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

Building and Energy Western Australia

General Inspection (Snapshot) Report Seven

Certificates of design compliance for class 7b and 8 buildings

January 2022

Table of contents

Glossary of terms, acronyms and abbreviations

Accessway	A path of travel suitable for use by people with a disability.
Applicable building standards	In general the applicable building standards for proposed building work is the BCA.
BCA	Building Code of Australia (Volumes One and Two of the National Construction Code)
Building classification	A categorisation system for buildings of similar risk levels based on use, hazard and occupancy.
Building Services Acts	A suite of laws governing building control.
Building permit	Permission granted by the permit authority for building work to be carried out.
Building Regulations	Building Regulations 2012 (WA)
Building surveyor contractor	Registered individuals, partnerships or companies that undertake to carry out building surveying work and issue approved certificates.
Building surveyor practitioner	Registered individuals that carry out building surveying work. They cannot issue a certificate but can be a nominated supervisor for a building surveyor contractor.
CCC	Certificate of construction compliance
CDC	Certificate of design compliance
Compliance demonstrated	The design documentation includes sufficient information to demonstrate compliance with the applicable building standards. (This information may have been provided in the form of drawings or included or described in specifications or other technical documents including performance solutions).
Compliance not-demonstrated	The design documentation does not include sufficient information to demonstrate compliance with the applicable building standards or the information provided clearly demonstrates non-compliance with the applicable building standards.
Deemed-to-satisfy (DTS)	Provisions that are deemed to satisfy the Performance Requirements of the BCA of Australia.
Design documentation	Drawings, specifications and technical documents referenced on a certificate of design compliance that demonstrate compliance with the building standards.

DFES	Department of Fire and Emergency Services
DMIRS	Department of Mines, Industry Regulation and Safety
Emergency lighting	Lighting provided in a building to aide safe evacuation during an emergency.
Lift installations	Installation requirements within a lift to allow suitable use by people with a disability and to assist emergency services in evacuating sick or injured persons from a building.
NCC	National Construction Code
Permit Authority	Unless otherwise prescribed usually the local government in whose district the building or incidental structure is, or is proposed to be, located
Type of Construction	The type of fire resisting construction required for Class 2–9 buildings as required by the BCA of Australia.
Warning Systems	An alarm for building occupants to provide effective warning of an emergency.
WA	Western Australia

Executive summary

General Inspection Report 7 (GIR7) details the findings of the Building and Energy's general inspection of Certificates of design compliance (CDCs) issued by building surveyor contractors for new warehouse and workshop buildings and additions or alterations to those buildings between January 2019 and March 2020.

GIR7 is a desktop review of approvals documentation which was planned and commenced during the initial coronavirus (COVID-19) pandemic lockdown period in March 2020. Approvals documentation was reviewed to determine if it demonstrated compliance with the applicable building standards as declared by the building surveyor on the CDC.

GIR7 examined 59 samples of work which were sourced from ten metropolitan and two regional permit authorities based on the likely prevalence of these building types within their jurisdiction.

Specifically, GIR7 focused on whether core building characteristics that determine the applicable requirements of the BCA, have been correctly considered. Additionally, GIR7 focused on life safety BCA requirements, the prevalence and complexity of performance solutions and whether the approved forms have been used and produced appropriately.

The inspection of 59 buildings included 2960 inspection points with a demonstrated compliance rate of 70 per cent. Items that did not demonstrate compliance were risk-ranked from no-risk to high risk. Individual reports advising of identified, risk-ranked non-compliance for each building were sent to the issuing building surveyor.

The findings highlighted five key areas shown below.

Access for people with a disability:

- Extent of access for people with a disability not adequately demonstrated.
- Requirements for accessways within buildings required to be accessible not adequately demonstrated.
- Information regarding signage required to assist people with a disability to identify facilities, services and features provided in a building not adequately demonstrated.

Emergency lighting, exit signage and warning systems:

- Provision of emergency lighting required to minimize risk of death or injury to occupants during an emergency not adequately documented.

Firefighting equipment:

- Requirements for the provision of adequate firefighting equipment within a building during construction not adequately demonstrated.

Lift installations:

- The level of documentation provided to address the requirements for lift installations require improvement in order to adequately demonstrate compliance.

Sanitary and other facilities:

- Provision of minimum acceptable sanitary facilities for people with a disability not adequately provided or documented.
- Measures for designing and commissioning hot water, warm water and cooling water systems aimed at minimizing the risk of major disease outbreak have not been adequately demonstrated.

Low and medium non-complying items were brought to the attention of the building surveyor contractor with instructions for improvements in future certifications. High risk items required a response from the building surveyor contractor advising of actions taken to remedy the impact on the associated building and action taken to prevent further occurrences in the future.

The items identified as having a low percentage of compliance will be an area of further focus of Building and Energy's compliance audits of building surveyors for class 2–9 buildings in the 2021–2022 audit priorities.

1. Background

In 2020–21 Building and Energy prioritised the audit of CDCs for class 7b and 8 buildings. In mid-2020 a general inspections of building surveying work relating to class 7b and 8 buildings was carried out.

General inspections of building surveying work generally relate to certificates issued by building surveyors and the documentation referenced in those certificates as having been relied upon to confirm compliance with the applicable building standards.

GIR7 is a desktop general inspection of CDCs for warehouse and workshop buildings. The purpose of this report is to:

- Inform the profession and industry on areas requiring improvement in the demonstration of applicable building standards through the certification of buildings with a focus on high risk areas.
- To inform the profession about how standard forms (certificates) were being used and to provide advice on necessary improvements.

The possible outcomes of general inspections of building surveyors can be:

- provision of advice and assistance to registered building surveyors;
- action to address non-compliant building surveyor work;
- recommendations to improve compliance; and
- referral of serious non-compliance for consideration of enforcement action.

2. Objectives and scope

2.1 Objectives

GRI7 is a desktop inspection that assessed how building surveyors were using relevant certificates, and how well building standards were being demonstrated in design documentation of class 7b and 8 buildings. This was achieved through a technical inspection of each set of referenced building approval documentation against the applicable building standards (the BCA).

In particular GIR7 focused on the following elements.

1) How building surveyor practitioners were identifying and applying the core building characteristics of class 7b and 8 building designs, which affect the overall assessment of the building design against the applicable building standards. These core building characteristics include:
    - Building classification (including multiple classifications)
    - Rise in storey
    - Area and volume
    - Required type of construction
    - Large isolated buildings
    - Compartmentation and separation

2) How building surveyor practitioners were considering and demonstrating life safety building code requirements for class 7b and 8 building designs based on the core building characteristics. These include:
    - Fire resisting construction & applicable classification based concessions
    - Firefighting equipment
    - Smoke hazard management
    - Protection of openings
    - Access and egress

3) The complexity, nature and prevalence of performance solutions for class 7b and 8 building designs and how they have been considered by the building surveyor practitioner as addressing the performance requirements of the BCA.

4) Building surveyor interaction with DFES as required by the Building Regulations as it relates to Class 7b and 8 buildings.

5) How relevant CDCs were being used and produced for class 7b and 8 building designs.

2.2 Scope

The scope of GIR7 was new buildings or additions to existing buildings of classification 7b or 8 that were the subject of a building permit approval from 1 January 2019 to 31 March 2020. As the objective of GIR7 was to assess the work of building surveyors in relation to warehouses and workshop type buildings, laboratories were excluded from this general inspection scope despite their inclusion as a class 8 building in the BCA.

Buildings of multiple classification, where the main building use was class 7b or 8 were included in the general inspection. The most typical example of mixed classification for the subject building types was where an office building part was attached to, or included within the main use building.

The inspection planning and early stages were commenced during a lock-down period due to the coronavirus (COVID-19) pandemic. As the nature of this inspection was desktop based, it was able to progress without being disrupted due to current and subsequent necessary lockdown periods.

3. Methodology

Documentation was collected from 12 permit authorities. Ten of those permit authorities were in the metropolitan area with one in the Peel region and one in the South West region. Permit authorities were selected based on the prevalence of in-scope buildings within their jurisdiction.

The permit authorities were requested to provide a list of in-scope approvals in the nominated time period. Where examples were considered appropriate for the purposes of the general inspection, building approval documentation was requested from and provided by the permit authority.

The gathered data resulted in 59 appropriate examples, which included work samples from 27 building surveyor contractors and one permit authority, with a total representation of 34 building surveyor practitioners.

The 59 samples of CDCs were assessed against the plans, specifications and other documents referenced on the certificate.

The CDCs were reviewed against the applicable building standards with areas not adequately demonstrating compliance, being allocated a risk ranking for each individual inspection point (see Appendix D – Determining risk).

Individual certificates for buildings were ranked based on their overall highest recorded risk level.

3.1 Inspection limitations

A minimum sample size of 24 certificates is sufficient to achieve an **80 per cent confidence level** which is sufficient for a Snapshot general inspection.

4. Findings

This section provides a break-down of the inspection point outcomes in sections as they appear in the BCA.

The inspection points of GIR7 relate directly to the requirements of the Building Regulations and the BCA. Inspection items that relate to the BCA are divided into sections that reflect the manner in which they arise in the BCA.

Figure 2 below, shows the compliance percentage outcome of the inspection points in the BCA parts. Table 1 shows a further breakdown into BCA sub-parts.

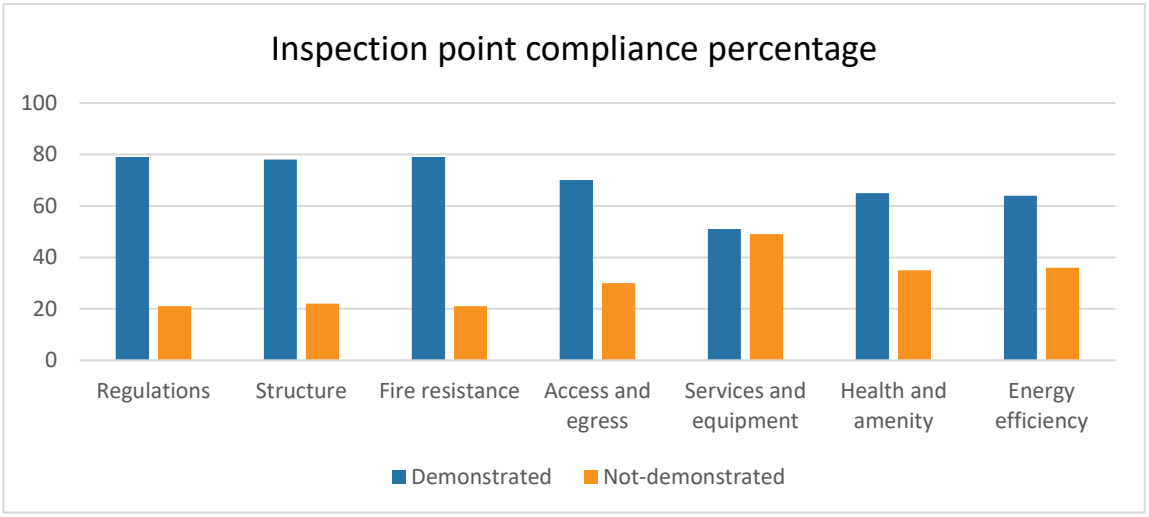

Figure 1 – Inspection point compliance by category.

Topic	Sub-topic	Demonstrated	Not-demonstrated	Percentage
Regulations	Documentation	383	100	79%
Structure	Structural provisions	83	23	78%
Fire resistance	Compartmentation and separation	82	29	74%
	Fire resistance and stability	204	45	82%
	Protection of opening	59	18	77%
Access and egress	Access for people with disability	129	121	52%
	Construction of exits	164	82	67%
	Provision for escape	353	72	83%
Services and equipment	Emergency lighting, exit signs and warning systems	25	23	52%
	Firefighting equipment	74	68	52%
	Lift installation	4	13	24%
	Smoke hazard management	10	4	71%
Health and amenity	Damp and weatherproofing	114	77	60%
	Light and ventilation	134	50	73%
	Room heights	46	5	90%
	Sanitary and other facilities	100	82	55%
Energy efficiency	Energy efficiency	117	67	64%
Totals		**2081**	**879**	**70%**

Table 1 – Inspection points outcomes breakdowns

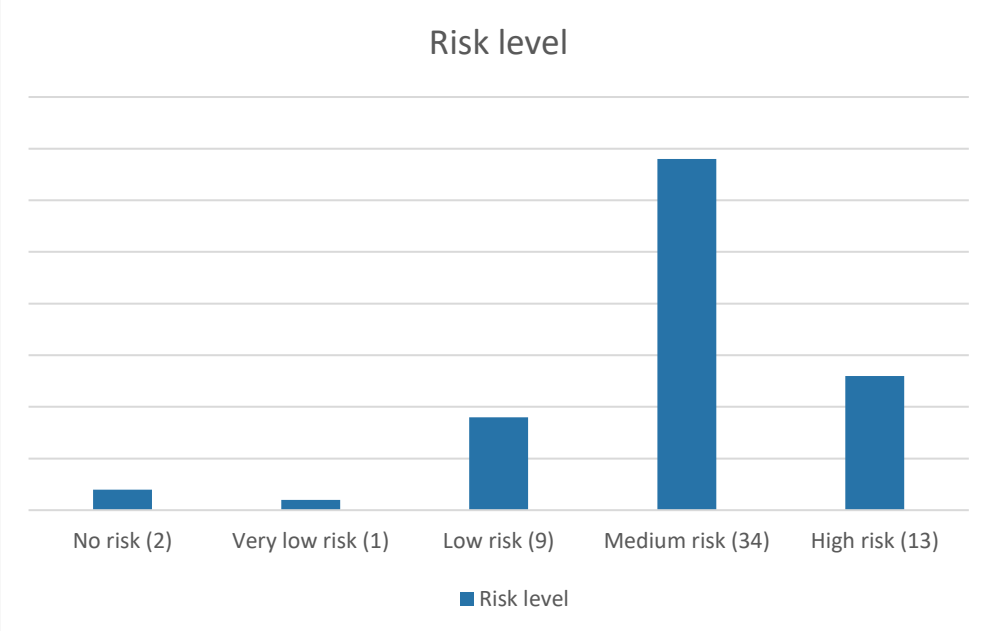

Figure 2 – Individual building risk ranking

Providing individual reports in this manner communicates issues directly to the responsible building surveyor as it relates to the specific building.

Holistically, the inspection points from GIR7 provide a snapshot view of how building standards are being demonstrated in the designs for buildings within the scope. Overall, there were 2960 inspection points showing a compliance rate of **70 per cent (2081 to 879)**.

The areas highlighted in Table 1 have attained a low percentage of demonstrated compliance. The information below shows common non-compliances identified within these areas.

Access for people with a disability:

- Extent of access for people with a disability not adequately demonstrated.
- Requirements for accessways within buildings required to be accessible not adequately demonstrated.
- Information regarding signage required to assist people with a disability to identify facilities, services and features provided in a building not adequately demonstrated.

Emergency lighting, exit signage and warning systems:

- Provision of emergency lighting required to minimize risk of death or injury to occupants during an emergency not adequately documented.

Firefighting equipment:

- Requirements for the provision of adequate firefighting equipment within a building during construction not adequately demonstrated.

Lift installations:

- The level of documentation provided to address the requirements for lift installations require improvement in order to adequately demonstrate compliance.

Sanitary and other facilities:

- Provision of minimum acceptable sanitary facilities for people with a disability not adequately provided or documented.
- Measures for designing and commissioning hot water, warm water and cooling water systems aimed at minimizing the risk of major disease outbreak have not been adequately demonstrated.

Other items for consideration:

- Consideration of compliance with the requirements of BCA Volume One C1.11 (performance of external walls in fire) with particular reference to the requirements of Specification C1.11. If the requirements of Specification C1.11 have not been addressed in the design

documentation then the structural design proposed by the structural engineer cannot be a DTS solution.

- Where an exit from a class 7b or 8 building discharges into a yarded area then that area must be compliant as an open space which connects directly to a public road. This is of particular importance where yard areas are securely gated.
- Where the design includes additions to an existing building or a new building is proposed on a site which has existing buildings, the effect on any existing performance solutions must be considered.
- Where the design includes additions to an existing building or a new building is proposed on a site which has existing buildings and existing sanitary facilities are being relied upon to satisfy BCA requirements, existing facilities/facility numbers should be documented in order to demonstrate compliance.

5. Actions

For each individual inspection, a report was produced which identified areas of non-compliance along with a risk rating. The reports contained the risk rating for each item of non-compliance and were sent to the issuing building surveyor contractor with the following actions required:

- In instances where the allocated risk level was **very low** or **low**, the items identified in the technical report were brought to the attention of the building surveyor contractor to address in future certifications and to assist in their understanding of their obligations. In this instance no response was required.
- Where the allocated risk level was **medium risk** the building surveyor contractor was required to ensure that procedures are put in place to guarantee that compliance was adequately demonstrated in future certifications. In this instance no response was required.
- Where the allocated risk level was **high risk** the building surveyor contractor was directed to provide evidence to Building and Energy advising what actions were taken to remedy the impact on the associated building. Also, they were required to advise Building and Energy of the procedures put in place to ensure that the items of concern will not be repeated on future certifications.

5.1 Future actions

As detailed in Building and Energy's Audit priorities statement for 2021–2022, there will be focus on those areas identified in GIR7 as having a low percentage of compliance.

Building surveyor contractors with multiple high risk items will be subject of targeted compliance inspections during 2021–2022. These targeted compliance inspections will consist of an inspection of how the building surveyor contractors were fulfilling their legislated obligations along with technical inspections of sample of their work.

6. Feedback

Feedback on the content of this report can be submitted via be.info@dmirs.wa.gov.au.

Appendix A – Role and powers of Building and Energy

Western Australia (WA) has a suite of laws governing building control, including the *Building Act 2011* (the Building Act), the *Building Services (Complaint Resolution and Administration) Act 2011* (the BSCRA Act), and the *Building Services (Registration) Act 2011* (the Registration Act).

The BSCRA Act empowers the Building Commissioner to monitor any building or building service in WA to verify how building services have been or are being carried out, and how building standards have been or are being applied.

The Building Commissioner is able to designate Building and Energy officers to review approval documentation and to inspect buildings during construction and after the completion of building works.

The Registration Act provides a framework for registering building surveyors and builders and includes disciplinary provisions to manage sub-standard work and conduct by a registered building service provider.

For a new building of any classification that requires a building permit, the Building Act requires a registered building surveyor to sign a CDC for the building design. The CDC contains a statement to the affect that if the building is completed in accordance with the plans and specifications that are referenced in the certificate the building will comply with each applicable building standard.

Additionally for new Class 2–9 buildings that require a building permit, the Building Act requires a registered building surveyor to sign a certificate of design compliance (CCC) for the

completed building. The CCC contains a statement to the affect that the building has been completed in accordance with the plans and specifications that were referenced in the CDC, and as such the building complies with each applicable building standard.

Further information about the role of Building and Energy is available on the DMIRS website.

Appendix B – Building approvals

The building approval process for WA is legislated under the Building Act and associated Building Regulations. This legislation controls the application of building standards for the design and construction of buildings and incidental structures and sets out when a building permit is needed for building work.

The Building Act generally requires a building permit for the construction of a new building and an occupancy permit to allow a building to be occupied (applies to class 2–9 only). As part of the process for getting a building permit, a building surveyor needs to sign a CDC stating that if the building is completed in accordance with the plans and specifications, the building will comply with each applicable building standard that applies to it. For an occupancy permit a building surveyor needs to sign a CCC stating the building has been completed in accordance with the plans and specification specified in the CDC.

The permit authority (usually the local government in whose district the dwelling will be built) can grant building permits and occupancy permits if satisfied that the application for a permit addresses the requirements of the Building Act 2011 and Building Regulations 2012. The permit authority can request further information to assist it in considering an application (if there is an error) and impose conditions on the grant of a building permit if necessary.

The builder named on the building permit is responsible for ensuring that the building is constructed in accordance with the building permit (including any conditions) and the applicable building standards.

Building surveyors must be satisfied that the building has been constructed in accordance with the approval documentation prior to signing a CCC.

The Building Act gives the permit authority powers to monitor and inspect building work to ensure compliance with these requirements. The Building Act also provides permit authorities with the power to issue building orders to remedy or stop building work, and to prosecute builders and owners for non-compliance.

Further information about the permit process is available on the DMIRS website.

Appendix C – Building standards

The Building Regulations, made under the Building Act, set out a general position as to applicable building standards, as well as a series of qualifications for particular circumstances and types of building. The general position is that the applicable building standards are those set out as the performance requirements in the BCA in effect at the time the building application is made or in effect 12 months before the building permit application was made.

The BCA is a comprehensive set of building standards that is the product of a series of efforts by the commonwealth, state and territory governments during the 1960s, 70s and 80s to develop a uniform national position on building standards.

The BCA was first published in 1988 and has been revised several times. In 2008 the Council of Australian Governments agreed to develop a national code covering building plumbing, electrical, and telecommunications standards. The NCC was published in 2011. To date the NCC only encompasses building and plumbing standards.

The NCC consists of three volumes. Volume One of the NCC deals with building standards for Class 2–9 buildings (multi-residential, commercial, industrial and public buildings); Volume Two deals with building standards for Class 1 and Class 10 buildings (residential and non-habitable buildings and structures); and Volume Three deals with plumbing standards. The term BCA refers to Volumes One and Two of the NCC.

The BCA sets out minimum performance requirements that buildings must achieve. A performance requirement can be satisfied through the use of a deemed-to-satisfy (DTS) solution, a performance solution (previously known as an alternative solution) or a combination of DTS and performance solutions.

A DTS solution is one that follows the prescriptive DTS requirements contained in the BCA. These requirements may cover materials, components and/or construction methods that are to be used and design factors that are to be considered.

A performance solution is any solution other than a DTS solution that satisfies the stated performance requirement. DTS solutions are typically the ‘time proven’ methods of construction that are known to produce an acceptable outcome. Such methods may however prove to be inefficient or come with other intrinsic limitations. Performance solutions by contrast are flexible and allow for the development of innovative construction methods and products.

For a DTS solution these assessment methods are:

- Compliance with the DTS provisions of the BCA.

For a performance solution these assessment methods are:

- provision of certain types of documentary evidence;
- verification through the conduct of tests, inspections, calculations;

- expert judgement; and
- comparison with the DTS requirements.

Part A2 of the BCA Volume One contains the acceptance of design and construction provisions. This part outlines the options that can be used as evidence to support that the use of materials, products or forms of construction meet the NCC requirements.

Before considering the BCA's performance requirements the primary classification system used for buildings must be considered (the BCA class). There are ten main classes of buildings and a number of subclasses. Their defining characteristics are summarised in the table below.

Class	Description
1a	A detached house or a group of attached dwellings separated by fire resistant walls (for example, town houses or villa units) which is not located above or below another building other than a private garage.
1b	A boarding house, guest house or hostel with a floor area not exceeding 300m^2 which ordinarily accommodates not more than 12 people and which is not located above or below another building other than a private garage.
2	An apartment building or group of single storey units located above a communal basement or garage.
3	A building, other than a Class 1 or 3 building, which is a common place of long term or transient residence such as (for example, a boarding house, guest house or backpackers accommodation or residential part of a hotel, school or detention centre.
4	A dwelling within a building that is otherwise a Class 6, 7, 8 or 9 building (for example, a caretaker's residence or an apartment above a workshop).
5	An office building used for commercial purposes not otherwise captured in Class 6, 7, 8 or 9.
6	A shop or other building through which the public is sold goods or services.
7a	A carpark structure.
7b	A warehouse or a building for the display of goods to be sold on a wholesale basis.
8	A laboratory, factory or workshop where business is carried out for trade, sale or commercial gain.
9a	A healthcare facility where occupants or patients generally need assistance to evacuate during an emergency (for example, a hospital or care facility).
9b	A building where people assemble for civic, educational, entertainment or transportation purposes.
9c	An aged care building.
10a	A non-habitable building being a private garage, shed or the like.
10b	A non-habitable structure being a fence, swimming pool, retaining wall or the like.
10c	A private bushfire shelter.

Appendix D – Determining risk

For the purposes of auditing, the reason for determining risk is to inform if and what follow up actions are required.

Risk Level	Follow up action
Low	Inform the building surveyor for their future reference.
Medium	Inform, ask the building surveyor to put proper procedures in place.
High	Inform, ask the building surveyor to put proper procedures in place and provide evidence.

In order to determine a risk ranking of areas identified as not demonstrating compliance, officers use a 5x5 risk matrix which has been developed for the purposes of auditing. Each identified item is assessed individually against the matrix, considering the possible consequences of a building that is completed without the required compliance element and then considering the likelihood of that consequence occurring.

The matrix considers four consequences categories, being people, financial, environmental and reputational. The many permutations available ensure that a risk outcome can be achieved for a particular non-compliance when related to a specific building. The methodology does not include any pre-determined risk ranking outcomes.

			CONSEQUENCE				
	People		Minor disruption and no risk to people's health or safety.	Slight disruption of occupants and minor injury to people. Minor impact on people's health (mental &/or physical) Moderate impact on people's legal rights.	Could cause a major disruption to occupants and result in injury or illness to people resulting in one or more day(s) unable to function in a working environment. Significant impact on people's legal rights.	Occupants could suffer a permanent total disability or major health issue (mental &/or physical). Major impact on people's legal rights.	Could result in fatality
	Financial		Cost <$1000	Cost $1000 - $10 000	Cost $10 000 to $100 000	Cost > $100 000	Cost > $1, 000 000
	Environmental		No environmental consequence greater than as expected business as usual	No environmental consequence greater than as expected business as usual	Environmental damage can be mitigated and is not required to be notified under jurisdiction requirements as environment can be restored.	Risk of reversible environmental damage required to be notified under jurisdiction requirements.	Could result in irreversible severe environmental damage required to be notified under jurisdiction requirements.
	Reputational		No reputational consequence greater than as expected business as usual	Minor reputational consequence compared to business as usual	Reputational damage is possible if action is not taken on subject non-compliance (possible chance of media coverage or loss in confidence by industry and public. Contentious Issue Briefing Note likely required)	Reputational damage is likely if action is not taken on subject non-compliance (likely chance of media coverage or loss in confidence by industry and public. Minister likely required to make a statement)	Reputational damage is almost certain if action is not taken on subject non-compliance (almost certain chance of media coverage and loss in confidence by industry and public. Parliamentary inquiry or Royal Commission could result)
			1	2	3	4	5
LIKELIHOOD	Probability		Insignificant	Moderate	Significant	High	Extreme
	Is expected to occur in most circumstances (>95%)	5 Almost certain	6	7	8	9	10
	Will probably occur in most circumstances (65 - 95%)	4 Likely	5	6	7	8	9
	Might occur at some time (35 - 65%)	3 Possible	4	5	6	7	8
	Could occur at some time (5 - 35%)	2 Unlikely	3	4	5	6	7
	May occur only in exceptional circumstances (<5%)	1 Rare	2	3	4	5	6

Score outcomes:	
2-5:	Low Risk: Builder to rectify defects (no proof of rectification sought). Building service provider or building surveyor to comply in future.
6:	Medium Risk: Builder to rectify defects (no proof of rectification sought). Building service provider or building surveyor to comply in future.
7-8:	High Risk: Proof of rectification is required. Building surveyor required to demonstrate future compliance. Refer to Audit Manual Chapter 17 (Escalation Process for High Risk Inspections).
9-10:	Very High Risk: **Immediate referral to Line Manager and/or building service provider, permit authority,Worksafe and any other as required.** Refer to Audit Manual Chapter 17 (Escalation Process for High Risk Inspections).

Figure 3 – Risk matrix

Appendix E – Additional resources

Building and Energy publications

Guidance on fire safety performance solutions

Obligations for registered building surveyor contractors

These publications are available in other formats on request to assist people with special needs.

Australian Building Codes Board resources

ABCB-connect – NCC Essentials

NCC – Volume One

NCC – A performance-based code

NCC – Volume One fire safety

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