VICTORIAN BUILDING AUTHORITY

PROACTIVE INSPECTIONS REPORT

Activity Report

FINANCIAL YEAR 2023-24

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, present and emerging. 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.

Authorised by the Victorian Building Authority
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Available online at www.vba.vic.gov.au

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About

This report

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. It also provides for various powers so the VBA can monitor the conduct and ability to practice of registered building practitioners and licensed building employees.

The VBA's Proactive Inspections Program (PIP) Activity Report is designed to give industry and practitioners an insight into our compliance monitoring activities of building and plumbing work during the construction phase and the outcomes of these monitoring activities. The PIP is one of three compliance monitoring programs the VBA delivered in the 2023-24 financial year.

As Victoria's building and plumbing regulator, our starting point is that individuals want to do the right thing. That's why we are enhancing our risk-based regulatory model that will encourage and incentivise good behaviour, while discouraging poor performance. This report centres on proactive inspections activities in 2023-24. Our primary focus is to reduce risk to the Victorian community by prioritising our efforts towards activities that pose a greater threat to their health and safety, or which risk economic loss.

Background

The VBA's PIP is a statewide early intervention regulatory oversight initiative which aims to monitor the compliance of work under construction performed by building and plumbing practitioners. Our team includes highly skilled and experienced registered building inspectors, building surveyors and licensed plumbers (referred to as Authorised Officers in the Act).

The VBA's Authorised Officers typically inspect thousands of domestic and commercial sites each year in Victoria, to reduce non-compliant building and plumbing work. This proactive approach places the onus on the registered builder, building surveyor and licensed plumbers, rather than the owner, to rectify any non-compliances prior to occupancy.

Legislative context

The VBA's PIP enables the VBA to fulfil its functions under section 197 of the Act.

The relevant sections of the Act are:

- s197(a) – to monitor and enforce compliance with the Act and the regulations.
- s197(ac) – to supervise and monitor the conduct and ability to practice of registered building practitioners and licensed building employees.
- s197(f)(iii) – the regulation of plumbing work and plumbers.

Regulatory approach

The VBA regulates the building and plumbing industries to improve consumer outcomes, prioritising its resources and regulatory effort on those areas which pose the greatest risk to consumers.

Building and plumbing practitioners are accountable to deliver safe and compliant work. The VBA expects that all practitioners maintain their capability and competence to carry out any work according to legislative and industry standards.

The VBA's Regulatory Policy Statement explains how the VBA regulates Victoria's building and plumbing industries. It emphasises the VBA's priorities on areas where the potential harm to consumers is greatest, using data and intelligence to focus our efforts on practitioners and sites of interest and using a harms-based approach to regulation that reduces the regulatory burden on those doing the right thing.

More information about the VBA's Regulatory Policy Statement can be found on the VBA website.

Objective

The objective of the PIP is to inspect building and plumbing work proactively, whilst under construction. Recommendations from Better Regulation Victoria's health check and a revised Minister's Statement of Expectations issued in November 2023 provided the VBA with opportunities to adapt and enhance the PIP's approach to monitoring building and plumbing work. **Appendix 1** outlines the BRV recommendation and the revised Minister's Statement of Expectations relevant to PIP.

Methodology and scope

PIP core activities

The PIP contains several core activities that underpin its effectiveness as a compliance and education tool to prevent harm to consumers. These core activities were retained and enhanced in 2023-24 and included:

- **A risk-rating scale applied to non-compliant issues:** This scale **(Appendix 2)** is used to determine the level of scrutiny applied to a potential issue observed during inspections. The scale considers the potential adverse effects on the future safety of building occupants, people nearby and on the amenity of the building itself.
- **Rectification of non-compliant items:** When VBA Authorised Officers identify potentially non-compliant building and plumbing work they write to the practitioner, notifying them of the items that need to be addressed. The practitioner is then required to respond to the VBA within specific timeframes and rectify these issues. During 2023-24, the VBA placed an increased focus on requiring the relevant building surveyor (RBS) to confirm rectification of non-compliant items, through either correspondence or using the Direction to Fix (DTF) powers. The VBA has a zero-tolerance approach towards practitioners who cause harm to consumers and does not hesitate to take enforcement action against practitioners who fail to comply with its requirements.
- **Immediate action and referral for critical life-safety issues:** In the event a critical life-safety issue is identified, the VBA immediately contacts the practitioner and RBS and notifies co-regulatory agencies, such as WorkSafe.
- **Electronic inspections checklist:** The VBA refined its electronic inspections checklist to report in greater detail about non-compliant items and flag if a priority harm is detected and rectified.

PIP improvements

During 2023-24, the VBA commenced transitioning PIP from a predominately quota-based approach to a harms-based approach, reflecting the increasing complexity of Victoria's built environment. This resulted in the following improvements:

- **A multidisciplinary approach to building and plumbing inspections:** The VBA allocated resources to pilot a comprehensive inspection approach to multi-storey Class 2 buildings under construction that included a multidisciplinary team of inspectors made up of plumbing, building and engineering specialists.
- **More focus on monitoring practitioners or sites of interest**: Previously, the VBA mostly selected sites to inspect using building permits based on predefined risk factors. In 2023-24, there was a shift in focus, and resources were allocated to pilot rapid deployment of Authorised Officers to monitor open permits associated with practitioners under investigation or known to be experiencing financial stress. This is a result of the VBA's improved data collection and complaints handling capabilities.
- **More meaningful data is collected:** The VBA allocated resources to enhance the checklists used by inspectors. The enhancements included the ability for plumbers to report on more granular and meaningful faults, and extra fields were created so that VBA priority harms could be recorded and tracked.
- **Harnessing the capabilities of our experts:** The VBA has encouraged its Authorised Officers to undertake ad-hoc inspections as and where appropriate. These sites may come to their attention when visiting pre-determined sites and allow our experts to take a proactive approach to improving Victoria's built environment.
- **Expanding our footprint across Victoria:** Regional and rural Victorian building and plumbing work under construction is subject to greater scrutiny by the VBA thanks to increased resource allocation. This resulted in more than one-third (36 per cent) of the VBA's inspections activities taking place in regional or rural Victoria. This is increased from 22 per cent in 2021-22 and 28 per cent in 2022-23.

Scope

The VBA's Authorised Officers are provided with comprehensive inspection checklists to complete full scope inspections that contain more than 500 elements grouped into three parts; building, plumbing and occupational health and safety (OHS) items. The VBA will consider the merits of limited scope inspections that target specific regulatory harms to prioritise our efforts and resources on issues where the potential harm to consumers is greatest.

The VBA's inspections activities consider:

- Building and plumbing work according to the National Construction Code (NCC) – Volumes 1 and 2 (Building Code of Australia) for building and NCC Volume 3 for plumbing.
- Mandatory requirements under the Act, Building Regulations 2018, Plumbing Regulations 2018 and the display of permit information.
- OHS elements, such as working at heights, temporary fencing, adequacy of propping and bracing and working in trenches. If any OHS items present an unacceptable risk, the relevant co-regulators (Environment Protection Authority, WorkSafe or Energy Safe Victoria) are contacted immediately by the building or plumbing inspector.

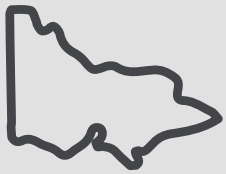
A comprehensive outline of the electronic inspection checklists is detailed in **Appendix 3**.

2023-24 Performance

2.1 Executive Summary

Inspections conducted in 2023-24

7,750



Number of municipalities visited

77

Total inspections of **domestic** sites

7,208

Single occupancy **6,737**

Dual occupancy **429**

Swimming pools **44**

Total inspections of **commercial** sites

542

Mixed use sites, group dwellings and hospitals (Class 2, 3, 4, 9a and 9c) **217**

Offices, retail (Class 5 & 6) **68**

Assembly building with no dwellings (Class 9b) **149**

Warehouse, factories no dwellings and carparks (Class 7a, 7b & 8) **108**

Building **3,349**

Plumbing **3,859**

Building **364**

Plumbing **178**

Notifications sent to practitioners to rectify work (includes notification to ensure work was rectified)

3,299

Notifications requiring close attention due to high-risk issues identified

69

The VBA demonstrates its commitment to enhancing the built environment through monitoring industry compliance with building and plumbing standards through inspections of building work under construction.

Our work is intended to make Victoria's built environment as safe as possible, protecting consumers from substandard work and holding those building and plumbing practitioners who do the wrong thing to account.

During the reporting period, the VBA completed 7,750 proactive inspections across Victoria, of which 542 were on commercial properties and 217 of dwellings intended to house multiple residencies (includes BCA Class 2, 3, 4 and 9C structures).

Of the 7,750 proactive inspections, the VBA sent out 3,368 notifications to practitioners to rectify work, representing 43 per cent of the inspections where at least one compliance risk was identified. This was similar to the 45 per cent compliance risk observed in the previous year.

The VBA continued to refine its intelligence-led approach to monitoring building and plumbing work under construction, noting that regulating tens of thousands of practitioners and their activities each year is a challenge.

During the final quarter of 2023-24, the VBA allocated resources to pilot strategic approaches to its proactive inspections. One project involved a multidisciplinary team who conducted a desktop audit of building permit documentation, followed by onsite inspections. The team included registered building inspectors, building surveyors, plumbing inspectors, engineers (structural, fire and mechanical) and essential safety specialists. During this pilot, the VBA identified issues with building and plumbing work that we engaged with practitioners about to promote rectification, with similar approaches being planned for future sites.

Total inspections 2023-24

4,037
Plumbing inspections

3,713
Building inspections

A total of 7,750 inspections (comprising 3,713 building and 4,037 plumbing inspections) were conducted across 77 municipalities in Victoria, involving 2,488 builders and 284 building surveyors.

Inspection map – 2023-24

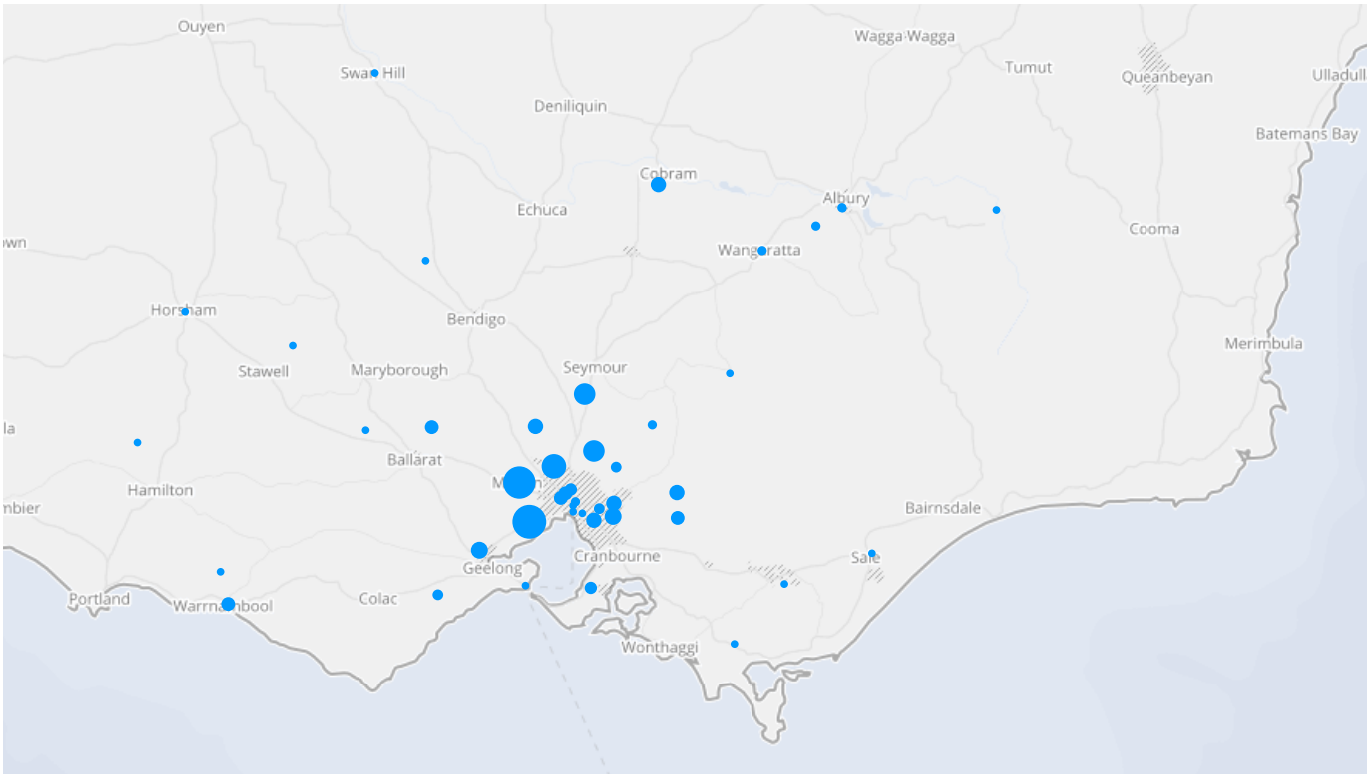


Figure 1: The dots represent the municipalities in which inspections occurred. The size of the dots correlates to the number of inspections. View the interactive map.

Number of inspections at construction stage 2023-24

The graphs below depict the number of inspections conducted at each stage of construction throughout 2023-2024. Frame stage inspections typically constitute the largest proportion of these inspections, which is the result of the VBA's strategy to select sites where work has progressed beyond slab stage (by selecting slightly older permits) and returning to sites if framing work had not commenced. This deliberate approach allows for more comprehensive observations of plumbing and building work.

Building inspections

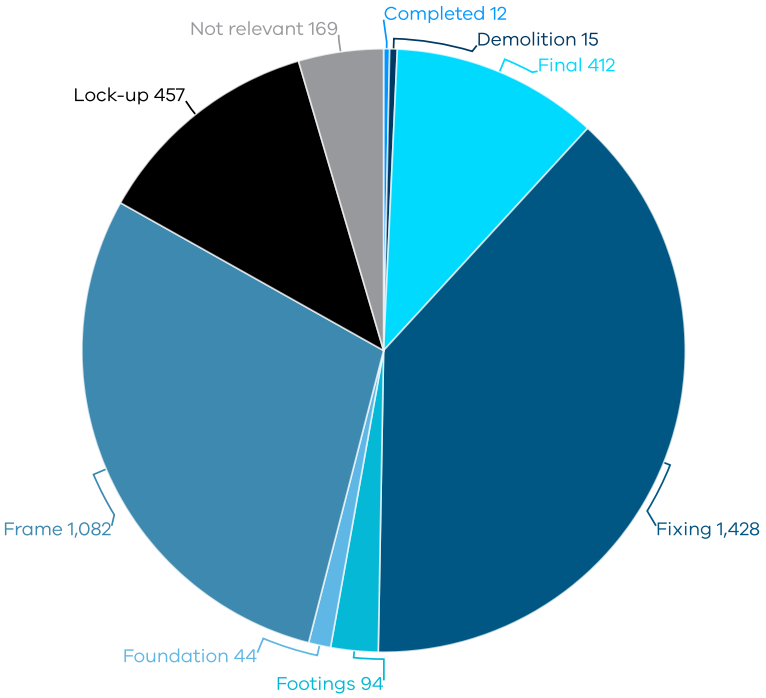


Figure 2: The stages during which proactive building inspections were conducted in 2023-24.

Plumbing inspections

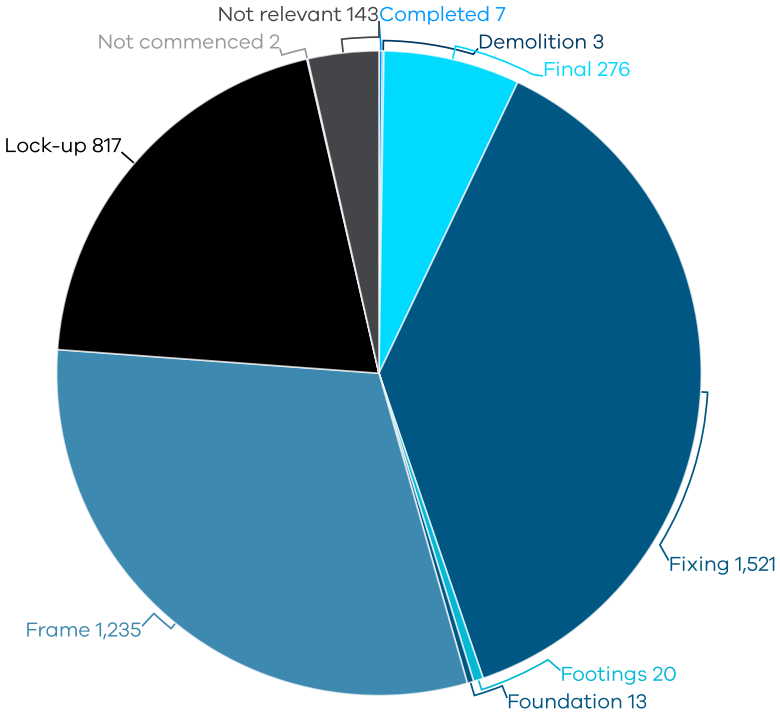


Figure 3: The stages during which proactive plumbing inspections were conducted in 2023-24.

2.2 What we found

Of all inspections conducted, **3,368** (43 per cent) identified at least one compliance risk, similar to the figure for 2022-23 (45 per cent).

A compliance risk is defined as any non-compliant item (observed in a building under construction) which, if not appropriately considered or addressed, has the potential to cause:

- An adverse effect on the safety or amenity of future building occupants and/or the public.
- Financial loss for future occupants or loss of structural integrity.

Observed compliance risk - Domestic works

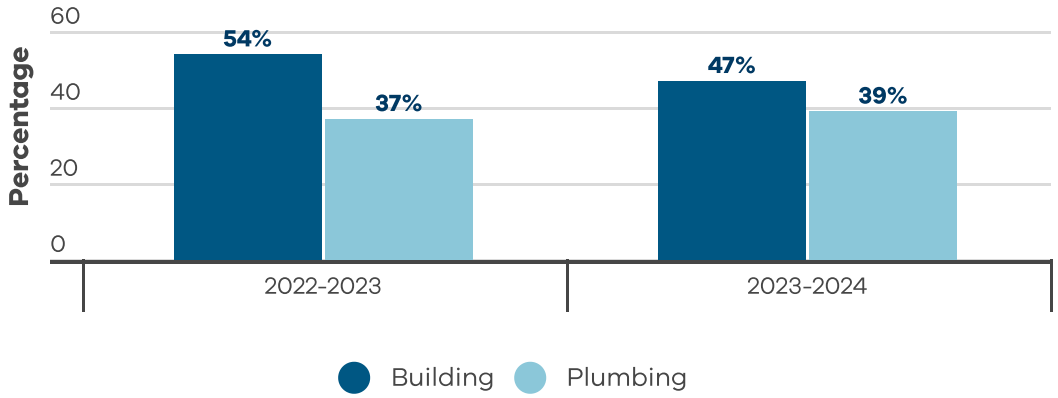


Figure 4: This graph compares the percentage of compliance risks (split between plumbing and building) observed during proactive inspections of domestic works between 2022-23 and 2023-24.

Observed compliance risk - Commercial works

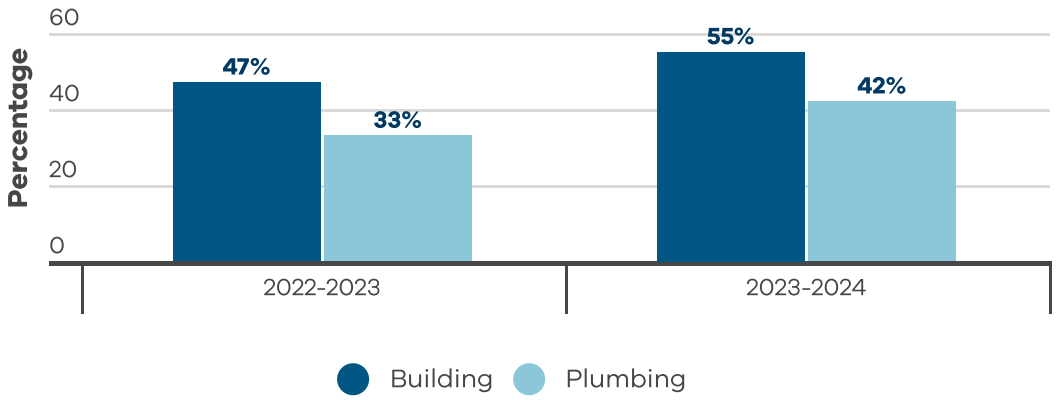


Figure 5: This graph compares the percentage of compliance risks (split between plumbing and building) observed during proactive inspections of commercial works between 2022-23 and 2023-24.

Critical issue

Non-compliant issues of a severity that could result in adverse effects on safety or amenity, financial loss for future occupants or loss of structural integrity if left untreated accounted for one per cent of inspections identified. This rate is consistent with previous findings across the past two years. Sites with OHS risk breaches in this category are referred to the relevant regulator on the same day. Details of the critical issues are outlined in **Appendix 3**.

2.3 Actions taken by the VBA in 2023-24

The VBA sent **3,368** notifications to practitioners, requiring them to respond to the compliance risks identified by the PIP. Typically:

- 15 to 18 per cent of notifications sent to practitioners result in the practitioner providing all relevant documents, such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner, demonstrating how the work meets the requirements of the relevant building legislation. Practitioners are not currently required to lodge this documentation with the VBA.
- 1 to 2 per cent of notifications sent to practitioners result in the practitioner demonstrating that the work is incomplete rather than non-compliant and committing to ensure compliance as the build progresses.
- The remaining notifications of non-compliant work typically require the practitioner to rectify the work and for them to provide RBS or the VBA with proof that the work was rectified.

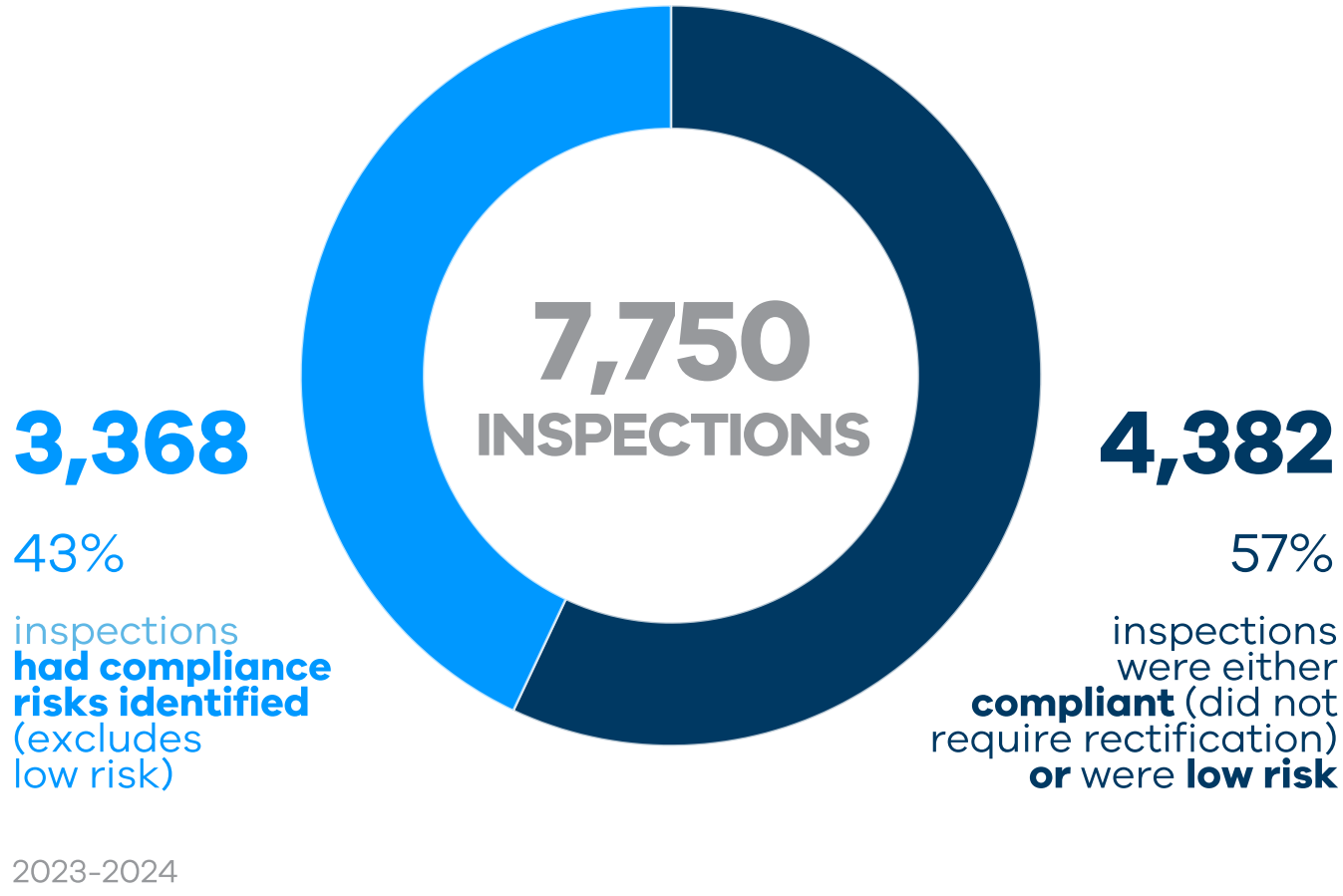


Figure 6: Proactive inspections where at least one compliance risk was identified versus proactive inspections that were compliant or were low risk.

2.4 Enforcement activity

The VBA regulates building surveyors and expects the RBS to proactively ensure safe and compliant work that complies with the legislation and regulations, including all relevant codes and standards. The RBS is responsible for issuing permits and inspecting building work (at mandatory inspection stages) to ensure compliance and ensure that a building is safe to occupy. The RBS are also responsible to manage any required rectifications using their enforcement powers. Typically, a verbal DTF is issued to the builder. However, depending on the severity and risk of the issue, the RBS may choose to issue a written DTF or issue enforcement under Part 8 of the Act to the builder and notify the VBA.

The VBA monitors all sites requiring rectification to ensure the appropriate work is carried out. In exceptional circumstances, the VBA will issue a written DTF to the builder instead of the RBS. This may occur when the RBS appears to have contributed to the non-compliance or where the issuance of an occupancy permit is imminent, and the VBA wants to ensure the non-compliance is addressed before the property is handed over to the owner.

Who receives notifications?

The builder and RBS are notified when compliance risks are identified. However, the builder is the primary addressee for potentially non-compliant building work if the elements have not been subject to a mandatory inspection stage. Where elements have been subject to mandatory inspection, the RBS is the primary addressee.

The RBS will also be the primary addressee when the endorsed building permit documentation is considered to lack sufficient information to show compliance for the purposes of the inspection, such as a performance solution or in situations where the RBS has not considered mandatory items, such as fire separation in dual-occupancy buildings.

The builder is also the primary addressee for potentially non-compliant plumbing work because the plumber is not named in the building permit documents. The VBA relies on the builder to provide the plumber's details. If provided, the VBA will also notify the plumber of any potential issues.

Building inspections

3.1 Overview of building inspections 2023-24

Total building inspections **3,713**

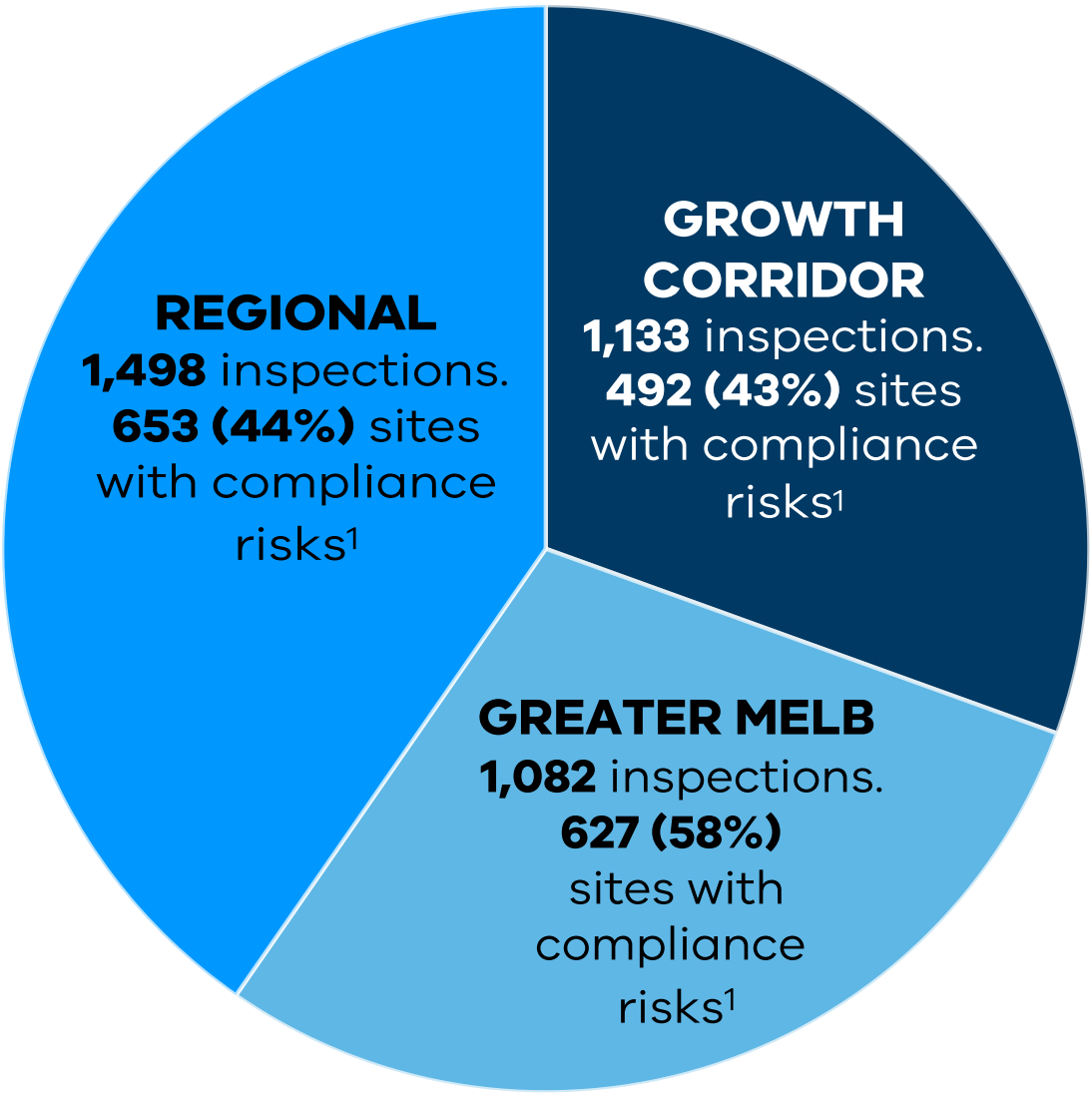


Figure 7: Geographic trends in proactive inspection non-compliance rates in building inspections.

Geographic trends

Volume – Regional Victoria volumes increased in 2023-24 compared to previous years due to VBA's focus on improving inspections coverage across regional and rural areas.

Inspection outcomes – Prevalence of non-compliant issues observed during building inspections was highest in 'Greater Melbourne', a trend largely consistent most with previous years.[2]

[1]*Number of sites inspected with at least one medium/high compliance risk observed.*

[2]*Quarterly reporting commenced March 2020.*

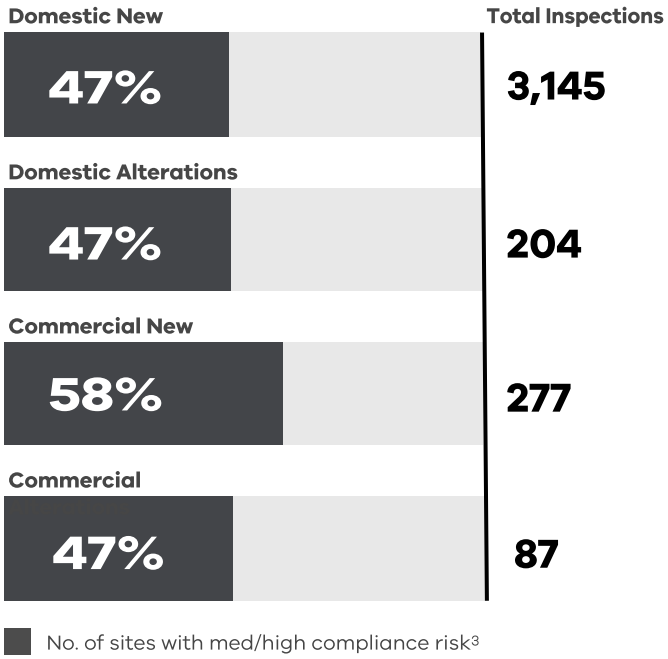


Figure 8: Rates of non-compliance in building work between new builds and alterations.

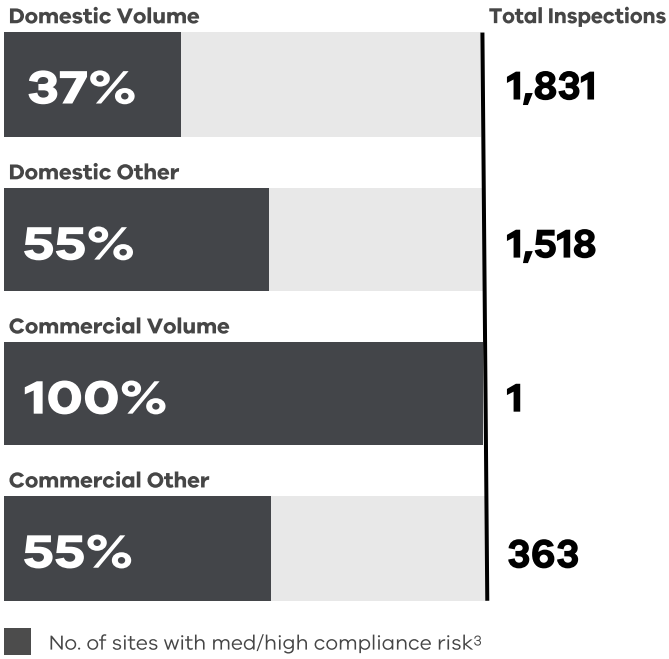


Figure 9: Comparison of non-compliance rates observed in proactive inspections of building work between large volume builders and other.

New builds vs Alterations

Volume – 'New Builds' had the highest number of inspections undertaken, where building permit activity is also the greatest.

Inspection outcomes – The rate of non-compliance observed during building inspections for new domestic builds matched that of buildings undergoing alterations. This marks a change from previous years, where non-compliance was typically more prevalent in new builds compared to alterations on domestic sites. However, for commercial sites, the previous trend remained, with new builds continuing to show higher rates of non-compliance.

Volume vs Other builders

Volume – 'Large Volume Builders' proportionately have a higher volume of inspections undertaken because they typically build new dwellings in growth corridors where building activity is the greatest.

Inspection outcomes – The prevalence of non-compliant issues observed during building inspections was lower in 'Large Volume Builders' compared to all 'Other Builders', a trend consistent with previous years.

The VBA uses trends to enhance its risk-based site selection. This ensures sites are selected based on the highest risk of adverse effects on the safety and/or amenity of future building occupants and the public.

[3]*Number of sites inspected with at least one medium/high compliance risk observed.*

3.2 Overview of where building compliance risks are found

Common non-compliance (Domestic) 2023-24

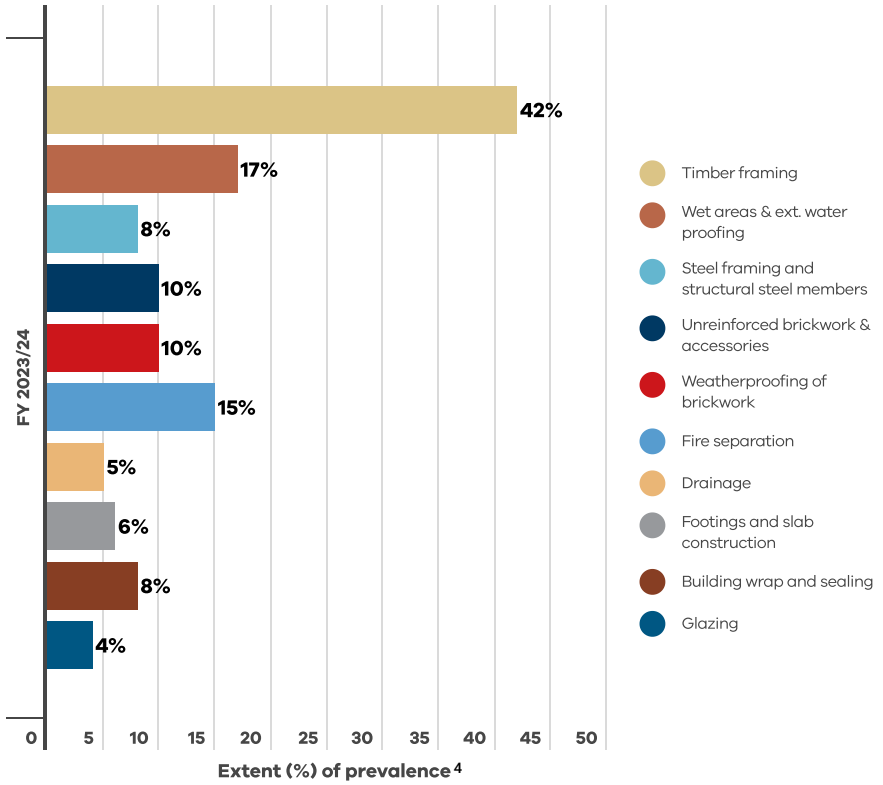


Figure 10: The most prevalent categories where non-compliance risks are observed (medium and high risk) in domestic building inspections.

Common non-compliance (Commercial) 2023-24

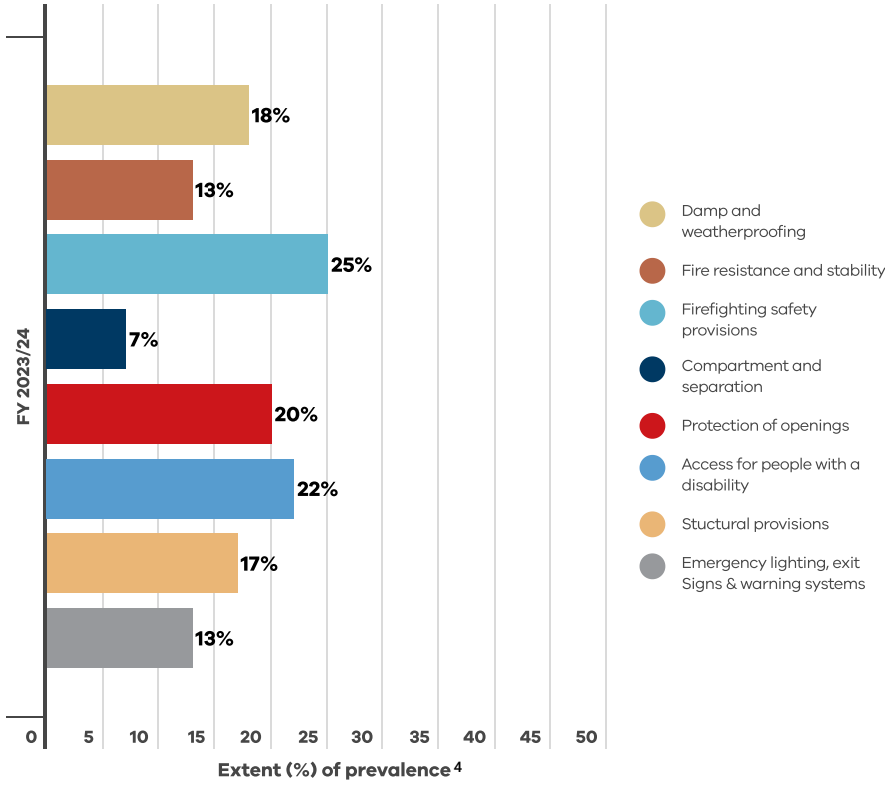


Figure 11: The most prevalent categories where non-compliance risks are observed (medium and high risk) in commercial building inspections.

For more information on the nature of non-compliant issues observed in this quarter go to Section 3.3 Overview of Building Compliance Risks.

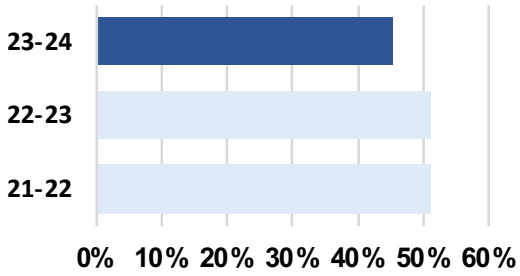
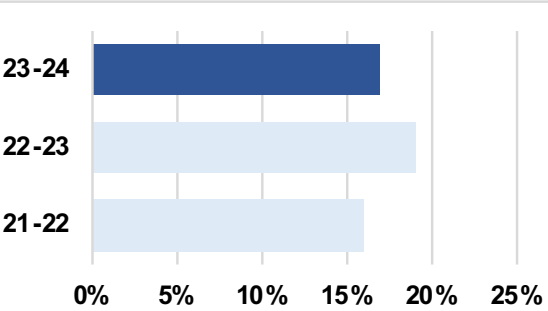
[4]Extent (%) of prevalence is calculated by 'number of times an item was observed as non-compliant over the number of times an item was inspected'.

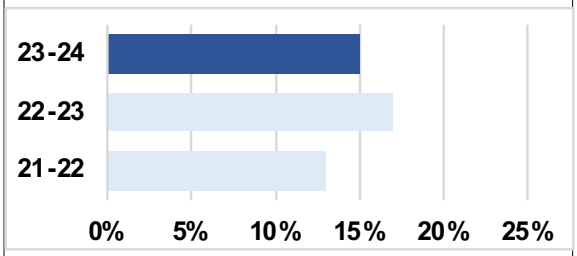
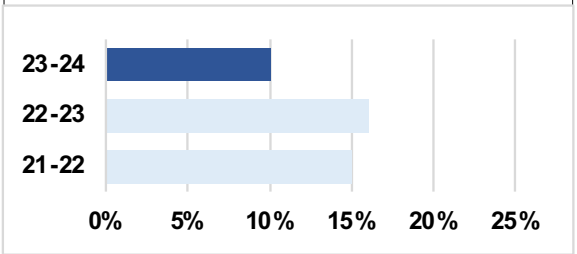
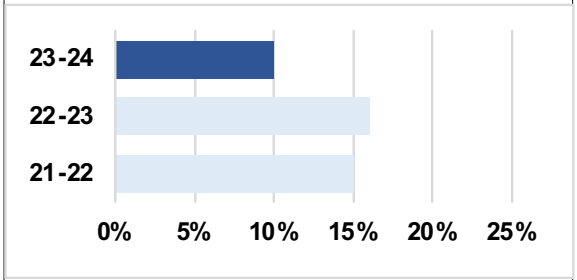
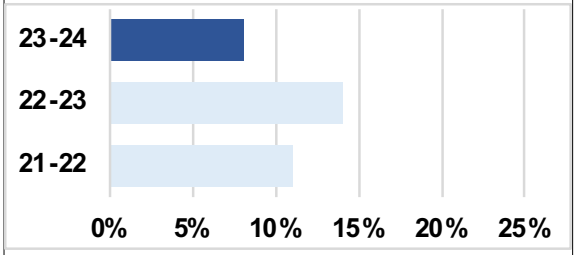
3.3 Overview of building compliance risk

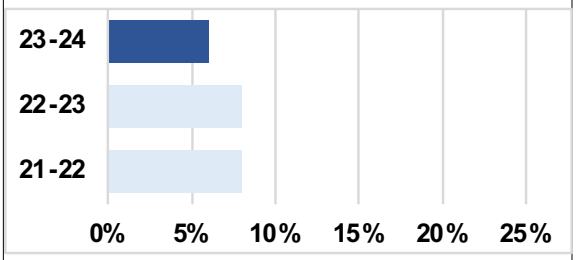
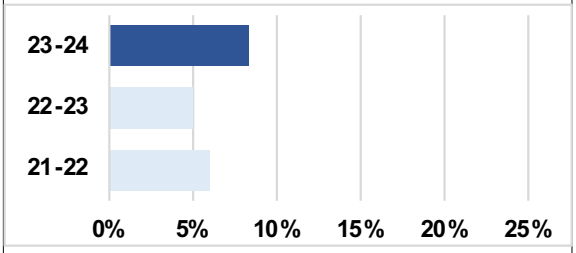
Domestic (Class 1)

Approximately 50,000 elements were assessed across 3,349 domestic building sites during this year (an average of 15 elements per inspection), of which 3,001 were identified as a compliance risk (across 1,571 sites) and required rectification or justification. Of these elements, 69 were critical (across 57 sites).

The most common non-compliances observed within the top eight categories were:

Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per year
Timber framing	852	• Non-compliant penetrations due to services (mostly plumbing) • Insufficient fixing. For example, nails used instead of hold bolts or failure to use two nails per stud in various items • Bottom plate overhang >10mm • Lintels missing from windows and door openings • Bottom plates cut and/or discontinuous • Shear blocks and noggins missing • Braced walls cut.	
Wet areas and external water proofing	285	• Water stops not installed in wet areas - around bath hob, beneath bath flange, shower enclosures, wet area thresholds and doors, floor junction of wet areas • Incomplete waterproofing to ensuite shower, walls and wall junctions and several compromised waterproofing membranes; to accommodate for services, pin holes in water proofing, gaps/holes in perimeter barrier • Bath hob plaster lining is not waterproof as required and back wall plaster lining to bath junction not waterproofed • Balconies - No overflow to balcony, inappropriate installations of balcony substrate not in line with manufacturer's instructions.	

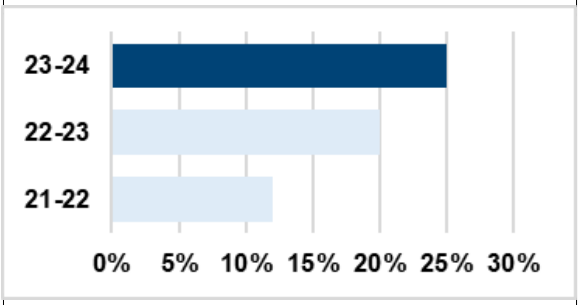
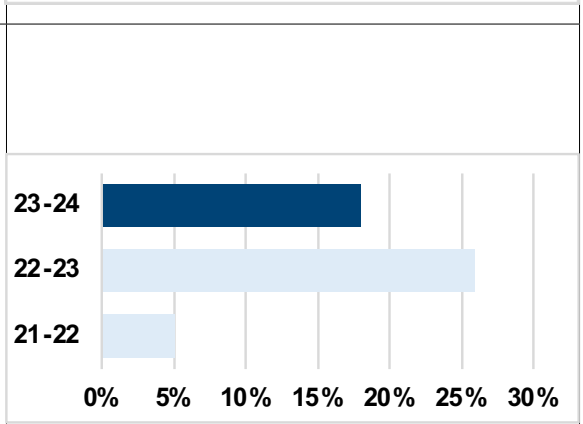
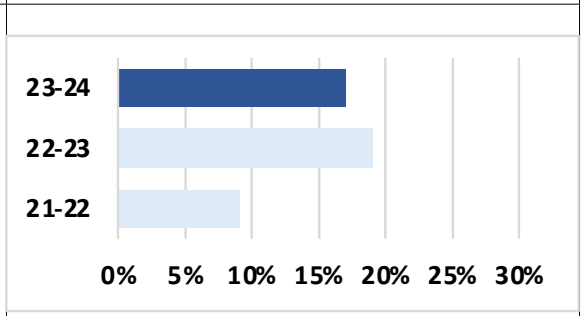
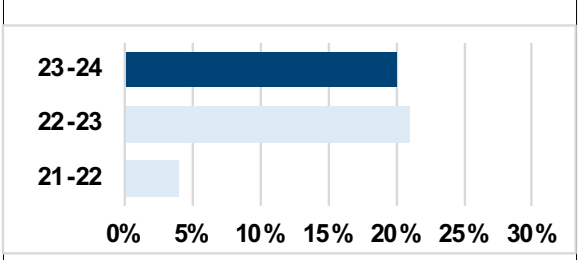
Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per year
Fire separation	**262**	• Fire separating boundary wall system not installed in accordance with manufacturer installation requirements: no 20mm gap between frame and shaft liner, L clips are placed midway, clips not located at every stud, clips placed at noggings and screwed into shaftliner, brackets not installed on both sides of separating wall, damaged panels, using nails instead of screws • Gaps and holes in fire separation system between dwellings.	
Unreinforced brickwork and accessories	**301**	• No Lintel over meter box • Brickwork Overhang less than 15mm • No expansion foam within articulation joints.	
Weatherproofing of masonry	**57**	• Flashings missing around openings or not installed as required by manufacturer • Damp proof course not extending to full part of walls • Weepholes to windows and other openings missing and weepholes obstructed at garage slab.	
Steel framing and structural steel member	**178**	• Structural integrity - insufficient tightening of bolts at baseplates and steel member connection missing bolts, and nuts not tightened to maintain structural integrity.	

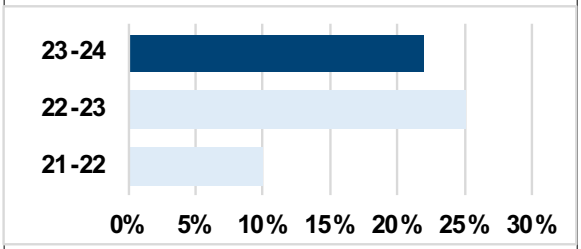
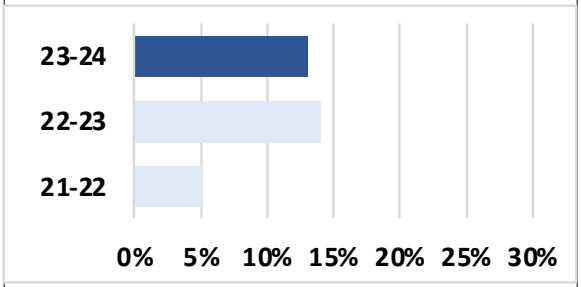
Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per year
Footings and slab construction	**212**	• Brickwork overhang • Reinforcing steel has exposed in the slab edge • Slab cut for plumbing services • Honeycombing to slab.	
Building wrap and sealing	**163**	• Membrane damaged and not properly sealed or not fixed to frame • Building wrap incomplete (not covering all external walls) • No insulation under the roofing iron • Various sections in roof missing insulation • Subfloor insulation is not secured into position to prevent falling out over time.	

3.3 Overview of building compliance risk - Commercial (Class 2-9)

Approximately 4,500 elements were assessed across 364 commercial building sites during 2023-24 (an average of 13 elements per inspection), of which 477 were identified as a compliance risk (across 201 sites) and required rectification or justification. Of these elements, 13 were critical (across five sites).

The most common non-compliances observed within the top eight categories were:

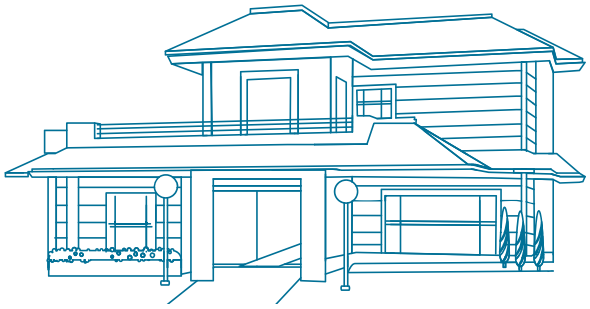
Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per year
Fire safety provisions	**148**	• No temporary portable fire extinguishers provided to site or installed to every floor during construction • Ceiling height in basement stairway less than 2m • Path of travel in basement less than 1m.	
Damp and weatherproofing	**32**	• Vinyl clip floating floor installed in wet areas • Waterstop not properly finished or in line with AS 3740 • No overflow provision provided to external balconies • No threshold or grate drain at door openings out onto balcony/ raised entry • No 75mm upturn to balcony and sole occupancy units • Slab edge beam not infilled to stop water ponding adjacent to the slab • Untreated timber used for balcony hob.	
Structural provisions	**59**	• Structural integrity compromised for service openings • Base plate connection bolts finger tightened • Bolts missing on steel supporting façade • Insufficient nails to balcony joists • Baseplates not fully bearing on slab.	
Protection of openings	**50**	• Unprotected penetrations through walls and floors requiring FRL • Fire doors non-compliant as they do not have fire seals and fire door seals • Windows located within 3m not protected.	

Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per year
Access for people with a disability	**43**	• Handrail to stairway contains obstructions • Stair in hallway has non-compliant going and riser dimensions • Door circulation space minimum of 510 x 1450 not met.	
Emergency lighting, exit signs and warning systems	**19**	• Non exit doors have had exit signs installed above them • No emergency lighting installed - builder unaware of requirement • Illuminated emergency exit light not visible (installed above height requirements).	

3.4 Prevalence of compliance risks in Class 1 buildings - single occupancy vs dual occupancy

Non-compliance rates observed in dual occupancy buildings are consistently much higher compared to single occupancy. This is influenced by dual occupancy dwellings requiring fire separation between the dwellings.

Single occupancy



Common building issues

- Timber framing
- Wet Areas and external weatherproofing
- Unreinforced masonry and accessories
- Footings and slab construction
- Fire separation
- Building fabric

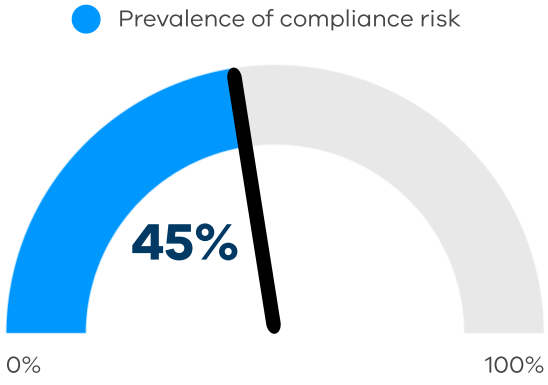
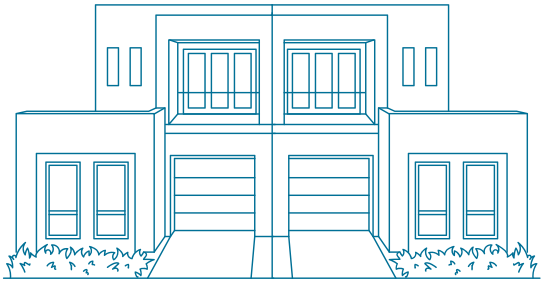


Figure 12: Prevalence of compliance risks observed in building inspections of single occupancy dwellings.

Dual occupancy



Common building issues

- Fire separation
- Timber framing
- Steel framing and structural steel
- Wet areas and external weatherproofing
- Unreinforced brickwork and accessories
- Footings and slab construction

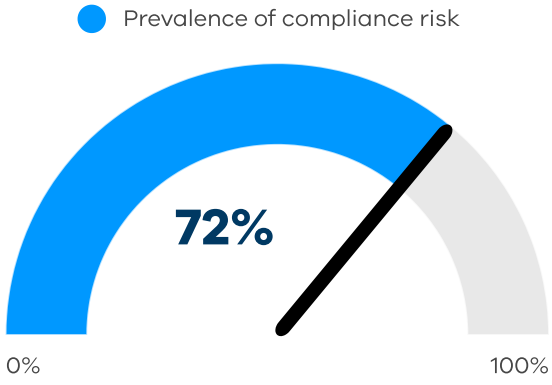


Figure 13: Prevalence of compliance risks observed in building inspections of dual occupancy dwellings.

3.5 Prevalence of compliance risks by class of building

Class	No. of sites inspected in 2023-24	% of compliance risks across class	Top non-compliant categories
Domestic (Class 1 and 10)	**3,349**	**47%**	• Timber framing • Weatherproofing of masonry • Wet areas and external weatherproofing • Steel framing and structural steel members • Unreinforced brickwork and accessories • Fire separation • Footings and slab construction • Building wrap and sealing • Glazing • Drainage.
Apartments less than two sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9)	**167**	**60%**	• Fire-fighting equipment • Protection of openings • Structural provisions • Construction of exits • Damp and weatherproofing • Compartmentation and separation.
Assembly building with no dwellings (Class 9b)	**85**	**53%**	• Fire-fighting equipment • Access for people with a disability • Structural provisions • Construction of exits • Fire resistance and stability.
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**50**	**56%**	• Fire-fighting equipment • Access for people with a disability • Structural provisions • Construction of exits • Protection of openings.
WWarehouse, factories and carparks – no dwellings (Classes 7a, 7b, 8)	**62**	**44%**	• Fire-fighting equipment • Access for people with a disability • Construction of exits • Structural provisions • Compartmentation and separation.

3.6 Case studies – Building

These case studies highlight the crucial role the VBA plays in inspecting building work under construction. Early identification of significant failures allows for easier rectification and helps prevent safety, health and amenity issues for future owners.

Dual occupancy, multi-storey dwellings are featured in these case studies because of the higher risk of non-compliant fire separation and the significant impact that inadequate waterproofing of wet areas can have on multi-storey buildings.

Case study 1: Dual occupancy dwelling – Design failures leading to serious non- compliance

Overview

During a proactive inspection of a dual occupancy development (intended for subdivision into two allotments), numerous non-compliances were identified. Of particular concern were unsupported wall frames along proposed boundary and steel beam with insufficient support that was carrying upper story loads.

The approved design specified a fire-separating party wall (shaft liner) system between the two Class 1 buildings.

The front and rear walls of the two buildings were staggered by approximately 3.5 and 4.7m, leaving substantial sections of single-framed walls unsupported by their respective buildings. These unsupported walls were only held up by aluminium brackets connected to the fire-separating shaft liner panels, contrary to the design intent and the certified shaft liner system as specified in the permit plans.

Fire-separating shaft liner systems require independent, self-supporting structures on both sides of the centrally positioned shaft liner panels. These stable structures are essential to provide adequate support for the shaft liner and to maintain its fire-separating integrity in the event of a structural collapse on either side due to fire.

Response

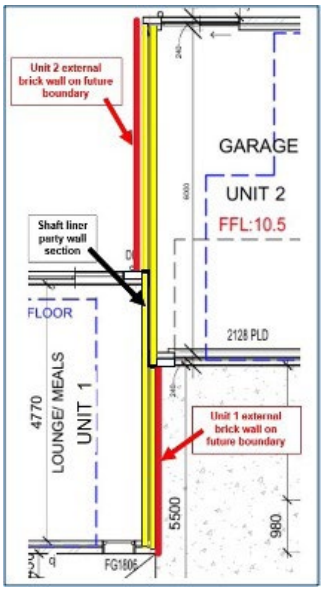
A VBA notification to the RBS and builder, with an explanation as to why the permitted design was not in accordance with the shaft liner tested system prompted the practitioners to reconsider the permitted design and amend the permit plans accordingly.

Outcome

The approved amendment to the permit plans successfully achieved the required fire separation design by shortening the shaft liner to the area where the two buildings are directly adjacent The front and rear sections of the shaft liner were replaced with external brick walls built along the proposed boundary at the front of dwelling 1 and the rear of dwelling 2. This revised design ensures consumer will not face significant property damage from fire spreading from the neighbouring building.

Proposed solution

The future line of subdivision will zigzag, from the external face of dwelling 1 brick wall, step in through the centre line of the shaft liner section, then continue along the external face of the dwelling 2 brick wall.



Case study 2: Class 1 dual occupancy dwelling - Serious non-compliances identified

Overview

During a proactive inspection of two triple-storey Class 1 dwellings under construction, numerous non-compliances were identified. The inspection revealed non-compliant brickwork, timber framing and structural steel works that would have compromised the structural integrity of the buildings.

Expanded Polystyrene (EPS) was also used at boundary junctions where fire separation was required, and the party walls between the units were not installed according to the manufacturer's specifications, failing to achieve the necessary Fire Resistance Level (FRL) of 60/60/60.

In addition, the balcony waterproofing was compromised due to the lack of control joints at the balcony substrate and incorrect installation of the waterproofing substrate, deviating from the manufacturer's guidelines.

Timber and framing non-compliant items

Inadequate packing under top chord support and floor trusses were not fully bearing, contrary to the manufacturer's installation guide.

Strong backs were not supported at the ends by walls or intersecting beams, as required by the manufacturer's installation guide.

Floor truss (supported by internal wall) had no vertical web provided at the load point. Also, no strong backs were provided to the front section of the dwelling.

Floor truss webs were cut to allow for plumbing services.

Various floor trusses had significant signs of degradation due to exposure.

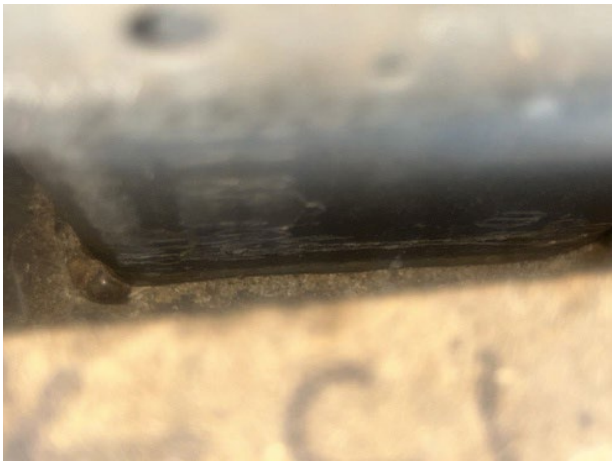
Internal braced walls were missing shear blocks, contrary to AS 4440 – 2004 Clause 2.2.3.

Structural steel non-compliant work

Chamfered steel beam had no stiffener installed where the chamfer begins.

Where steel column base plates are bolted to the slab, various bolts were not tightened throughout.

Bolts did not adequately pass through nut (currently negative pass), contrary to AS 4100 Clause 14.3.6.1.



Various column to beam connections did not have full perimeter welds.

Cavity between steel column baseplates and slab were not fully packed/filled, and column was not fully bearing on slab.

Fabric and fire separation walls non-compliant work

External walls did not have a pliable building membrane installed.

Aluminium clips were fixed directly to shaft liner panels, contrary to the manufacturer's installation guide.

Lamination of fire shield uses a combination of nails and batten screws, contrary to the manufacturer's installation guide. Nails penetrated the entire way through the party wall system.

Clips were not installed on both sides of party wall, contrary to the manufacturer's installation guide.

EPS cladding spanned across the face of the dwelling junctions compromising the required FRL 60/60/60.

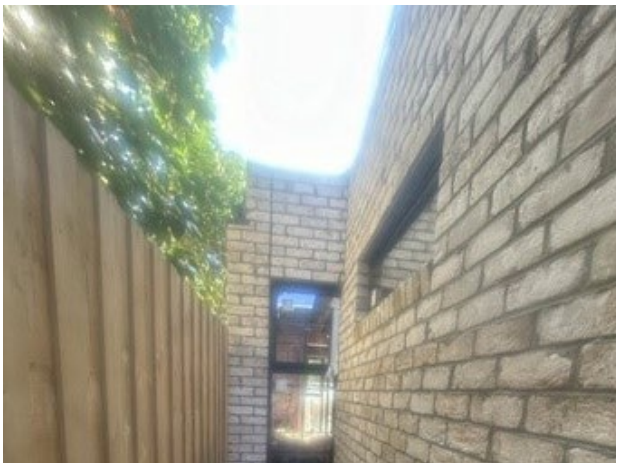
External waterproofing non-compliant work

An overflow provision was not installed, contrary to AS4652.2-2012 Clause 2.11. The installation of the substrate was not in accordance with the manufacturer's installation guide.

Unreinforced masonry accessory and weatherproofing non-compliant work

Fixing of wall ties to brickwork exceeded 400mm vertical cuts, contrary to NCC 2019 Vol. 2 Part 3.3.5.10.

Placement of wall ties at the top of the wall were not within two courses of the top of veneer, contrary to NCC 2019 Vol. 2 Table 3.3.5.3b.



Sill flashings were not installed to the 'openings', contrary to AS 4773.2-2010 Clause 9.6.2.2.

Response

A VBA notification was sent to the RBS and the builder prompting them to rectify the issues and obtain supporting documentation demonstrating compliance. The VBA has received photographic evidence of rectification works and fire engineering reports outlining required rectifications to achieve compliance.

Ongoing action

Given the number of issues identified and the ongoing nature of the construction, some items are still in the process of being rectified. The VBA will not close this matter until the builder and/or RBS provides adequate evidence of compliance in accordance with the relevant codes and standards.

Outcome

The VBA's findings in this case, along with the actions taken to bring the building work into compliance with the Act, Regulations and building permit, have ensured these items have been brought into compliance before the consumer occupies the home. This prevents the burden of non-compliant work from being passed on to current or future owners. For instance, if left unaddressed, these issues could have led to structural failure or, at a minimum, damage to internal linings, with potential movement and failure in the framing due to inadequate fixings, connections and bracing. Additionally, rectifying the balcony issues prevented potential water ingress problems from poorly waterproofed balconies, which could have caused significant structural damage and required substantial financial expenditure to repair.

Case study 3: Class 1 Dual occupancy dwelling - Serious waterproofing issues and lack of provisions of smoke alarms.

Overview

A proactive inspection of two triple-storey Class 1 dwellings identified serious waterproofing issues:

- Waterstops (including at cavity sliders) and perimeter flashings in all wet areas were incorrectly installed, contrary to AS 3740-2010 Part 3.9.1.2; perimeter flashings were not completed at the thresholds and the vertical leg of the waterstop terminated below the finished level of the tile.
- Waterstops and waterproofing at the extremity of the shower areas were incorrectly installed, contrary to AS 3740-2010 Clause 3.13.5, and the shower membrane continued under the waterstop.
- Water ingress was occurring at certain sections of the basement, indicating a potential failure of the waterproofing system.
- The external Finished Floor Level (FFL) is less than 50mm below the FFL of the dwelling, contrary to NCC 2019 Vol. 2 Part 3.1.3.3.

Floor level openings where waterstops and perimeter flashings are incorrectly installed.

Shower extremity where water stops, and waterproofing are incorrectly installed.

Vertical leg of waterstop terminating below finished tile surface.

External FFL less than 50mm below FFL.

Response

A VBA notification was sent to the RBS and the builder prompting them to rectify the issues and obtain supporting documentation demonstrating compliance. The VBA closed the matter after receiving photographic evidence of the rectification works.

Outcomes

The VBA's findings in this case, along with the actions taken to bring the building work into compliance with the Act, Regulations and building permit, have ensured these items have been brought into compliance before the consumer occupies the home. This prevents the burden of non-compliant work from being passed on to current or future owners. For instance, inadequate waterproofing could or would have led to hidden water ingress, causing structural damage and requiring significant financial outlay to repair. Additionally, the insufficient FFL on the external floors could have caused flooding during heavy rain.

Plumbing inspections

4.1 Overview of plumbing inspections conducted 2023-24

Total plumbing inspections **4,037**

Figure 14: Geographic trends in proactive inspection non-compliance rates in plumbing inspections.

Geographic trends

Volume – 'Growth Corridors' had the highest number of inspections undertaken, as this is where building permit activity is the greatest.

Inspection outcomes – The prevalence of non-compliant issues observed during building inspections was highest in 'Regional Victoria', which is a trend largely consistent with previous years.

[5]*Number of sites inspected with at least one medium/high compliance risk observed.*

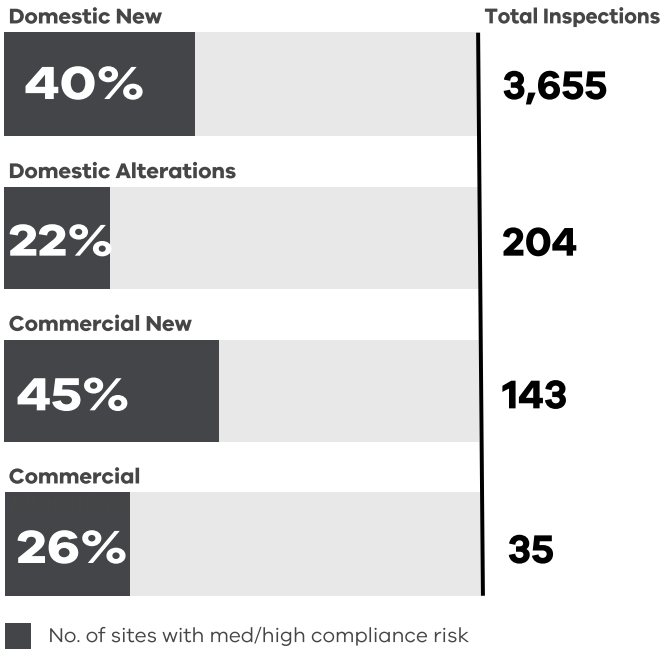


Figure 15: Rates of non-compliance in plumbing work between new builds and alterations.

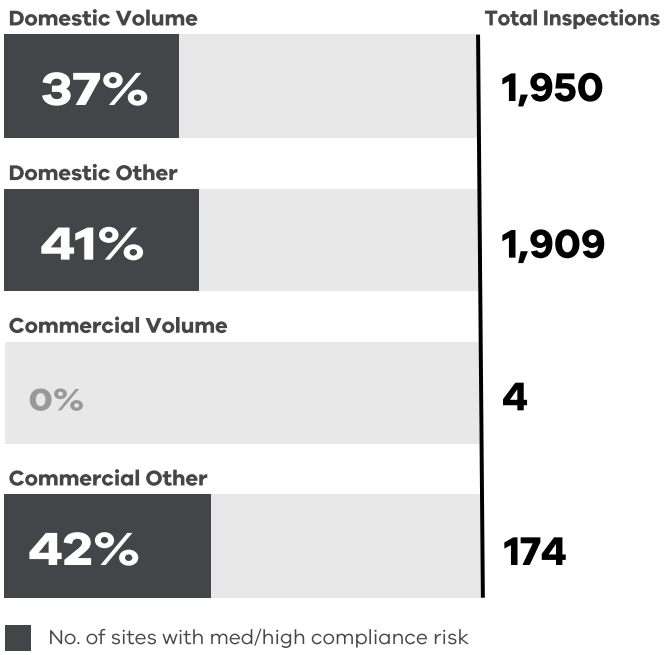


Figure 16: Comparison of rates of non-compliance in plumbing work between volume builders and all other builders.

New builds vs Alterations

Volume – 'New Builds' had the highest number of inspections undertaken, where building permit activity is also the greatest.

Inspection outcomes – A higher prevalence of non-compliant issues was observed during plumbing inspections of 'New Builds', in comparison to buildings undergoing 'Alterations', which is a trend consistent with previous years.

Volume vs Other builders

Volume – 'Large Volume Builders' proportionately have a higher volume of inspections undertaken because they build a lot of the new dwellings in the growth corridor areas of Melbourne.

Inspection outcomes comparisons – Prevalence of non-compliant issues observed during plumbing inspections were slightly higher in 'Other' builders compared to all 'Volume' builders, which is a trend consistent with previous years.

The VBA uses trends to enhance its risk-based site selection. This ensures sites are selected based on the highest risk of adverse effect on the safety and/or amenity of future building occupants and the public.

4.2 Overview of where plumbing risks are found

In 2023-24, improvements were made to the electronic checklist for proactive plumbing inspections. Plumbing items are now organised according to the Part 4 and Part 5 Divisions of the Plumbing Regulations 2018, allowing for more detailed tracking of non-compliance elements.

Common non-compliance (Domestic) 2023-24

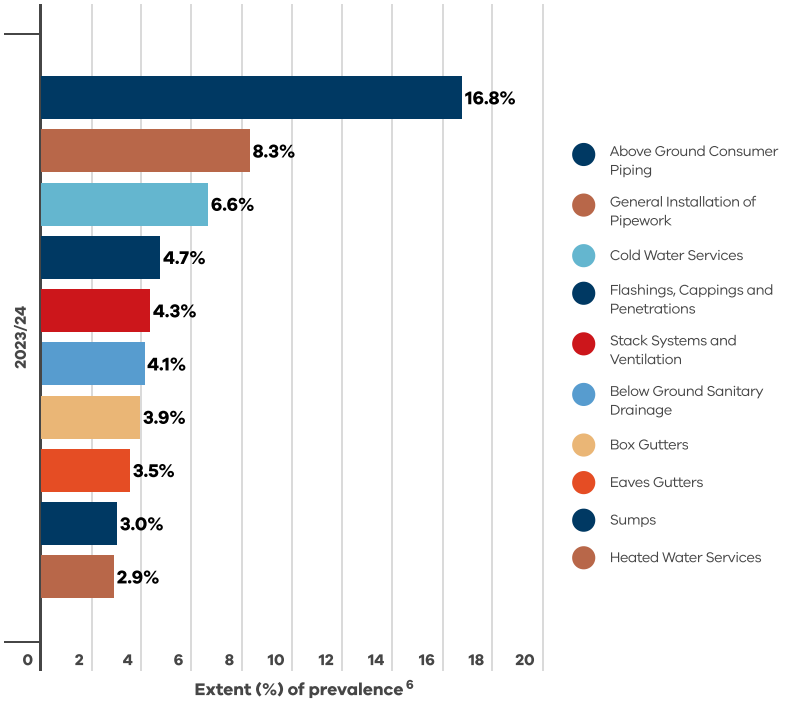


Figure 17: The most prevalent categories where non-compliance risks are observed (medium and high risk) in domestic plumbing inspections.

Common non-compliance (Commercial) 2023-24

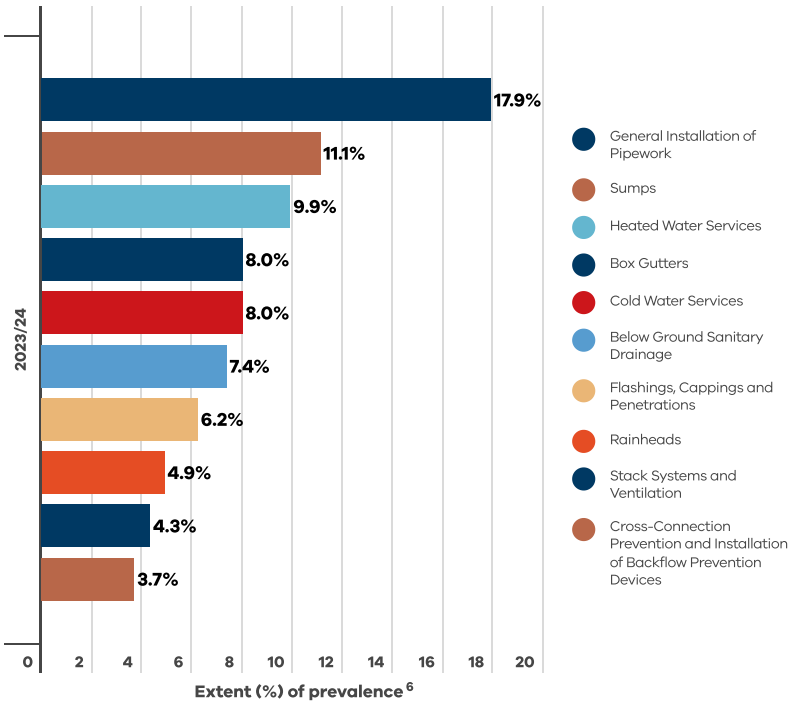


Figure 18: The most prevalent categories where non-compliance risks are observed (medium and high risk) in commercial plumbing inspections.

For more information on the nature of non-compliant issues observed this year go to Section 4.3 Overview of Plumbing Compliance Risks.

[6]Extent (%) of prevalence is calculated by 'number of times an item was observed as non-compliant over the number of times an item was inspected'.

4.3 Overview of common non-compliant items observed

Domestic (Class 1)

Approximately 40,000 elements were inspected across 3,859 sites (average of 11 elements per inspection) and 3,131 elements (across 1,522 sites) were identified as a compliance risk requiring rectification or justification. A total of seven critical issues (across seven sites) were observed to be related to a gas flue installation.

The most common non-compliances observed within the top five categories were:

Plumbing Category	Total non-compliant items and sites affected in 2023-24	Most common non-compliant work under each category	Non-compliant cases
Gas Fitting Work	**778** items were found across **713** sites, accounting for **18%** of sites inspected	Above ground consumer piping	644 (83%)
		Gas flue installation	59 (8%)
		Gas appliance installation	40 (5%)
		Below ground consumer piping	35 (4%)
Roof (Stormwater)	**888** items were found across **601** sites, accounting for **16%** of sites inspected	Flashings, cappings and penetrations	180 (20%)
		Box gutters	151 (17%)
		Eaves gutters	135 (15%)
		Sumps	115 (13%)
		Rainheads	72 (8%)
		Roof sheeting	71 (8%)
		Valley gutters	47 (5%)
		Downpipes	43 (5%)
		Spreaders	41 (5%)
		Above ground stormwater pipework	24 (3%)
		Soaker gutters	9 (1%)
Sanitary Work	**493** items were found across **661** sites, accounting for **12%** of sites inspected	General installation of pipework	320 (65%)
		Stack systems and ventilation	166 (34%)
		Fixtures and appliances	7 (1%)
Water Supply Work	**492** items were found across **404** sites, accounting for **10%** of sites inspected	Cold water services	253 (51%)
		Heated water services	111 (23%)
		Solar water services	75 (15%)
		Rainwater	29 (6%)
		Non-drinking water services	22 (4%)
		Pumps	2 (0.4%)
Drainage Work	**230** items were found across **213** sites, accounting for **5%** of sites inspected	Below ground sanitary drainage	158 (67%)
		Below ground stormwater drainage	72 (31%)

4.3 Overview of common non-compliant items observed

Domestic (Class 2-9)

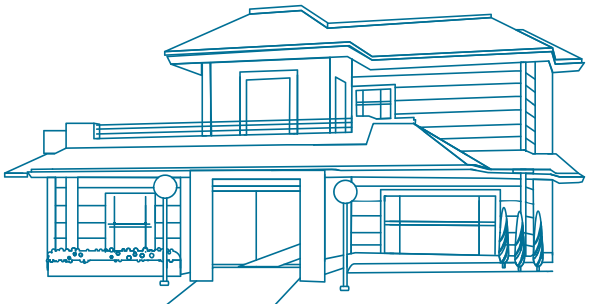
Approximately 1,400 elements were inspected across 178 sites, of which 191 elements (across 74 sites) were identified as a compliance risk requiring rectification or justification. No critical issues were found.

The most common non-compliances observed in the top five plumbing categories were:

Plumbing Category	Total non-compliant items and sites affected in 2023-24	Most common non-compliant work under each category	Non-compliant cases
Roof (Stormwater) Work	**69 items** were found across **34 sites**, accounting for **19%** of sites inspected	Sumps	18 (26%)
		Box gutters	13 (19%)
		Flashings, cappings and penetrations	10 (14%)
		Rainheads	8 (12%)
		Roof sheeting	5 (7%)
		Eaves gutters	4 (6%)
		Above ground stormwater pipework	4 (6%)
		Spreaders	3 (4%)
		Downpipes	2 (3%)
		Valley gutters	1 (1%)
		Soaker gutters	1 (1%)
Sanitary Work	**37 items** were found across **33 sites**, accounting for **19%** of sites inspected	General installation of pipework	29 (78%)
		Stack systems and ventilation	7 (19%)
		Fixtures and appliances	1 (3%)
Water support Work	**34 items** were found across **28 sites**, accounting for **16%** of sites inspected	Heated water services	16 (47%)
		Cold water services	13 (38%)
		Non-drinking water services	3 (9%)
		Rainwater	1 (3%)
		Pumps	1 (3%)
Drainage Work	**19 items** were found across **14 sites**, accounting for **8%** of sites inspected	Below ground sanitary drainage	12 (63%)
		Below ground stormwater drainage	4 (21%)
		On-site wastewater management	3 (16%)
Refridgerated Air-conditioning work	**13 items** were found across **13 sites**, accounting for **7%** of sites inspected	Single head split systems	6 (46%)
		Multi head split systems	3 (23%)
		Ceiling cassette systems	3 (23%)
		Add on condenser unit for ducted systems	1 (8%)

4.4 Prevalence of compliance risks single occupancy vs dual occupancy

Single occupancy



Common plumbing issues

- Roof drainage systems
- General gas installations
- Sanitary plumbing systems
- Cold water services
- Sanitary plumbing systems

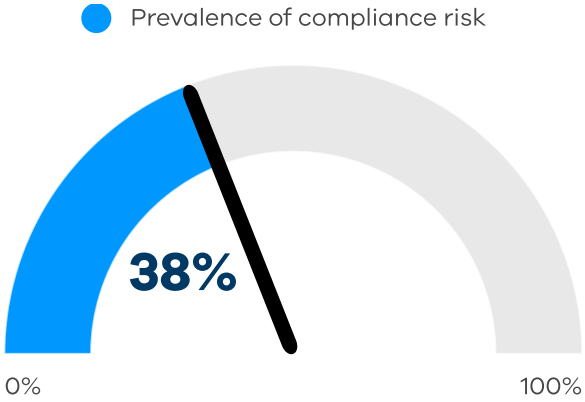
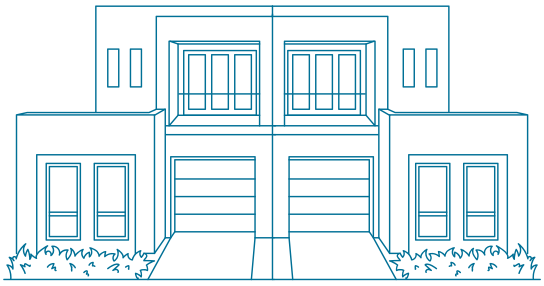


Figure 18: Prevalence of compliance risks observed in plumbing inspections of single occupancy dwellings.

Dual occupancy



Common plumbing issues

- Roof drainage systems
- General gas installations
- Sanitary plumbing systems
- Cold water services
- Heating, ventilation, and air-conditioning systems

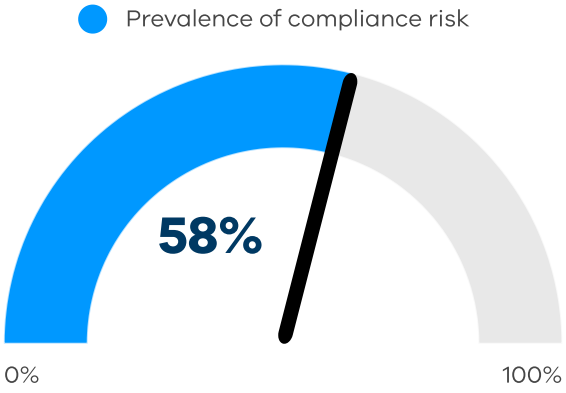


Figure 19: Prevalence of compliance risks observed in plumbing inspections of dual occupancy dwellings.

4.5 Prevalence of plumbing compliance risks by class

Class	No. of sites inspected in 2023-24	% of compliance risks across class	Top non-compliant categories
Domestic (Class 1 and 10)	**3,859**	**39%**	• General gas installation • Cold and heated water services • Roof drainage systems • Sanitary plumbing systems • HVAC.
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9)	**50**	**54%**	• General installation of pipework • Sumps • Heated water services • Rain heads and box gutters.
Assembly building with no dwellings (Class 9b)	**64**	**44%**	• Below ground sanitary drainage • Box gutters • Heated water services • General installation of pipework • Stack systems ventilation.
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**18**	**56%**	• Heated water services • General installation of pipework • Cold water services • Sumps.
Warehouse, factories and carparks – no dwellings (Classes 7a, 7b, 8)	**46**	**9%**	• Cold water services • Single head split systems • Non-drinking water services • Roof sheeting.

4.6 Case study – Plumbing

The Victorian building systems provides the chance for Victorians to build their own homes. While this is a great opportunity for consumers, owner-builders typically have less experience in practical applications of building and plumbing work. The case study below provides an overview of how the VBA's proactive inspection contributed to preventing potential water ingress during heavy rain events.

Class 1 Dwelling – Owner builder

During a proactive inspection of a single storey Class 1 dwelling under construction, numerous non-compliances in roofing plumbing work were identified. Of particular concern was the lack of overflow protection from the eave gutters, which prevents the entry of water into the dwelling. Additionally, the sealed joints in the roofing were not flush and lapped 25mm in the direction of the fall.

Response

A VBA notification was sent to the RBS and the builder, prompting the builder to inform the responsible plumber about the non-compliant work. The VBA plumbing inspector requested a meeting with the licensed plumber on-site, which the plumber agreed to attend. During the reinspection, the plumber's stack design, which was outside the standard scope, was discussed. While on-site, the plumber devised a compliant solution. He then provided clear photos demonstrating compliance, allowing the case to be closed. The owner-builder was highly engaged and proactive in monitoring compliance throughout the build.

Outcome

The findings by the VBA in this case, and action taken to bring the building work into compliance with the Act, Regulations and building permit, ensured the owner-builder received a home that is compliant, and the burden of non-compliant work is not passed onto the current or any future owners.

Eave gutters did not have overflow provision to prevent the entry of water into the dwelling in accordance with AS/NZS 3500.3:2021 clause 3.5.

Soldered or silicone-sealed joints were not flush and lapped 25mm in the direction of the fall throughout the building in accordance with HB39-2015 Clause 5.8.1.

Appendix 1: BRV recommendation and Minister's Statement of Expectations

Minister Statement of Expectations Nov 2023 (Relevant to PIP)			
Reduce regulatory harms	Report annually on results and **impacts of harm reduction** activities.	**Risk-based approach to compliance and enforcement**	Report annually on results and **impacts of compliance and enforcement activities** in reducing high risk.
	Ensure that the VBA's regulatory **approach is informed by evidence on harms**.		Implement effective strategies to address non-compliance, informed by operational intelligence, data and research.

Table 1 - Minister's SOE relevant to the Proactive Inspections Program in 2023-24

1E	The VBA should review how it allocates compliance monitoring and enforcement resources to ensure sufficient capacity for strategic interventions. This should include identifying opportunities to pilot 'problem solving' projects for suitable harms and developing internal capabilities to implement such an approach.
3E	The VBA should engage with DELWP and the Minister for Planning on its objectives for a more mature and comprehensive model for designing and monitoring work, with a focus on risk targeting, and moving from an activity quota to a balanced set of performance indicators, consistent with guidance set out in Towards Best Practice.
3G	In designing its PIP model, the VBA should aim to set aside a portion of inspections for higher risk sites and practitioners, and a portion for random sampling of general sites and practitioners to maintain visibility and monitor for emerging risks.
5G	In its communications, the VBA should emphasise guidance given, and remedial actions taken, under a narrative of 'predicable and expected outcomes and constructive compliance management' - as opposed to 'enforcement and punishment.'

Table 2 - Better Regulation Victoria Recommendations relevant to PIP in 2023-24

Appendix 2: Proactive Inspections Program – Risk Rating Scale

The following table shows the PIP risk rating matrix.

The level of risk observed during inspection determines the VBA's response and any actions required of the relevant building practitioners.

LOW-RISK (PASS)	Non-compliance is not identified at inspection, or any non- compliance that is consistent with work in progress and is reasonably expected to be resolved as work progresses.
LOW-RISK (LOW-IMPACT)	It is unlikely that the compliance risk, if left untreated, would cause an adverse effect on the safety and/or amenity of the occupants. Financial loss for future occupants or loss of structural integrity is unlikely.
MEDIUM RISK	It is possible that the compliance risk, if left untreated, would cause an adverse effect on safety and/or amenity of the occupants/public. Financial loss for future occupants or loss of structural integrity is possible.
HIGH-RISK	It is almost certain that the compliance risk, if left untreated, would cause an adverse effect on the safety and/or amenity of the occupants/public. Structural integrity would be significantly compromised and/or total loss of project value would be incurred.

Appendix 3: Proactive Inspections Program – electronic checklists

Section one

Guidance on elements concerning immediate life-safety issues to ensure these items are inspected first.

Safe access / egress (including fencing, rubbish control and storage of materials).

Asbestos in demolition / refurbishment work.

Perimeter rails, stair void protection for multi-storey build.

Scaffold with valid "scafftag".

Scaffold components.

Risk controls for ground collapse in trenching / excavation work.

Emergency procedures in trenching / excavation work.

Section two

Guidance on mandatory requirements under the Building Act 1993 and Building Regulations 2018

Building Regulation 2018 Provision and display of permit information (Regulation 41)

Building Act 1993 Part 3 Building Permits (Section 16 - works without a Building Permit or not in accordance with Building Permit, Section 24A- appropriate certificate of insurance issued for cost of building work >$16,000 , Section 24B – Specification of builders in relation to specific building work, Section 25B – Restrictions on owner builders.

Building Act 1993 Part 5 Occupancy Permits

Building Regulation 2018 Part 5 Siting (Regulation 73 to 97 when applicable)

Building Regulation 2018 Part 7 Protection of adjoining property and public

Building Regulations 2018 Part 6, 8 and Part 10 Building work and Designation of special areas of building work (Regulation 132, 150, 152, 153,154)

Section three

Guidance on building work relevant to residential inspections and is broken down into different building stages under the NCC of Australia BCA Vol 2 (Class 1 and 10). There are two templates available: one that aligns with NCC 2019 Vol 2 and another that aligns with NCC 2022 Vol 2.

Residential inspections – NCC 2019

Site preparation Earthworks and site cuts, site surface drainage and termite risk management.

Footings and slabs Preparation Concrete and reinforcing, site classification, and footings and slab construction.

Masonry Unreinforced and reinforced, accessories, weatherproofing and earth wall construction.

Framing Sub-floor ventilation, timber/steel framing, structural steel members.

Roof and wall cladding Roof cladding, gutters and down-pipes, wall cladding.

Glazing.

Fire Safety Separation, smoke alarms, heating appliances, bushfire areas, alpine area.

Health and amenity Wet area and external water.

Safe movement and access stair construction Balustrading and handrails, swimming pool safety barriers, swimming pool water recirculation.

Additional construction High wind, earthquake and flood hazard.

Structural design.

Energy efficiency Building fabric, external glazing, building sealing, air movement.

Residential inspections – NCC 2022

Structure H1 Structural provisions, site preparation, footing and slabs, masonry, framing, roof and wall cladding, glazing, earthquake areas, flood hazard, attachments of framed desks and balconies to external walls of building using waling plates, piled footings.

Damp and weatherproofing H2 Drainage, footing and slabs, masonry, subfloor ventilations, roof and wall cladding, glazing, external waterproofing.

Fire Safety H3 Fire hazard properties and non- combustible building elements, fire separation of external walls, fire protection of separating walls and floors, fire separation of garage-top-dwellings, smoke alarms and evacuation lightings.

Health and amenity H4 Wet areas, materials and installations of wet area components and systems, room heights, facilities, light, ventilation, sound insulation, condensation management.

Safety movement and access H5 Stair way and ramp construction, barriers and handrails.

Energy efficiency H6 Application of energy efficiency.

Ancillary provisions and additional construction requirements H7 Swimming pools, construction in alpine areas, construction in bushfire prone areas, heating appliances, fireplace, chimneys and flues.
Liveable housing design H8

Section four

Guidance on building work relevant to commercial inspections and is broken down into different building stages under the NCC of Australia BCA Vol 1 (Class 2 and 9). There are two templates available: one that aligns with NCC 2019 Vol 1 and another that aligns with NCC 2022 Vol 1.

Commercial inspection – NCC

Section B: Structure.

Section C: Fire resistance Fire resistance and stability, compartment and separation, protection of openings.

Section D: Access and egress Provision of escape, construction of exits, access for people with disability.

Section E: Services and equipment Fire fighting equipment, Smoke hazard management, lift installations, emergency lighting, exit signs and warning systems.

Section F: Health and amenity Damp and weatherproofing, sanitary and other facilities, room heights, light and ventilation, sound transmission and insulation.

Section G: Ancillary provisions Minor structure and components, heating appliances, fireplaces, chimneys and flues, atrium construction, construction in alpine areas and bush-fire prone areas.

Section H: Special use buildings Theatres, stages and public galls, public transport buildings.

Section J: Energy efficiency- Energy efficient, building fabric, glazing, building sealing, air-condition and ventilation systems, artificial lighting and power, heated water supply and swimming pool and spa plant, access for maintenance and facilities monitoring.

Commercial inspection - NCC 2022

Section B: Structure.

Section C: Fire resistance Fire resistance and stability, compartment and separation, protection of openings.

Section D: Access and egress Provision of escape, construction of exits, access for people with disability. Section E: Services and equipment Fire fighting equipment, smoke hazard management, lift installations, emergency lighting, exit signs and warning systems.

Section F: Health and amenity Surface water management, rising damp and external waterproofing, wet areas and overflow protection, roof and wall cladding risk, sanitary and other facilities, room heights, light and ventilation, sound transmission and insulation, condensation management.

Section G: Ancillary provisions Minor structure and components, boilers, pressure vessels, heating appliances, fireplaces, chimneys and flues, atrium construction, construction in alpine areas, construction in bushfire prone areas, occupiable outdoor areas, livable housing design.

Section I: Special use buildings Class 9b buildings, public transport buildings, farm buildings and farm sheds, Class 3 and 9a residential aged care buildings and class 9c buildings, places of public entertainment, Class 9b children's services**.**

Section J: Energy efficiency Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, building fabric, building sealing, air-conditioning and ventilation, artificial lighting and power, heated water supply and swimming pool and spa plant, energy monitoring and on-site distributed energy resources.

Section five

Guidance on requirements under the Plumbing Regulations 2018, and relevant codes and standards that apply to residential and commercial properties in the following categories.

Part 4 - Classes of plumbing work other than classes of specialised plumbing work.

Division 1 - Drainage Work Below ground sanitary drainage, below ground stormwater drainage, on-site wastewater management / trade waste.

Division 2 - Fire protection work Commercial and industrial fire sprinkles, fire system pump set, hydrants and hose reels, residential and domestic fire sprinklers.

Division 3 - Gas fitting work Above consumer piping, below ground consumer piping, gas appliance installations, gas fuel installations, LP gas installation in caravans and boats.

Division 4 - Irrigation (non- agricultural) work Irrigation.

Division 5 - Mechanical services work Duct fixing, solid fuel heaters, hydronic heating systems, evaporating cooling systems, medical gas systems, air handling systems, cooling towers.

Division 6 - Refrigerated air conditioning work Single head split systems, multi head split systems, ceiling cassette systems, add on condenser unit for ducted systems.

Division 7 - Roofing (stormwater) work Roof sheeting, box gutters, sumps, rain heads eaves gutters, valley gutters, soaker gutters, downpipes, spreaders, roof flashings, capping and penetrations, above ground stormwater pipework, siphonic drainage systems.

Division 8 - Sanitary work Stack systems and ventilation, general installation of pipework, fixtures and appliances.

Division 10 - Water supply work, Cold water services, heated water services, solar water services, non-drinking water services, rainwater, pumps.

Part 5 - Classes of specialised plumbing work.

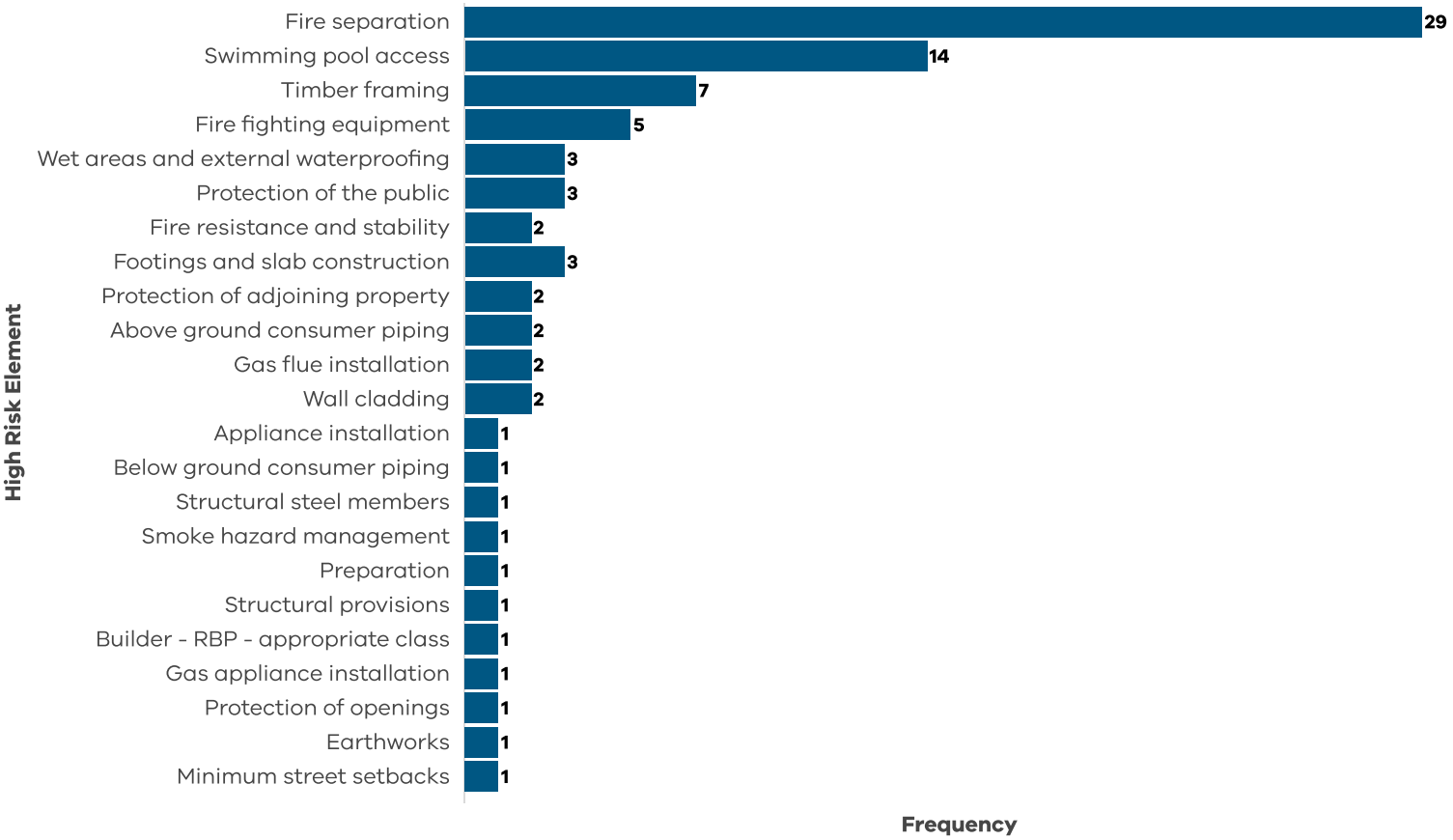
Division 1 - Backflow prevention work Cross-connection prevention and installation of backflow prevention devices.

Division 2 - Thermostatic mixing valve work Thermostatic mixing valves.

Division 3 - Type A appliance conversions work Type A appliance conversions. Division 4 - Type A appliance servicing work Type A appliance servicing.

Unlicensed/unregistered plumbing work Unlicensed/unregistered plumbing work.

Appendix 4: Composition of high-risk elements in 2023-24

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