requirements. Stakeholders are asked to consider and provide feedback on the reform proposals and are also welcome to suggest other options they consider appropriate. Importantly, feedback is sought on the potential costs and benefits of the proposals presented and any that may be suggested by stakeholders.

2.2 National framework

On 18 July 2019 the Building Ministers' Forum (BMF) established an Implementation Team within the Australian Building Codes Board (ABCB) to develop a national framework for the consistent implementation of the recommendations of the *Building Confidence* report.¹

Building and Energy is working with the Implementation Team to provide input to the national framework. The reform proposals presented in this CRIS are generally modelled on requirements in other Australian jurisdictions, so are consistent with the Government's commitment to promote harmonised building regulation in all States and Territories. The Implementation Team's national framework will support and influence the work to implement the *Building Confidence* report recommendations for WA.

2.3 Limitations

This CRIS deals only with implementing the *Building Confidence* report recommendations that relate to the design, approval and construction of class 2-9 buildings.

The remainder of the *Building Confidence* report recommendations are the subject of concurrent reviews and consultation. Building and Energy is also reviewing the approvals process for residential buildings and the registration framework. The CRIS for the residential buildings approval process has a comment period open from 12 September 2019 to 9 December 2019. CRISs for the other projects will be available in the last quarter of 2019.

¹ Australian Building Codes Board, *Building Confidence report implementation team* (not dated)

2.4 How to have your say

Making a submission

When reading and commenting on this CRIS, please feel free to focus only on the areas that are relevant to you. A number of questions are included throughout the CRIS, which aim to make it easier for stakeholders to make comments. It is not expected that all respondents will respond to all questions and proposals.

A submission template form is available for download on the Building and Energy website: <https://www.commerce.wa.gov.au/building-and-energy/public-consultations-0>. Using this form will help to focus comments from stakeholders and will help us analyse comments. However, you are welcome to make submissions in other formats, including responding specifically to questions included in the CRIS; or writing a letter outlining your views.

You are also welcome to suggest alternative options to address matters of concern to you. Please include the reasons for your suggestions as this will help the Government to understand your viewpoint and will assist to identify the most suitable options for reform.

Submissions can be emailed to commercial.building@dmirs.wa.gov.au or posted to:

Att: Commercial Building Approval Review
Policy and Legislation Branch
Building and Energy
Department of Mines, Industry Regulation and Safety
Locked Bag 100
EAST PERTH WA 6892

Who are you?

When making your submission please let us know which part of the building industry you are from. For example, whether you are a builder, building owner, design professional, building surveyor or industry organisation.

Closing date

This CRIS is open for comment for 16 weeks, from 11 Dec 2019 – 3 Apr 2020.

How your input will be used?

Building and Energy will analyse all the information gathered through this consultation process and will publish a Decision Regulatory Impact Statement recommending a final policy position. The Government will then decide which reforms to adopt.

Information provided may become public

Please note that any feedback submitted is part of a public consultation process. Responses received may be made publicly available on Building and Energy's website and quoted in future publications. If you prefer your name to remain confidential, please indicate this in your submission.

As submissions will be subject to freedom of information rules, please do not include any personal or confidential information that you do not wish to become available to the public.

3 Introduction

The Building Act 2011 (the Act) and its subsidiary regulations have been in force since April 2012. The Act is the primary piece of legislation governing the building approvals process in WA. The legislation assigns different responsibilities to different parties, including registration, approval, compliance and enforcement roles.

Under the Act, private building surveyors play a significant role by assessing building plans and specifications for compliance with applicable building standards, including the National Construction Code, and issuing certificates of compliance. Permit authorities are responsible for granting permits and enforcing building standards. All Local Governments are permit authorities, there are also four State permit authorities which issue permits for government building projects.

While the Act has been in operation for eight years and a review was timely, the *Building Confidence: Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia* report by Professor Peter Shergold AC and Bronwyn Weir (Building Confidence report), has acted as catalyst for an in-depth review of the legislative framework in Western Australia. The Australian Building Ministers' Forum (BMF), which consists of representatives from all Australian States and Territories, is committed to improving the effectiveness of compliance and enforcement systems for the building and construction industry by implementing the recommendations in the *Building Confidence* report.

The *Building Confidence* report concluded that there are a number of significant systematic deficiencies with Australia's building industry culture and Australia's governance arrangements and made 24 principle-based recommendations for reform, ranging from reviewing the registration requirements for building practitioners, powers of regulators and strategies for the proactive regulation of building design and construction.

The Western Australian Government supports the recommendations in the *Building Confidence* report. It is committed to address the shortcomings identified in the regulation of the building and construction sector. As a result, Western Australia has initiated three projects to consider options for reform:

1. Review of the residential building approval process (BCA Class 1a and 10).
2. Review of the commercial building approval process (BCA Class 2 to 9).
3. Review of registration requirements for the building industry.

Since most of the *Building Confidence* report recommendations will require amendments to Western Australian statutes and regulations, regulatory impact assessments on all proposals for change are necessary. As a first step, public consultation is being undertaken.

A CRIS on improving the building approvals process for single residential dwellings (BCA Class 1a and 10) was released in mid-September 2019 for a three month period of public comment. A third paper focusing on proposed changes to registration requirements for a range of occupations will be released early in 2020.

About 140,000 Western Australians earn a living in the building and construction industries across Western Australia. Every day, their work affects not only houses or apartments, schools, hospitals or office blocks, but also the communities in which we live. Consumer confidence in the building industry is vital for the building industry, as well as the State's economy.

4 Background

4.1 Role of regulation in the building industry

It is widely accepted market forces can drive industries to produce their products quickly, for the lowest cost, both to offer competitive prices to consumers and to maximise profits. In the building industry, this can result in buildings that are unsafe due to poor design or construction. It is considered that Government intervention is required to set and enforce minimum standards of safety and amenity and to create a basis for all building industry participants to compete fairly.

There is information asymmetry between consumers and practitioners in the building industry. People who engage the services of a builder are generally unfamiliar with the construction process and the industry, and do not have the technical knowledge to assess a building's standard of construction. In contrast, builders tend to have more detailed knowledge of both buildings and the industry.

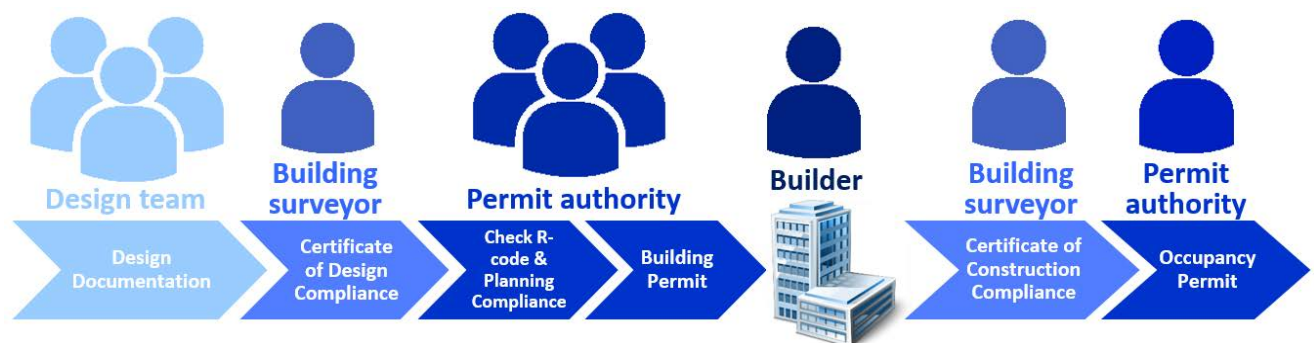
The information asymmetry means that, "as developers are belatedly realising, the market is a shaky edifice built entirely on public trust."² People buy property 'off the plan', trusting that buildings will meet minimum standards. The industry relies on such pre-sales to finance new building developments. Building defects affect public confidence, which reduces off-the-plan sales and makes project cash-flows untenable.

Government regulation seeks to address the information imbalance, and to protect the community and individual property owners. The current building regulatory framework in WA does this in two ways:

- **Registering certain building professionals:** The *Building Services (Registration) Act 2011* (BSR Act) requires that builders and building surveyors must be registered. A person must meet minimum levels of competence, insurance and financial capacity to be registered to carry out a building service.
- **Building approvals process:** The *Building Act 2011* (Building Act) requires that builders of commercial buildings obtain a building permit before starting construction, and an occupancy permit before the building can be occupied. Permits are issued by a permit authority, usually the local government. The approval process is meant to ensure that buildings meet minimum prescribed standards, including the National Construction Code (NCC).

Figure 1 provides an overview of the approvals process for commercial buildings.

Figure 1: Overview of the approvals process for class 2-9 buildings in WA



² Elizabeth Farrelly, *Sydney's stupidest building boom was born in a bonfire of regulation* (Sydney Morning Herald, 27 Jul 2019)

4.2 What is the problem?

In 2017 the Building Ministers' Forum commissioned a report by Professor Peter Shergold and Ms Bronwyn Weir, *Building confidence: improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia*, (*Building Confidence* report). The *Building Confidence* report observed weaknesses with the compliance and enforcement frameworks across Australia.

Non-compliance with the NCC can result in building defects, whereby a building fails to perform its intended design function. Examples of building defects include structural failure, or failure to withstand water or fire to the degree necessary. Such defects may, in turn, result in increased costs for the building industry and the community to remedy the defective work and increased risk to people living and working in sub-standard buildings. Recent, high-profile examples of building failures include:

- Lacrosse (Melbourne, 25 Nov 2014);
- Lidcombe apartment building (Sydney, 30 Jan 2016);
- Grenfell Tower (London, 14 Jun 2017);
- Opal Tower (Sydney, 24 Dec 2018);
- Neo200 (Melbourne, 4 Feb 2019);
- Mascot Towers (Sydney, 14 June 2019); and
- Westralia Square (Perth, 10 June 2019).

With the exception of Westralia Square, these buildings are all multi-storey apartment towers. Further details on Opal and Grenfell towers are provided below.

The *Building Confidence* report found evidence of “serious compliance failures in recently constructed buildings” in Australia, including: non-compliant cladding; water ingress leading to mould and structural compromise; structurally unsound roof construction; and poorly constructed fire resisting elements.³

4.3 Causes of the problem

The *Building Confidence* report found factors such as poor design documentation can lead to building defects. On occasion, the lack of guidance may result in builders improvising and making decisions which could affect the safety, amenity and sustainability of the building. The Report also found inadequate oversight and general poor compliance with the existing regimes across the jurisdictions as possible contributing factors which are required to be addressed.

Western Australia's Building Act requires builders of class 2-9 buildings to obtain a certificate of construction compliance from a building surveyor, which is submitted to the permit authority to obtain an occupancy permit.⁴ In practice this means a building surveyor may inspect the building once, at completion. However, to ensure compliance, a building should be inspected at multiple points during construction when critical elements are exposed.

³ Peter Shergold and Bronwyn Weir, *Building confidence: improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia* (Australian Government, February 2018) p 3

⁴ *Building Act 2011* s41, 46, 56; *Building Regulations 2012* r43.

Opal Tower, Sydney

The 36-storey Opal Tower building was completed in 2018. Occupation of the 392 apartments commenced in the second half of 2018.⁵ On Christmas Eve 2018, the building was evacuated after cracks appeared in the concrete on level 10, sparking fears that the building may collapse.⁶

The NSW Minister for Planning and Housing commissioned a report into the cause of the structural damage. This report found that structural damage was sustained on levels 4, 10, 16 and 26 due to over-stressed beams.⁷ The building failures were due to a combination of design, construction and material deficiencies that were not in accordance with requirements in the NCC and Australian Standard for concrete structures. For example, some beams appear to have been constructed with lower-strength concrete than the design allowed.⁸

Stabilisation works were undertaken on three walls in the building across 12 levels.⁹ Significant rectification works are necessary to ensure that the building and all its structural components satisfy the NCC.¹⁰

The report recommends that all rectification work be completed before residents are allowed to move back in.¹¹

Grenfell Tower, London

At approximately 1:00am on 14 June 2017, an electrical fire started in a refrigerator in a level 4 apartment of Grenfell Tower. Within 25 minutes, flames had spread to the top of the 24-storey, 129-apartment building.¹²

The main reason the flames spread so quickly was because the building was clad in aluminium composite panels filled with polyethylene insulation. The fire caused the aluminium to buckle, exposing the highly-flammable insulation.¹³ Similar fires have occurred in other buildings clad in aluminium composite panels, including Lacrosse in Melbourne, 2014.¹⁴

Grenfell Tower was built in 1974. The aluminium cladding was added in 2016, when the building was refurbished. It is possible that the cladding type was changed during construction, from zinc to aluminium, to save money.¹⁵ This may have affected the building's fire resistance.

The Grenfell Tower fire resulted in the greatest loss of life from a residential fire in Britain since World War II; 72 people died.¹⁶ The inquiry into this fire is ongoing.¹⁷

⁵ Mark Hoffman, John Carter and Stephen Foster, *Opal Tower investigation – final report* (NSW Government, 19 Feb 2019) p 3

⁶ Ted Tabet, *Sydney's Opal Tower: what we know so far* (The Urban Developer, 21 Jan 2019)

⁷ Hoffman, Carter and Foster, op cit p 1

⁸ Hoffman, Carter and Foster, op cit p 10-11; Sas, Nick, *Opal Tower builders used lower-strength concrete, beams burst under pressure* (ABC News, 22 Feb 2019)

⁹ Australian Associated Press, *Some Opal Tower residents refuse to return home as builder stops paying allowance* (The Guardian, 27 Jan 2019)

¹⁰ Hoffman, Carter and Foster, op cit, p 1

¹¹ Hoffman, Carter and Foster, op cit, p 2

¹² Robert Booth, *Grenfell Tower inquiry: what we've learnt so far* (The Guardian, 14 Dec 2018)

¹³ Konstantinos Daniel Tsavdaridis, *Grenfell: a year on, here's what we know went wrong* (The Conversation, 14 Jun 2018)

¹⁴ Giuseppe Genco, *Lacrosse building fire* (City of Melbourne, Apr 2015)

¹⁵ Tom Symonds, and Daniel De Simone, *Grenfell Tower: cladding was 'changed to cheaper version'* (BBC News, 30 Jun 2017)

¹⁶ Tsavdaridis, op cit

¹⁷ Grenfell Tower Inquiry, *Update from the inquiry* (5 Mar 2019)

Beyond the evidence identified in the *Building Confidence* report, Building and Energy has conducted audits of roofing construction,¹⁸ bushfire safety, and cladding. These audits identified a number of areas where WA building construction could make improvements. The *Building Confidence* report identified that reform is required to ensure that new buildings comply with the NCC.

4.4 Cost of the problem

It is difficult to quantify the cost of non-compliance, particularly for commercial buildings. While the full cost and extent of non-compliance in buildings is unknown, various studies have found both to be high. A 2012 study by the University of NSW, involving 1,020 apartment owners, found that 72% of respondents reported one or more defects:

One of the most striking findings of the surveys was the extent of concerns around building defects. In the survey of owners, 72% of all respondents, and 85% of respondents in buildings built since 2000, indicated that one or more defect(s) had been present in their scheme at some stage. For owners in schemes built since 2000 that had defects, 75% said that there were still some defects in their schemes that had not been fixed. The most common defects identified were internal water leaks, cracking to internal or external structures and water penetration from the exterior of the building.¹⁹

Part of the difficulty in quantifying the cost of non-compliant building work is that building defects and subsequent remediation result in significant costs and disruption for all parties. The cost of rectification and disruption includes:

- rectifying defects, which is usually more expensive than building it right initially;
- subsequent damage caused before the defect is noticed, for example through water ingress;
- some defects are not possible to rectify to the standard the building was designed to meet;
- building owners suffer financially through lost rent, difficulty retaining tenants, and reduced property value;
- occupants face the stress and expense of finding emergency accommodation;
- commercial occupants lose revenue due to the disruption of rectification works;
- owner-occupiers are likely to have to continue making mortgage repayments while also paying rent for emergency accommodation;
- legal proceedings to recover costs are lengthy and expensive;
- reputational damage for people involved in the design, approval and/or construction of defective work; and
- increased insurance premiums, excesses and exclusion clauses for both building owners and building industry participants.

These costs can outweigh the cost of rectifying the original defect. Legal proceedings, in particular, can take years to resolve, and are left to the building owner to pay for and pursue (see case studies below, on Lidcombe and Lacrosse apartment buildings). Another consideration is that some defects are not able to be rectified to meet the

¹⁸ Building and Energy, *Roof construction: a general inspection report into the construction of sheet metal clad timber framed roofing in Perth metropolitan and South West regions* (Government of Western Australia, Apr 2016)

¹⁹ Hazel Easthope, Bill Randolph and Sarah Judd *Governing the compact city: the role and effectiveness of strata management* (University of NSW, 2012) p 3

standard of a newly constructed, compliant building, which can affect the property's value for the life of the building.

Insurance premiums are rising for building owners and building industry professionals, with some insurers refusing to provide cover at all.²⁰ This is largely because “insurers now recognise the risk being carried by [building surveyors and fire engineers] and are beginning to price that risk accordingly.”²¹ As well as increased premiums, large excesses and exclusion clauses are becoming more prevalent. For example, excesses for buildings that contain combustible cladding panels have jumped from less than \$500 up to \$25,000-\$50,000 in many cases.²² Building surveyors also report that professional indemnity (PI) insurers are beginning to introduce exclusion clauses, either specifically excluding claims arising out of non-compliant cladding, or more broadly excluding all non-conforming building products and assemblies.²³

PI exclusions operate to exclude all claims arising under the exclusion. This means that building surveyors may no longer be covered for claims arising out of historical projects:

Professional Indemnity insurance operates on a “claims made” basis which means that it is the current policy that supports claims arising out of past and current work. Therefore if an exclusion is applied from renewal, that exclusion will apply to any claims made after that renewal no matter when the work was done²⁴

However, insurers encouraged building industry professionals to declare past work relating to combustible cladding panels as part of policy renewal processes. Past projects that have been declared therefore do have a level of protection. A report for Queensland's Department of Housing and Public Works found that:

Building certifiers have reported that some are being insured for past cladding work, provided that they have notified their insurer of potential exposure, but not for any future work.²⁵

In March this year, Bovill Risk and Insurance Consultants stated that while exclusion free PI insurance is still available, “large premium increases are sometimes encountered and securing exclusion-free cover is ‘not an easy task’.”²⁶

At end of June this year, *Insurance News* announced that:

The only insurer in Australia providing [building surveyors with] PI cover free from exclusions is pulling out next week. Like all the other insurers who have already abandoned the market, the insurer decided the risks associated with the crisis-plagued building industry are simply not worth the gamble.²⁷

²⁰ James Fernyhough, *Combustible cladding crisis pushes up insurance premiums* (The Australian Financial Review, 13 Jan 2019); Su-Lin Tan, *Opal Tower owners face \$2m building insurance premium* (Australian Financial Review, 28 Jun 2019)

²¹ Chris Bovill, *Professional indemnity insurance update* (Australian Institute of Building Surveyors, 23 Jan 2019)

²² Insurance News, *Cladding fallout: insurers burn building industry* (23 Jul 2018)

²³ Property Observer, *Certifiers, building owners at risk from insurer cladding exclusion rules* (10 Aug 17)

²⁴ Bovill Risk and Insurance Consultants, *Cladding crisis in the professional indemnity insurance market* (Australian Institute of Building Surveyors, 28 Jun 2018)

²⁵ PWC, *Strengthening the professional indemnity insurance environment for building industry professionals in Queensland* (24 June 2019) p 41

²⁶ Insurance News, *Lacrosse ruling could worsen PI ‘crisis’* (7 Mar 2019)

²⁷ Insurance News, *PI pullout chips away at building industry's foundations* (24 June 2019)

Australian jurisdictions whose legislation required building surveyors to hold exclusion-free PI insurance have amended their legislation to remove this requirement.²⁸ Queensland and New South Wales announced that they “will allow building certifiers to practice while they hold insurance with cladding related exclusions in an effort to head off a looming crisis in the development industry.”²⁹

The Victorian Government considered stepping in, “as the insurer of last resort”,³⁰ but ultimately followed Queensland and New South Wales, “to allow building certifiers practice even if they hold insurance with cladding-related exclusions”.³¹

Lidcombe apartment building, Sydney

A 53-unit apartment building in Lidcombe, Sydney, sustained \$2.6 million damage when half of its roof blew off in a storm on 30 Jan 2016. The owner’s corporation attempted to recover the cost of repairs, as well as loss of rent and emergency accommodation costs through their insurance company. The insurer’s investigation found that the damage was due solely to non-compliant work. The insurer therefore denied the claim, because a compliant roof structure would have withstood the wind uplift generated by the storm.³²

The apartment owners are investigating other legal avenues to recover costs, but in the meantime must bear all costs themselves, including \$200,000 for legal advice and a \$2.4 million strata loan to start repairing the building.³³ One tenant stated:

"I'm losing \$550 every week in lost rent while paying the Commonwealth Bank \$2,044 every month in interest-only mortgage repayments. Plus I'm also paying the council and water rates and strata levies." ...

The hole in the roof has not been covered and the building is deteriorating.

"We are facing financial hardship from all angles and may end up not being able to afford to chase anyone whilst our building continues to suffer further damage with each rainfall." ³⁴

²⁸ Queensland Government, *There are changes to professional indemnity (PI) insurance for Certifiers* (Queensland Building and Construction Commission, 9 Aug 2019);

²⁹ Nick Lenaghan and Michael Bleby, *Queensland acts on cladding crisis* (Australian Financial Review, 3 July 2019)

³⁰ Nick Lenaghan and Michael Bleby, op cit

³¹ Gillzeau, Natasha, *Victoria follows Queensland’s lead on cladding crisis* (Australian Financial Review, 11 July 2019); Victorian Government Gazette, *Building practitioners’ insurance ministerial order* No. S 293 Thursday 11 July 2019, s 4.3.

³² Ford, Mazoe, *Lidcombe unit owners face \$2.6m storm damage bill after AIG insurance rejects claims* (ABC News, 8 Apr 2016)

³³ Esther Han, *Insurer rejects storm-damaged Lidcombe apartment building claim because of numerous defects* (Sydney Morning Herald, 9 Apr 2016)

³⁴ Esther Han, op cit

Lacrosse Apartments, Melbourne

Lacrosse Apartments is a 23-storey mixed-use building in Melbourne's Docklands, with apartments on levels 6-21. Early on 25 November 2014, a cigarette butt on a level 8 balcony started a fire. A smoke detector alerted the Metropolitan Fire Brigade at 2:23am, and at 2:29am when fire fighters arrived on site the fire had spread up the façade to level 14. By 2:35am the fire reached the roof of the building.³⁵

Like Grenfell Tower, the rapid spread of fire was due to combustible aluminium composite panels on the building's façade.³⁶ Fortunately, the building's fire hydrant and sprinkler system "operated significantly beyond its designed capability", preventing the spread of fire internally through the building. If not for this, the fire "may have resulted in serious injury and/or death."³⁷

The Victorian Building Authority (VBA) subsequently directed the builder to replace the combustible cladding on Lacrosse, as well as five other apartment buildings it had constructed. This direction was issued under section 37B of the *Building Act 1993 (Vic)*.³⁸ The builder appealed this direction and in December 2017 the Victorian Supreme Court ruled that the VBA had no power to order the builder to replace the cladding, because occupancy permits had already been granted.³⁹

This ruling indicates that the regulator's power to hold the builder responsible for rectifying non-compliance is limited. The onus is therefore on the building owner to pursue defect rectification costs from liable parties.⁴⁰

After the VBA's direction was overruled, the Lacrosse owners' corporation sued eight parties, including the builder, for \$24 million in damages.⁴¹ More than four years after the fire, on 28 February 2019, the Victorian Civil and Administrative Tribunal found that the fire engineer, the building surveyor, the architect and the builder were jointly liable, and ordered them to pay costs of \$5.7 million to the building owners.⁴² However, this does not conclude the matter – the remaining sum sought by apartment owners is yet to be resolved,⁴³ and the ruling is currently under appeal.⁴⁴

Questions

1. Do you think that non-compliant building work is a problem? Why, or why not?
2. Have you experienced any increased costs caused by non-compliant building work? Please specify as far as you are able.

³⁵ Owners Corporation No.1 of PS613436T v LU Simon Builders Pty Ltd (Building and Property) [2019] VCAT 286 (28 February 2019)

³⁶ Joseph Dunstan, *Lacrosse apartment owners awarded \$5.7 million in damages after flammable cladding blaze* (ABC News, 1 Mar 2019)

³⁷ Metropolitan Fire Brigade, *Post-incident analysis report: Lacrosse Docklands* p 31.

³⁸ Justin Cotton, *Directions to builders to rectify work: the supreme court enforces a time limit on the Victorian Building Authority* (Lovegrove and Cotton construction and planning lawyers, 26 Feb 2018)

³⁹ L U Simon Builders Pty Ltd v Victorian Building Authority [2017] VSC 805 (22 Dec 2017)

⁴⁰ Ben Davidson and Emily Steiner, *Victorian supreme court decision on 'directions to fix' allows builders to avoid the heat* (Corrs Chambers Westgarth lawyers, 1 Mar 2018)

⁴¹ Clay Lucas, *Docklands owners sue for \$24m over fire, as date to fix cladding looms* (The Age, 10 Sep 2018)

⁴² Simone Fox Koob, *Apartment tower residents awarded millions in damages after cladding fire* (The Age, 28 Feb 2019)

⁴³ Joseph Dunstan, op cit

⁴⁴ Bronwyn Weir, personal communication (6 Sep 2019)

4.5 National initiatives to address the problem

On 18 July 2019 the Building Ministers' Forum (BMF) established an Implementation Team within the Australian Building Codes Board (ABCB). The Implementation Team is tasked with developing a national framework for the consistent implementation of the recommendations of the *Building Confidence* report, as well as the design, construction and certification of complex buildings.⁴⁵

On 23 September 2019 the ABCB released for comment proposed changes to the NCC in an out-of-cycle amendment. The proposed NCC 2019 Amendment 1 contains several provisions that address *Building Confidence* report recommendations, including:

- a definition of 'building complexity', to create a head of power to identify buildings which require increased supervision of design and construction;
- provisions that require the creation of a Performance Based Design Brief, wherever a performance solution is developed, to improve the quality and clarity of performance solutions' documentation for both approval and auditing purposes; and
- reference to a new Technical Specification for the permanent labelling of Aluminium Composite Panels.⁴⁶

The ABCB will make any changes at a national level, via the NCC. Unless there is significant inconsistency with WA legislation, Building and Energy will adopt these changes in WA and will work to ensure that any amendments to WA legislation are compatible with national reforms. More information on the proposed NCC amendment can be found here: <https://consultation.abcb.gov.au/engagement/ncc-2019-amendment-1/>

⁴⁵ Australian Building Codes Board, Building Confidence report *implementation team* (not dated)

⁴⁶ Australian Building Codes Board, *NCC 2019 will be amended out of cycle* (23 Sept 2019)

5 Objective

This review proposes reforms that aim to enhance and improve levels of compliance in new commercial building work, to provide safe, long-lasting buildings that better meet public needs and expectations. To achieve this objective, the WA Government proposes to reform the approvals process for commercial buildings and in doing so implement the recommendations of the *Building Confidence* report.

The *Building Confidence* report makes 24 recommendations for a national best practice model to better implement and enforce the NCC (see Appendix B). This paper considers proposals to implement recommendations 6, 8-11, 13-18 and 20, as they relate to commercial buildings. Other recommendations of the *Building Confidence* report are being implemented through separate reviews to reform the residential building approval process and the registration framework. Reforms to the commercial building approvals process are being considered and developed in concert with these reviews. For example, the details of reforms to registration requirements (Rec 1) will affect the reforms that may be considered in WA for building documentation (Rec 13). It is not practicable to require that only registered people may prepare building documentation until all building design professionals are required to be registered in WA.

The recommendations in the *Building Confidence* report are necessarily broad. They apply equally to all Australian jurisdictions, which each have different processes governing building documentation, approval and construction, as well as different registration requirements for the people designing and constructing buildings. It is therefore up to the regulators in each jurisdiction to determine how each recommendation should be implemented in their own jurisdiction. Building and Energy is aware that any reforms to implement the *Building Confidence* report recommendations in WA need to be tailored to operate within WA's existing legislative framework.

Finally, the effect of any reforms on the building industry needs to be considered as a whole. It is expected that implementation of reforms will be phased to allow the industry time to adjust to any changes. Building and Energy will consider the operation of these reforms in total, as well as individually, to achieve the best outcome for the building industry and the community.

Note that maintaining the status quo is not currently being considered as an option to address any of the problems that have been identified. The WA Government has committed to implement the recommendations in the *Building Confidence* report. This commitment requires reform of the framework for building approvals in WA.

6 Overview of reforms

This CRIS presents several proposals and options to reform the commercial buildings approval process in WA. Table 1 provides an overview of all the reforms considered. Figures 1 and 2 compare features of the current and proposed approvals processes. Note that this CRIS has been released to seek feedback on possible reforms to the approvals process. It does not represent the WA Government’s final policy position.

Table 1: Overview of all reforms being considered for the commercial building approval process.

Overview of commercial building approvals reform proposals		
BC Rec	Proposals for reform	Location
6 Regulators’ powers	<ol style="list-style-type: none"> 1. Require that building materials must comply. 2. <i>Code of Practice: Safe design of buildings and structures</i> to be an applicable standard for class 2-9 building work. 3. Empower Building Commissioner to prescribe standards. 4. Amend Building Commissioner’s right of entry and inspection. 5. Regulator’s power to remedy dangerous situations 	Section 7.1
8 Fire Authority consultation	<ol style="list-style-type: none"> 6. Fire engineering performance solutions to be in accordance with IFEG. 7. FES Commissioner’s advice may be given early. 8. FES Commissioner’s advice must be responded to whenever it is provided. 9. Prescribed information to be included in response to FES Commissioner’s advice. 	Section 7.2
9 Conflicts of interest	10. Building surveyors must be independent of anyone whose work they certify.	Section 7.3
10 Code of Conduct	11. Code of Conduct for building surveyors	Section 7.4
11 Supervisory power for building surveyors	<ol style="list-style-type: none"> 12. Building surveyor’s contract must extend until CCC is issued, and may not be terminated early. 13. Building surveyors must be paid for work done. 	Section 7.5
13 Building documentation	<ol style="list-style-type: none"> 14. Supporting documents must demonstrate how design meets NCC requirements. 15. Supporting documents must state author’s name and registration number. 16. Supporting documents must include prescribed information. 17. Supporting documents revision number noted on CDC. 18. CDC, CCC and occupancy permit to state any occupancy and maintenance conditions. 19. Builders Notice of Completion not required for class 2-9. 	Section 7.6
14 Performance solutions - documentation	<ol style="list-style-type: none"> 20. Mandatory documentation requirements including: <ul style="list-style-type: none"> o What performance requirements apply; o Copy of fire engineering report, if applicable; o How design meets performance requirements; o How design differs from deemed-to-satisfy provisions; o Evidence relied on, e.g. inspection or test results; o Building surveyor’s reasons for accepting design; and o Owner’s consent. 	Section 7.7

Overview of commercial building approvals reform proposals			
BC Rec		Proposals for reform	Location
15	Performance solutions - retrospective approval	21. Mandatory documentation requirements to assess and approve performance solutions in completed buildings. 22. Certain types of unauthorised work to be reported to regulator. 23. CCC to state that building work complies with applicable standards.	Section 7.8
16	Variations during construction	24. Require amended documentation to be approved throughout construction.	Section 7.9
17	Third party review of design	25. Mandatory, independent peer review of high risk engineering design work.	Section 7.10
18	Inspections	26. Mandatory inspections for all construction work, either by: <ul style="list-style-type: none"> o permit authorities; or o private sector inspectors. 27. Inspection points to be notifiable stages for building compliance.	Section 7.11
20	Building manual	28. Introduction of a digital building manual to be provided to owners at completion of building work.	Section 7.12

Figure 1: Overview of the existing regulatory process for class 2-9 buildings

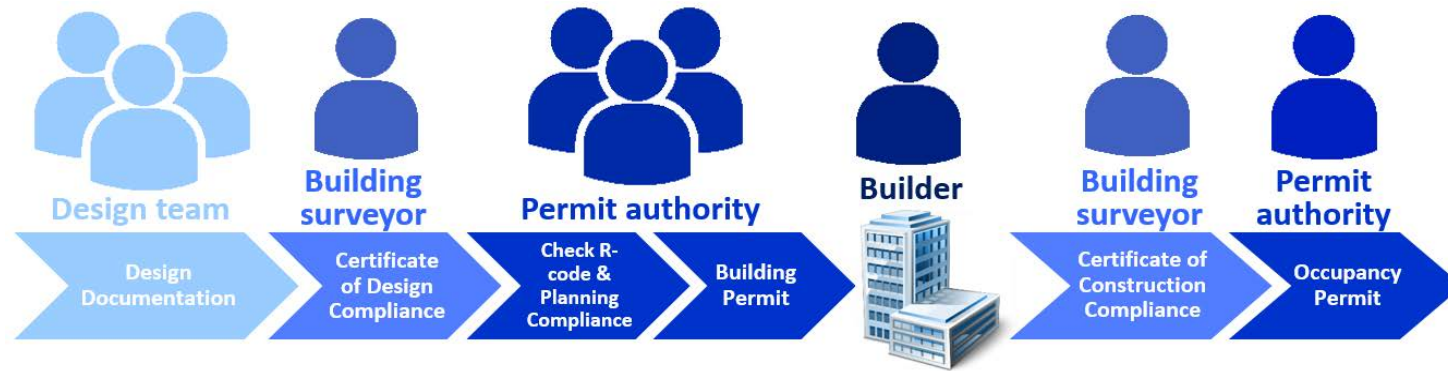
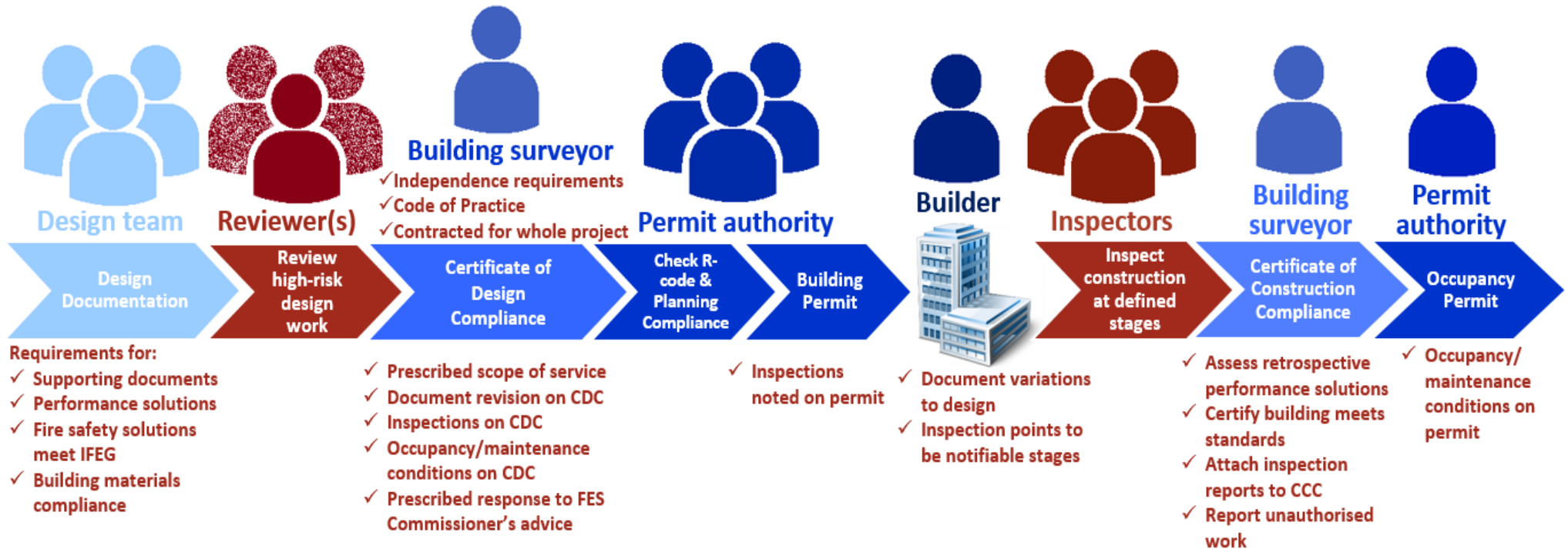


Figure 2: Overview of proposed changes to the regulatory process for class 2-9 buildings



7 Reforms

7.1 Regulators' monitoring and enforcement powers

Recommendation 6 of the *Building Confidence* report states:

6. That each jurisdiction give regulators a broad suite of powers to monitor buildings and building work so that, as necessary, they can take strong compliance and enforcement action.

Proposals for reform

Proposal 1 – Building materials to comply with Australian Standards and NCC

Proposal 1: Amend the *Code of Practice: Safe design of buildings and structures* to address non-conforming and non-compliant building products.

Building materials must meet Australian Standards and be installed to comply with NCC requirements. However, building materials are increasingly sourced internationally and manufactured in countries not bound by Australian Standards. This can lead to confusion regarding their suitability for use in Australian buildings. It can also pose health and safety risks for people who construct, occupy, maintain or demolish buildings, if non-conforming and non-complying materials are used.

Powers to monitor and enforce building compliance in WA could be enhanced to reduce instances of non-compliant and non-conforming building products. Any such reform would need to assign responsibility for compliance across the whole of the construction industry supply chain.

The *Code of practice: safe design of buildings and structures* (Code of Practice) is one means by which the supply chain could be better regulated. This Code is administered by WorkSafe, a division of DMIRS. The Code of Practice addresses the occupational safety and health issues associated with each stage in the life of a building, from design to demolition.⁴⁷ It applies to manufacturers, importers and suppliers, as well as to people who design, construct and manage workplaces.⁴⁸ It is therefore considered to be an appropriate instrument to regulate building materials at all points along the construction industry supply chain.

Non-conforming or non-complying?

Non-conforming building products are products that:

- claim to be something they are not;
- do not meet required standards for their intended use; or
- are marketed with the intent to deceive those who use them.

For example a building product that is labelled as being non-combustible but which is combustible is non-conforming.

Non-compliant building products are products that are used in situations where they do not comply with the requirements of the NCC. For example if a building product that is combustible, and is described as such, is installed in a situation where a non-combustible product is required under the NCC, it is non-compliant.

A building product can be both non-conforming and non-compliant.

⁴⁷ Commission for Occupational Safety and Health, *Code of practice: safe design of buildings and structures* (Department of Mines, Industry Regulation and Safety, 2008), p 2

⁴⁸ Commission for Occupational Safety and Health, op cit, Definitions

Under this proposal, the Code of Practice would be amended to:

- require that a building material must comply, in that it must:
 - be safe;
 - comply with the applicable building standards; and
 - perform to the standard it is represented to perform; and
- assign a duty of care to suppliers and importers of building materials to assume some responsibility for product compliance.

This is based on Queensland's definition of a non-conforming building product.⁴⁹

Advantages

This proposal would:

- enhance regulators' powers to manage non-complying and non-conforming building products in WA; and
- provide an incentive for manufacturers, importers and suppliers to supervise product compliance more closely.

Questions

3. Do you support Proposal 1? Why, or why not?
4. Can you provide any examples where non-complying or non-conforming building products have caused problems for a building project in WA?
5. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 2 – Mandate that buildings comply with the Code of Practice

Proposal 2: Amend the Building Regulations to mandate the *Code of Practice: Safe Design of Buildings and Structures* as an applicable standard for all classes of building.

This proposal would empower regulators to enforce compliance with the Code of Practice. The Building Regulations, part 4 division 1, sets out the applicable building standards for all types of construction. Compliance with the *Code of practice: safe design of buildings and structures* could be mandated for class 2-9 buildings.

Advantages

This proposal would:

- enhance regulators' powers to manage non-compliant and non-conforming building products in WA; and
- provide an incentive for manufacturers, importers and suppliers to supervise product compliance more closely.

Questions

6. Do you support Proposal 2? Why, or why not?
7. Do you foresee any other costs or benefits to implementing this proposal?

⁴⁹ Queensland Building and Construction Commission Act 1991 (Qld) s 74AB(2)

Proposal 3 – Building Commissioner to prescribe certain requirements

Proposal 3: Amend the *Building Services (Complaint Resolution and Administration) Act 2011* to empower the Building Commissioner to prescribe requirements on technical matters.

Under this proposal, the BSCRA Act would be amended to include provisions that the Building Commissioner may prescribe requirements on matters relating to building industry policy, building services and other matters that relate to the functions of the Building Commissioner. This is consistent with one of the Building Commissioner's existing functions, being:

to promote and conduct research and training into building industry policy, building services and other matters that relate to the functions of the Building Commissioner⁵⁰

For example, technical matters that the Building Commissioner may prescribe requirements for include:

- information to be contained in the documents supporting a permit application ([Proposal 16](#));
- guidance on using risk analysis to identify third-party review requirements ([Proposal 25](#)) or inspections ([Proposal 26](#));
- details regarding a building surveyor's contractual scope of service ([Proposal 12](#)); and
- Codes to govern various categories of registered practitioners ([Proposal 11](#)).

Empowering the Building Commissioner to prescribe certain requirements would make building policy reforms easier to update and much more responsive to industry feedback. It would be easier to keep technical requirements up-to-date and respond to industry feedback if they could be maintained directly by the Building Commissioner, rather than being included, and subsequently updated, in the Building Regulations.

This proposal aligns with powers granted to similar officers, under other legislation, for example:

- *Health (Miscellaneous Provisions) Act 1911* (WA)
s344A(2) empowers the Chief Health Officer to publish codes of practice on matters relating to public health
- *Building Act 1975* (Qld)
s258 empowers the chief executive to make guidelines to help with compliance with the Act.
- *Building Act 2016* (Tas)
s20 empowers the Director of Building Control to make determinations under the Act.

Advantages

This proposal would:

- make it easier to update certain building requirements;
- make regulations more responsive to industry feedback; and
- reduce the administrative burden of updating regulations.

⁵⁰ *Building Services (Complaint Resolution and Administration) Act 2011* (WA) s 86(e)

Questions

8. Do you support Proposal 3? Why, or why not?
9. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 4 – Regulator’s right of entry and inspection

Proposal 4: Amend the Building Act and the BSCRA Act to empower the Building Commissioner’s inspectors to enter and inspect any building site.

Currently, under the BSCRA Act, the Building Commissioner may authorise inspectors to inspect building sites for compliance purposes, however the inspector may only enter with the occupier’s consent.⁵¹ If the occupant refuses their consent, then an entry warrant must be obtained from a justice of the peace, in person, in writing and on oath, in accordance with the *Criminal Investigation Act 2006*.⁵² It is administratively onerous to hold building compliance inspections to the same standard of probity as a criminal investigation.

Under this reform proposal, the BSCRA Act would be amended to reinstate the entry powers that were provided by the *Builders’ Registration Act 1939*, which empowered the Building Services Board to enter any building site to inspect building work, and made it an offence to impede or obstruct an inspector.⁵³

This aligns with Queensland’s legislation, which empowers investigators to inspect any building site where building work is being carried out.⁵⁴

Advantages

This proposal would:

- reduce administrative red tape to monitor building compliance; and
- increase regulatory oversight of construction work.

Questions

10. Do you support Proposal 4? Why, or why not?
11. Do you foresee any other costs or benefits to implementing Proposal 4?

Proposal 5 – Regulator’s power to remedy dangerous situations

Proposal 5: Amend to definition of *dangerous situation* in the BSCRA Act to empower the Building Commissioner to remedy any situation where there is a high risk to people, property or the environment from the carrying out of a building service.

Currently, the BSCRA Act empowers the Building Commissioner only to remedy dangerous situations where there is “an imminent and high risk”.⁵⁵ Deleting “imminent”

⁵¹ *Building Services (Complaint Resolution and Administration) Act 2011* (WA) s 66(2)

⁵² *Building Services (Complaint Resolution and Administration) Act 2011* (WA) s 72, *Criminal Investigation Act 2006* (WA) s 13. Note that permit authority inspectors are not similarly fettered, unless they need to inspect a place that’s in use as private residence. (*Building Act 2011* (WA) s 100)

⁵³ *Builders’ Registration Act 1939* (WA) s 20A

⁵⁴ *Queensland Building and Construction Commission Act 1991* (Qld) s 105(1)(e)

⁵⁵ *Building Services (Complaint Resolution and Administration) Act 2011* (WA) s 76

from this definition would broaden the Building Commissioner’s enforcement powers to be able to act in circumstances that were not just in an emergency situation.

Advantages

This proposal would increase the regulatory oversight to monitor building compliance.

Questions

12. Do you support Proposal 5? Why, or why not?
13. Do you foresee any other costs or benefits to implementing Proposal 5?

7.2 Fire authority consultation

Background

Recommendation 8 of the *Building Confidence* report states:

8. That, consistent with the International Fire Engineering Guidelines, each jurisdiction requires developers, architects, builders, engineers and building surveyors to engage with fire authorities as part of the design process.

The Department of Fire and Emergency Services (DFES) has an advisory role in building approval in WA. Building surveyors must submit plans and specifications to DFES for comment at least 15 business days before signing the certificate of design compliance (CDC).⁵⁶ There is room to improve this process, however it should be noted that none of the proposed reforms are intended to change the nature of DFES’s advisory role.

Proposals for reform

Proposal 6 – Fire safety performance solutions be in accordance with IFEG

Proposal 6: Amend the Building Regulations to require that documentation of fire safety performance solutions must include a fire engineering brief and fire engineering report, in accordance with the International Fire Engineering Guidelines’ process.

Fire engineering performance solutions are not always documented clearly, making it difficult to assess compliance. This could be addressed by requiring that performance solutions be documented in accordance with the International Fire Engineering Guidelines (IFEG). The IFEG process requires detailed assessment and documentation of performance solutions. The *Building Confidence* report notes that IFEG:

contains best practice for the development of fire engineering designs and includes an obligation to engage with fire authorities as part of the design process. It has been reported to us that if the IFEG was closely followed, the quality of fire engineering designs would improve and fire authorities would be consulted early on all designs involving performance solutions as part of the fire engineering design process.⁵⁷

⁵⁶ *Building Regulations 2012 (WA)* r18B

⁵⁷ Shergold and Weir, op cit p 23

The IFEG process involves five main steps:

1. Prepare a fire engineering brief;
2. Carry out analysis;
3. Collate and evaluate the results;
4. Draw conclusions; and
5. Prepare the fire engineering report.⁵⁸

The process requires consulting with relevant stakeholders, including the fire service, being DFES in WA. Engaging with DFES earlier in the design stage will give greater surety that the design meets the FES Commissioners' operational requirements, which can expedite the process to issue a certificate of design compliance. DFES could provide guidance on how to demonstrate compliance with the IFEG.

This proposal would be supported by provisions enabling Building and Energy and DFES to monitor and assess compliance with the requirement. Non-compliance with this requirement could be made a disciplinary matter, once fire engineers are required to be registered.

Advantages

This proposal would:

- require that DFES is consulted on fire engineering performance solutions earlier in the design process;
- improve the clarity of documentation for fire engineering performance solutions, making the design easier to assess, approve and construct;
- expedite the process to issue a Certificate of Design Compliance (CDC), because DFES can advise earlier on how the design can meet the FES Commissioner's operational requirements;
- improve the rigour used to develop and assess fire safety performance solutions;
- improve compliance of fire safety systems in new buildings; and
- improve the safety of building occupants in the event of a fire.

Disadvantages

This proposal may:

- result in some confusion regarding the level of consultation and documentation required to comply with the IFEG process; and
- increase project documentation costs, which would be passed on to consumers.

Questions

14. Do you support Proposal 6? Why, or why not.
15. Do you think this proposal is likely to increase documentation costs? If so, by how much?
16. Do you foresee any other costs or benefits to implementing this proposal?

⁵⁸ Australian Building Codes Board and others, *International Fire Engineering Guidelines* (Australian Government, 2005) figure 1.1.2

Proposal 7 – FES Commissioner’s advice may be provided early

Proposal 7: Amend the Building Regulations to provide that the FES Commissioner may issue a certificate at any time confirming that a building design meets operational requirements.

Where DFES’s advice is considered during the design stage as part of the IFEG process, and DFES is confident that a design meets the FES Commissioner’s operational requirements, it may be possible for DFES to issue a certificate stating:

1. That the design meets the FES Commissioner’s operational requirements;
2. The conditions upon which the certificate is given, being the fire safety features that are incorporated in the design at the time of the certificate being issued; and
3. That the design is exempted from any further assessment requirement by DFES.

The FES Commissioner’s certificate would then be attached to the CDC, and a permit application would be required to be submitted within a certain time limit from the date of the certificate, for example three months.

This reform proposal is modelled on a similar provision in South Australia.⁵⁹

Advantages

This proposal would:

- encourage people to consult DFES earlier in the design phase, when changes to the design can more easily be accommodated; and
- reduce time for DFES consultation at the end of design.

Questions

17. Do you support Proposal 7, in whole or in part? Please specify.
18. What do you think should be the maximum allowable timeframe to elapse between the date of the FES Commissioner’s certificate, and submitting the building permit application?

Proposal 8 – FES Commissioner’s advice may be provided at any time

Proposal 8: Amend the Building Regulations to clarify that the FES Commissioner’s written advice must be considered and responded to no matter when it is provided.

This proposal would clarify that building surveyors must consider, and respond to, the FES Commissioner’s advice no matter when the advice is provided. It aligns with the allowance given to permit authorities to grant or refuse permit applications after the expiry of the legislated timeframe.⁶⁰

Advantages

This proposal would:

- clarify that the FES Commissioner’s advice must always be responded to, no matter when it is provided;

⁵⁹ *Development Act 1993 (SA) s37AA*

⁶⁰ *Building Act 2011 (WA) s23(6) and 59(5)*

- clarify that the timing of the advice is not, alone, sufficient reason not to incorporate the advice in the building design; and
- does not alter the nature of the FES Commissioner's advisory role.

Disadvantages

A disadvantage of this proposal is that it may be onerous to amend a building design if the FES Commissioner's advice arrives after a permit application is submitted.

Questions

19. Do you support Proposal 8? Why, or why not?
20. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 9 – Clarify content of response to DFES advice

Proposal 9: Amend the Building Regulations to clarify the information that must be included when responding to the FES Commissioner's advice.

Under this proposal, where the FES Commissioner's advice is not incorporated into a building design, the building surveyor must notify the FES Commissioner in writing of how DFES's stated operational requirement is either:

- not applicable to the building; or
- being addressed through other measures, including details of how this is to be achieved.

The minimum requirements of the NCC are designed to facilitate fire brigade intervention in the event of a fire. Any variation to these requirements may present a risk for building occupants, and it is reasonable for building surveyors to be required to justify how this risk is being managed.

Advantages

This proposal would:

- clarify what is required of building surveyors; and
- increase the consideration given to fire brigade operational requirements.

Disadvantages

A disadvantage of this proposal is that it may result in increased work for building surveyors in responding to the FES Commissioner's advice.

Questions

21. Do you support Proposal 9? Why, or why not?
22. Do you foresee any other costs or benefits to implementing this proposal?

7.3 Building surveyors' conflicts of interest

Background

Recommendation 9 of the *Building Confidence* report states:

9. That each jurisdiction establishes minimum statutory controls to mitigate conflicts of interest and increase transparency of the engagement and responsibilities of private building surveyors.

The Building Act requires a certificate of compliance to be signed by an independent building surveyor. Independence is defined as being:

- neither the owner of the land, nor an employee of the owner of the land, and
- neither the builder, nor an employee of the builder.⁶¹

However, a building surveyor may be employed by the same entity as any member of the design team. Indeed, there is nothing to prevent a person with dual qualifications from designing a building and then certifying their own design.

Proposal for reform

Proposal 10 – Building surveyors' independence

Proposal 10: Amend the definition of 'independent building surveyor' in the Building Act to require that a building surveyor must be independent of anyone whose work they certify.

Under this proposal, a building surveyor's independence would be more strictly defined to prevent building surveyors from certifying their own work, or work produced by colleagues employed by the same entity.

Other jurisdictions have similar provisions to manage private building surveyors' conflicts of interest.⁶² For example, in Victoria, it is an offence to carry out any function of a private building surveyor where the private building surveyor or a related person:

- prepared the design of the building or building work;
- is an employee, contractor or financial beneficiary of the person or body that prepared the design of the building or building work; or
- is a financial beneficiary of a person or body carrying out the building work.⁶³

Advantages

This proposal would:

- mitigate some of the conflicts of interest inherent in private certification.
- increase the rigour with which the compliance of building designs is assessed;
- prevent building surveyors from certifying their own work, or work produced by their employer; and
- align WA requirements more closely with those in other jurisdictions.

⁶¹ Building Act 2011 s4

⁶² *Building Act 1975* (Qld) s128 and 137; *Building Act 1993* (Vic) s79; *Building Act 2016* (Tas) s28(2).

⁶³ Victorian Building Authority, *When a private building surveyor may or may not act* (16 June 2016)

Disadvantages

This proposal would:

- prevent large firms from offering a full design and certification service from within their own staff; and
- potentially increase design and/or certification costs because building surveyors can no longer undertake any other roles in the design of a building project.

Questions

23. Do you support Proposal 10? Why, or why not?
24. Do you foresee any other costs or benefits to implementing this proposal?
25. Can you think of any other measures to address building surveyors' conflict of interest?

7.4 Building surveyors' code of conduct

Recommendation 10 of the *Building Confidence* report states:

10. That each jurisdiction put in place a code of conduct for building surveyors which addresses the key matters which, if contravened, would be a ground for a disciplinary inquiry.

Proposal for reform

Proposal 11 – Code of Conduct for building surveyors

Proposal 11: Introduce a mandatory Code of Conduct for registered building surveyors in WA.

The Building Commissioner is currently empowered to develop and enforce codes governing the conduct of registered building service providers, including building surveyors.⁶⁴ A Code of Conduct for registered building surveyors in WA could be modelled on Tasmania's Code of Practice, which states that a building surveyor in undertaking their role within the scope of their licence must:

1. Perform building surveying functions in the public interest.
2. Abide by ethical standards expected by the community for legislative conformity and reputable conduct.
3. Not perform building surveying functions where there is the potential for a conflict of interest.
4. Maintain satisfactory levels of competence.
5. Ensure that their engagement to undertake their functions is valid and in accordance with the Building Act.
6. Comply with legislative requirements.
7. Not perform building surveying functions beyond their level of competence or outside their area of expertise.
8. Maintain confidentiality.
9. Take all reasonable steps to obtain all relevant facts when performing building surveying functions.

⁶⁴ *Building Services (Complaint Resolution and Administration) Act 2011* s 96(1)(b)

10. Ensure that all aspects of design are adequately documented and in accordance with the Building Act prior to issuing a certificate of compliance.
11. Ensure that performance solutions pursuant to the National Construction Code are developed in accordance with the Code.
12. Ensure building owners are adequately informed of performance solutions prior to issuing a certificate of compliance.
13. Clearly document reasons for building surveying decisions.
14. Ensure that sufficient and adequate inspections are carried out to be reasonably satisfied that building work complies with the Building Act and any relevant approvals.
15. Be accountable for the supervision, competence and conduct of staff and contractors whom they employ or contract with to assist them in fulfilling their functions as a building surveyor.⁶⁵

It is acknowledged that the national implementation team are working on a code of conduct for building surveyors. Building and Energy will consider any national model that is proposed, before adopting a code of conduct for WA building surveyors.

Also note that private building surveyors may be engaged to undertake different types of work, including both advisory and certification roles. The rigour with which building surveyors would be expected to apply a code of conduct may vary depending on the nature of the work they are undertaking.

Advantages

This proposal would codify a building surveyor's responsibilities to their clients, community and profession.

Questions

26. Do you support Proposal 11? Why, or why not?
27. Do you agree with the 15 responsibilities listed above? Is there anything that you would add or delete?
28. Do you foresee any other costs or benefits to implementing this proposal?

7.5 Supervisory powers for building surveyors

Background

Recommendation 11 of the *Building Confidence* report states:

11. That each jurisdiction provides private building surveyors with enhanced supervisory powers and mandatory reporting obligations.

In WA supervisory functions are undertaken jointly by private building surveyors and permit authorities. The *Building Confidence* report supports this, stating that:

The allocation of roles between government and private building surveyors is for each jurisdiction to determine. The recommendations can be implemented

⁶⁵ Consumer, Building and Occupational Services, *Occupational licensing (Building Surveyors) Code of Practice 2018* (Government of Tasmania, Mar 2018)

regardless of the public versus private certification model in place in any given jurisdiction.⁶⁶

Private building surveyors undertake a regulatory function in a commercial environment. Their statutory role and duty to the public should take precedence over their commercial interest, however their duty to enforce compliance can sometimes conflict with the desire to maintain commercial relationships. Evidence from Queensland, which has full private certification for all classes of building, indicates that private certifiers are not willing or able to take enforcement action where non-compliance is identified in construction work. Andrew Wallace's 2014 review of building certification in Queensland found that:

Concerns have been raised, particularly by local governments, that private certifiers are reticent to commence enforcement action against builders and/or building owners. This may be for several reasons including:

- Private certifiers may be reluctant to 'bite the hands that feed them';
- Private certifiers generally practice in small or micro businesses. Most, if not all are unlikely to possess the financial capacity or skills necessary to mount enforcement action which may end up in the Courts; and
- Other than a fulfilment of a private certifier's statutory duty, there is no incentive for a private certifier to commence enforcement action against a builder and/or building owner.⁶⁷

There is currently no intention to introduce privately-issued permits for class 2-9 buildings in WA.⁶⁸ Therefore any reforms to implement recommendation 11 will need to operate within WA's hybrid system of private certification and publicly-issued permits.

Note that any proposal to implement this recommendation applies only for building surveyors engaged to certify a building project. Building surveyors may be engaged to undertake other work, for example to provide advice on an aspect of a building design, in which case these proposals would not apply.

Proposals for reform

Proposal 12 – Only one building surveying contractor to be engaged for work

Proposal 12: Amend the Building Act to require that a building surveying contractor's contract for certification must extend for the duration of a construction project, must incorporate a prescribed scope of services, and may not be terminated early except in certain prescribed circumstances.

An aspect of WA's private certification system that appears to require reform is the ability for multiple building surveying contractors to be engaged throughout a building project. People who engage a private building surveyor can terminate the contract at any time and engage a new building surveyor. Anecdotal evidence indicates that building surveyors' contracts have been terminated to resolve differences of opinion

⁶⁶ Shergold and Weir, op cit p 12

⁶⁷ Andrew Wallace, *Review of the Building Act 1975 and building certification in Queensland* (Queensland Building and Construction Commission, October 2014) p 321

⁶⁸ Reforms to the approvals process for class 1a buildings are being progressed through a separate discussion paper.

regarding the application of NCC requirements. A discussion paper released by the Queensland Government in 2011 supports this supposition:

Applicants for building approval often disengage because they think the building certifier is too restrictively applying the building legislation. They may then engage another building certifier who will give them what they want, which could result in a building that does not comply with relevant codes and standards. People who occupy these buildings may be exposed to an unsafe environment that negatively affects their health, safety and wellbeing. ...

Strengthening the rules for disengagement would prevent builders disengaging from contracts because they do not like the building surveyor's interpretation of the required standard. It would also help prevent building owners being exposed to costly and inconvenient rectification work later.⁶⁹

To address this issue in WA, it is proposed to amend the Building Act to require that a building surveying contractor's contract to certify a building project must extend for the duration of that project. That is, until a certificate of construction compliance is issued under s56(2) of the Building Act or until the project is discontinued. The building surveyor's scope of services under this contract will include:

- assess the building design for compliance;
- ensure documentation clearly demonstrates how the design complies with each applicable standard;
- identify required inspections;
- submit documentation to the FES Commissioner, if required, and respond as required to any advice received;
- produce an NCC assessment report detailing the assessment and decision-making process, particularly for any performance solution;
- issue a certificate of design compliance;
- ensure required inspections are undertaken, and documented, by appropriately qualified people;
- assess and certify any variations to the design during the construction process;
- undertake a final inspection;
- collect all inspection documentation; and
- issue a certificate of construction compliance.

The building surveyor's contract may not be terminated early unless:

1. Both parties to the contract mutually agree; or
2. A court orders that a new building surveyor be appointed; or
3. The building surveyor is unable to fulfil their contractual obligations due to:
 - a. No longer holding the required registration,
 - b. Declaring bankruptcy or insolvency, or
 - c. Death.

This reform is intended to give building surveyors the contractual security to enforce a higher level of compliance.

⁶⁹ Queensland Government, *Improving building certification in Queensland – discussion paper* (Department of Local Government and Planning, Aug 2011) p 20-21

This reform would align WA legislation more closely with legislative provisions in other Australian States and Territories.⁷⁰

Advantages

This proposal would:

- increase oversight of construction by ensuring that a building surveyor is engaged for the duration of a building project;
- ensure, as far as practicable, that the building surveyor who certifies design compliance also certifies construction compliance;
- give building surveyors contractual security to enforce NCC requirements;
- align WA legislation more closely with requirements in other jurisdictions;
- increase the accountability and transparency of private certification;
- retain market freedom for people to seek quotes and engage the building surveyor of their choice;
- retain building surveyors' freedom to compete in an open market; and
- have no additional cost for industry or the community, as this is an administrative change to an existing requirement to engage a building surveyor.

Disadvantages

This proposal may affect contractual arrangements between building surveyors and building owners or builders, because the contract may not be terminated as easily. The standard form contracts for engaging building surveyors may need to be revised to accommodate this requirement.

Questions

29. Do you support Proposal 12? Why, or why not?
30. Do you think the proposed scope of services is appropriate? Are there any items that should be added to, or deleted from, the list?
31. Do you think the proposed conditions to terminate a building surveyor's contract are appropriate? Are there any conditions you would add or delete?
32. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 13 – Building surveyor must be paid

Proposal 13: Amend the Building Act to require that a building surveyor must be paid for work undertaken, even if they are unable to issue a certificate of compliance because the building design or construction does not comply with the applicable standards.

This proposal would ensure that building surveyors are paid for the work they undertake, when they have a valid reason for refusing to issue a certificate of compliance for the design or building. With surveyors' contracts to extend for the duration of a project (see [proposal 12](#)) and potentially incorporate inspection work (see [section 7.11](#)), this proposal will give building surveyors a greater degree of independence when certifying compliance.

⁷⁰ *Building Act 2016* (Tas) s35-38; *Building Act 1993* (Vic) s78(2) and 80C-80D; *Building Act 2004* (ACT) s19D; *Building Act 1993* (NT) s39 and 45; *Environmental Planning and Assessment Act 1979* (NSW) s109EA; *Planning, Development and Infrastructure Act 2016* (SA) s90.

This proposal is modelled on a similar requirement in Queensland.⁷¹ It is also consistent with the allowance for permit authorities to retain the permit application fee if they refuse to grant a permit because a building design is non-compliant (although they must refund the building services levy).⁷²

Advantages

This proposal would give private building surveyors more independence to certify building compliance.

Questions

33. Do you support Proposal 13? Why, or why not?
34. Should private building surveyors have any additional supervisory powers or reporting obligations?
35. Are there any other reforms necessary to support private building surveyors to certify building compliance?
36. Do you foresee any other costs or benefits to implementing this proposal?
37. Do you think the proposed conditions to terminate a building surveyor's contract are appropriate? Please specify.

7.6 Building documentation requirements

Background

Recommendation 13 of the *Building Confidence* report states:

13. That each jurisdiction requires building approval documentation to be prepared by appropriate categories of registered practitioners, demonstrating that the proposed building complies with the National Construction Code

Poor documentation can lead to increased costs during construction. In 2005 a taskforce of 18 industry organisations led by the Queensland division of Engineers Australia released a report called "*Getting it right the first time*". This report found that:

- 60-90% of variations were due to poor design documentation;
- poor documentation added 10-15% to project costs in Australia; and
- the cost to the annual Queensland construction budget was \$2 billion, equating to \$12 billion nationally (in 2005 dollars).⁷³

The *Building Confidence* report found that unclear documentation remained a problem in 2018, noting that:

The adequacy of documentation prepared and approved as part of the building approvals process is often poor ... in part because of owners and developers endeavouring to minimise costs on documentation. ...

Poor quality documentation leads to builders improvising or making decisions which may not be compliant with the NCC. Performance solutions can, in some instances, be post facto rationalisations intended to address design

⁷¹ *Building Act 1975* (Qld) s146

⁷² *Building Act 2011* (WA) s24 and 60; Building Services (Complaint Resolution and Administration) Regulations 2012 (WA) r16

⁷³ Engineers Australia, *Getting it right the first time* (Oct 2005) p 6

that is not in accordance with NCC requirements. Inadequate documentation can also result in hidden costs or allow builders to cut costs without owners being aware of it.

The integrity of documentation for future use is also compromised when the approval documents do not reflect the as-built building⁷⁴

Where building documentation is unclear or insufficient, builders may either follow potentially non-compliant documentation, or make decisions on building details that are not compliant with the NCC. This can adversely affect the compliance of buildings and occupant safety in completed buildings.

Insufficiently detailed documents also do not provide an accurate record for the as-built building, which can affect operation over the life of the building. The building may not operate as designed, and it can affect the operation and maintenance of critical systems.

The *Building Confidence* report recommends that legislation should require that documentation for building approval must:

- adequately demonstrate compliance with the NCC;
- include any relevant certificates of conformity, accreditations and other prescribed material; and
- require a declaration by each registered practitioner responsible that they believe the documentation demonstrates compliance with the NCC.⁷⁵

The Building Act does not currently include these requirements. The Building Act prescribes the documents that must accompany a building permit application, including the CDC and any supporting documents it references.⁷⁶ The Building Regulations specify information that must be included in a CDC,⁷⁷ but do not have any requirements for supporting plans and specifications.

Six reforms are proposed to improve documentation standards, as discussed below. In addition, reforms to the registration framework in WA to implement recommendation 1 of the *Building Confidence* report are currently being examined. Currently in WA, most design professionals are not required to be registered.

When this CRIS refers to documentation, it includes electronic documentation and documentation produced via software systems, such as, but not limited to, BIM or NatHERS. Legislation would be drafted to ensure that all suitable methods of documentation format and provision are accommodated.

Proposals for reform

Proposal 14 – Documentation to demonstrate compliance with NCC requirements

Proposal 14: Amend the Building Regulations to require that supporting documents specified in a certificate of compliance must demonstrate how the building work will comply with each applicable building standard.

⁷⁴ Shergold and Weir, op cit p 28

⁷⁵ Shergold and Weir, op cit p 29

⁷⁶ *Building Act 2011* (WA) s 16

⁷⁷ Building Regulations 2012 (WA) r.18A and 18B

This proposal will require all supporting documents – including plans, specifications and technical certificates – to clearly demonstrate how a building design complies with NCC requirements. Permit applications will be required to include all applicable evidence to prove compliance. For example, technical certification will need to include evidence of compliance such as calculations, test details or modelling. Plans and specifications must also include compliance details such as passive fire safety features, including required fire resistance levels; construction details for fire and smoke compartments; and sealing requirements for penetrations in fire-resistant elements.

This reform proposal will give building surveyors and design professionals greater powers to ensure documentation is clear. The certifying building surveyor will remain responsible for ensuring that supporting documents demonstrate compliance with the requirements of the NCC. It is, and will continue to be, up to the building surveyor's discretion as to how much detail they require to be satisfied that building documentation demonstrates compliance with the applicable building standards.

This proposal is modelled on Queensland's legislation, which specifies several requirements for supporting documents, including that:

Each supporting document must on its face demonstrate that the carrying out of the building work will comply with the building assessment provisions.⁷⁸

Advantages

Advantages of this proposal include:

- better documentation will result in more compliant buildings and better building stock in WA;
- building surveyors will have a better understanding of how the building will comply and so can have more confidence in certifying the CDC;
- builders can have more confidence that when building to the plans and specifications the building will be compliant;
- clearer, more detailed documentation will reduce variations during construction; and
- an increase in compliant buildings can save significant amounts for builders and owners in rectification costs, insurance claims for defects and disputes.

Disadvantages

This proposal would, at least initially, increase documentation costs. However, the costs associated with producing clearer, more detailed documentation are likely to be offset by an easier and quicker build, reduced variations and fewer disputes.

Questions

38. Do you support Proposal 14, in whole or in part? Please specify.
39. Do you think this proposal is likely to increase documentation costs in the long term? If so, by how much?
40. Do you foresee any other costs or benefits to implementing this proposal?

⁷⁸ *Building Act 1975* (Qld) s 25(1)

Proposal 15 – Supporting documents must state author's name

Proposal 15: Amend the Building Regulations to require that all supporting documents referenced in a certificate of compliance must state the author's name, and registration number if applicable.

This proposal involves amending the Building Regulations to require that any supporting document referenced in a certificate of compliance must include the author's name and, if applicable, their practitioner and contractor registration numbers. This reform proposal is modelled on a similar clause in Queensland's Building Act.⁷⁹

Most building design professionals put a signature block on every drawing they produce. However, in the course of undertaking the audit of bushfire safety compliance, it was found that some supporting documents do not identify the author.

Requiring the inclusion of the author's name, and registration number if applicable, would make it possible for both permit authorities and the Regulator to question the reasoning behind design decisions, or hold people to account for their work.

Advantages

This proposal would:

- clarify the authorship of supporting documents, enabling greater accountability and easier auditing;
- have no cost to implement; and
- align WA's legislation more closely with that in other jurisdictions.

Questions

41. Do you support Proposal 15? Why, or why not?
42. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 16 – Prescribe information in supporting documentation

Proposal 16: Amend the Building Regulations to prescribe the information that must be included in documents supporting a permit application.

It is proposed to prescribe the minimum level of information that must be included in documents supporting a permit application, as per [Appendix C](#). The information proposed to be required for inclusion in supporting documents is based on requirements in Singapore.⁸⁰

Legislation in most other Australian jurisdictions prescribes minimum building documentation requirements.⁸¹

⁷⁹ *Building Act 1975* (Qld) s 24

⁸⁰ Building Control Regulations 2003 (Singapore) s6-10B; Fire Safety (Building and Pipeline Fire Safety) Regulations 2008 (Singapore) s7-9.

⁸¹ Building Regulations 1993 (NT) r 6; Environmental Planning and Assessment Regulations 2000 (NSW) sch 1; Building (General) Regulation 2008 (ACT) r 12; Development Regulations 2008 (SA) sch 5; Building Regulations 2018 (Vic) r 25; Building Regulations 1989 (WA) r 11.

Advantages

This proposal would clarify the information required to be included on documents supporting permit applications.

Disadvantages

This proposal would, at least initially, increase documentation costs. However, the costs associated with producing clearer, more detailed documentation are likely to be offset by an easier and quicker build, reduced variations and fewer disputes.

Questions

43. Do you support Proposal 16? Why, or why not?
44. Do you think this proposal is likely to increase documentation costs in the long term? If so, by how much?
45. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 17 – Building surveyors to include revision number or date on CDC

Proposal 17: Amend the Building Regulations to prescribe that when completing the certificate of design compliance (CDC), building surveyors must include the revision number or date of each supporting document.

Building documentation is often amended multiple times before and after a building permit is issued. If there is no clear record of which revision of the plans and specifications were approved, inspecting the construction and completing certificate of construction compliance can be problematic.

Noting the revision number, or date, of each supporting document specified on a CDC will reduce confusion on site regarding which documents to reference for construction, inspections and certification.

This would be a requirement when completing the CDC and an extra field would be included in the CDC template for this purpose. The building surveyor is responsible for completing the CDC, and so is best placed to do this work.

Advantages

This proposal would:

- reduce confusion on site regarding which documents to reference for construction, inspections and certification;
- create a more accurate record of the documents that are approved for construction; and
- be a relatively simple requirement that would have minimal cost to implement.

Disadvantages

This proposal would:

- potentially take time to ensure that the approved plans and specifications are being marked up with a date and revision number; and
- add a layer of administration to the work of a building surveyor (although potentially reducing administration when undertaking inspections or issuing a CCC after construction).

Questions

46. Do you support Proposal 17? Why, or why not?
47. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 18 – Building surveyors to note any occupancy or maintenance conditions

Proposal 18: Amend the Building Regulations to prescribe that any occupancy or maintenance conditions that must be met, to ensure compliance over the life of a building, are stated on the certificates of design and construction compliance, and the occupancy permit.

A compliant building can become non-compliant during use, for example if too many people are accommodated, if exit passage ways are blocked, or if fire safety features are not maintained to meet the required standard. Under this proposal, certificates of compliance and occupancy permits would be required to state:

- the maximum number of occupants permitted;
- any other occupancy conditions that must be met;
- any maintenance conditions for required safety features, such as active fire safety systems; and
- any other maintenance conditions that must be met to ensure compliance over the life of the building, including those set out in the prescribed information required for any performance solutions (see [Proposal 20](#)).

Additional information may be attached, for example copies of the building plan may be marked up to illustrate which areas need to be kept clear of furniture to maintain emergency exit pathways.

Advantages

This proposal would create a record for the owner, occupants and permit authority of ongoing conditions that must be met to maintain compliance over the life of a building.

Questions

48. Do you support Proposal 18? Why, or why not?
49. Do you agree with the proposed list of conditions to be stated on certificates of compliance and occupancy permits? Are there any items you think should be added or deleted from this list?
50. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 19 – Builders notice of completion not required for class 2-9 buildings

Proposal 19: Amend the Building Act to require that a builder's notice of completion is not required for building work that requires an occupancy permit.

At the completion of any work for which a permit was granted, a builder is required to issue a notice of completion to the relevant permit authority. This serves to notify the permit authority that the work is complete and the permit is consequently expired.

For buildings that require an occupancy permit, the certificate of construction compliance and the subsequent occupancy permit application fulfil this purpose, making a notice of completion obsolete.

Advantages

This proposal would:

- improve the likelihood of the permit authority receiving all documentation required at the end of a building project;
- reduce administrative red tape for the builder at the end of the project.

Questions

51. Do you support Proposal 19? Why, or why not?
52. Do you foresee any other costs or benefits to implementing this proposal?

7.7 Performance solutions

Background

Recommendation 14 of the *Building Confidence* report states:

14. That each jurisdiction sets out the information which must be included in performance solutions, specifying in occupancy certificates the circumstances in which performance solutions have been used and for what purpose.

In the NCC, legal compliance is achieved by meeting the performance requirements. The NCC provides two pathways to demonstrate compliance with the performance requirement. A building design can demonstrate compliance by using either the deemed-to-satisfy provisions or a performance solution.

Performance solutions are a common way of complying with performance requirements in commercial construction. A performance solution is developed by a building practitioner to meet the performance requirement, and is often supported by expert analysis or judgement. In WA a building surveyor must be satisfied that a performance solution meets the performance requirement before they can sign a CDC.

The *Building Confidence* report found that:

the standard of documentation supporting performance solutions is poor. There is a lack of basic information on matters such as the relevant performance requirements and the assessment methods applied. It is common for the person preparing the performance solution to rely on their own 'expert judgement' that the performance solution complies and on that basis they proceed to self-certify the design.⁸²

Instead of a best-guess, self-certification approach, each performance solution "requires empirical analysis, modelling and/or testing."⁸³ Legislation should therefore specify what information is required to document performance solutions to demonstrate compliance with the NCC.

⁸² Shergold and Weir, op cit p 30

⁸³ Shergold and Weir, op cit p 30

Proposal for reform

Proposal 20 – Prescribed process to document performance solutions

Proposal 20: Amend building legislation to prescribe documentation requirements for performance solutions.

To implement recommendation 14 it is proposed to amend building legislation to prescribe documentation requirements for performance solutions. Thus, if a building design contains performance solutions, the CDC must state:

- what NCC performance requirements apply;
- how the design meets the performance requirements;
- how the performance solution differs from the deemed-to-satisfy provisions in the NCC;
- a copy of the fire engineering report for fire engineering performance solutions;
- the analysis, test results, or other information relied on to verify compliance;
- any ongoing maintenance or conditions that must be met to ensure the performance solution complies over the life of the building;
- the building surveyor's reason(s) for accepting the performance solution; and
- the owner's consent.

The CDC may reference specific supporting documents if any of this information is contained within supporting documents specified in the CDC.

Details of any performance solution(s) must be noted on the occupancy permit to improve lifelong building compliance. In relation to existing buildings, there is a need to alert building practitioners of existing performance solution(s) if they plan to initiate alterations or additions to existing buildings. In addition, where compliance of a performance solution relies on occupancy or maintenance conditions over the life of the building, the conditions must be detailed on the occupancy permit.

This reform is modelled on requirements in Queensland and Victoria.⁸⁴

In addition, performance solutions could be subjected to independent, third party review, to further increase accountability and compliance.

Advantages

This proposal would:

- provide a more rigorous framework to document, assess and approve performance solutions;
- improve compliance by increasing scrutiny of performance solutions;
- improve life-time compliance of buildings, by noting any occupancy or maintenance conditions on the occupancy permit;
- reduce incidences of non-compliant work;
- improve the standard of building documentation, thus reducing the cost of variations during construction;
- give building owners greater confidence in the compliance of their building; and
- align WA legislation more closely with that in other jurisdictions.

⁸⁴ *Building Act 1975* (Qld) s26 and 68A; *Building Regulations 2018* (Vic) r38 and 124.

Disadvantages

Complying with this requirement will likely increase documentation costs. This cost will be offset by reduced variations and rectification work, and is likely to reduce over time as this becomes a normal part of providing documentation.

Questions

53. Do you support Proposal 20, in whole or in part? Please specify.
54. Do you think the proposed documentation to support a CDC is appropriate? If not, what changes do you suggest?
55. Do you think this proposal is likely to increase documentation costs in the long term? If so, by how much?
56. Do you foresee any other costs or benefits to implementing this proposal?
57. Do you think any performance solutions should be subject to third-party review? Please specify.
58. Do you think the new requirements governing performance solutions, proposed in NCC 2019 Amendment 1, will remove the need to implement Proposal 20?

7.8 Retrospective building approval

Background

Recommendation 15 of the *Building Confidence* report states:

15. That each jurisdiction provides a transparent and robust process for the approval of performance solutions for constructed building work.

The *Building Confidence* report noted that, where a completed building is found not to comply with the NCC's deemed-to-satisfy provisions, often a performance solution is reverse-engineered to fit the building as it was constructed, rather than rectifying the building work. "For example, performance solutions are currently being offered to justify combustible cladding remaining on buildings."⁸⁵ This can be done without the owner's knowledge, as the builder deals directly with the building surveyor to resolve the issue.

WA legislation already provides for retrospective approval of existing buildings, through certificates of building compliance⁸⁶ and applications under section 51 of the Building Act.⁸⁷ The certificate of building compliance "must state that the building or incidental structure substantially complies with each applicable building standard".⁸⁸ However, the existing provisions in WA do not specifically address performance solutions.

⁸⁵ Shergold and Weir, op cit p 30

⁸⁶ *Building Act 2011* (WA) s57

⁸⁷ *Building Act 2011* (WA) Part 4 Division 2

⁸⁸ *Building Act 2011* (WA) s57(3)

Proposals for reform

Proposal 21 – Prescribed process to approve retrospective performance solutions

Proposal 21: Amend the Building Act to prescribe a process for retrospective approval of performance solutions.

This proposal involves amending the Building Act to provide a power to prescribe a process for retrospectively approving performance solutions for completed buildings. The process would require certificates of construction or building compliance to state whether the building contains any performance solutions that were not approved under a building permit. If so, the certificate would be required to be supported by documentation demonstrating:

- what NCC performance requirements apply;
- how the building meets the performance requirements;
- how the performance solution differs from:
 - the deemed-to-satisfy provisions in the NCC, and/or
 - the design that was approved under the building permit;
- for fire engineering performance solutions:
 - documentation was submitted to the FES Commissioner for advice, and
 - the FES Commissioner's advice and response to the FES Commissioner, if applicable;
- any inspection or test results or other information relied on to verify compliance;
- the building surveyor's reason(s) for accepting the performance solution; and
- the owner's consent.

In addition, retrospective performance solutions could be subjected to independent, third party review, to further increase accountability and compliance. Third-party reviews are proposed for high-risk design and building work in [section 7.10](#) of this CRIS, under recommendation 17 of the *Building Confidence* report.

Details of the performance solution would then be noted on the occupancy certificate.

Building owners would have the right of appeal if they do not consent to a proposed performance solution. This proposal is intended to protect building owners and occupants, if unauthorised building work is completed.

Implementing this proposal would align WA's legislation more closely with requirements in Queensland and Victoria.⁸⁹

Advantages

This proposal would:

- provide a more rigorous framework to assess and approve performance solutions for non-compliant work;
- improve building compliance by increasing scrutiny of retrospective approvals;
- reduce the incidences of non-compliant work causing unsafe buildings; and
- align WA legislation more closely with other Australian jurisdictions.

⁸⁹ *Building Act 1975* (Qld) s26 and 68A; *Building Regulations 2018* (Vic) r38 and 124

Disadvantages

Complying with this requirement will likely increase documentation costs, however, people should have always been documenting performance solutions.

Questions

59. Do you support Proposal 21? Why, or why not?
60. Do you think the proposed documentation to support a certificate of compliance is appropriate? If not, what changes do you suggest?
61. Do you think this proposal is likely to increase documentation costs in the long term? If so, by how much?
62. Do you think that retrospective performance solutions should be subject to independent third-party review?
63. Do you foresee any other costs or benefits to implementing this proposal?

Proposal 22 – Certain types of unauthorised work to be reported

Proposal 22: Require certain types of unauthorised or non-compliant work to be reported to permit authorities and Building and Energy.

Some types of unauthorised and/or non-compliant work present greater risks than others. For example: combustible building materials increase the risk to the safety of a building's occupants; and non-compliant water proofing in wet areas presents a risk to occupant health through mould growth, and is likely to result in significant rectification costs.

This proposal would prescribe certain types of high-risk, non-compliant building work which building surveyors would be required to report to permit authorities. Permit authorities would then pass the information on to Building and Energy. This data would enable both permit authorities and Building and Energy to target their education and enforcement resources to greatest effect.

Advantages

This proposal would ensure that regulators are made aware of the level and types of non-compliant work, enabling better targeting of enforcement and education resources.

Questions

64. Do you support Proposal 22? Why, or why not?
65. Do you foresee any other costs or benefits to implementing this proposal?
66. What types of non-compliant work do you think should be required to be reported?

Proposal 23 – CCC to certify compliance with standards

Proposal 23: Amend the Building Act to require a certificate of construction compliance to certify that the building meets applicable standards.

Currently, a CCC requires a building surveyor to state that “the building has been completed in accordance with the plans and specifications that are specified in the

applicable certificate of design compliance”.⁹⁰ The CDC states that a building completed in accordance with the plans and specifications will comply with the NCC.⁹¹ However, if a permit is mistakenly issued for a non-compliant building design, the wording of s56(2)(a) of the Building Act allows a CCC to be issued so long as the completed building complies with the (mistakenly) approved plans and specifications.

Where a non-compliant building is constructed in accordance with non-compliant plans, this clause enables a building surveyor to issue a CCC without requiring any rectification of the non-compliant work. While not common, this practice contravenes the intent of the Act. It is proposed to amend the Building Act to clarify that a CCC must state that the building complies with the applicable standards.

Advantages

This proposal would:

- clarify the intention of the Building Act;
- give permit authorities and building surveyors more scope to enforce compliance with NCC requirements; and
- have no cost to implement.

Questions

67. Do you support Proposal 23? Why, or why not?
68. Do you foresee any other costs or benefits to implementing this proposal?

7.9 Variations during construction

Background

Recommendation 16 of the *Building Confidence* report states:

16. That each jurisdiction provides for a building compliance process which incorporates clear obligations for the approval of amended documentation by the appointed building surveyor throughout a project.

Under WA legislation, the requirement to seek approval for variations that change the way a building complies with the NCC is implied by the requirement to have a building permit to do building work.⁹² The intent of the legislation is clarified in Industry Bulletin 003, published by Building and Energy in May 2012. IB003 clarifies what types of work is exempt from requiring a building permit, and concludes that:

Where the variation requires a building permit then an application should be made as soon as practicable and prior to the builder submitting a notice of completion under section 33 of the Building Act.⁹³

However, variations to the design are common during construction, and should therefore be explicitly governed by legislation. This would better align WA legislation with other Australian jurisdictions.⁹⁴

⁹⁰ *Building Act 2011* (WA) s56(2)(a)

⁹¹ *Building Act 2011* (WA) s19(3)

⁹² *Building Act 2011* (WA) s9

⁹³ Building and Energy, *IB003: Variations and amendments to building work* (Govt of WA, May 2012)

⁹⁴ *Building Act 2016* (Tas) s148; *Planning Act 2016* (Qld) s78-79; *Building Act 2004* (ACT) s31-32.

Proposal for reform

Proposal 24 – Variations to be approved during construction

Proposal 24: Amend the Building Act to provide a process to manage variations to the approved design during construction.
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This proposal involves amending the Building Act to provide a process to manage variations to the approved design during construction. Under this proposal, before performing any building work that varies from the building permit, builders will be required to notify the building surveyor, who will determine if the change affects the way the building complies with the NCC. If it does not, then the work may be undertaken without further documentation or approval. If it does, then the builder must:

1. Document the variation, including how it meets NCC performance requirements;
2. Submit the variation to the FES Commissioner for comment, if it affects fire safety compliance;
3. Respond to any comments the FES Commissioner makes;
4. Obtain an amended CDC from the building surveyor; and
5. Obtain an amended building permit from the relevant permit authority.

After meeting these conditions, the building work may be commenced.

It may not always be practicable to document a variation before work commences, for example, if a departure from the approved plans and specifications is only noticed after construction has commenced. In this case, the Building Act may provide that variations be documented either before the work is carried out, or the earlier of:

- a. Within 21 days of the work being carried out, or
- b. Prior to the issue of a certificate of construction compliance.

If the variation request is not made until after the work is commenced, and the building surveyor or permit authority do not approve the variation, the builder would be required to rectify the work at their own expense. This would encourage builders to seek approval before carrying out the variation, and put the onus on them to correct it at their expense if they get it wrong.

Advantages

This proposal would:

- provide a more rigorous process to manage variations during construction, thereby reducing instances of non-compliance in completed buildings; and
- reduce the time to certify compliance and obtain an occupancy permit for the completed building, because variations were approved during construction.

Disadvantages

Disadvantages of this proposal include:

- documenting, certifying and approving variations during construction may affect construction timelines and potentially hold up work on site; and
- increased documentation requirements may increase costs for consumers. However, this would be offset by reduced costs to obtain an occupancy permit, and reduced risk of non-compliance and associated rectification costs.

Questions

69. Do you support Proposal 24? Why, or why not?
70. Do you think the three steps proposed above, to document, certify and approve variations, are reasonable? If not, what changes do you suggest?
71. Do you think the proposed process to manage variations that are begun without approval is likely to result in compliant building work? Why, or why not?
72. Do you think Proposal 24 will address the issues presented by design-and-construct projects? Is there anything you would change to cater for these projects?
73. Do you foresee any other costs or benefits to implementing this proposal?

7.10 Third party review of design work

Background

Recommendation 17 of the *Building Confidence* report states:

17. That each jurisdiction requires genuine independent third party review for specified components of designs and/or certain types of buildings.

The work of building design professionals is nominally reviewed by the building surveyor, who assesses the design and certifies that it meets NCC requirements. However, building surveyors are not qualified to assess all aspects of design work. Designs by engineers or other technical experts are accepted, without in-depth review, as being compliant. This means engineers may self-certify their work.

There is therefore an argument for legislation to require independent third-party review of high-risk engineering designs. Life-safety risks in buildings are posed by structural failure and fire. It is therefore proposed that, for high-risk buildings (see Table 2), the structural design and required fire safety features be subjected to third-party review.

Third-party review is recognised as a means of improving built outcomes. For example, the Department of Finance – Building Management and Works division employs a building research and technical services team to undertake design and documentation reviews for all state government projects that it manages valued over \$1 million.⁹⁵ The Department of Health also recommends that the design of high-risk wastewater collection and treatment plants be subjected to third-party review.⁹⁶

It is acknowledged that the Australian Building Codes Board is also developing a ‘proof engineer’ or ‘proof expert’ model of third party review for high-risk buildings. The outcomes of that national work will inform the final shape of this proposal.

⁹⁵ Department of Finance, *Working with BMW* (Government of Western Australia, not dated)

⁹⁶ Department of Health, *Guidance note for independent third party engineering verification* (Government of Western Australia, 2016)

Proposal for reform

Proposal 25 – Third-party review of high-risk design work

Proposal 25: Amend the Building Act to require independent, third-party reviews for high-risk design elements.

Identifying review requirements

The legislation would provide two means to identify the review requirements for a building project:

1. A prescribed approach, whereby one-size-fits-all review requirements are prescribed according to risk triggers (see Table 2); or
2. A risk-based approach, whereby project-specific review requirements are identified by a full, project-specific risk analysis.

The flexibility of the risk-based approach to identify review requirements is intended to balance the rigour of prescribed review requirements. Providing the risk-based approach allows the prescribed review requirements to capture more risks, because the risk-based approach will ensure that individual projects are not unduly burdened by the one-size-fits-all prescribed approach.

Further details of the prescribed and risk-based approaches proposed to identify third-party review requirements are discussed below.

Prescribed approach

The prescribed approach is the simplest way to identify third-party review requirements for a project. Third-party reviews would be undertaken in accordance with the review requirements identified in Table 2. Buildings that meet more than one risk trigger – for example, a class 2 building that is required to be type A construction, and is located in a designated bushfire prone area – must obtain all the reviews required for each risk. Buildings that meet several risk triggers requiring the same review need only get that element reviewed once; for example a building that is required to be Type A construction and is located in wind region C will require its structural engineering to be reviewed once.

See Appendix D – Table 13 for estimated costs to obtain third party reviews for all class 2-9 building projects in accordance with the risk triggers identified in Table 2.

The ABCB is working to define “building complexity”, to create a head of power in the NCC under which to introduce increased supervision and other governance requirements to manage high-risk, complex buildings.⁹⁷ Building and Energy will consider any national model to govern complex buildings when defining prescribed risk triggers for third-party review in WA.

⁹⁷ Australian Building Codes Board, *NCC Governing requirements and common schedules 2019 amendment 1* (2019)

Table 2: Type of review(s) proposed for different risk triggers

Risk trigger	Review requirements
Building designs that are required to be NCC type A fire resisting construction (as defined in table 3).	<ul style="list-style-type: none"> • Structural engineering • Fire hydrant systems, pumps, tanks and boosters • Fire suppression systems
Buildings located in wind regions C or D.	<ul style="list-style-type: none"> • Structural engineering
Buildings with earthquake design category of EDCII or EDCIII as per AS 1170.4.	<ul style="list-style-type: none"> • Structural engineering
Buildings that have importance levels 3 or 4 (as defined in table 4).	<ul style="list-style-type: none"> • Structural engineering • Means of escape (fire isolated exits, pathways and stairways) • Fire detection system • Emergency communication systems (warning (BOWS) and control (EWIS)) • Fire hydrants, pumps, tanks and boosters • Fire suppression systems
Class 2, 3 and associated class 10 buildings located in designated bushfire prone areas.	<ul style="list-style-type: none"> • BAL assessment • Bushfire safety certification (if applicable)
Structures that incorporate: <ul style="list-style-type: none"> • Steelwork that is construction category CC3 or CC4, under AS/NZS 5131; • Concrete required to have compressive strength greater than 60MPa; • Fatigue-sensitive components; • One or more members or connections that support more than 5 tonnes of mass which would collapse if removed; and/or • Overhangs weighing more than 1 tonne above public walkways. 	<ul style="list-style-type: none"> • Structural engineering
Buildings that present a special fire hazard, as defined in NCC Vol 1, E1.10.	<ul style="list-style-type: none"> • Means of escape (fire isolated exits, pathways and stairways) • Fire Brigade mobilising • Fire detection system • First aid firefighting equipment • Fire hydrant systems, pumps, tanks and boosters • Fire suppression systems
Building work that affects other land, and requires a Form BA 20.	<ul style="list-style-type: none"> • Any engineering or technical certification relating to the work affecting other land
Buildings containing atriums.	<ul style="list-style-type: none"> • Fire separation of atrium (NCC part G3)
Large isolated buildings.	<ul style="list-style-type: none"> • Sprinkler system and vehicle access (NCC clauses C2.3, C2.4, E1.5 and table E2.2a)
Buildings containing basements.	<ul style="list-style-type: none"> • Fire safety provisions (NCC clause D1.2(c) and tables E2.2a and E2.2b)
Buildings of complexity levels 3 or 4, as defined in NCC 2019 Amendment 1.	<ul style="list-style-type: none"> • Structural engineering • Fire hydrant systems, pumps, tanks and boosters • Fire suppression systems
Risk-based inspection regimes.	<ul style="list-style-type: none"> • Project risk analysis
Completed buildings that are subject to retrospective performance solutions.	<ul style="list-style-type: none"> • Any certification relating to the performance solution

Table 3: Type of fire resisting construction required⁹⁸

Rise in storeys	Class of building 2, 3, 9	Class of building 5, 6, 7, 8
4 or more	A	A
3	A	B
2	B	C
1	C	C

Table 4: Importance levels of buildings and structures⁹⁹

Importance level	Building type
1	Buildings or structures presenting a low degree of hazard to life and other property in the case of failure
2	Buildings or structures not included in Importance Levels 1, 3 and 4.
3	Buildings or structures that are designed to contain a large number of people.
4	Buildings or structures that are essential to post-disaster recovery or associated with hazardous facilities.

Risk-based approach

The risk-based approach would require design and certification professionals engaged on the project team to identify project-specific risks relating to their area of expertise, and nominate which elements of the design and certification require review. This approach would be supported by guidelines to assist in risk analysis. Design and certification professionals would have to consider risk factors such as:

- site characteristics, including wind and seismic loads, geotechnical features especially where structures or services may be undermined, and corrosion rates;
- dynamic loads, including people, animals, vehicles and machinery;
- robustness and redundancy levels incorporated into all aspects of the design;
- design complexity, including buildability and the degree of innovation incorporated into the design;
- prefabrication complexity and value, and likely experience of the factory in manufacturing to Australian standards;
- fabrication complexity and the degree of precision required, including potential construction difficulties relating to access or non-ideal weather conditions; and
- material characteristics, including the reliability of the supply chain, and the degree of proven performance.

Each member of the project design team would be required to produce, or contribute to, a project-specific risk matrix. The risk matrix would list all the risks identified for the project, and assign a risk rating for each risk based on the likely probability and consequence of each risk eventuating. (See Table 5) The risk matrix would then need to detail what controls are being used to manage each risk, including any third-party reviews, and inspections. The risk matrix could additionally be used to complement a risk-based inspection regime for construction work, as outlined in [Section 7.11](#).

⁹⁸ Australian Building Codes Board, *Building Code of Australia Vol 1* (Commonwealth of Australia, 2019) table C1.1

⁹⁹ Australian Building Codes Board, op cit, table B1.2a

The risk matrix would form part of the building permit application, and the permit authority would be responsible for checking that third-party reviews and inspections are identified and undertaken.

Table 5: Risk assessment matrix

	Consequence	Low Failure not likely to endanger human life <i>or</i> cause permanent financial impairment, <i>or</i> cause environmental damage	Ordinary Failure may cause up to 1 death, <i>or</i> financial ruin for a family or small business, <i>or</i> reversible environmental damage (cost \$10,000-100,000)	Severe Failure may cause 1-5 deaths, <i>or</i> financial ruin for several small businesses, <i>or</i> one major business, <i>or</i> severe, reversible environmental damage (>\$100,000)	Exceptional Failure may cause >5 deaths, <i>or</i> have severe impact on State or community finances, <i>or</i> cause irreparable environmental damage.
Likelihood					
Likely F=10E-6, ~20yrs Several times in the life of the building		Moderate	High	Extreme	Extreme
Normal F=10E-7, ~50yrs Once or twice in the life of the building		Minor	Moderate	High	Extreme
Unlikely F=10E-8, 100yrs No more than once in the life of the building		Minor	Moderate	High	Extreme
Rare F=10E-9, ~500yrs Unusual in the life of the building		Minor	Minor	Moderate	High

Engaging a reviewer

It is proposed to use recognised, industry-based, accreditation schemes – such as Engineers Australia’s National Engineering Register (NER), or Professionals Australia’s Registered Professional Engineer (RPEng) – to identify suitably-qualified reviewers. Anyone registered, under a recognised accreditation scheme, as a professional engineer in the relevant area of practice would be able to undertake review work.

Building and Energy also are considering options to register engineers in WA, to fulfil recommendation 1 of the Building Confidence Report. It is likely that any such registration scheme will also use industry-based accreditation schemes to assess the qualifications and experience of people to be registered.

Anyone requiring the services of a reviewer would be free to seek quotes and engage an appropriately-registered, independent person to undertake review work. The only further restriction on engaging a reviewer is that the reviewer must be independent to the project. Independence would be defined in similar terms to that of an independent building surveyor, as per [proposal 10](#).

An appropriately qualified person would most likely be an equivalently registered engineer. Note that reviewing required fire safety features may cross multiple disciplines. Identifying appropriately qualified reviewers to undertake this work will need to consider what expertise are required – to review fire safety features, reviewers may require expertise in:

- hydraulic engineering (hydrants, fire hose reels, sprinkler systems);
- electrical engineering (emergency power, warning and intercom systems);
- fire engineering (fire safety performance solutions); and
- building surveying (material fire exit pathways and stairways).

Once engaged, the reviewer's contract would not be able to be terminated early unless:

1. Both parties to the contract mutually agree;
2. A court orders that a new reviewing engineer be appointed; or
3. The reviewer is unable to fulfil their contractual obligations due to:
 - a. No longer holding the required registration,
 - b. Declaring bankruptcy or insolvency, or
 - c. Death.

Reviewer's deliverables

The reviewer would be required to:

- assess the documentation, including any calculations or modelling, to verify compliance.
- produce a written report documenting the review process, including details of any:
 - verification calculations, and
 - amendments that were made to the design as a result of the review.
- certify that the design, as documented, appears to comply with the applicable standards.
- put their name and registration number on each document that they review.

Estimated cost of review

Undertaking third-party reviews in accordance with the prescribed risk-triggers identified in Table 2 is estimated to increase the cost of construction for class 2-9 buildings valued over \$1 million by an average of 0.507 percent. This figure varies depending on the project value. Projects valued \$1-5 million face the highest percentage cost increase – 0.679 percent – while projects valued over \$20 million face an increase of 0.354 percent. (See Appendix D – Table 13)

This cost increase would be passed on to consumers by businesses.

Projects valued below \$1 million are excluded from this cost estimate, as they are unlikely to require review.

Advantages

Advantages of this proposal include:

- increased compliance by increasing the oversight of engineering design work;
- potentially improved documentation standards by increasing oversight of engineering design work;
- projects that adopt the risk-based approach could use the risk-assessment matrix to complement a risk-based inspection regime (see [section 7.11](#));
- more accurate design and documentation, resulting in reduced variations and rectification work during construction;
- the dual approach of either prescribed or risk-based reviews addresses the maximum number of compliance risks;
- prescribed review requirements will be easy to implement and audit; and
- increased public confidence in building compliance levels.

Disadvantages

Disadvantages of this proposal include:

- the review work would increase project construction costs by approximately 0.5 percent (this cost would be offset by reduced variations, delays, rework and the associated potential for contractual disputes and legal action);
- providing a risk-based approach could be difficult to implement and audit;
- the risk-based approach is not likely to be applied consistently by different people for different projects. Identifying risks and, particularly, assigning risk ratings is highly subjective; research has found that:
 - different risk assessors may assign vastly different ratings to the same hazard;
 - even following lengthy reflection and learning, variance remains high; and
 - the disparate ratings are due to factors such as fundamentally different worldviews, beliefs, and a panoply of psychosocial factors that are seldom explicitly acknowledged;¹⁰⁰ and
- it will likely require increased auditing resources for regulators to assess the rationality of risk analyses and proposed review schedules.

Questions

74. Do you support Proposal 25, in whole or in part? Please specify.
75. Do you think the proposed triggers and review requirements identified in Table 2 are appropriate? Is there anything that you would add or delete?
76. Do you support reviewers being engaged privately? Why, or why not?
77. Do you think the proposed conditions to engage and terminate a reviewer are sufficient?
78. Do you foresee any other costs or benefits to implementing this proposal?
79. Proposal 25 is for independent peer review of medium-high risk design elements. Do you think there is a need for expert review, undertaken by a proof engineer appointed by the regulator, for any types of design work? Please specify.

7.11 Mandatory inspections

Background

Recommendation 18 of the *Building Confidence* report states:

18. That each jurisdiction requires on-site inspections of building work at identified notification stages.

Most Australian jurisdictions require that construction work be inspected. The extent and number of inspections varies significantly between jurisdictions. Unlike residential buildings, the number and timing of inspections for commercial buildings are often not prescribed but left to the certifying building surveyor to determine. This is because the diversity of commercial buildings makes it difficult to prescribe inspection points.

The *Building Confidence* report identifies the problems for inspections as being:

- lack of sufficient inspections, possibly worsened by different interpretation of the requirements where inspections are left to building surveyors to specify;

¹⁰⁰ David Ball and John Watt, "Further thought on the utility of risk matrices" *Risk Analysis* vol 33 no 11 (2013) p 2068

- inspections undertaken by a range of persons, including registered and unregistered people; and
- accountability of inspections may be undermined due to possible conflicts of interest, for example if the private building surveyor who certified the documents also inspects the construction work he or she may be unwilling to act on instances of non-compliance.¹⁰¹

WA has one of the most minimal inspection regimes in Australia for all buildings. In WA currently the only required inspections are for:

- safety barriers for private swimming pools;¹⁰² and
- required fire safety systems in class 2-9 buildings (see Table 6).¹⁰³

Table 6: Inspections required for class 2-9 buildings constructed in WA¹⁰⁴

System to be tested	When test is to be conducted
Fire hose reel system required under EP1.1 and EP1.5	On completion of the installation of the system
Fire hydrant system required under EP1.3 and EP1.5	On completion of the installation of the system
Automatic fire suppression system required under EP1.4	On completion of the installation of the system
Fire detection, warning, control and intercom systems required under EP2.1 and EP2.2	On completion of the installation of the system
Air handling systems that incorporate smoke control provisions required under EP2.2	On completion of the building work
Smoke/heat venting systems required under EP2.2	On completion of the installation of the system
Sound systems and intercom systems for emergency purposes required under EP4.3	On completion of the installation of the system

Table 6 lists the required inspections for commercial buildings. The required inspections are not exhaustive to determine compliance with all fire safety requirements for a building and do not cover any other aspect of construction. In addition, the Building Act and Regulations do not prescribe who should undertake the inspections. It is currently up to the builder to be satisfied that inspections were done by a suitably qualified and experienced person.

Question

80. Do you think the tests required for active fire safety systems are adequate?
81. Is there any inspection or test that you'd add for active fire safety systems?

No other inspections are prescribed for commercial buildings. However, builders of commercial buildings are required to obtain a CCC from a building surveyor. The CCC is then submitted to the permit authority to obtain an occupancy permit before the building may be occupied.¹⁰⁵ The CCC certifies that the building has been completed in accordance with the plans and specifications specified in the certificate of design compliance, and that the building can be safely occupied. This implies that a building

¹⁰¹ Shergold and Weir, op cit p 33

¹⁰² Building Regulations 2012 (WA) r 28

¹⁰³ Building Regulations 2012 (WA) r 27, sch 3.

¹⁰⁴ Building Regulations 2012 (WA) sch 3 – inspections or tests of systems

¹⁰⁵ Building Act 2011 (WA) s 41(2)

surveyor signing a CCC is required to inspect the building to confirm that this is so. Indeed, the CCC form already contains a field for the certifying building surveyor to note the date of the site inspection.¹⁰⁶

Nevertheless, a single inspection by a building surveyor at the end of construction is not sufficient to determine if a building complies with the required standards. Appropriately qualified people should inspect the building at various points throughout the construction process, when the footings, structure and other critical elements are still exposed. A CCC goes some way to address this need by allowing technical documents to be attached.¹⁰⁷ Technical documents tend to be certificates from engineers, who inspect the construction of the elements they designed, for example, structural or mechanical.

There is currently no explicit legislative requirement for a building to be inspected at any prescribed points during construction. The policy intent of the existing legislation was to allow the building surveyor who is being engaged to provide the CCC to list the inspections that they need in order to be able to sign the CCC.

Investigations into the levels of compliance in WA buildings, although not extensive, have identified significant non-compliance in the areas inspected. For example, Building and Energy inspected metal roof construction for 123 houses in Perth and the southwest against 12 inspection points.¹⁰⁸ This investigation found that:

The results for satisfactory construction varied across the 12 general inspection points from very low (11%) in relation to corrosion protection to moderate (63%) for battens properly tied down within 1200 mm of the edge of the roof. Overall, when the results from the 12 inspection points were averaged, this achieved an overall satisfactory rate of 33% ...

Only two construction sites were found to be satisfactory across all the relevant inspection points and 14 sites were identified with zero satisfactory relevant inspection points.

Throughout the general inspection a steady improvement was observed.¹⁰⁹

It was the view detailed in the *Building Confidence* report that inspections during construction are required to increase compliance in buildings. Inspections are intended to identify instances of non-compliance early, when it is easy to rectify and so save money and potentially lives.

Estimated inspection workload

The estimated inspection workload in WA is approximately 73,248 inspections per year, and rising. This estimate is based on the following data from 2018:

- 17,477 building construction projects, including:
 - 14,137 residential building projects;
 - 3,340 commercial building projects; (see Appendix D - table 12)
- four inspections per residential building; and
- five inspections per commercial building.

¹⁰⁶ Building and Energy, *Form BA17 - Certificate of Construction Compliance* (Government of Western Australia, 30 June 2016) p 2

¹⁰⁷ Building and Energy, *Form BA17 - Certificate of Construction Compliance* p 1

¹⁰⁸ Building and Energy, *Roof construction* op cit p 14

¹⁰⁹ Building and Energy, *Roof construction* op cit p 29

(Housing figures are included here because the *Building Confidence* report recommends inspections for all classes of building. WA has a limited pool of inspectors qualified to undertake all of these inspections.)

Large commercial buildings are likely to require more than five inspections. For example, for multi-storey buildings, each storey may need to be inspected as the building is constructed. However, as can be seen from Table 12 (at Appendix D), the bulk of commercial building projects are valued under \$1 million, so are not likely to be large, multi-storey buildings. Therefore, the increased number of inspections for larger projects should not significantly increase the total workload.

Estimated cost of inspections

Inspecting construction work in accordance with the prescribed risk-triggers identified in Table 9 is estimated to increase the cost of construction for all class 2-9 buildings by an average of 0.292 percent. This figure varies depending on the project value. Projects valued under \$1 million face the highest percentage cost increase – 0.499 percent – while projects valued over \$20 million face an increase of 0.149 percent (see Appendix D – Table 14). This cost increase would be passed on to consumers by businesses.

Inspectors qualifications

Legislation would need to specify the minimum qualifications for inspectors. While private building surveyors and permit authorities are responsible for ensuring compliance, building surveyors are not qualified to assess engineering construction. Engineers may be better qualified to undertake some inspections. Other professionals, such as architects and building designers, may also be qualified to inspect.

Allowing other building professionals to undertake inspections would spread the workload across more practitioners. There are only 388 registered building surveyor practitioners in WA, including 264 level 1 practitioners and 164 level 2 practitioners.¹¹⁰ Engineers Australia, on the other hand, has over 13,860 WA-based members. Not all of these would be appropriately qualified to inspect buildings, but the quantum is significantly larger than the 388 building surveying practitioners.

Questions

82. What building professions do you think are qualified to do inspections?
83. Do you think WA has enough appropriately qualified people to inspect all building work?

Prefabrication

Building inspections traditionally focus on on-site construction work. However, commercial buildings increasingly involve off-site fabrication of high-value, high-risk components. Precast concrete and structural steel components are often prefabricated, and even whole buildings. For example, whole apartments may be constructed in factories, transported to site and assembled into multi-storey apartment buildings.

It is common for engineers and builders to inspect factories where building elements are fabricated. For example, John Holland staff made more than 20 visits to the Chinese factory that manufactured the vitreous enamel panels for the façade of the

¹¹⁰ Information from DMIRS building surveyor register, March 2019

Perth Children’s Hospital.¹¹¹ Further panels were sourced from Germany, and the façade engineer inspected the factory’s manufacturing process and quality assurance procedures.¹¹² However, factory inspections of prefabricated building work are not mandated in legislation.

It is considered appropriate that any inspection regime adopted in WA should provide scope for permit authorities and building surveyors to require the inspection of prefabricated building elements for two reasons. Firstly, because technological advancements will likely lead to more prefabrication in future. Secondly, building elements and materials are increasingly being sourced internationally, and prefabricated in countries not bound by Australian Standards.

However, prefabrication in a factory does not require the same level of inspection as site work. Factory conditions are more highly controlled, and the work can be machined to a more precise level than can be achieved on site.

Proposal for reform

Proposal 26 – Introduce mandatory inspections for all class 2-9 buildings

Proposal 26: Amend the Building Act and Regulations to mandate inspections for all class 2-9 buildings, via either Option A or Option B.

Two different options are proposed to implement inspections for commercial building construction in WA. These options incorporate various combinations of the inspection options presented in Table 7. Table 8 compares the two inspection options.

Note that “inspection” means a physical inspection of the work being carried out on location, and must be done in person. It may not be done remotely.

¹¹¹ Building and Energy, *Perth Children’s Hospital audit – final report* (Government of Western Australia, Apr 2017) p 64

¹¹² *Ibid*, p 65

Table 7: Elements of an inspection regime, and associated implementation options and considerations.

	Options	Considerations
Number and timing of inspections	Inspections occur at prescribed notification stages.	Commercial buildings are too diverse for prescribed notification stages to manage risks as effectively as a project-specific approach.
	Project-specific, risk-based inspection stages identified for each project.	Requires an appropriately qualified person to identify project-specific risks for each project. Will require independent third-party review to ensure the project risk analysis is appropriate.
	Combination of prescribed and project-specific inspections.	Some prescribed inspection points, with scope for certifier and/or permit authority to specify project-specific inspections too. This risks the minimum allowed becoming the maximum undertaken.
What to inspect	Site work only.	Does not address pre-fabrication.
	Site work and off-site prefabrication work.	Commercial building projects increasingly involve off-site fabrication of high-value, high-risk components.
Who should identify inspections	Legislation, through prescribed notification stages.	Commercial buildings are too diverse for prescribed notification stages to be as effective as a project-specific approach.
	Certifying building surveyor	The certifying building surveyor, as a private practitioner, would be subjected to market pressures to minimise the number of inspections.
	Permit authority	Permit authorities may not employ a level 1 building surveyor, so may not have anyone qualified to prescribe inspections for class 2-9 buildings.
	A combination of the above options.	Some prescribed inspection points, with scope for certifier and/or permit authority to specify project-specific inspections too.
Who should inspect	Certifying building surveyor	May be a conflict of interest for the certifier to inspect the construction of designs they certified.
	Independent private building surveyor(s)	Would need to familiarise him or herself with the building before inspecting. Likely to be subject to market pressures.
	Private engineer(s)	Likely to be best qualified to inspect construction of engineering design elements.
	Permit authority	Independent and not subject to market pressures. However, would likely have to contract some or all inspection work out to private contractors.
	A combination of the above options.	Legislation would need to define how to identify appropriately qualified people to undertake inspections, and to what extent inspection duties may be contracted out.
What happens if non-compliance is identified	Permit authority issues and enforces a building order.	Regulatory functions are best undertaken by an impartial regulator with incentive and resources to enforce compliance.
	Private inspector issues and enforces a building order.	Private individuals, subject to market forces, don't have a regulator's incentive to enforce compliance, and may not have the resources to prosecute non-compliance.
	A combination of the above options.	Private inspector issues a rectification notice, permit authority enforces compliance if required.
How should the cost be set	Market forces	Allows consumers to seek quotes to obtain the best value, and enables inspectors to compete in a free market.
	Legislation to prescribe cost	Greater certainty for consumers, but would represent an average cost, with no consideration of specific project or market factors.

Table 8: Comparison of inspection elements included in Options A and B

	Option A Inspections by permit authorities	Option B Inspections by private sector
Number and timing of inspections	Either prescribed or risk-based inspections.	Either prescribed or risk-based inspections.
What to inspect	Prescribed stages for site work only. Guidelines to identify project-specific inspections may address inspections of off-site prefabrication.	Prescribed stages for site work only. Guidelines to identify project-specific inspections may address inspections of off-site prefabrication.
Who should identify inspections	Inspections either prescribed in legislation or identified by risk analysis by the certifying building surveyor.	Inspections either prescribed in legislation or identified by risk analysis by the certifying building surveyor.
Who will do inspection work	Permit authority, likely via private contractors.	Project design engineers and building surveyor.
What happens if non-compliance is identified?	Inspector notifies permit authority, which issues and enforces a rectification order if required.	Building surveyor issues a notice of rectification, and states on the CCC if notice(s) have been complied with <u>or</u> notifies permit authority if notice(s) is not complied with.
How should the cost be set	Legislation to prescribe cost.	Market forces.

Prescribed notification stages

Prescribed notification stages for inspection and the features to be inspected, for both Options A and B, are listed in Table 9.

Table 9: Prescribed inspection points and features to be inspected

Feature to be inspected	Timing of inspection
Footings and reinforcing	Before covering the foundations of the work.
Reinforcing	Before pouring structural concrete.
Structural framework	Before installing internal or external covering over structural elements.
Required passive fire safety features	Before cladding or building over junctions and penetrations to any building element required to resist fire or smoke spread.
Completed building	At the completion of the building work, before occupation

These prescribed notification stages are based on legislative requirements in Tasmania, where they apply to all classes of building.¹¹³

The prescribed inspection stages are limited to the inspection of passive fire safety features. Inspections for active fire safety systems – such as sprinklers, hydrants, detection and alarm systems – are already addressed through mandatory test requirements in the Building Regulations (see Table 6).

¹¹³ Building Regulations 2016 (Tas) r18(1)

Prescribed notification stages do not always translate to a single point in the construction of a commercial building. For example, class 2-9 buildings may have multiple structural concrete pours, and there is unlikely to be a single point when all passive fire safety features are exposed to inspect. The prescribed notification stages will therefore be accompanied by:

1. sampling requirements for large, multi-storey buildings; and
2. a risk-based option, similar to the dual, prescribed and risk-based options for identifying third-party review requirements (see [Proposal 25](#)).

Sampling

It is generally impracticable to inspect every element of a building in accordance with the prescribed notification stages in Table 9. Inspections undertaken in accordance with these notification stages would therefore need to include a representative sample of the building work, to be reasonably certain that the whole building is likely to comply.

For example, regulations could define a certain percentage of penetrations to fire-resistant walls that must be inspected. In New South Wales class 2-9 buildings must be inspected as follows:

1. All class 2-9 buildings:
 - a. after the commencement of the excavation for, and before the placement of, the first footing;
 - b. prior to covering any stormwater drainage connections; and
 - c. after the building work has been completed and prior to any occupation certificate being issued in relation to the building.
2. Class 2, 3 or 4 building:
 - a. prior to covering of fire protection at service penetrations to building elements that are required to resist internal fire or smoke spread, inspection of a minimum of one of each type of protection method for each type of service, on each storey of the building comprising the building work, and
 - b. prior to covering the junction of any internal fire-resisting construction bounding a sole-occupancy unit, and any other building element required to resist internal fire spread, inspection of a minimum of 30% of sole-occupancy units on each storey of the building containing sole-occupancy units, and
 - c. prior to covering of waterproofing in any wet areas, for a minimum of 10% of rooms with wet areas within a building, and
 - d. prior to covering any stormwater drainage connections.
3. Class 5, 6, 7, 8 or 9 building:
 - a. in relation to a critical stage inspection of a class 9a and 9c building, as defined in the *Building Code of Australia*—prior to covering of fire protection at service penetrations to building elements that are required to resist internal fire or smoke spread, inspection of a minimum of one of each type of protection method for each type of service, on each storey of the building comprising the building work.¹¹⁴

If any inspection sample uncovers instances of non-compliance, it is expected that the inspection regime would be expanded appropriately to reflect this, and that rectification work would be applied to the whole building, not only the area inspected.

¹¹⁴ Environmental Planning and Assessment Regulation 200 (NSW) r.162A(5)-(7A)

Risk-based inspections

Where a construction project does not lend itself to being inspected at the prescribed notification stages, the building surveyor, aided by design team, will undertake a risk analysis to identify project-specific inspection stages to manage that project's construction risks. Queensland's *Guidelines for inspection of class 2 to 9 buildings* outlines how to identify risk-based inspection requirements.¹¹⁵

The certifying building surveyor would be responsible for specifying all required inspection points on the certificate of design compliance, and the manner in which these requirements were identified.

A risk-based inspection regime may be required to be subject to independent, third-party review, to ensure the risk analysis is appropriate to the project. The permit authority is empowered to refuse to grant a permit if the inspections specified are insufficient for the project.

Rectifying non-compliance

Upon identifying an instance of building work that does not comply with either the Building Act or the building permit, the building surveyor will give the builder a notice of rectification to rectify the building work, at the builder's cost, within a set period of time. A copy of this rectification notice will be sent to the building owner.

When the work is rectified, the building surveyor will record that the notice of rectification was complied with, and attach the record to the certificate of construction compliance. Alternatively, if the builder fails to comply with the notice of rectification, the building surveyor must give written notice of this failure to the permit authority and the building owner, and must not issue a certificate of construction compliance until the non-compliance is resolved.

This process is illustrated in Figure 3, and is based on Victoria's 'directions to fix building work' process.¹¹⁶

New South Wales' legislation contains a similar process, requiring the building surveyor to issue a notice directing remedial action, and then notify the consent authority if the direction is not complied with.¹¹⁷

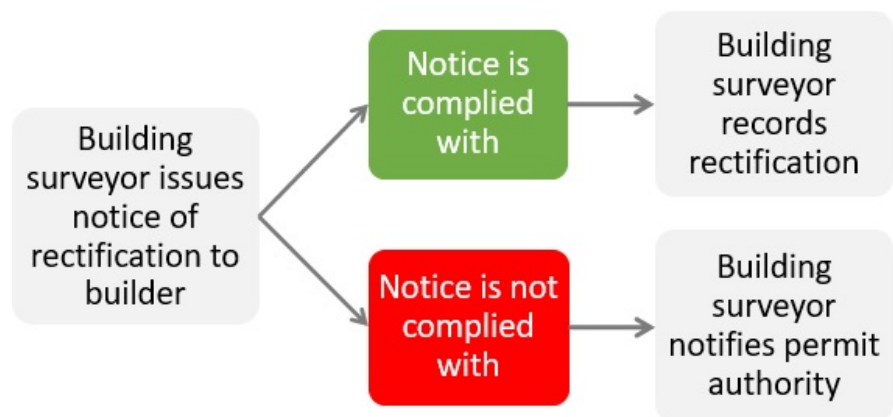


Figure 3: Process to rectify non-compliant building work

The above requirements – for prescribed notification stages, sampling, risk-based inspections and rectifying non-compliance – apply equally to Options A and B.

¹¹⁵ Queensland Government, *Guidelines for inspection of class 2 to 9 buildings* (Department of Housing and Public Works, 29 Jun 2012)

¹¹⁶ *Building Act 1993* (Vic) s37-37K

¹¹⁷ *Environmental Planning and Assessment Act 1979* (NSW) s6.31

Questions

84. Do you think the proposed inspection notification points in Table 9 are appropriate? If not, what changes do you suggest?
85. Should active fire safety systems form part of the prescribed inspections stages? If so, specify which active systems.
86. How does inspection sampling currently occur in practice?
87. How do you think inspection samples should be defined for each of the prescribed notification points in Table 9?
88. Do you think an inspection regime should require inspections of any types of off-site manufacture or prefabrication work? Please specify.
89. Do you think risk-based inspection regimes should be subject to review?
90. Do you support the proposed process for rectifying non-compliance? If not, what changes do you suggest?

Option A – Inspections by permit authorities

Option A: The certifying building surveyor identifies inspection requirements in accordance with legislation. Inspection requirements are noted on the CDC and building permit. The builder notifies the permit authority at stages identified on the building permit. The permit authority manages all inspections and issues the CCC.

Under Option A, inspections would be undertaken by the permit authority, which may either use their own inspectors or engage appropriately qualified private contractors, such as building surveyors or engineers.

Inspections would be funded by an additional fee, paid to the permit authority as part of a building permit application. A reasonable fee for inspections would need to be determined and set in legislation, then reviewed annually for currency as is done for other permit authority fees.

Note that the party responsible for overseeing inspections during construction should also be required to issue the certificate of construction compliance. It becomes unreasonable to require a private building surveyor to issue the CCC when they have had no involvement in inspecting the construction work. If Option A is adopted, then permit authorities would likely also have to take on responsibility for issuing the CCC for completed buildings. This change affects several other reform proposals, such as the duration of a building surveyor's contract ([proposal 12](#)). Such implications would be considered by Building and Energy when implementing any reforms.

Advantages

Advantages common to Options A and B include:

- flexibility to identify what inspections are required for each building project. this is important as class 2 to 9 buildings encompass a range of different building types and construction methods, including on-site and off-site construction work;
- increase the level of compliance of commercial buildings, many of which are considered to be high risk;
- reduce rectification costs to the owner and builder by identifying non-compliant work earlier in the construction process;

- reduce potentially catastrophic instances of building failure;
- give building surveyors confidence when determining construction compliance;
- increase public confidence in building stock, which has been affected by several recent, high-profile building failures; and
- more closely align WA requirements with other Australian jurisdictions.

Advantages specific to Option A are:

- makes permit authorities responsible for inspecting construction work, providing greater independence, and reducing conflict of interest issues.

Disadvantages

Disadvantages common to Options A and B include:

- implementing a new inspection regime may affect construction timeframes, at least initially;
- building owners will have to pay for the inspections. however, this cost will be offset by reduced rectification costs for completed buildings; and
- it may increase the workload of engineers and building surveyors, requiring a staged implementation approach.

Disadvantages specific to Option A include:

- increased administrative burden for permit authorities to manage all inspections;
- if permit authorities contract private building surveyors and engineers to carry out inspections, their independence may be undermined. The inspectors' need to maintain commercial relationships to generate further business may not be compatible with undertaking a regulatory enforcement role. This conflict could be addressed by a number of means, for example:
 - Building and Energy creating and maintaining a panel of pre-qualified people who could be engaged to undertake inspection work; or
 - Registering inspectors, who could be governed by a code of conduct; and
- legislating the cost of inspections necessitates setting an average cost with no consideration of specific project or market factors.

Questions

91. Do you support Option A, either in whole or in part? Please specify.
92. Do you foresee any other costs or benefits to implementing this option?
93. Do you support permit authorities being responsible for all mandatory inspections? Why, or why not?

Option B – Inspections by project design engineers and building surveyor

Option B: The certifying building surveyor identifies inspection requirements in accordance with legislation. Inspection requirements are noted on the CDC and building permit. The builder notifies the building surveyor at the stages identified on the building permit. Inspections are done by the design engineers and building surveyor for the project. Details of all inspections must be attached to the CCC, and accompany the occupancy permit application.

Option B is similar to Option A, in that inspection requirements will be identified either in accordance with prescribed stages, or by a project-specific risk analysis. However,

under Option B, inspections will be undertaken by private practitioners, being engineers and building surveyors.

The engineers and building surveyor responsible for inspecting a building during construction would be those that designed it and certified the design. Legislation would require that a structural or fire engineer's contract must extend until a CCC is issued under s56(2) of the Building Act. Similar to a building surveyor's contract (see [Proposal 12](#)) an engineer's contract may not be terminated before this, unless:

1. Both parties to the contract mutually agree; or
2. A court orders that a new engineer be appointed; or
3. The engineer is unable to fulfil their contractual obligations due to:
 - a. No longer holding the required registration,
 - b. Declaring bankruptcy or insolvency, or
 - c. Death.

This will create a level field for engineers to quote for undertaking design and inspection work for a project. It will also prevent unscrupulous people from constructing a building and then shopping around for an inspector willing to certify it as constructed.

While mandatory, Option B proposes an inspection regime managed primarily by the private sector, rather than by permit authorities. This increases the potential for conflict of interest in comparison to Option A. Measures to counter this conflict, and make inspections by private individuals more rigorous and accountable, include:

- introducing a registration scheme for structural and fire engineers (Building and Energy is currently considering options to register engineers);
- requiring independent third-party review of high-risk engineering design work (see [Proposal 25](#));
- requiring that all inspections required to be undertaken be stated on the CDC and the building permit;
- introducing penalties for registered contractors who do not undertake required inspections, or do not undertake them with the required degree of rigour;
- requiring that each inspection report be given to the building surveyor, and attached to the CCC; and
- permit authorities would retain an oversight role, checking certification to ensure that required inspections are identified and undertaken.

Advantages

Advantages specific to Option B include:

- construction work would be inspected by the design engineers and the certifying building surveyor (i.e. the people who are most familiar with it);
- third party review of high-risk designs reduces the conflict of interest for people inspecting the construction of their own designs;
- the cost of inspections would be subject to market forces, allowing consumers to seek quotes to obtain the best value for money for their project;
- mandatory inspections by engineers and building surveyors aligns most closely with current practice, so regulatory compliance costs, and disruption to the industry and construction timeframes, should be minimal; and
- mandating inspections by the private sector reduces the administrative burden for both permit authorities and the industry, compared to Option A.

Disadvantages

Disadvantages specific to Option B include:

- inspections by private individuals are not as independent as inspections managed by permit authorities, and may be more subject to conflicts of interest; and
- it may increase liability for engineers, although when buildings fail engineers are already in the crosshairs, for example the judgement on the Lacrosse building fire ordered the fire engineer to pay 39 percent of damages.¹¹⁸

Questions

94. Do you support Option B, either in whole or in part? Please specify.
95. Do you think the controls proposed are enough to make private-sector inspections accountable?
96. Do you foresee any other costs or benefits to implementing this option?

Proposal 27 – Inspection stages to be ‘notifiable work’

Proposal 27: Amend the Building Regulations to state that required inspections, as identified on the building permit, are ‘notifiable stages’ at which the builder may face disciplinary action if unreasonable and/or significant areas of non-compliance are found.

Under this proposal, the builder would be made responsible for ensuring that building work is compliant at each inspection point during construction. If non-compliant work is identified during an inspection, that would be reasonably expected to be compliant at that stage of the work, then the inspector would be required to record the non-compliance, issue a notice of rectification, and report the non-compliance to the regulator who would consider taking further action to discipline the builder if required.

Advantages

This proposal would:

- make builders more accountable to ensure that building work is compliant;
- empower the regulator to take action against registered building contractors who produce non-compliant building work; and
- minimise the risk of building inspections being substituted for the supervisory role of the builder.

Questions

97. Do you support Proposal 27? Why, or why not?
98. Do you foresee any other costs or benefits to implementing this proposal?

¹¹⁸ Geoff Hanmer, *Lacrosse fire ruling sends shudders through building industry consultants and governments* (The Conversation, 5 Mar 2019)

7.12 Building manual for building documentation and operational information

Background

Recommendation 20 of the *Building Confidence* report states:

20. That each jurisdiction requires that there be a comprehensive building manual for commercial buildings that should be lodged with the building owners and made available to successive purchasers of the building.

The *Building Confidence* report continues, to state that:

The building manual should be in a digital format and be required to have prescribed information such as:

- as-built construction documentation;
- fire safety system details and maintenance requirements;
- assumptions made in any performance solution (for example, occupant characteristics);
- building product information, including certificates and details of maintenance or safety requirements; and
- conditions of use – such as occupant numbers, loads, replacement of products after certain periods (for example, glass after 25 years).

There should be a requirement for the manual to be provided to successive purchasers of the building.¹¹⁹

The idea of a single point for all of a building's approval, construction, occupation and operational documents has been investigated previously via the National Energy Productivity Plan (NEPP). Under Measure 32 of the NEPP, the National Energy Efficiency Building Project (NEEBP) was tasked to help increase compliance of energy efficiency requirements.¹²⁰ One of the NEEBPs initiatives is the 'Building Passport' which aims to create a single point of access for all of a building's information, but initially only for energy efficiency documentation.¹²¹ This work is ongoing.

In addition to this work, the BMF has established an implementation team to develop a national framework to implement the *Building Confidence* report recommendations.¹²² This work will address building and building product information. The WA Government supports the work being done by the national implementation team.

The New South Wales *Environmental Planning and Assessment Act 1979* requires that a building surveyor (certifier) must provide the owner of the building with a building manual before issuing an occupancy permit for the building.¹²³ The content and form of the building manual is to be prescribed via regulations.

The further development of these work areas will help determine the form and extent of any building manual introduced in WA. This will also help WA align any requirements with other states and territories.

¹¹⁹ Shergold and Weir, op cit p 35

¹²⁰ Department for Energy and Mining, *National Energy Efficiency Building Project* (Government of South Australia, 2019)

¹²¹ pitt&sherry and Queensland University of Technology, *Pilot Electronic Building Passport – Final Report* (Government of South Australia, 2015)

¹²² Building Ministers Forum, *Communique – 18 July 2019*

¹²³ *Environmental Planning and Assessment Act 1979* (NSW) s.6.27

While national work to implement a building manual is underway, a timeframe for implementation has not been set. This CRIS provides a good opportunity to canvass opinion on the idea of a building manual, which may be used to direct future work in this area.

Proposal for reform

Proposal 28 – Introduction of a digital building manual

Proposal 28: Amend the Building Act to provide for digital building manuals for all buildings.

Several of the other reform proposals in this document will contribute towards implementing a requirement for digital building manuals. The first step in creating a useful building manual is to ensure that correct building documentation is available. Proposals [14](#), [16](#), [20](#) and [24](#) will help to ensure compliant building documentation. Also, proposal [18](#) will provide a record of occupancy and maintenance conditions.

Requirements for fire safety system documentation and maintenance will be considered in a separate CRIS, to be released by Building and Energy later this year.

Industry organisations and technology providers are likely to be able to support the implementation of this proposal. Building and Energy will work with the ABCB's national implementation team to coordinate government and industry efforts to progress the implementation of building manuals.

New South Wales's legislation contains the provision for a building manual to be required as prescribed, although regulations have not yet been developed to implement this requirement.¹²⁴

Advantages

A digital building manual would:

- provide a single point to access all the documentation and information for a building through its lifetime;
- provide building managers and owners with access to operational instructions for building systems, such as HVAC and fire safety systems;
- provide a reference point to resolve any post-construction issues;
- subsequent owners will have a documented history of the building's design and construction, including maintenance regimes.

Some questions on implementing digital building manuals include:

- A. What is the best platform for the digital documents to be stored on, in terms of security, compatibility, access, and adaptability to technological advances?
- B. What is the best way to collate and store all the documentation?
- C. Who should be responsible for collecting the documentation?
- D. Who should be responsible for storing the manuals?
- E. How should access to the manuals be provided?

¹²⁴ *Environmental Planning and Assessment Act 1979* (NSW) s6.27

- F. Who should be allowed to access the manuals – building owners, tenants, owners of neighbouring sites, permit authorities, fire authorities, builders, building maintenance workers, other government agencies?
- G. Who should be responsible for maintaining and updating the manuals over the life of a building?
- H. How should the manuals be updated?
- I. How should the system be paid for?

Questions

- 99. Remembering that this proposal is still in the early stages, do you support Proposal 28? Why, or why not?
- 100. Please provide your opinion on, or answers to, the list of implementation questions, A-I, above.
- 101. Do you foresee any other costs or benefits to implementing this proposal?

8 Implementation

The proposals identified for implementation through this consultation would be implemented by amending the building legislation, as required. It is likely that any proposals adopted through this CRIS process that require amendment to the Building Act will be implemented through a single Bill of Parliament. Changes that require amendment to the Regulations are generally able to be implemented more quickly than changes to the Acts.

It is recognised that the proposed reform package represents significant change for the building industry. Commencement dates for the various reforms will be phased in, both to allow time for the industry to adjust its practices and also to accommodate the implementation of any other, prerequisite reforms.

Transition periods to implement any reforms will be determined based on the impact of the reform. Some administrative reforms may not require any transition period at all. Other changes, such as mandatory inspections of construction work, would require a longer transition period and/or would only apply to contracts signed after the implementation date.

Implementing inspections for all buildings – residential and commercial – represents a significant change for the WA building industry. Staged implementation will allow people time to adjust to the new requirements. It is proposed that inspections be implemented gradually in various stages. These stages could be identified and triggered by the classification of the buildings, size and locations of buildings, etc. over a period of time.

It is intended to keep industry informed of changes through face-to-face seminars, newsletters and industry bulletins in advance of any change coming into effect.

9 Evaluation

The reforms proposed represent significant change for the building and construction industry, and will require time to implement and adjust to. It is therefore proposed to evaluate the effectiveness of all changes implemented within two to five years of operation. Evaluation will be undertaken through industry surveys, and feedback reported from permit authorities.

Question

102. Do you think online surveys are an appropriate way to obtain industry feedback on the operation of these reforms? If not, how do you think the reforms' effectiveness should be evaluated?

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Appendix A – NCC building classifications

1a	A single dwelling including the following: <ul style="list-style-type: none"> a) A detached house. b) One of a group of two or more attached dwellings, each being a building, separated by a fire-resisting wall, including a row house, terrace house, town house or villa unit.
1b	<ul style="list-style-type: none"> a) A boarding house, guest house, hostel or the like that— <ul style="list-style-type: none"> i. would ordinarily accommodate not more than 12 people; and ii. have a total area of all floors not more than 300 m² (measured over the enclosing walls of the building or buildings); or b) four or more single dwellings located on one allotment and used for short-term holiday accommodation.
2	A building containing two or more separate sole-occupancy units.
3	A residential building providing long-term or transient accommodation for a number of unrelated persons, including: <ul style="list-style-type: none"> a) A boarding house, guest house, hostel, lodging house or backpacker accommodation. b) A residential part of a hotel or motel. c) A residential part of a school. d) Accommodation for the aged, children, or people with disability. e) A residential part of a health-care building which accommodates members of staff. f) A residential part of a detention centre. g) A residential care building.
4	A single dwelling in a Class 5, 6, 7, 8 or 9 building.
5	An office building used for professional or commercial purposes
6	A shop or other building used for the sale of goods by retail or the supply of services direct to the public, including— <ul style="list-style-type: none"> a) an eating room, café, restaurant, milk or soft-drink bar; or b) a dining room, bar area that is not an assembly building, shop or kiosk part of a hotel or motel; or c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or d) a market or sale room, showroom, or service station.
7a	A carpark.
7b	A building that is used for storage, or display of goods or produce for sale by wholesale.
8	A process-type building that includes the following: <ul style="list-style-type: none"> a) A laboratory. b) A building in which the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce for sale takes place.
9a	A health-care building including any parts of the building set aside as laboratories, and includes a healthcare building used as a residential care building.
9b	A public assembly building, including a library, theatre, public hall or place of worship, school, nightclub, bar, cinema, stadium, or public transport station.
9c	A residential care building.
10a	A non-habitable building including a private garage, carport, shed or the like.
10b	A structure that is a fence, mast, antenna, retaining wall or free-standing wall or swimming pool or the like.
10c	A private bushfire shelter.

Appendix B – *Building Confidence* report recommendations

1. That each jurisdiction requires the registration of the following categories of building practitioners involved in the design, construction and maintenance of buildings:
 - a. Builder
 - b. Site or Project Manager
 - c. Building Surveyor
 - d. Building Inspector
 - e. Architect
 - f. Engineer
 - g. Designer/Draftsperson
 - h. Plumber
 - i. Fire Safety Practitioner
2. That each jurisdiction prescribes consistent requirements for the registration of building practitioners including:
 - a. certificated training which includes compulsory training on the operation and use of the NCC as it applies to each category of registration;
 - b. additional competency and experience requirements;
 - c. where it is available, compulsory insurance in the form of professional indemnity and/or warranty insurance together with financial viability requirements where appropriate; and
 - d. evidence of practitioner integrity, based on an assessment of fit-and-proper person requirements.
3. That each jurisdiction requires all practitioners to undertake compulsory Continuing Professional Development on the National Construction Code.
4. That each jurisdiction establishes a supervised training scheme which provides a defined pathway for becoming a registered building surveyor.
5. That each state establishes formal mechanisms for a more collaborative and effective partnership between those with responsibility for regulatory oversight, including relevant state government bodies, local governments and private building surveyors (if they have an enforcement role).
6. That each jurisdiction give regulators a broad suite of powers to monitor buildings and building work so that, as necessary, they can take strong compliance and enforcement action.
7. That each jurisdiction makes public its audit strategy for regulatory oversight of the construction of Commercial buildings, with annual reporting on audit findings and outcomes.
8. That, consistent with the International Fire Engineering Guidelines, each jurisdiction requires developers, architects, builders, engineers and building surveyors to engage with fire authorities as part of the design process.
9. That each jurisdiction establishes minimum statutory controls to mitigate conflicts of interest and increase transparency of the engagement and responsibilities of private building surveyors.

10. That each jurisdiction put in place a code of conduct for building surveyors which addresses the key matters which, if contravened, would be a ground for a disciplinary inquiry.
11. That each jurisdiction provides private building surveyors with enhanced supervisory powers and mandatory reporting obligations.
12. That each jurisdiction establishes a building information database that provides a centralised source of building design and construction documentation.
13. That each jurisdiction requires building approval documentation to be prepared by appropriate categories of registered practitioners, demonstrating that the proposed building complies with the National Construction Code.
14. That each jurisdiction sets out the information which must be included in performance solutions, specifying in occupancy certificates the circumstances in which performance solutions have been used and for what purpose.
15. That each jurisdiction provides a transparent and robust process for the approval of performance solutions for constructed building work.
16. That each jurisdiction provides for a building compliance process which incorporates clear obligations for the ongoing approval of amended documentation by the appointed building surveyor throughout a project.
17. That each jurisdiction requires genuine independent third party review for specified components of designs and/or certain types of buildings.
18. That each jurisdiction requires on-site inspections of building work at identified notification stages.
19. That each jurisdiction requires registered fire safety practitioners to design, install and certify the fire safety systems necessary in Commercial buildings.
20. That each jurisdiction requires that there be a comprehensive building manual for Commercial buildings that should be lodged with the building owners and made available to successive purchasers of the building.
21. That the Building Ministers' Forum agree its position on the establishment of a compulsory product certification system for high-risk building products.
22. That the Building Ministers' Forum develop a national dictionary of terminology to assist jurisdictions, industry and consumers to understand the range of terminology used to describe the same or similar terms and processes in different jurisdictions.
23. That the Building Ministers' Forum acknowledges that the above recommendations are designed to form a coherent package and that they be implemented by all jurisdictions progressively over the next three years.
24. That the Building Ministers' Forum prioritise the preparation of a plan for the implementation of the recommendations against which each jurisdiction will report annually.

Appendix C – Documentation requirements for permit application

Preparation of plans for approval

All plans of building works accompanying any permit application shall —

- (a) be in accordance with the provisions of the Act and these Regulations and any other requirement of the Building Commissioner;
- (b) be clear and intelligible;
- (c) bear a title block on the right side of the plan showing, at a minimum:
 - a. the project title;
 - b. the site address;
 - c. the document number;
 - d. the document revision number;
 - e. the document date;
 - f. the document scale;
 - g. the author's name;
 - h. the author's registration number, if applicable;
- (d) be fully annotated with suitable notations and symbols to show or distinguish the different types of materials to be used in the building works;
- (e) contain a full description or generic name in any specification of materials or components given or shown on the plans;
- (f) demarcate clearly the new building works from any existing building;
- (g) delineate clearly any building works to be demolished or removed;
- (h) be numbered serially, where the first plan is numbered as 1 of n and the last plan as n of n (n being the total number of pages of the relevant plans);
- (i) be amended and re-submitted for approval to reflect any variations during construction; and
- (j) comply with such other requirements as the Building Commissioner may specify.

Where a computer program is used in any of the design calculations —

- (a) the details of the program including assumptions, limitations and the like shall be explained; and
- (b) the inputs and outputs from the program shall be endorsed and submitted by the registered person and shall form part of the design calculations submitted.

In addition to the plans and specifications required by regulations, the building surveyor, permit authority or Building Commissioner may require the applicant to produce computations, test reports and such other information as may be necessary to determine compliance with the applicable standards.

Scale of plans

All plans of building works shall be scaled such that the information presented is clearly legible.

Information to be shown on building plans

All building plans shall, where applicable, include the following:

- (a) A site plan showing —
 - i. the location and layout of the site with boundary lines verged in red;

- ii. the outline of the building to be erected or building in which building works are to be carried out marked;
 - iii. the north point;
 - iv. the number of the lot and adjoining lots;
 - v. the distances between the building work to be carried out and other proposed or existing buildings, and the lot boundary;
 - vi. the existing and proposed platform levels and slopes of the site and adjoining lots;
 - vii. the proposed finished floor level(s) of the ground floor, relative to existing and proposed site levels;
 - viii. the ingress and egress to the site, including all existing and proposed gradients and path(s) of travel to meet access requirements;
 - ix. the various roads constituting the access layout to and within the lot;
 - x. the means of access to the site and to the perimeter of each building for fire fighting vehicles and equipment;
 - xi. the location of existing and proposed internal fire hydrants on the site; and
 - xii. any other feature on or in the vicinity of the site which is likely to be a fire hazard or cause obstruction to fire fighting vehicles and equipment and rescue operations.
- (b) The floor plan of each storey including the roof plan of the building showing —
- i. clear statements indicating the purpose of every room or space in the building;
 - ii. the types of materials to be used for the main elements of the building;
 - iii. the dimensions between columns, corridors, staircase landings and the thickness of walls and columns;
 - iv. the dimensions and details necessary to demonstrate compliance with accessibility standards, including signage, walkways, ramps, landings, stairways, handrails, doors, glazing strips, switches, sanitary facilities, luminance contrast, etc.
 - v. the type of plant, equipment or water tank proposed to be installed and the location of the equipment and every plant room or water tank room;
 - vi. clear statements indicating every part of the building that is to be air-conditioned or mechanically ventilated;
 - vii. in respect of the ground floor, the existing and proposed levels of the site and finished floor level(s); and
 - viii. in respect of the ground floor, the distance between the building and the lot boundary and any existing buildings.
- (c) Cross-sectional views to fully describe all details and configurations of the proposed building, including:
- i. the full height of each storey and the depth of ceiling space;
 - ii. the dimensions of treads and rises of staircases; and
 - iii. the types of materials used in and the thickness of all walls, floors, roofs, ceilings, beams and other related parts of the building.
- (d) Elevational details including, where applicable —
- i. an elevation of each face of the building;
 - ii. the height of each storey and total building height;
 - iii. the types of materials to be used for the main elements of the building;
 - iv. the dimensions of openings in external walls;
 - v. door and window schedules detailing dimensions, location and specifications for each door and window; and

- vi. room elevations to demonstrate compliance with access requirements in sanitary facilities.
- (e) Such other details as the Building Commissioner may require.

Information to be shown on detailed structural plans and design calculations

All detailed structural plans shall, where applicable —

- (a) be signed by the registered person who prepared the detailed structural plans and design calculations, and by an accredited reviewer if applicable;
- (b) bear a certificate from the registered person who prepared and signed the structural plans on the first and last sheets of the plans stating that they have taken into consideration the loads imposed by all the building works as shown in the building plans or any amendment thereto;
- (c) bear a certificate by an accredited reviewer, if applicable, on the first and last sheets of the plans;
- (d) clearly indicate on the respective area of every floor plan, the imposed load for which the floor system or part thereof has been designed;
- (e) show the type or types of foundation to be used;
- (f) contain the specifications of the materials to be used; and
- (g) indicate the fixing and framing details of any external cladding, and safety barriers against falling from a height if applicable.
- (h) detail the roof frame, including design parameters and location of all required roof frame members, sizes, grades, etc.

The design calculations shall —

- (a) contain a contents page;
- (b) be signed and endorsed by the registered person who prepared the detailed structural plans and design calculations;
- (c) bear a certificate by the registered person who prepared the detailed structural plans and design calculations on the first and last sheets of the calculations stating that, to the best of their knowledge and belief, the design calculations have been prepared in accordance with these Regulations and that they are the person who prepared the design calculations;
- (d) state on the first page the number of pages, and number every page;
- (e) contain a Design Information Sheet giving a summary of the design information including, where applicable:
 - i. all dynamic and static design loads;
 - ii. codes of practice;
 - iii. assumptions;
 - iv. soil investigation report;
 - v. foundation system;
 - vi. wind loads; and
 - vii. other information relevant to the design in question;
- (f) contain a Structural Summary Sheet showing:
 - i. the structural system;
 - ii. the form of the structure;
 - iii. the key structural elements;
 - iv. the provision for overall stability; and
 - v. structural analysis;
- (g) contain a Grouping of Structural Elements Sheet containing a list of designed structural elements that are similar; and

- (h) contain an Analysis and Design of Structural Elements Sheet showing the detailed design and calculations of —
 - i. the foundation;
 - ii. the shearwall, corewall and all structural elements resisting horizontal forces;
 - iii. the column and all vertical loadbearing structural elements;
 - iv. the transfer beams or plates, cantilevers, pre-stressed beams and flat slabs;
 - v. the space truss and portal frame;
 - vi. any shaft, tunnel or connections, or cavern structure;
 - vii. the retaining walls and supporting structures; and
 - viii. the overall structural system under wind loads, if applicable.
- (i) Where the design incorporates a truss system, the documentation should include:
 - i. all design parameters;
 - ii. the truss layout highlighting individual truss types and tie down details; and
 - iii. be countersigned by the design engineer to confirm suitability and connectivity with main design and location of point loadings within the building.

Fire safety information to be shown on plans and calculations

All required fire safety features shall be clearly documented including, where applicable:

- (a) the floor plan of each storey including the roof plan of the building showing —
 - i. details of all openings and voids penetrating floors including their usage, dimensions and the nature and arrangement of enclosing walls and barricades;
 - ii. the required fire resistance levels (FRL) of all elements of structure, fire doors, shutters, dampers and such other fire safety measures;
 - iii. clear statements indicating the design occupant load for that storey or roof, for which means of escape in case of fire have been provided;
 - iv. the calculation method used to determine the design occupant load;
 - v. details of all means of escape to the exterior at ground level from every part of the floor such as exit doors, corridors, passageways, aisles, gangways, balconies, lobbies, ramps, exit passageways, escape and fire-isolated staircases and areas of refuge;
 - vi. locations of all existing and proposed fire lifts, fire lift lobbies, the fire control centre, fire pumps, water tank rooms and generator rooms;
 - vii. locations of all areas designated for the storage of flammable liquids or gases, boiler rooms, transformer rooms and any other area of special risk;
 - viii. the types and extent of provision of fire detection and alarm systems and voice communications systems;
 - ix. clear statements indicating the type and ratings of all proposed or existing portable fire extinguishers and their locations;
 - x. the type and extent of provision of hydraulic hose reels, sprinklers systems, wet and dry rising mains and other fire extinguishing systems; and
 - xi. the type and extent of provision of smoke control and ventilation systems and their related air or smoke shafts.
- (b) Cross-sectional views to fully describe all details and configurations of the proposed building and associated fire safety works, including:
 - vii. details of all openings and voids penetrating floors including their dimensions, usage and height of enclosing walls and barricades;
 - viii. sealing requirements for penetrations in fire-resistant elements;

- ix. details of the junction between the roof and any compartment walls;
 - x. construction details for fire and smoke compartment boundaries;
 - xi. the clear height of all structures or projections directly above the access for fire fighting vehicles and equipment;
 - xii. the clear distance of the external wall from the fire fighting vehicles and equipment access, lot boundary, adjacent buildings and other structures;
 - xiii. enlarged details of curtain walling at the junction with the typical floor slab to show the provision of fire stopping or fire cavity barriers.
- (c) Elevational details including —
- i. the provisions of fire fighter access panels on the external walls and claddings; and
 - ii. the clear distance of the external wall from the fire fighting vehicles and equipment access, lot boundary, adjacent buildings and other structures.
- (d) Such other details, particulars or information relating to the building or fire safety works as the Building Commissioner may require.

Information to be shown on detailed fire engineering plans and design calculations

All detailed fire engineering plans and calculations shall, where applicable —

- (a) be signed by the registered person who prepared the detailed plans and design calculations, and by an accredited reviewer if applicable;
- (b) bear a certificate from the registered person who prepared and signed the plans on the first and last sheets of the plans stating that they have taken into consideration the fire safety risks presented by all the building works as shown in the building plans or any amendment thereto;
- (c) bear a certificate by an accredited reviewer, if applicable, on the first and last sheets of the plans;
- (d) include a report identifying and describing each fire safety system installed in the building and its design, features and operational arrangements;
- (e) include all design calculations, computations, test reports and such other information as may be necessary to determine compliance with each applicable standard; and
- (f) for fire safety performance solutions, include a copy of the fire engineering report, in accordance with the IFEG.

Information to be shown on plans for air-conditioning and mechanical ventilation systems that incorporate fire safety features

Plans for air-conditioning and mechanical ventilation systems that incorporate fire safety features shall include the following:

- (a) key features of the building in which the system is to be installed;
- (b) a schematic diagram of the overall system showing clearly the key features and their functions, relative locations in the building, lots, sizes, capacities and other essential information including the air distribution design arrangement in the case of air-conditioning and mechanical ventilation systems;
- (c) the layout of the system on every floor plan showing clearly the various parts and their functions, locations, arrangements, sizes, capacities and other essential information;
- (d) necessary cross-sectional views as superimposed on the building or part thereof to fully describe the details and configurations of the system;

- (e) a colour scheme to clearly distinguish the various distinct parts of the system and the different systems from one another;
- (f) for air-conditioning and mechanical ventilation systems, indicate—
 - i. the volumetric rate of flow of air at each point of inlet and outlet of each system including those serving protected staircases, exit passageways, lobbies, areas of refuge, the Fire Command Centre, fire pump rooms, generator rooms, rooms used for the storage of flammable liquids or gas or other areas of special risk;
 - ii. the location of fire compartment walls, floors and air shafts;
 - iii. the location of fire dampers;
 - iv. the location of smoke detectors; and
 - v. the location and function of other fire precautionary features.

Where required by the Building Commissioner, plans shall be accompanied by —

- (a) a report identifying and describing each system installed in the building and its design, features and operational arrangements; and
- (b) design calculations.

Information to be shown on site work plans and pile layout plans

All site work plans and calculations shall, where applicable —

- (a) show the contour lines at intervals of 500 mm in height or spot levels of the existing site and adjoining lands drawn with reference to the ordnance datum;
- (b) show the location of the site formation works;
- (c) show the finished levels, including platform level for the building or buildings and the finished road levels;
- (d) show the slope of any excavation or filling exceeding 1500 mm in depth; and
- (e) show the means of protecting the site formation works against erosion, earthslip, slope failure or instability.

The pile layout plans shall, where applicable, show —

- (a) the types of piles and the specification of materials to be used;
- (b) the location of piles and site investigation boreholes;
- (c) the estimated pile penetration depth for each design zone;
- (d) the minimum embedded pile length into competent stratum, where applicable;
- (e) the unit skin friction and unit end bearing resistance for pile designs;
- (f) the allowable pile bearing capacity before and after deduction of negative skin friction (if applicable) and details of pile joints;
- (g) the allowable total and differential foundation settlement;
- (h) the allowable vibration limit during pile installation; and
- (i) the sectional details of piles and number and type of pile load tests and the location of ultimate pile load tests.

Information to be shown in geotechnical building works plans

The geotechnical building works plans shall, where applicable, include the following:

- (a) plans of any tunnelling support system;
- (b) plans of any excavation and earth retaining structures;
- (c) plans for constructing or stabilising any slope;
- (d) plans of the foundation;
- (e) instrumentation and monitoring plans.

All geotechnical building works plans shall, where applicable —

- (a) be in accordance with the provisions of the Act and these Regulations and any other requirement of the Building Commissioner;
- (b) be signed and endorsed by the person who prepared the plans and calculations;
- (c) bear a certificate by the person who prepared the plans on the first and last sheets of the calculations stating that, to the best of their knowledge and belief, the design calculations have been prepared in accordance with these Regulations and that they are the person who prepared the design calculations;
- (d) state on the first page the number of pages and number every page in the book;
- (e) be accompanied by an Information Sheet giving a summary of the key design and construction information including, where applicable:
 - i. load conditions;
 - ii. codes of practice;
 - iii. assumptions;
 - iv. earth-retaining system;
 - v. tunnel support system;
 - vi. foundation system; and
 - vii. other information relevant to the design and construction;
- (f) be accompanied by an impact assessment report on neighbouring structures and a site investigation report;
- (g) be accompanied by a geotechnical report which shall contain —
 - i. a summary highlighting the key elements of the design and the issues addressed;
 - ii. evaluation and interpretation of existing information and investigation and monitoring results;
 - iii. assessment of geotechnical parameters and groundwater conditions;
 - iv. geotechnical assumptions, analysis, design and calculations;
 - v. geotechnical requirements relating to the design and construction of the geotechnical building works including testing, validating, controlling, inspecting and monitoring;
 - vi. geotechnical reviews; and
 - vii. any other details as the Building Commissioner may require; and
- (h) be accompanied by such other reports as the Building Commissioner may require.

The plans of any excavation and earth retaining structures, or plans for constructing or stabilising any slope, in relation to any geotechnical building works shall include, where applicable —

- (a) layout, sections and details of all excavation and earth retaining works showing:
 - i. subsurface information including plan showing layout of investigation boreholes and surface profile along and across the excavation boundary;
 - ii. maximum depth and extent of excavation at each stage; and
 - iii. profile and nature of the site and its surrounds including ground topography, neighbouring structures, subsurface geological and geotechnical data, and groundwater conditions;
- (b) layout, sections, details and material specifications of earth retaining elements and structures, wall elevation showing the wall founding depth or penetration depth or minimum wall embedment requirement, and overall retaining system;
- (c) layout, sections and details of struts, anchors, soil nails, walers, king posts, bracings, corbels and other structural elements showing types, sizes and material specifications of members to be used, connection details, and where appropriate, inspections and tests to be carried out;

- (d) layout and sections of earth berms or slope showing type of soils, size and location of berms, internal and external drainage provisions and protection measures including against surface weathering;
- (e) layout, sections and details of earth or ground strengthening, improvement or protection works including layout, sections and sizes of all elements, material specifications, details of inspections and tests to be carried out;
- (f) layout, sections and details of permanent support system to the earth retaining system showing details of lateral bracing element, and connection details;
- (g) method and sequence of construction including duration and spatial limits of critical activities;
- (h) details of inspections and tests to be carried out;
- (i) details of any special precautions, groundwater control measures, control and protective measures required during excavation, and installation and removal of any earth retaining element;
- (j) other specifications and relevant particulars; and
- (k) such other details as the Building Commissioner may require.

The foundation plans for the design and construction of foundation for buildings of 30 or more storeys shall contain, where applicable —

- (a) the layout, sections and details of all foundation works showing —
 - i. types of piles or foundation and specification of material to be used;
 - ii. location of piles or foundation and site investigation boreholes;
 - iii. pile or foundation founding depth or pile minimum embedment into competent stratum for each pile or foundation;
 - iv. unit shaft friction, pile base resistance or foundation bearing pressure;
 - v. allowable foundation capacity before and after accounting for negative skin friction where applicable, allowable tension, and lateral load;
 - vi. details of pile reinforcements, pile joints, connection with pilecap, pile shops;
 - vii. allowable total and differential foundation movement; and
 - viii. allowable vibration limit; and
- (b) the number, type of pile or foundation tests, structural integrity tests and location of preliminary test pile or ultimate load tests and site investigation for the tests.

The instrumentation and monitoring plans shall contain, where applicable —

- (a) numbers, types, locations, details and other particulars of instruments for monitoring forces and movement of structural elements, building and ground movements, and variations in the groundwater or piezometric levels;
- (b) frequency and duration of monitoring;
- (c) allowable ground or building movement limits;
- (d) allowable vibration limits;
- (e) where applicable, long-term instrumentation, monitoring and maintenance requirements;
- (f) other specifications and relevant particulars; and
- (g) such other details as the Building Commissioner may require.

Information to be shown in demolition works plans

All demolition works plans shall —

- (a) be accompanied by —
 - i. an impact assessment report on neighbouring structures, including design calculations showing the stability and adequacy of every structural element the structural continuity of which is to be truncated by the demolition works;

- ii. design calculations showing that the floor is capable of resisting —
 - (A) the load from the debris; or
 - (B) where a demolition machine is intended to be placed on the floor of the building in accordance with the demolition works plans, the load from the demolition machine and the debris; and
- iii. such reports as the Building Commissioner may require.

Each demolition plan shall include, where applicable:

- (a) the location and site plan of the building to be demolished, including distances between the building to be demolished and adjacent buildings which are not to be demolished;
- (b) structural floor plans showing —
 - i. in respect of each area of each floor plan, the imposed load for which the floor system or part thereof has been designed;
 - ii. the demolition sequence and demolition zone for each floor;
 - iii. the method statement on the handling and disposal of debris;
 - iv. the type and weight of the demolition machine; and
 - v. the location of the temporary ramp;
- (c) a layout plan showing the demolition sequence of all —
 - i. beams;
 - ii. columns;
 - iii. walls;
 - iv. slabs; and
 - v. edge parapets;
- (d) the following information on safety and environmental protection measures:
 - i. layout plan, details, material specifications and elevation view of shoring and temporary supports;
 - ii. layout plan, details and material specifications of protective hoardings, covered walkways, catch platform, catch fans, scaffolding, protective screens and safety nets;
 - iii. where a demolition machine is used, the route of safe movement of the demolition machine;
 - iv. where a continuous beam extends from the building to be demolished to an adjacent building and the beam is to be cut off at the boundary of the buildings, the anchorage detail of the existing reinforcement bars of the beam where it is to be cut off.

Each instrumentation and monitoring plan shall include, where applicable:

- (a) the layout and location of other buildings (that are not to be demolished) in relation to the building to be demolished;
- (b) the number, types, location, details and other particulars of instruments for monitoring building and ground movements;
- (c) the frequency and duration of monitoring;
- (d) allowable vibration limits;
- (e) the location of closed-circuit television cameras to monitor the progress of the demolition work, especially for demolition of high-rise buildings.

Appendix D – Cost benefit analysis

Reforms to the approval process for commercial buildings in Western Australia

Estimated costs of compliance model

WA is considering introducing a series of reforms that would alter the approval process for commercial buildings in Western Australia.

The draft Consultation RIS includes a number of reforms, but only two are considered here:

- Third party review of design work
- Mandatory independent inspections during construction.

In addition, indicative rectification costs (absent the reform) are estimated here.

Ahead of the Consultation RIS, the model has been created for DMIRS to estimate industry costs of compliance.

The model then estimates the "tipping point" in terms of the reduced rectification costs that would result from the changes to deliver a net benefit.

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Table 10: Numbers of commercial building projects in WA by project value, 2010-29¹²⁵

Year ended June	Total commercial projects					Total
	<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	
2010	2376	836	84	21	21	3338
2011	2700	545	75	34	26	3380
2012	2502	410	87	39	33	3071
2013	2463	438	89	43	35	3068
2014	2569	466	96	39	40	3210
2015	2912	438	75	34	30	3489
2016	2665	440	75	32	29	3241
2017	2613	442	67	33	36	3191
2018	2848	380	54	24	34	3340
2019	2952	439	67	35	37	3530
2020	2978	439	70	33	38	3558
2021	2962	444	70	36	39	3551
2022	3036	454	72	34	40	3636
2023	2919	439	71	35	40	3504
2024	2959	436	69	35	40	3539
2025	2999	433	67	35	40	3574
2026	3040	430	65	35	40	3610
2027	3081	428	63	35	40	3647
2028	3123	426	61	35	40	3685
2029	3166	424	59	35	40	3724

¹²⁵ Data for 2010-2023: John Fiocco, op cit p 341; data for 2024-29 extrapolated based on 10-year average growth rates for 2014-23.

Notes

- This cost analysis was undertaken by Marsden Jacob Associates, an independent consultant.
- Cost have been estimated by two industry members. This was not industry consultation - but instead provides values for use in industry consultation.
- The cost of third-party reviews has not been calculated for projects valued under \$1 million as it is assumed that low-value projects are comparatively unlikely to require review.
- The task of estimating hours for the high level items provided is difficult given the possible variations in practice within the items described. One \$5-10m building can be very different to another \$5-10m building, for example. As such, the hours should be seen as an experienced “best guess” rather than being anything else. Potentially significant variations to the hours presented are possible in practice. We have applied the test of “reasonableness” in all cases, which means we expect these numbers to be within the bell curve and not extreme examples.
- The hours provided for third-party reviews contemplate both the time likely to be required and also commercial considerations. Consultants may and should ensure that fees charged for reviews reflect the liability being assumed. These hours may be assumed to be a blend of the two.
- The engineering hourly rate of \$250/hr is anticipated as reflecting a reasonable industry average for the level of person who would likely be undertaking these reviews (i.e. senior staff). The lower rate of \$220/hr for the inspections reflects the fact that less experienced staff would be ordinarily capable of undertaking informed inspections.
- The “>\$20m” column has been taken to mean around \$30m.
- The engineers stated: “We have not provided our views in relation to the philosophy behind the proposed regulation changes as this isn’t part of our agreed scope. We foresee potential risks and issues that would need to be managed if the proposed changes are implemented e.g. risk for project timeline extensions due to reviews, potential conflicts of interest, differing opinions between incumbent and reviewer etc. Our view is that these would be manageable with a common sense approach and that they should be secondary to the need for safe building outcomes.”
- Some concerns raised by the building surveyors around third-party review were:
 - No registered building surveyor can “re-certify” another’s previously certified project. No-one can take on the responsibility of another party’s decisions without massive insurance problems.
 - A simple peer review system may work however, as long as it has a code of practice, rules and standards, limitations as well as strict dispute resolution criteria.
 - There is a risk of significant time delays if the reviewer does not respond promptly or disagrees with the original design. The cost analysis set out here does not include costs of delays.
 - The proposed process does not recognise the “design and construct” industry that occurs on all major projects. That is, design and design amendments continue during construction, as they must do. A peer reviewer must therefore be on board for the whole construction program.

Third party review of design work

Table 11: Estimated cost of third-party review of high-risk design elements (Marsden Jacobs)

Building value range	\$1-5M	\$5-10M	\$10-20M	>\$20M	Total (>\$1M)
Number of projects	435	67	35	40	577
Assumed average project value	\$3,000,000	\$7,500,000	\$15,000,000	\$30,000,000	\$3,532,500,000

Risk trigger	Item	Review requirements	Reviewer (Type of technical expert)	Cost of reviewer (\$/hr, incl GST)	Estimated hours per review (assumes class 2-apartments or 5-office)				Notes	Cost per item per building				Assumed % of buildings requiring this review	Estimated average annual cost					
					\$1-5M	\$5-10M	\$10-20M	>\$20M		\$1-5M	\$5-10M	\$10-20M	>\$20M		\$1-5M	\$5-10M	\$10-20M	>\$20M	Total	
Building designs that are required to be NCC type A fire resisting construction (as defined in table 3).	1.0	Structural engineering	Structural Engineer	\$250	15	30	70	110	Broad estimate assuming regular complexity. Detailed review scope assumed incl interrogation of software and analysis models, specifications, calculation packages and compilation of review report.	\$3,750	\$7,500	\$17,500	\$27,500	33%	\$543,750	\$167,500	\$204,167	\$366,667	\$1,282,083	
	1.1	Fire hydrant systems, pumps, tanks and boosters	Hydraulic/Fire Engineer	\$250	15	25	25	40		\$3,750	\$6,250	\$6,250	\$10,000	33%	\$543,750	\$139,583	\$72,917	\$133,333	\$889,583	
	1.2	Fire suppression systems	Fire Engineer	\$250	5	10	25	40		\$1,250	\$2,500	\$6,250	\$10,000	33%	\$181,250	\$55,833	\$72,917	\$133,333	\$443,333	
Buildings located in wind regions C or D.	2.0	Structural engineering	Structural Engineer	\$250	20	25	60	100	Buildings in Regions C&D generally low level with earthquake rarely governing which reduces input.	\$5,000	\$6,250	\$15,000	\$25,000	10%	\$217,500	\$41,875	\$52,500	\$100,000	\$411,875	
Buildings with earthquake design category of EDCII or EDCIII as per AS 1170.4.	3.0	Structural engineering	Structural Engineer	\$250	25	40	80	120	Likely to be more intense in terms of reviewing earthquake design/models etc.	\$6,250	\$10,000	\$20,000	\$30,000	67%	\$1,812,500	\$446,667	\$466,667	\$800,000	\$3,525,833	
Buildings that have importance levels 3 or 4 (as defined in table 4).	4.0	Structural engineering	Structural Engineer	\$250	25	40	80	120	See notes	\$6,250	\$10,000	\$20,000	\$30,000	50%	\$1,359,375	\$335,000	\$350,000	\$600,000	\$2,644,375	
	4.1	Means of escape (fire isolated exits, pathways and stairways)	Building Surveyor	\$250	8	16	32	40		\$2,000	\$4,000	\$8,000	\$10,000	50%	\$435,000	\$134,000	\$140,000	\$200,000	\$909,000	
	4.2	Fire detection system	Electrical Engineer	\$250	5	10	25	40		Dry fire (Items 4.2 & 4.3), wet fire (Items 4.4 & 4.5).	\$1,250	\$2,500	\$6,250	\$10,000	50%	\$271,875	\$83,750	\$109,375	\$200,000	\$665,000
	4.3	Emergency communication systems (warning (BOWS) and control (EWIS))	Electrical Engineer	\$250	5	10	25	40		\$1,250	\$2,500	\$6,250	\$10,000	50%	\$271,875	\$83,750	\$109,375	\$200,000	\$665,000	
	4.4	Fire hydrants, pumps, tanks and boosters	Hydraulic/Fire Engineer	\$250	15	25	25	40		\$3,750	\$6,250	\$6,250	\$10,000	50%	\$815,625	\$209,375	\$109,375	\$200,000	\$1,334,375	
	4.5	Fire suppression systems	Fire Engineer	\$250	5	10	25	50		Fire Suppression systems likely to be NA for buildings less than \$10m but nominal hours included for appraisal to confirm.	\$1,250	\$2,500	\$6,250	\$12,500	50%	\$271,875	\$83,750	\$109,375	\$250,000	\$715,000
Class 2, 3 and associated class 10 buildings located in designated bushfire prone areas.	5.0	BAL assessment	BAL assessor	\$230	4	8	12	15		\$920	\$1,840	\$2,760	\$3,450	20%	\$80,040	\$24,656	\$19,320	\$27,600	\$151,616	
	5.1	Bushfire safety certification (if applicable)	BAL assessor	\$230	2	4	6	8		\$460	\$920	\$1,380	\$1,840	20%	\$40,020	\$12,328	\$9,660	\$14,720	\$76,728	
Structures that incorporate: Steelwork that is construction category CC3 or CC4, under AS/NZS 5131; Concrete required to have compressive strength greater than 60MPa; Fatigue-sensitive components; One or more members or connections that support more than 5 tonnes of mass which would collapse if removed; or Overhangs weighing more than 1 tonne above public walkways.	6.0	Structural engineering	Structural Engineer	\$250	25	40	80	120	Assumed to occur in only 10% of buildings, because the remainder would be captured under one of the other risk triggers, e.g. Type A construction or importance level 3 or 4.	\$6,250	\$10,000	\$20,000	\$30,000	10%	\$271,875	\$67,000	\$70,000	\$120,000	\$528,875	
Buildings that present a special fire hazard, as defined in NCC Vol 1, E1.10.	7.0	Means of escape (fire isolated exits, pathways and stairways)	Building Surveyor	\$250	8	16	32	40	See notes	\$2,000	\$4,000	\$8,000	\$10,000	5%	\$43,500	\$13,400	\$14,000	\$20,000	\$90,900	
	7.1	Fire Brigade mobilising	DFES						DFES provide comments to documents but don't certify designs.						\$0	\$0	\$0	\$0	\$0	
	7.2	Fire detection system	Electrical Engineer	\$250	5	10	25	40		\$1,250	\$2,500	\$6,250	\$10,000	5%	\$27,188	\$8,375	\$10,938	\$20,000	\$66,500	
	7.3	First aid firefighting equipment	Hydraulic/Fire Engineer	\$250	Incl	Incl	Incl	Incl	Item 7.3 is included in Items 7.4 & 7.5.						\$0	\$0	\$0	\$0	\$0	
	7.4	Fire hydrant systems, pumps, tanks and boosters	Hydraulic/Fire Engineer	\$250	15	25	25	40		\$3,750	\$6,250	\$6,250	\$10,000	5%	\$81,563	\$20,938	\$10,938	\$20,000	\$133,438	
	7.5	Fire suppression systems	Fire Engineer	\$250	5	10	25	50	Fire Suppression systems likely to be NA for buildings less than \$10m but nominal hours included for appraisal to confirm.	\$1,250	\$2,500	\$6,250	\$12,500	5%	\$27,188	\$8,375	\$10,938	\$25,000	\$71,500	
Building work that affects other land, and requires a Form BA 20.	8.0	Any engineering or technical certification relating to the work affecting other land	Structural Engineer	\$250	5	10	20	35	Hours limited to elements affecting other land only.	\$1,250	\$2,500	\$5,000	\$8,750	67%	\$362,500	\$111,667	\$116,667	\$233,333	\$824,167	
Buildings containing atriums.	9.0	Fire separation of atrium (NCC part G3)	Building Surveyor	\$250	8	16	32	40	See notes	\$2,000	\$4,000	\$8,000	\$10,000	5%	\$43,500	\$13,400	\$14,000	\$20,000	\$90,900	
Large isolated buildings.	10.0	Sprinkler system and vehicle access (NCC clauses C2.3, C2.4, E1.5 and table E2.2a)	Hydraulic/Fire Engineer	\$250	10	25	50	85		\$2,500	\$6,250	\$12,500	\$21,250	20%	\$217,500	\$83,750	\$87,500	\$170,000	\$558,750	
Buildings containing basements.	11.0	Fire safety provisions (NCC clause D1.2(c) and tables E2.2a and E2.2b)	Building Surveyor	\$250	4	8	16	32	See notes	\$1,000	\$2,000	\$4,000	\$8,000	50%	\$217,500	\$67,000	\$70,000	\$160,000	\$514,500	
Risk-based inspection regimes.	12.0	Project risk analysis	Each Discipline or Risk Specialist?	\$250	5	8	12	15	Hours presented are for Structural Engineering. I assume reviews may be required for the 5 main Eng disciplines (mech, Elec, Hyd, Struc, Civil) in which case these hours can be multiplied by a nominal 5. Possibly a risk specialist reviews all disciplines as one process.	\$1,250	\$2,000	\$3,000	\$3,750	67%	\$362,500	\$89,333	\$70,000	\$100,000	\$621,833	
Completed buildings that are subject to retrospective performance solutions.	13.0	Any certification relating to the performance solution	Building Surveyor or Fire Engineer	\$250	10	20	30	40	This is very difficult to estimate as the extent of the retrospective work is anyone's guess. These numbers should be considered to be a broad guess.	\$2,500	\$5,000	\$7,500	\$10,000	33%	\$362,500	\$111,667	\$87,500	\$133,333	\$695,000	
Total estimated average annual cost										\$8,861,748	\$2,412,972	\$2,388,126	\$4,247,320		\$17,910,165					
Total annual value of buildings										\$1,305,000,000	\$502,500,000	\$525,000,000	\$1,200,000,000		\$3,532,500,000					
Percentage increase in compliance costs										0.679%	0.480%	0.455%	0.354%		0.507%					

Table 12: Estimated cost of inspections at prescribed notification stages for all class 2-9 buildings (Marsden Jacobs)

Mandatory independent inspections during construction

Building value range	<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	Total
Number of projects	3,026	435	67	35	40	3,603
Assumed average project value	\$600,000	\$3,000,000	\$7,500,000	\$15,000,000	\$30,000,000	\$5,348,100,000

Feature to be inspected	Timing of inspection	Inspector (Type of technical expert)	Cost of inspector (\$/hr, incl GST)	Estimated Hours for this category of inspection (assumes class 2-apartments or 5-office)					Cost per item per building					Assumed % of buildings requiring this inspection	Estimated average annual cost					
				<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M		<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	Total
Footings and reinforcing	Before covering the foundations of the work	Structural Engineer	\$220	4	8	20	35	50	\$880	\$1,760	\$4,400	\$7,700	\$11,000	100%	\$2,662,880	\$765,600	\$294,800	\$269,500	\$440,000	\$4,432,780
Reinforcing	Before pouring structural concrete	Structural Engineer	\$220	4	8	30	50	80	\$880	\$1,760	\$6,600	\$11,000	\$17,600	67%	\$1,775,253	\$510,400	\$294,800	\$256,667	\$469,333	\$3,306,453
Structural framework	Before installing internal or external covering over the structural framework	Structural Engineer	\$220	4	8	30	50	80	\$880	\$1,760	\$6,600	\$11,000	\$17,600	90%	\$2,396,592	\$689,040	\$397,980	\$346,500	\$633,600	\$4,463,712
Required fire safety features	Before cladding or building over required fire safety features	Fire Engineer	\$220	2	4	10	20	30	\$440	\$880	\$2,200	\$4,400	\$6,600	67%	\$887,627	\$255,200	\$98,267	\$102,667	\$176,000	\$1,519,760
Completed building	At the completion of the building work, before occupation	Structural Engineer	\$220	2	4	4	6	8	\$440	\$880	\$880	\$1,320	\$1,760	100%	\$1,331,440	\$382,800	\$58,960	\$46,200	\$70,400	\$1,889,800

Total Estimated average annual cost \$9,053,792 \$2,603,040 \$1,144,807 \$1,021,533 \$1,789,333 \$15,612,505

Total value of buildings \$1,815,600,000 \$1,305,000,000 \$502,500,000 \$525,000,000 \$1,200,000,000 \$5,348,100,000

Percentage increase in compliance costs 0.499% 0.199% 0.228% 0.195% 0.149% 0.292%

Table 13: Rectification work that must be assumed to be avoided, to offset the estimated cost of third-party reviews and inspections (Marsden Jacobs)

Rectification costs

An indicative estimate of the cost range for rectification work for non-compliant class 2-9 buildings in WA on a per building basis – as a percentage cost impost per building.

Building value range	<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	Total
Number of projects	3,026	435	67	35	40	3,603
Assumed average value per building	\$600,000	\$3,000,000	\$7,500,000	\$15,000,000	\$30,000,000	

Type of rectification work	Level of rectification work required	Assumed % cost of rectification work required					Rectification cost per building					Assumed current % occurrence per building	Estimated average annual benefit (avoided cost)					Min no of buildings per year which would need to avoid rectification for benefits to outweigh costs		
		<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M	<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M		<\$1M	\$1-5M	\$5-10M	\$10-20M	>\$20M		Total	
Building Services Engineering	None	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	96.3%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0
	Low	4%	4%	4%	4%	4%	\$24,000	\$120,000	\$300,000	\$600,000	\$1,200,000	1.8%	\$1,338,876	\$962,345	\$370,558	\$387,150	\$884,915	\$3,943,844	11	
	High	10%	10%	10%	10%	10%	\$60,000	\$300,000	\$750,000	\$1,500,000	\$3,000,000	1.8%	\$3,347,190	\$2,405,862	\$926,395	\$967,875	\$2,212,287	\$9,859,609	11	
Structural Engineering	None	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	96.3%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0
	Low	5%	5%	5%	5%	5%	\$30,000	\$150,000	\$375,000	\$750,000	\$1,500,000	1.8%	\$1,673,595	\$1,202,931	\$463,198	\$483,938	\$1,106,143	\$4,929,804	11	
	High	15%	15%	15%	15%	15%	\$90,000	\$450,000	\$1,125,000	\$2,250,000	\$4,500,000	1.8%	\$5,020,785	\$3,608,793	\$1,389,593	\$1,451,813	\$3,318,430	\$14,789,413	11	

Note: "High" rectification work is estimated at 10-15% as being within a reasonable bell curve estimate of a reasonably foreseeable worst-case. It is possible, in extreme circumstances, that a complete demolition and rebuild would cost in excess of 100%.

Total avoided cost \$11,380,445 \$8,179,930 \$3,149,743 \$3,290,777 \$7,521,775 \$33,522,670 **Total: 44 buildings**

Table 14: Estimated costs and assumed benefits, by value of building (Marsden Jacobs)

Net benefits		Commercial building value					
		<\$1M	\$1-5M	\$5-10M	\$10-20M	\$30M	Total
Costs	Third party review of design work	\$0	\$8,861,748	\$2,412,972	\$2,388,126	\$4,247,320	\$17,910,165
	Inspections during construction	\$9,053,792	\$2,603,040	\$1,144,807	\$1,021,533	\$1,789,333	\$15,612,505
	Total cost of compliance	\$9,053,792	\$11,464,788	\$3,557,778	\$3,409,659	\$6,036,653	\$33,522,670
Benefits	Avoided rectification costs	\$11,380,445	\$8,179,930	\$3,149,743	\$3,290,777	\$7,521,775	\$33,522,670
Net Benefits							\$0

Acknowledgements

Thank you in advance to everyone who submits comments on this CRIS. Building and Energy values your feedback, and will analyse every submission before recommending any reform proposals to the Government for its decision.

Thank you also to all the people who have already provided input on the proposals presented here. Before being released publicly this CRIS was reviewed by both internal and external parties. This CRIS would not have been possible without the expert input from many highly experienced building industry professionals. You know who you are; thank you very much for your advice and assistance!

In addition, Building and Energy sought input from one of the authors of the *Building Confidence* report, Ms Bronwyn Weir. Her review of the CRIS considered whether the proposed reforms met with the intent of the recommendations in the *Building Confidence* report. Ms Weir concluded that this CRIS “contains well-considered proposals, and seeks to inform stakeholders on what will be important reforms in a fair and balanced way.” Ms Weir did suggest several places where additional information would be helpful; Building and Energy has addressed these suggestions.