VICTORIAN BUILDING AUTHORITY

Building Documentation Audit Volume 2 - Class 1a

September 2023 to February 2024

VICTORIA State Government

Aboriginal Acknowledgement

The VBA respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely. We pay our respects to their Elders past and present. We recognise and value the ongoing contribution of Aboriginal peoples and communities to Victorian life.

We embrace the spirit of reconciliation, working towards equality of outcomes and an equal voice.

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1. ABOUT

The Victorian Building Authority's (VBA) Building Documentation Audit Program (BDAP) is a regulatory initiative that proactively monitors building work using a risk-based approach to identify and reduce non-compliant building work in Victoria in line with the Minister's Statement of Expectations. The program involves the desktop review of building permit and occupancy permit documentation to ensure registered practitioners and endorsed building engineers are carrying out their functions correctly. This report details the BDAP findings from September 2023 to February 2024.

1.1 VBA compliance and enforcement

The Victorian Building Authority (VBA) is responsible for monitoring and enforcing compliance with the *Building Act 1993* (the Act) and associated regulations and guidelines, including the National Construction Code (NCC) and Code of Conduct for Building Surveyors in Victoria.

The Act provides for plumbing and building work to be carried out so that it meets minimum standards of safety, health, and amenity. It requires people and companies undertaking building and plumbing work to be registered or licensed practitioners or endorsed building engineers.

It also provides for various enforcement tools to be used where individuals and companies fail to comply with the requirements of Act.

The VBA's compliance and enforcement decisions are made according to the Compliance and Enforcement Policy.

The VBA's twice-yearly Compliance and Enforcement Report is designed to give industry, practitioners, and the community an insight into the VBA's activities. To safeguard Victoria's future, the VBA is strengthening its capacity to take firm action when needed to keep Victorians safe and hold practitioners to account. As Victoria's building and plumbing regulator, the VBA's starting point is that individuals want to do the right thing. That is why we are enhancing our risk-based regulatory model that will encourage and incentivise good behaviour, while discouraging poor performance.

1.2 Building documentation audit program benefits

The benefit of the BDAP is to improve safety and compliance outcomes for building work in Victoria through conducting desktop reviews of section 30 building permit documentation acquired from council for regulatory and technical compliance against key areas of harm. The results of these audits are communicated to practitioners.

Building surveyors perform a crucial role in the building approval process to ensure we live in a safe, accessible, and energy efficient built environment. The Act gives building surveyors in Victoria the power to issue building permits, occupancy permits and enforce compliance with the Act, Regulations, and NCC.

Section 17 of the Act allows for applications for building permits to be made to a municipal building surveyor or private building surveyor appointed under Part 6 of the Act. Section 24 of the Act requires, among other things, that the Relevant Building Surveyor (RBS) refuse to issue a building permit unless he or she is satisfied that the building work and the building permit will comply with the Act and the building regulations.

As building surveyors perform a crucial role in the building approval process, monitoring their compliance provides an avenue for oversight of the building industry's performance. Information and intelligence gathered through BDAP enables the VBA to identify areas of concern warranting further investigation and possible need for improvement of industry practice and the regulatory framework. Data from the audits is used to guide education as well as the enforcement and compliance activities of the VBA.

While BDAP has an educative nature, where non-compliances are identified, practitioners (including plumbers, builders and engineers) may, among other compliance measures, be subject to enforcement action in line with the VBA's Compliance and Enforcement Policy.

1.3 What are our powers?

Section 197 of the Act provides that it is a function of the VBA to:

(a) Monitor and enforce compliance with the Act and regulations.

(b) Supervise and monitor the conduct and ability to practice of registered building practitioners.

(c) Provide information on matters relating to –

i. building standards; and

ii. the regulation of buildings, building work and building practitioners.

(d) Provide information and training to assist persons and bodies in carrying out functions under this Act or the regulations.

1.4 What was the scope?

The scope of this audit report is Class 1a and 1b buildings with a mixture of storeys located throughout the state for compliance against the performance requirements of Part 2.1 Structure, Part 2.2 Damp and Weatherproofing, Part 2.3 Fire safety, Part 2.4 Health and amenity, and Part 2.5 Safe movement and access of Volume 2 of the NCC.

Whilst a new version of the NCC has since been released, due to the timing of these audits and the ability for the RBS to determine under section 10 of the Act to adopt an older regulation, all audits referred to in this report were a NCC version pre-NCC 2022.

Part 2.7 Ancillary provisions and additional construction requirements were not considered as part of this audit as the performance requirements for Swimming pool and buildings in bushfire prone areas have been considered as part of previous audits available on the VBA website.

1.5 How did we do it?

The audits were conducted by the VBA's Building Audit team, which is a multi-disciplinary team that consists of registered and qualified building practitioners including building surveyors and building inspectors, along with endorsed building engineers.

The VBA conducted desktop audits on 35 building permits for Class 1a and Class 1b buildings located within 26 municipalities in Victoria. The locations of the audits are shown in Figure 1.

The practitioners and buildings were selected using a risk-based selection criteria utilising data from across the VBA such as Proactive Inspection Program (PIP) results, complaints data, and practitioner discipline to identify areas of high risk. Site selection criteria considers data such as building use e.g., number of storeys, construction materials, and location, such as bushfire prone areas.

To ensure a high value audit program, the audits are scoped based on risk assessment to align with a focus on known risks and the harms in line with the VBA's regulatory priorities including:

- Fires in buildings
- Building collapse or structural damage
- Children drowning
- Threat to life and safety
- Water ingress
- Fit for purpose.

The risk-based nature of the program means that the audits do not assess compliance with all NCC requirements and as such the audited permit documents may have other unidentified compliance issues.

A total of 33 Building Surveyors were responsible for the sites selected.

The Section 30 building permit documentation was used to assess each building for sufficiency of the information to enable the building surveyor to determine compliance, and whether compliance was achieved against the Building Code Volume Two and the following Performance Requirements of the NCC:

- P2.1.1
- P2.1.2
- P2.2.1
- P2.2.2
- P2.2.3
- P2.3.1
- P2.3.2
- P2.4.1
- P2.4.7
- P2.5.1
- P2.5.2

Where there was no performance solution documented to satisfy the performance requirement, the assessment was undertaken against the Deemed-to-Satisfy requirements (DtS).

AUDIT LOCATIONS

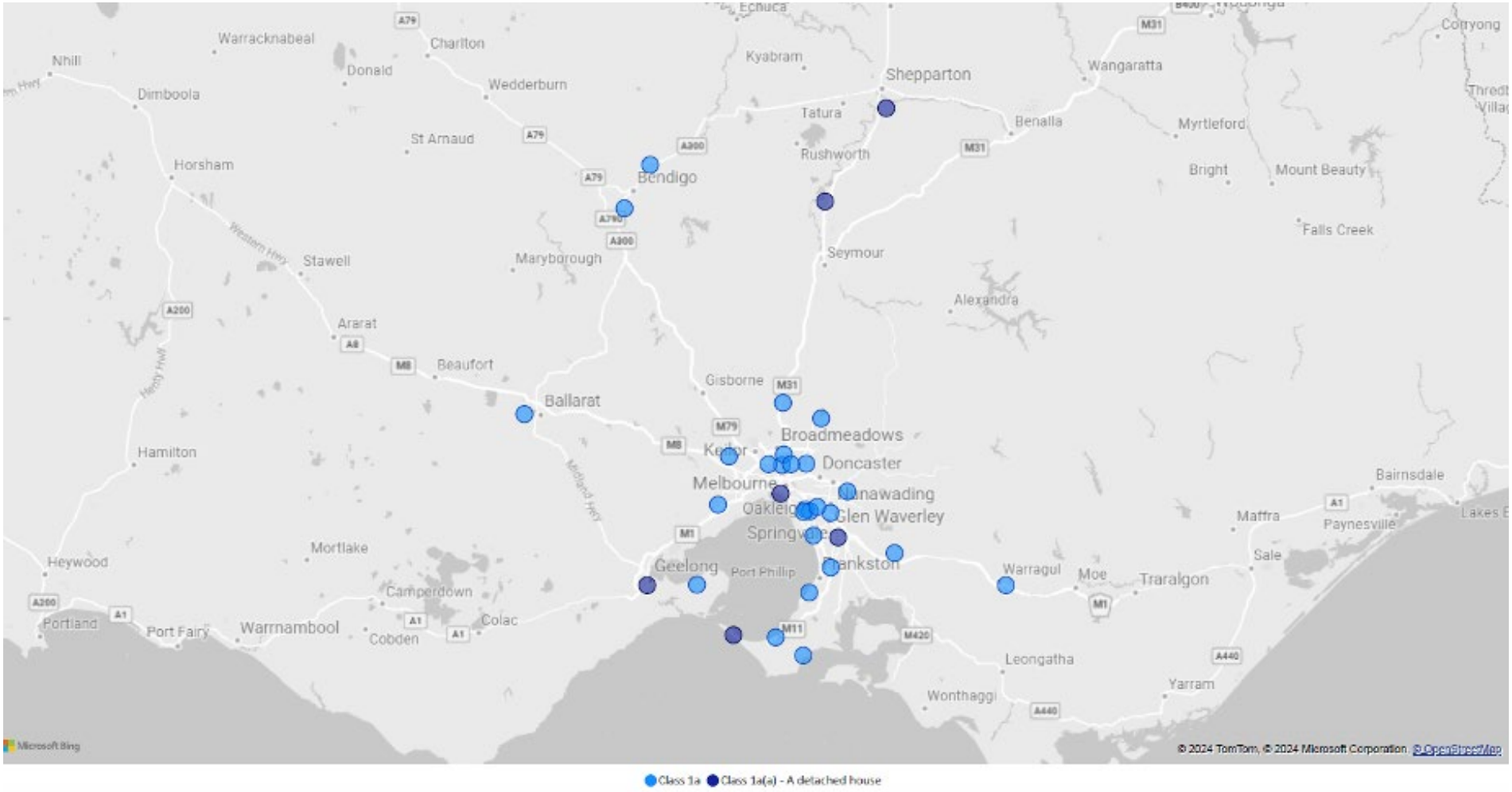

Figure 1. Audit Locations. Figure 1 is a map of Victoria showing the locations of the audits.

1.6 Audit Process

When undertaking the audits, four elements are considered:

- Whether a DtS clause would be applicable to satisfy a performance requirement.
- If the clause is applicable, then whether there is sufficient information in the documentation for the RBS to determine compliance.
- What compliance solution was used, e.g., DtS, performance solution, or a combination of these.
- Whether the information is compliant, non-compliant, or unable to determine.

There are three compliance levels which are linked to sufficiency of information. These are illustrated in Figure 2. Compliances levels.

An item is deemed compliant where there is sufficient information to be satisfied that the clause has been complied with, either through DtS, or a performance solution, as shown in example A of Figure 2, where there is sufficient information to determine the stair going and riser are DtS compliant.

Where there is insufficient information, for example where there are no details of the goings or risers, such as example B of Figure 2, we would assess this as being unable to determine.

Lastly, an item is marked as non-compliant when there is a physical non-compliance detailed. As shown in Example C where the going is not the minimum required.

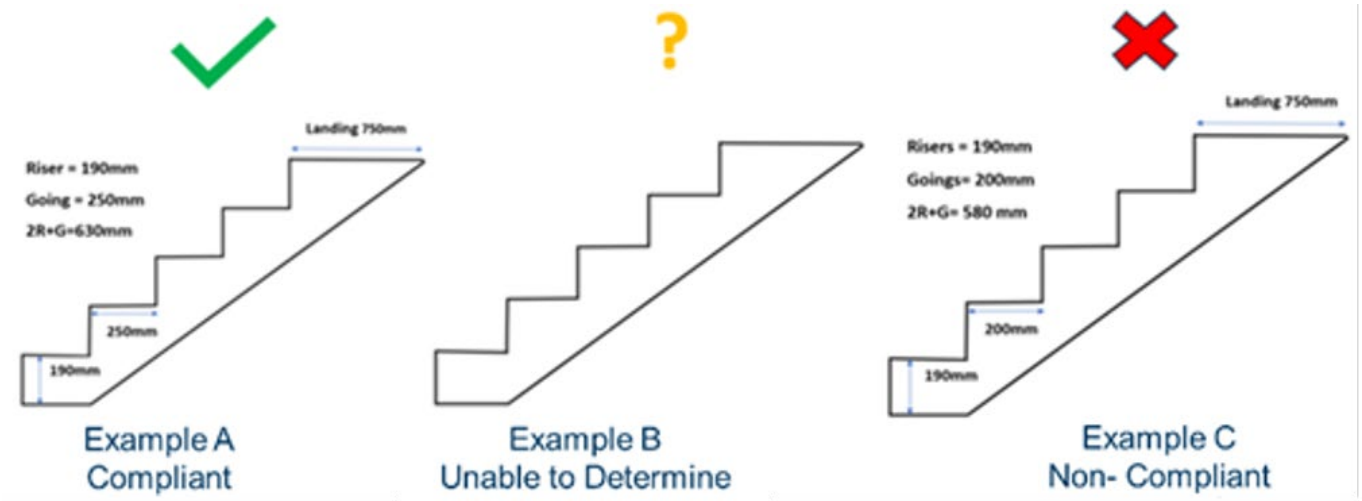

Figure 2. Compliance levels. Figure 2 shows three different stairs with their associated compliance levels.

1.7 Action taken by the VBA

Where compliance risks were identified, the VBA sent notification to the RBS. Typically, these notifications require the practitioners to:

- Provide any relevant documentation (such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner) showing how the work meets the requirements under the building legislation – this is because practitioners are currently not required to lodge this documentation with the VBA; or
- Provide the VBA with proof the work has been/and will be brought into compliance (e.g., amended building permit).

The RBS is expected to manage any rectification required, using their enforcement powers. Although the program has an education focus, where serious non-compliances are identified, practitioners are referred for further investigation in line with the VBA's Compliance and Enforcement Policy.

1.8 Next steps

The next steps after publishing this report will be to use the information collected from the audits to:

- Engage with industry stakeholders and co-regulatory partners about causes, challenges, and ways to improve.
- Provide education to building practitioners and endorsed building engineers.
- Allow for refined targeting of proactive inspections and other regulatory functions.
- Monitor for improvement of issues identified.
- Advocate for legislative changes and reforms to improve regulatory process.

2. AUDIT FINDINGS

Of the 35 audits completed, three audits had at least one item which was non-compliant. This is an improvement on the reporting period of March 23 to August 2023 where 12 of the 40 audits had a non-compliance item.

The results of the audits for sufficient documentation for the RBS to make a determination on compliance varied from 16 per cent for wet areas to 84 per cent for smoke alarms and evacuation lighting. Wet areas have consistently been the underperforming area throughout the audits. There has again been a slight improvement from the last reporting period for smoke alarms and evacuation lighting whilst the other areas generally remained around the same figure.

The results for compliance varied from 16 per cent for wet areas to a high of 84 per cent for smoke alarms and evacuation lighting. These results are consistent with previous reports.

Overall, when the results from the 35 audits were averaged, of the 113 items assessed there were found to be on average of 30 items per audit where the RBS could not have been satisfied that compliance was achieved when an item was applicable. There were on average 16 items per audit that were compliant when applicable. These are consistent with the previous reporting period.

3. DOCUMENTATION INSIGHTS

Documentation insufficiencies across all audits are shown in Figure 3.

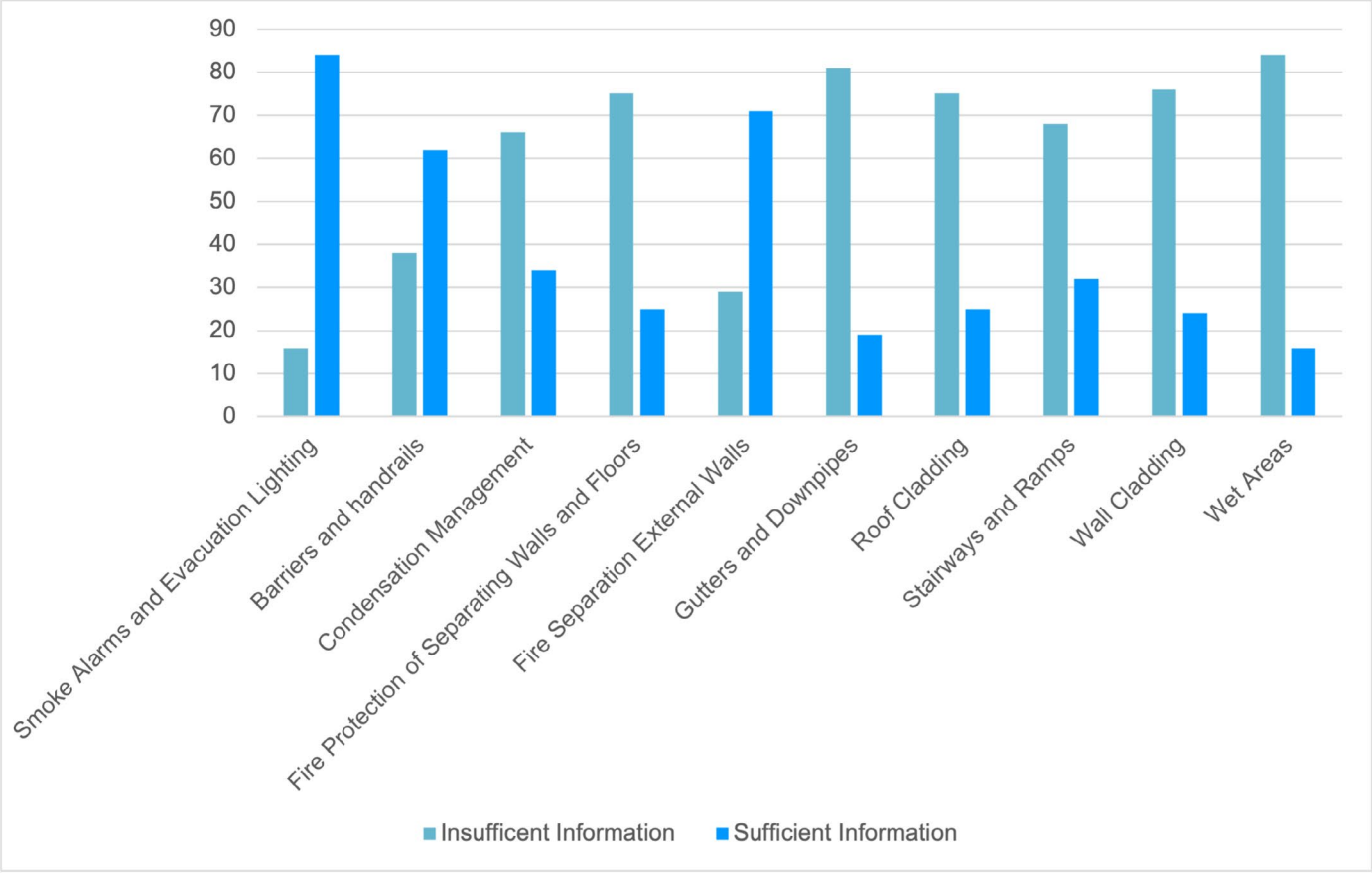

Figure 3. Documentation insufficiencies across all audits, where applicable. Figure 3 is a graph that shows a comparison of sufficient and insufficient information for each category type.

4. COMPLIANCE INSIGHTS

The compliance levels, that is where compliance had been demonstrated, across all audits are shown in Figure 4.

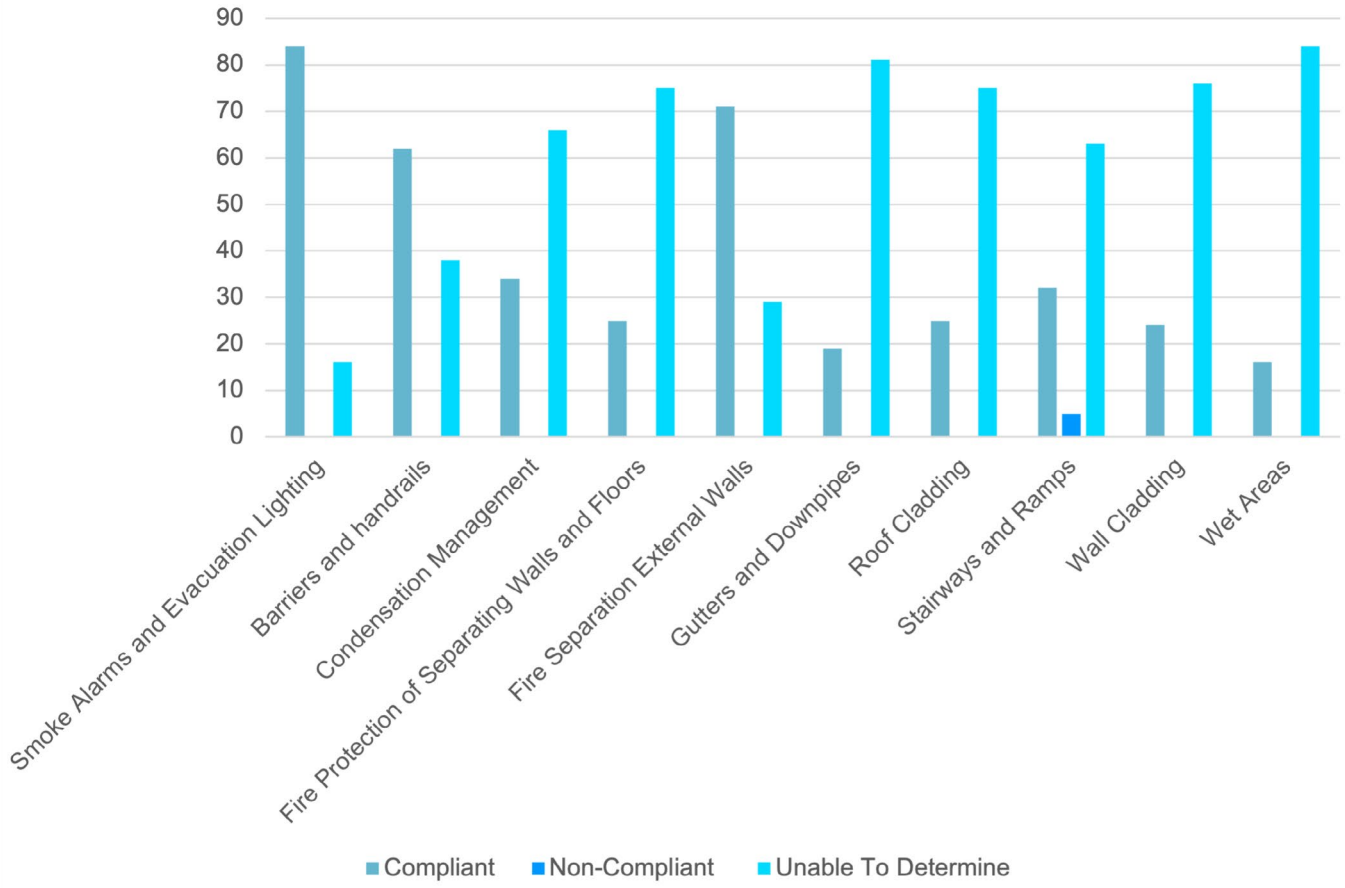

Figure 4. Compliance level across all audits. Figure 4 shows a comparison between the compliance levels of compliant, non-compliant and unable to determine for each category type.

5. SPECIFIC COMPLIANCE INSIGHTS

Structure

Part 2.1 Structure of Volume 2 of the NCC sets out the performance requirements required to be achieved to:

- Safeguard people from injury caused by structural failure;
- Safeguard people from loss of amenity caused by structural behaviour;
- Protect other property from physical damage caused by structural failure; and
- Safeguard people from injury that may be caused by failure of, or impact with, glazing.

Performance requirement P2.1.1 Structural stability and resistance sets out, among other things, consideration of how a structure is to perform under certain design actions to achieve these objectives.

Where a performance solution is not used, performance requirement P2.1.1 can be satisfied by complying with the DtS requirements of:

- Part 3.0 Structural provisions
- Part 3.1 Site preparation
- Part 3.2 Footings and slabs
- Part 3.3 Masonry
- Part 3.4 Framing
- Part 3.5 Roof and wall cladding
- Part 3.6 Glazing of Volume 2.

Where there are no DtS solutions for non-prescribed wall claddings, such as Expanded Polystyrene cladding (EPS), these must comply with P2.1.1 via a performance solution.

The audit focused on the footing and slab design.

Part 3.2 Footings and slabs

DtS clauses 3.2.0 and 3.2.1 inter alia parts 3.2.2 to 3.2.5 were assessed for the proposed footings and slabs as part of the audit to ensure that performance requirement P2.1.1 had been satisfied where a performance solution was not used.

The majority of footing and slab designs were completed by registered engineering practitioners and certification was provided by the practitioners with a regulation 126 certificate.

Compliance was generally achieved using AS 2870 footings and slabs. The audits all had geotechnical investigations with the site classification.

The audits identified the following items for footings and slabs:

- The minimum height of the dwelling floor slab above finished ground level not being specified in accordance with section 5.2 of AS 2870.
- The additional drainage requirements for class M, H1, H2, and E sites as detailed in section 5.6 of AS 2870 not specified.
- The fall away from the slab of 50mm over a meter not detailed.

Non-prescribed wall cladding

Non-prescribed wall claddings, that is cladding materials that there are no DtS provisions for, such as EPS cladding, were assessed to ensure there was a performance solution that demonstrated compliance against P2.1.1.

There were 13 audits that identified a cladding material being used that was not one prescribed in the DtS provisions in Part 3.0 Structural Provisions of the BCA.

These wall solutions were therefore required to have a performance solution to demonstrate compliance with P2.1.1 structural stability.

Four of the audits had a performance solution that demonstrated compliance through the use of CodeMark Certificates. However, there were some buildings which had foam cladding or the like that did not have a performance solution for their use. It was noted that some audits did not have a regulation 38 determination and that the conditions and limitation on the CodeMark certificate had not been achieved in all audits.

Section 238

Section 238 of the Act allows a building surveyor to rely on a certificate, issued by another registered building practitioner, or endorsed building engineer in a prescribed class, that certifies that the proposed building work complies with the Act and regulations.

Regulation 126 of the building regulation sets out the form in which a certificate relied upon under section 238 of the Act must be in.

Anomalies in the regulation 126 certificate of compliance for proposed building works could impact the validity of the certificates and their ability to be relied on in good faith by the RBS in accordance with section 238 of the Act.

As part of the audit Certificates of Compliance issued under s.238 and r.126 were assessed for compliance.

In 30 of the 34 audits, the certificates were not in the correct form. This included:

- Information missing from the form such as the RBS details, nature of proposed building work details and building classification details.
- Design documents specified that were inconsistent with the approved building permit documents and/or the document page numbers were not listed.
- Standards referenced that were no longer current and that the code or standard the work was certified to was inconsistent with the version nominated on the building permit.
- Certificates had a building classification nominated that was inconsistent with the building permit and proposed use of the building.

Damp and Weatherproofing

Part 2.2 Damp and weatherproofing of Volume 2 of the NCC sets out the performance requirements required to be achieved to:

- Safeguard occupants from illness or injury and protect buildings from damage caused by surface water, external moisture entering the building, and the accumulation of internal moisture in a building; and
- Protect other property from damaged caused by redirected surface water.

Performance requirement P2.2.1 Rainwater management requires surface water to be managed and disposed of in a way which avoids the likelihood of damage or nuisance to another property, and from not entering the building depending on the average recurrence interval.

Performance requirement P2.2.2 Weatherproofing requires a roof and external wall to prevent the penetration of water that could cause unhealthy or dangerous condition, or the loss of occupant amenity and undue dampness or deterioration of building element.

Performance requirement P2.2.3 Rising damp requires moisture from the ground being prevented from causing unhealthy or dangerous condition, or the loss of occupant amenity and undue dampness or deterioration of building element.

Where a performance solution is not used, performance requirement P2.2.1 and P2.2.2 can be satisfied by complying with the DtS requirements of Part 3.5 Roof and wall cladding of Volume 2. Performance requirement P2.2.3 can be satisfied by complying with part 3.2. Footings and slabs.

Part 3.5 Roof and wall cladding

DtS clauses 3.5.1.0 to 3.5.1.8 for sheet roofing, 3.5.2.0 to 3.5.2.6 for roof tiles and shingles, Vic variation 3.5.3.0 inter alia AS 3500 for gutters and downpipes and 3.5.4.8 for parapet cappings were assessed as part of the audit to ensure that performance requirement P2.2.1 and P2.2.2 had been satisfied where a performance solution was not used.

The audit also assessed non-prescribed wall claddings, that is cladding materials that there are no DtS provisions for, such as EPS cladding and precast concrete for compliance against P2.2.2.

Part 3.5.1 Sheet Roofing

Compliance for part 3.5.1 Sheet roofing can be demonstrated by complying with the Acceptable Construction Manual (ACM), AS 1562.1 or by complying with the Acceptable Construction Practice (ACP) for buildings located in a design wind speed of not more than N3.

There were 20 audits where the ACM was used for sheet roofing. No audits had sufficient information to determine compliance.

Where the ACM was used there was limited information provided other than a general note for roofing to comply with AS 1562.1.

There were 12 audits where the ACP was assumed to be used as there was no reference to the ACM. All 12 audits had sufficient information to determine that they were all within the parameters of a design wind speed of not more than N3 and deemed to be compliant.

Eleven audits had sufficient information to determine that the minimum roof pitch would be achieved while four had sufficient information the maximum span was complied with.

Compliance in the other audits could not be achieved as the material being used were not nominated and only generic terms or brands were used rather than the specific product.

Details demonstrating compliance with 3.5.1.5 (Fixing of metal sheet roofing) where present in one audit, and 3.5.1.8 (Water discharge) in one audit. These were all compliant. Details for 3.5.1.7 (Flashings and cappings) and 3.5.1.6 (Installation of roofing sheets) were not identified in any of the approved building permit documents.

Part 3.5.2 Roof tiles and shingles

Compliance for part 3.5.2 Roof tiles and shingles can be demonstrated by complying with the ACM, AS 2050 for roof tiling and AS 4597 for terracotta, fibre-cement and timber slate and shingles or by complying with the ACP for buildings located in a design wind speed of not more than N3 and the roof pitch is not less than 15 degrees and not more than 35 degrees using roof tiles that comply with AS 2049.

There were eight audits where the ACM was referenced and four where the ACP was used.

Two audits had sufficient information to determine compliance with the ACP and this was compliant.

General notes were used to nominate compliance to be with the ACP or the ACM, however there were no specific details which showed how compliance would be achieved.

Where tiles were being used these were within the required roof pitch range. However, details on 3.5.2.2 Fixing of roof tiles and ancillaries, 3.5.2.3 Flashings, 3.5.2.4 Sarking requirements, 3.5.2.5 Anti-ponding devices, and 3.5.2.6 Water discharge were not detailed. There were two audits with sufficient information for both of which were compliant.

Part 3.5.3 Gutters and downpipes (Vic variation)

In Victoria, the only DtS solution for compliance with P2.2.1 for gutters is clause 3.5.3.0, which requires compliance with the ACM AS/NZS 3500.3. Regulation 133 also sets out requirements for storm water drainage.

Regulation 133 Storm water drainage

Regulation 133 of the Building Regulations 2018 sets out requirements for storm water drainage. This includes:

- The RBS approving the design of the drainage system to the point of discharge.
- Obtaining the report of the relevant council indicating the location of the point of discharge from an allotment either within the allotment or at the allotment boundary.
- Approving the storm water drainage system design.
- Ensuring that the point of discharge is consistent with the report of the council.

Twenty-one of the audits had the required information and stormwater drainage detailed and approved. This is an improvement on the previous report where there were 18. All of these were compliant with the regulation including the point of connection being consistent with the reported location for discharge.

Information missing from the remaining audits included:

- No report from the relevant council.
- No details/design of the storm water drainage.
- No details/design of how the stormwater drainage was connected to the legal point of discharge.

AS/NZS 3500.3 Plumbing and drainage Part 3: Stormwater drainage

Roof plumbing and drainage continues to be an area identified by industry stakeholders where there are compliance issues. As water ingress is an identified harm through the VBA's regulatory priorities it was included as part of the audit.

The audit focused on Section 2 Materials and Products and Section 3 Roof Drainage Systems—Design of AS/NZS 3500.3, when determining if the gutters and downpipes complied with the NCC. The items considered included:

- Eaves Gutter Systems
- Valley Gutters
- Box Gutters Systems.

General findings for Section 2 Materials and Products of AS/NZS 3500.3 included:

- Compliance with clause 2.3.1 roof drainage system components could not be determined in 31 audits as roof drainage system components were not specified to the relevant standards. Components should be specified to compliance with AS/NZS 2179.1 as required.
- Compliance with clause 2.3.2 Downpipes could not be determined in 20 audits as materials and products were not specified to the relevant standard. Downpipes should be specified to the relevant standard for the material/product.
- Compliance with clause 2.3.3 Accessories and fasteners could not be determined in 31 audits as materials and products were not specified. Accessories and fasteners manufactured from aluminium alloys, aluminium/zinc and aluminium/zinc/magnesium alloy-coated steel, copper, copper alloys, zinc-coated steel, stainless steel and zinc should be specified to AS/NZS 2179.1.

General findings for Section 3 Roof Drainage Systems – Design of AS/NZS 3500.3 included:

- Generally, for eaves gutter systems there was a note that they were to comply with AS/NZS 3500.3, however there were:
    - No fall direction, and gradients were only specified in some instances.
    - No details of the cross-sectional area/size of eaves gutters.
    - In some instances, the size and location of downpipes was not specified.
    - No overflow details.
    - Higher catchment areas not discharging directly to rain head, sump or spreader.
- Valley Gutters had notes requiring compliance with the standard.
- Where valley gutters were identified these were all on roofs which had the required roof slope of not less than 1:4.5 (12.5°).
- There were valley gutters that did not have details of the sizing and effective width.
- Some drawings specify that the design and construction of gutters and downpipes shall comply with the acceptable construction practice of BCA part 3.5.3 which is not applicable in Victoria in accordance with clause 3.5.3.0.
- There were 17 audits which had Box Gutters.
    - Two were compliant with the general requirements for box gutters in 3.7.1 as they had the overflow requirements nominated.
    - 14 were compliant with 3.7.2 as they showed the freeboard size.
    - One was compliant with the limitations of clause 3.7.3 as box gutter gradients, rainhead design flows and downpipe sizes were within the prescribed ranges.
    - Eight had compliant downpipe sizes shown.

3.5.4.8 Parapet cappings

Clause 3.5.4.8 of the NCC Volume 2 requires wall cladding that is used to form a parapet wall to be attached to the supporting structure and have a capping installed.

There were four audits that had parapet walls that would require capping. No audits had sufficient information to determine compliance.

The audits did not have details of how the capping would comply including:

- No details of the material.
- That the capping extended not less than 50mm down the sides of the parapet.
- That the top of the capping sloped a minimum of 5 degrees.
- How the joint in the capping would be constructed.

Non-prescribed wall cladding

During the Statewide Cladding Audit on Classes 2, 3 and 9 buildings, issues with weatherproofing external walls was identified. This included water ingress allowing for mould formation and rotting of timber framing. As part of the audit, a focus was put on the weatherproofing of non-prescribed wall cladding such as EPS.

There were 13 audits that identified a cladding material being used that was not one prescribed in the DtS provisions in Part 3.5.4, Part 3.3 or Part 3.5.5 of the BCA.

These wall solutions were therefore required to have a performance solution to demonstrate compliance with P2.2.2 Weatherproofing.

Four of the audits had performance solutions that demonstrated compliance through the use of CodeMark Certificates. It was noted that there were audits that:

- Did not have a regulation 38 determination.
- Did not meet the conditions and limitation on the CodeMark certificates.
- Had CodeMark certificates for a version of the NCC that was not consistent the building permit nominated.
- Had inconsistencies of the approved cladding type on the working and structural drawings.

P2.2.1 Weatherproofing

Whilst weatherproofing was not generally in the scope of the audits for prescribed cladding materials, it was identified in some audits that weatherproofing P2.2.2 of the 10a when associated with class 1a had not been considered where there was not a stepdown between the dwelling and the garage.

Fire safety

Part 2.3 Fire safety of Volume 2 of the NCC sets out the performance requirements required to be achieved to:

- Safeguard occupants from illness or injury by alerting them of a fire in a building so that they may safely evacuate; and
- Avoid the spread of fire.

Performance requirement P2.3.1 Spread of fire requires Class 1 buildings to be protected from the spread of fire from another building, other than an associated class 10, and an allotment boundary, other than a boundary adjoining a road or public space.

Performance requirement P2.3.2 Automatic warning for occupants requires occupants of a Class 1 building to be provided with an automatic warning on the detection of smoke so that they can evacuate safely in the event of a fire.

Where a performance solution is not used performance requirement P2.3.1 and P2.3.2 can be satisfied by complying with the DtS requirements of Part 3.7 Fire safety of Volume 2.

Part 3.7 Fire safety

DtS clauses 3.7.2.2 to 3.7.2.7 for fire separation of external walls, 3.7.3.2 to 3.7.3.5 for fire separation of separating walls and floors, 3.7.4.2 and 3.7.4.3 for protection of garage top dwellings, and 3.7.5.2 and 3.7.5.3 smoke alarms and evacuation lighting were assessed as part of the audit to ensure that performance requirement P2.3.1 and P2.3.2 had been satisfied where a performance solution was not used.

Part 3.7.2 Fire separation of external walls

Eleven audits had an external wall that was less than 900mm from the allotment boundary or 1.8m from another building on the same allotment.

- Seven of these had sufficient information to determine compliance.
- Seven audits had nominated that the wall required an Fire Resistance Level (FRL) which was compliant.

Thirty-two of the audits had a class 10a building located between the allotment boundary and the dwelling or another dwelling on the same allotment.

- 29 had sufficient information to determine compliance, that is the setback was nominated.
- 29 were compliant.
- The remaining three did not have sufficient information to determine compliance.

Construction of external walls required to achieve an FRL was primarily achieved through the use of brick construction.

Information not identified in the audits included:

- Details showing that the wall extended to the underside of the non-combustible roof covering or terminating not more than 200 mm from the underside of the non-combustible roof covering where the area between the external wall and roof covering is sealed with a non-combustible fascia, gutter or flashing.
- Evidence of suitability in accordance with part A of the BCA to demonstrate the external wall achieved the required FRL when tested from the outside when masonry was not used.

There were 21 audits which had encroachments i.e., eaves within 900 mm of an allotment boundary or within 1.8 m of another building on the same allotment.

- 15 had sufficient information to determine compliance.
- 15 were compliant.

Part 3.7.3 Fire protection of separating walls and floors

There were three audits that had separating walls. Of these three audits:

- Two had sufficient information to determine compliance. These two audits were compliant.
- One audit did not have sufficient information to determine compliance.

Missing information included:

- Details showing that the wall would extend to the underside of a non-combustible roof covering.
- That where a tested system was nominated that there was evidence that the system complied with Part A of the BCA evidence of suitability requirements.
- Details showing compliance with tested system manufacturer requirements.
- Evidence to show that a separating wall of lightweight construction has been tested in accordance with Specification C1.8 of NCC Volume 1.
- Details of service openings and how they are protected in accordance with 3.7.3.3.

Part 3.7.4 Smoke alarm and evacuation lighting

All audits required a smoke alarm.

The majority of the audits had notes that the smoke alarms were to be installed to AS 3786, in some instances information missing included:

- That the smoke alarms are to be interconnected.
- That they are to be hardwired to consumer mains.

Thirty-one of the audits had the location clearly shown on the plans. This is an area of the audits where building surveyors continue to perform well.

Health and amenity

Part 2.4 Health and amenity of Volume 2 of the NCC sets out the performance requirements required to be achieved to:

- Safeguard occupants from illness and injury, and protect the building from damage caused by the accumulation of internal moisture arising from the use of wet areas in the building; and
- Safeguard occupants from illness and injury due to lack of air freshness.

Performance requirement P2.4.1 Wet areas requires the building's structure and occupant's amenity to be protected by preventing water penetrating behind fittings and linings, or into concealed spaces of sanitary facilities, bathrooms, laundries, and the like.

Performance requirement P2.4.7 Condensation and vapour management requires the risk associated with water vapour and condensation be managed to minimise their impact on the health of occupant.

Where a performance solution is not used performance requirement P2.4.1 and P2.4.7 can be satisfied by complying with the DtS requirements of Part 3.8 Health and amenity of Volume 2.

Part 3.8.1 Wet areas

DtS clause 3.8.1.2 was assessed as part of the audit to ensure that performance requirement P2.4.1 had been satisfied where a performance solution was not used.

3.8.1.2 Wet areas - shower

Four audits had sufficient information to determine compliance for the wet areas in the shower area, all were compliant.

The compliant audits had:

- Wet areas to be as per AS 3740-2010 nominated in General Notes and location of wet areas shown on the plans.
- Shower base details and installation, and waterproofing details shown on the plans.

The remaining 31 audits did not have sufficient information to determine compliance. Missing information to determine compliance with this clause included:

- No details of where and what type of waterproofing system was required, only a general note to be in accordance with AS 3740.
- No waterproofing details for wall joints and wall/floor junctions.
- No details of how penetrations are waterproofed.

3.8.1.2 Wet areas – outside shower area

Nine audits had sufficient information to determine compliance for wet areas outside of the showers.

These compliant audits had:

- The locations required to be waterproofed, or water resistant were nominated.
- Details of the flooring material that showed whether they were required to be water resistant or waterproof.
- Where required to be waterproofed, there were details of the waterproofing system.
- The area of wall where the waterproofing/water resistance was required to be applied.

Those audits where there was insufficient information to determine compliance included:

- Only general notes to comply with AS 3740 and no details of where compliance was required and what was required.
- No details of how wall/floor junctions would be waterproofed.
- Where the waterproofing/water resistance was required.

3.8.1.2 Wet areas - adjacent spa and bath

There were 29 audits that had a wet area adjacent to a spa/bath. Five of these had sufficient information to determine compliance, all of which were compliant.

Those where compliance could not be determined there were insufficient details to show:

- Whether water resistance or water proofing was required and the location in which it was required.
- How junctions would be water resistant/waterproofed.
- How penetrations would be waterproofed.

3.8.1.2 Wet areas - other

There were four audits that had sufficient information to determine compliance for other wet areas such as laundry floors and walls adjoining other vessels such as the laundry tub or basins. These four were compliant and showed the location of the water resistance including the wall above vessels.

Those where compliance could not be determined because there was insufficient information:

- Did not detail where water resistance was required including the wall above vessels.
- Show that the junctions would be water resistant.
- That penetrations for taps and spouts would be waterproofed.

Part 3.8.7 Condensation management

DtS clauses 3.8.7.2 to 3.8.7.4 were assessed as part of the audit to ensure that performance requirement P2.4.7 had been satisfied where a performance solution was not used.

These condensation management provisions were introduced in NCC 2019.

3.8.7.2 Pliable building membrane

There were 34 audits which had pliable building membranes specified.

One audit had sufficient information to determine compliance, which was compliant.

Those where there was insufficient information to determine compliance only had a note for the membrane to comply with AS/NZS 4200. There were no details of the membrane to be used and evidence of suitability to demonstrate compliance with AS/NZS 4200.1 and vapour permeability requirements.

3.8.7.3 Flow rate and discharge of exhaust systems

There were 23 audits that had sufficient information to determine compliance for flow rates and discharge of exhaust systems. This included:

- Notes on the required flow rate.
- That it was required to be discharged to external or vented roof space.

Missing information to determine compliance included:

- Discharge to outside air being nominated but not the required flow rate.
- Flow rate nominated but no details on whether it was to outside air or ventilated roof space.

3.8.7.4 Ventilation of roof spaces

There were nine audits that had exhaust systems discharging into the roof space.

Two audits had sufficient information to determine compliance. These audits were compliant.

The remaining audits did not have details of the size and distribution of the vents therefore it was not possible to determine that the roof would have adequate ventilation.

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Safe movement and access

Part 2.5 Safe movement and access of Volume 2 of the NCC sets out the performance requirements required to be achieved to provide people with safe access and movement within a building.

Performance requirement P2.5.1 Movement to and within a building requires safe walking gradients, and stair and ramp elements to meet certain requirements.

Performance requirement P2.5.2 Fall prevention barriers sets out circumstances in which barriers are required to prevent falls.

Where a performance solution is not used performance requirement P2.5.1 and P2.5.2 can be satisfied by complying with the DtS requirements of Part 3.9 Safe movement and access of Volume 2.

Part 3.9.1 Stairways and ramp construction

DtS clauses 3.9.1.2 to 3.9.1.6 were assessed as part of the audit to ensure that performance requirement P2.5.1 had been satisfied where a performance solution was not used.

3.9.1.2 Stairway construction

Twenty-two of the audits had stairs that were required to comply with P2.5.1.

- Two of the audits had sufficient information to determine compliance.
- 20 audits did not have sufficient information to determine compliance.
- One of the 22 audits was non-compliant.
- The audits that had sufficient information to determine compliance were compliant.
- Those that did not have sufficient information mainly had generic notes for the stairs to comply with BCA 3.9.1.2. This mainly included the maximum number of risers permitted, minimum and maximum riser height, going and slope relationship, and maximum opening between risers.
- There were no details to demonstrate that the stairs had been designed to take loading in accordance with AS 1170.1.

The level of detail identified on the plans would result in the person on site having to determine what is required to comply.

The non-compliance arose from incorrect going and risers.

3.9.1.4 Slip-resistance

Twenty-two of the audits had stairs that were required to comply with P2.5.1.

- No audits had sufficient information to determine compliance.
- The majority had general notes for the slip resistance to comply with 3.9.1.4.
- The level of details in the notes varied from comply with table 3.9.1.3 of NCC to those that nominated the required slip resistance rating.
- Those audits with insufficient information did not specify product details and provide evidence of suitability to demonstrate that the product achieved the required slip-resistance classification when tested in accordance with AS 4586, however did have general notes that the slip resistance was to comply with AS 4586.

3.9.1.5 Landings

In the audits that required landings:

- There were general notes that the landings were to comply with the NCC.
- Whilst the landing dimension was not always detailed, it was possible to determine from the plans that the minimum required landing could be achieved.

One audit was non-complaint as it did not have a landing where the sill of the threshold for a doorway was opening onto a stair way which was greater than 3 risers or 570mm.

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3.9.1.6 Thresholds

The audits identified:

- That the doorways having thresholds were mainly on external doors and internal doors on garages.
- Internal doors between garages and the dwelling area had sufficient detail of the step down to show compliance.
- External doors generally had sufficient detail to determine that the threshold would comply, however, there were audits where the external surface level was not nominated and therefore when scaled from the plans, would exceed the maximum threshold height.

Part 3.9.2 Barriers and handrails

DtS clauses 3.9.2.2 to 3.9.2.5 were assessed as part of the audit to ensure that performance requirement P2.5.1 and P2.5.2 had been satisfied where a performance solution was not used.

3.9.2.2 Barriers to prevent falls

There were 21 audits that required barriers to prevent falls. Of the 21 audits:

- 20 had sufficient information to determine that there would be a barrier required.

3.9.2.3 Construction of barriers to prevent falls

There were 21 audits that a barrier was required by 3.9.2.2 to prevent falls to be constructed in accordance with 3.9.2.3.

- No audits had sufficient information to determine that the barrier would comply with 3.9.2.3.
- The majority had the required height nominated.

Missing information from the documentation included:

- Construction details and the materials being used.
- Details of the gaps and that they do not exceed 125mm.
- That the barrier was designed to take the loading forces in accordance with AS/NZS 1170.1.

3.9.2.4 Handrails

There were 22 audits where the handrails were required to be installed on stairways.

- 19 had sufficient information to determine that the handrail was required.
- All 19 of these audits were compliant.
- There were three audits where there was insufficient detail to show that the handrail would comply.

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6. GENERAL OBSERVATIONS

As identified in previous audits there was a high reliance on general notes on plans rather than specific details of what was required to achieve compliance.

An observed consequence of the use of general notes and details on drawings is inconsistency between drawings, which can create confusion, and the inclusion of irrelevant details.

Further to this, there is a heavy reliance on conditions including those for further information to be provided for approval before issuing the occupancy permit, which includes information that should have been approved as part of the building permit and before installation. This creates an opportunity for non-compliances to arise if the conditions are overlooked and not followed up.

Issues identified by industry stakeholders as areas where difficulties arose on site, such as roof drainage, were validated as areas that the plans lacked sufficient information to determine compliance. For example, a common overflow device at the downstream end of box gutters shown on drawings is a sump with a side duct to a rain head with a downpipe and overflow provision. This overflow device arrangement is not in accordance with figure 3.7.3 of AS/NZS 3500.3 and therefore requires a performance solution. A performance solution for this alternative arrangement was not identified in any of the audits.

Generally, the roof design is not being considered which is contributing to the overall issues with the roof drainage. Based on the audit observations and the feedback from industry a conclusion that can be drawn is that poor detailing on the plans is creating onsite difficulties.

Other common trends observed during the audit included:

- Reliance by the RBS on certificates or statements of compliance issued at the end of the project to be satisfied that the building work will comply. This particularly relates to roof plumbing and waterproofing works. This contradicts the requirements of section 24 of the Act for the RBS to be satisfied of compliance of the building work when issuing the building permit.
- There appears to be some misunderstanding of the application of ACMs and ACPs in the BCA with drawings specifying compliance with both. As specified in clause A2.3 of the BCA, when an ACM or ACP in the same part satisfy the same performance requirement, it is only necessary to satisfy one of these.
- That RBSs are not including all information that they have relied on, e.g., CodeMark Certificates with the documentation they submit to council under section 30 of the Act.
- That evidence of suitability, such as CodeMark certificates are not being reviewed to ensure the product specified is suitable or having the evidence of suitability that matches the product specified on the drawings.

The results in this report are generally consistent with the previous reports. The majority of the permits audited in this report were issued before additional guidance was issued to practitioners, therefore it was expected that the results would be similar.

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7. POST-AUDIT ACTIONS

The RBS was notified post-audit where non-compliances were identified, where there was insufficient information in the plans and documentation to determine whether compliance was achieved, or where the item posed a high-risk, and the RBS was required to provide a response to the VBA.

Where RBSs were required to provide a response to items identified by the VBA in the audit, RBSs were generally responsive and able to provide the required information, including evidence of suitability. RBSs are still generally accepting of advice and show a willingness to improve.

Some RBSs have indicated that they do not check certain items because these items do not require a mandatory inspection (e.g., stormwater drainage and waterproofing). The RBSs rely solely on the plumbing certificate or compliance statement from the installer to verify compliance after the work has been completed.

As with the previous report there were some occasions where the RBS had to take enforcement action to achieve compliance including the issuance of building notices.

There were items where performance solutions were required to confirm that compliance had been achieved.

In some instances, initial responses from the RBS did not demonstrate that compliance had been achieved. This included that the information provided was not evidence of suitability in accordance with the governing requirements. For example, manufacturers brochures were provided for FRLs rather than the required test reports.

There were also responses that demonstrated there is a misunderstanding about the roles of different practitioners. This included where issues were identified on the plans with plumbing work and building surveyors were relying on plumbers to install and/or correct this on site.

8. AUDIT CHALLENGES

Consistent with the previous audit report, a challenge faced during the audits was determining whether information forming part of the building permit had not been provided or that it never existed to start with. There is no requirement for the building surveyor to list the documentation they have relied on to determine compliance on the building permit. If building surveyors were required to list all the documentation that they have relied on to make a decision on the building permit it would be easier to determine if information is missing. This would also be beneficial to those on site, as they could look at the listed documentation and know if they were missing any information. This would assist in reducing the risk of onsite non-compliance from lack of access to appropriate documentation. Listing the relevant documents on the building permit would also assist councils and consumers to understand if they have an accurate record of the building permit documentation.

Furthermore, the VBA is not a central repository of information, therefore there is a reliance on all information being provided to council by the RBS and then this information being provided to the VBA. This could be overcome by regulatory reform requiring the VBA being a central repository of information.

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