

Proactive Inspections Program Activity Report

JANUARY - MARCH 2022

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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 people 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 VBA's Proactive Inspections Program (PIP) is an early-intervention regulatory initiative which aims to identify non-compliant building and plumbing work under construction and ensures the work is rectified. Our team includes experienced building inspectors, building surveyors and licensed plumbers, who typically inspect over 1,000 domestic and commercial sites each month. Inspections focus on either building or plumbing work and sites are chosen using a variety of methods. These include:

- **Random** - identification of building permits (lodged with the VBA) based on pre-defined risk-factors, (e.g. buildings intended for human occupation, buildings that are more than two storeys or costs of works etc.)
- **Intelligence based** - typically involves targeted inspections of practitioners or sites of interest (based on a variety of information, including risk data) and/or a class of builder/building surveyor.
- **Ad-hoc** - inspectors use flexibility to inspect sites that come to their attention while attending other pre-determined sites.

When our inspectors identify compliance risks (that is, potentially non-compliant building and plumbing work), they write to the practitioner, notifying them of the issues that need to be addressed. Once notified, the practitioner responsible (builder, plumber or building surveyor) must respond to the VBA within three days for serious issues and within 14 days for moderate or lesser risk. Critical life-safety issues must be addressed immediately and, in these cases, the VBA will telephone the practitioner and relevant building surveyor, as well as notifying co-regulatory agencies such as WorkSafe.

- In some circumstances, the VBA will issue a *Direction to Fix* to resolve the most critical issues. For example, where non-compliant wall cladding is identified, the VBA will issue a *Direction to Fix*, requiring the cladding's removal before an occupancy permit is granted.
- The VBA uses a risk-rating scale (Appendix 1) to determine the level of scrutiny applied to a potential issue. The scale considers the potential adverse effects on the future safety of building occupants and people nearby and on the amenity of the building itself.

1.1. MINISTER'S STATEMENT OF EXPECTATIONS

In line with the Minister's Statement of Expectations, our goal is to inspect 10 per cent of all building permits issued in Victoria each year. When selecting inspection sites, we analyse building permit data and consider a range of risk factors. We sometimes target certain types of construction to manage risk and ensure intervention at the earliest possible stage.

1.2. BENEFITS

PIP improves safety and compliance outcomes for building and plumbing work in Victoria through early identification and rectification and, in some cases, by taking other enforcement action. By inspecting work under construction, the VBA can address significant failures earlier, resulting in better outcomes for all involved. At the same time, rectification is often easier and less costly (and covered by practitioners, not the owner) and avoids impacts on the safety, health and amenity of future occupants if the compliance risk had remained undetected or unresolved.

Information and intelligence gathered through PIP enables the VBA to provide advice on building and plumbing standards and education and training in the industry.

1.3. HOW WE CONDUCT PROACTIVE INSPECTIONS

Building and plumbing inspectors are provided with comprehensive electronic inspection checklists. The checklists have more than 500 elements grouped into three parts that address:

- building and plumbing work broken down into different building stages under the National Construction Code – Volumes 1 and 2 (Building Code of Australia).
- mandatory requirements under the Building Act 1993, Building Regulations 2018 and Plumbing Regulations 2018.
- the display of permit information.
- occupational health and safety (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 2.

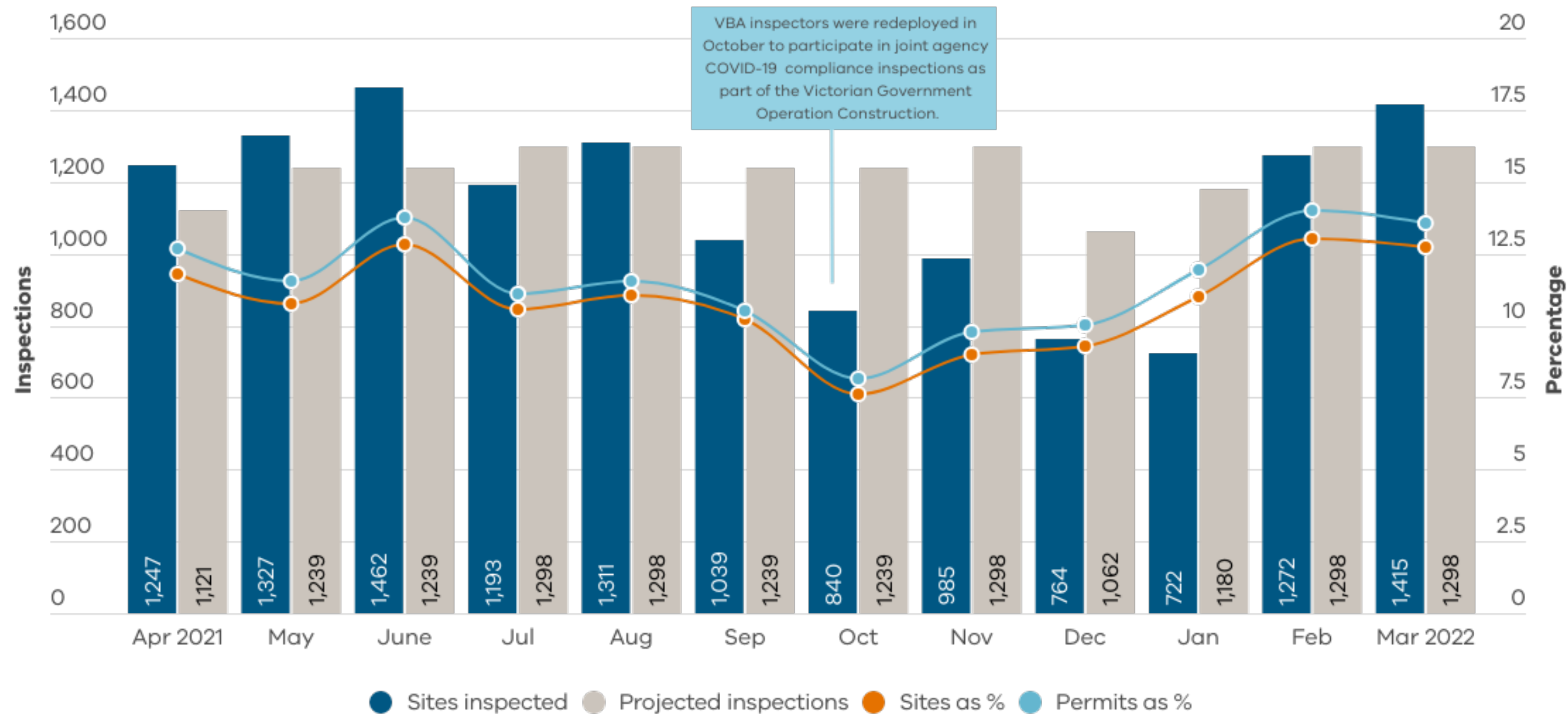


1.4. PERFORMANCE YEAR TO DATE

The graph below illustrates the number of sites inspected each month and demonstrates how the VBA is tracking against the Minister’s Statement of Expectations to inspect 10 percent of new building permits every year.

INSPECTIONS YEAR TO DATE - APRIL 2021 TO MARCH 2022

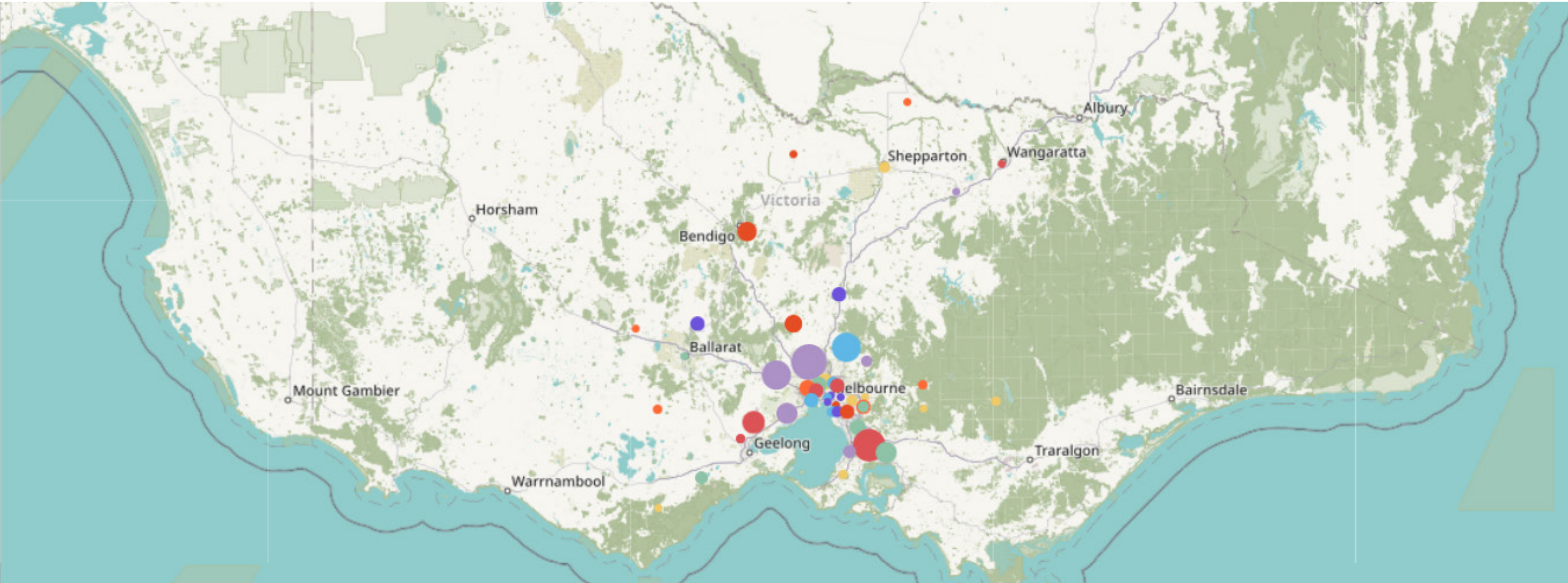
Projected inspections are based on a full financial year forecast of building permit activity across the State as well as historic monthly building permit activity trends. Actual activity is reported from building permit levy data and may vary from projected totals. Discrepancies between projected and completed inspections may occur depending on unforeseen industry activity and resource allocation (e.g. COVID-19 restrictions).



2. Q3 IN FOCUS



Q3 INSPECTION MAP - JANUARY 2022 TO MARCH 2022



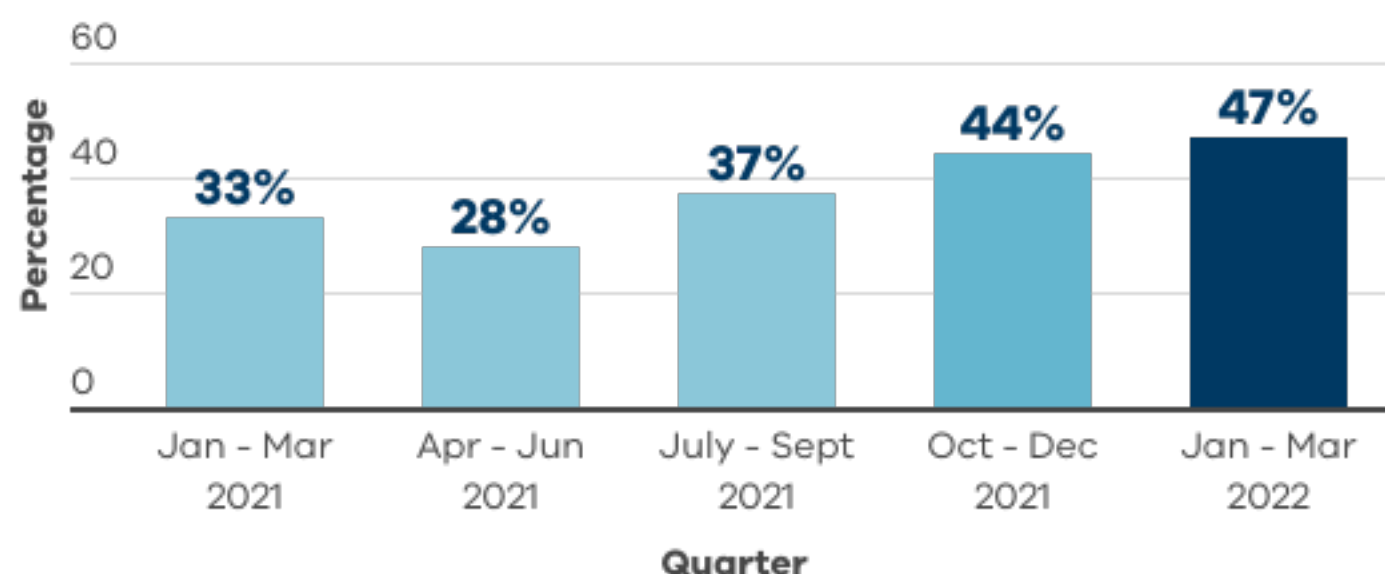
The coloured dots represents the municipalities in which inspections occurred, the size of dots correlates to the number of inspections.
Visit the link to view the interactive map <https://www.vba.vic.gov.au/building/complaints-compliance-enforcement/proactive-inspections-program/quarterly-reports>

2.1. WHAT WE FOUND

1,617 or 47% per cent of inspections conducted during this quarter (Jan-Mar 2022) identified at least one compliance risk, an increase of 4% from the previous quarter (Oct-Dec 2021). This is the third quarter in a row where an increase in compliance risk compared to the previous quarter has occurred.

This increase is linked to the VBA's continued strategy (implemented in July-Sept 2021) to select more sites that have progressed beyond slab stage (by identifying slightly older permits), and by targeting practitioners of interest as a result of gained intelligence.

YEAR TO DATE - OBSERVED COMPLIANCE RISK - ALL INSPECTIONS



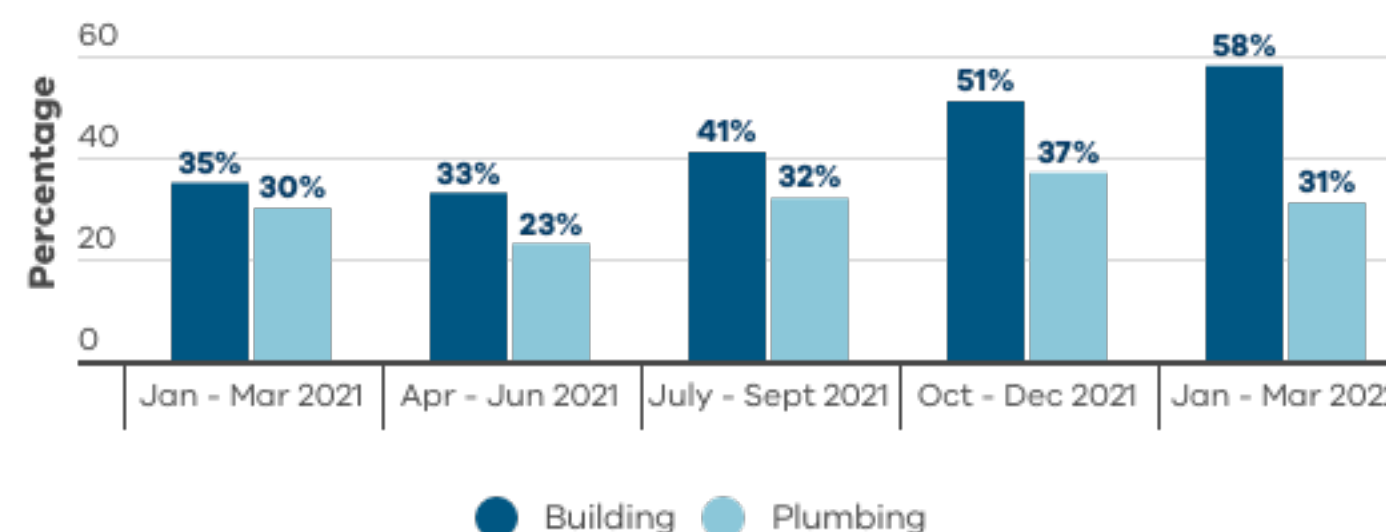
CRITICAL ISSUE

2.0% of inspections identified 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. This rate is consistent with previous quarters since January 2020. Sites with OHS risks are reported in this category, with breaches referred to the relevant regulator on the same day. Details of the critical issues are outlined in Appendix 3.

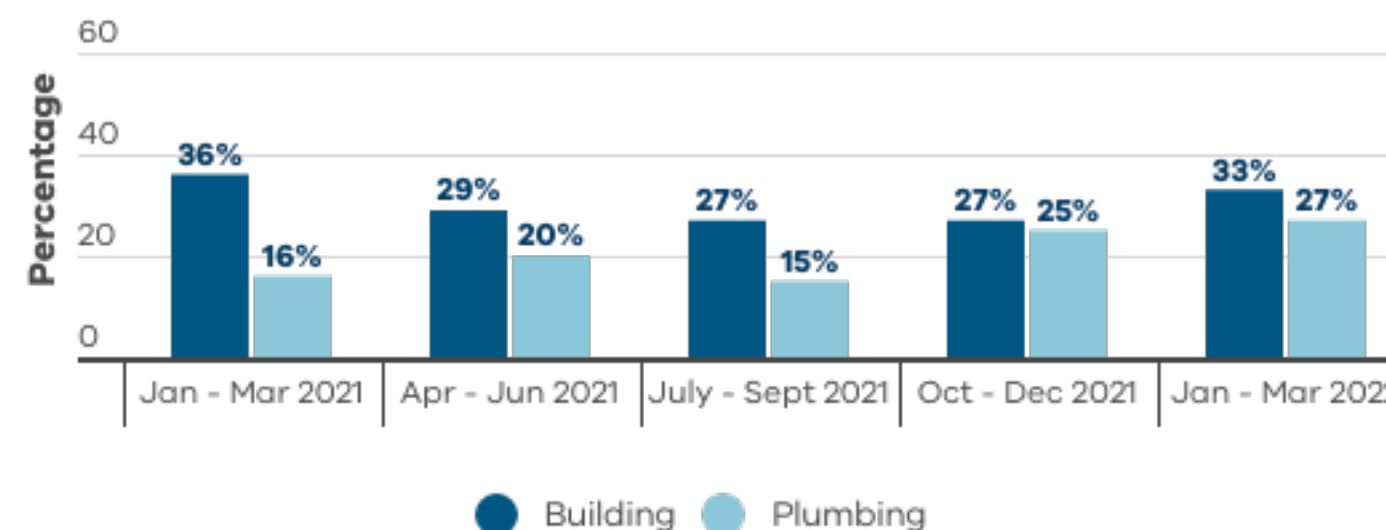
A compliance risk is defined as any non-compliant item (observed in a building under construction) which if not appropriately considered or addressed, has the potential to cause:

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

YTD - OBSERVED COMPLIANCE RISK - DOMESTIC WORKS



YTD - OBSERVED COMPLIANCE RISK - COMMERCIAL WORKS



2.2. ACTIONS TAKEN BY THE VBA

The VBA sent 1,617 notifications to practitioners requiring them to respond to the compliance risks identified by the PIP. Typically:

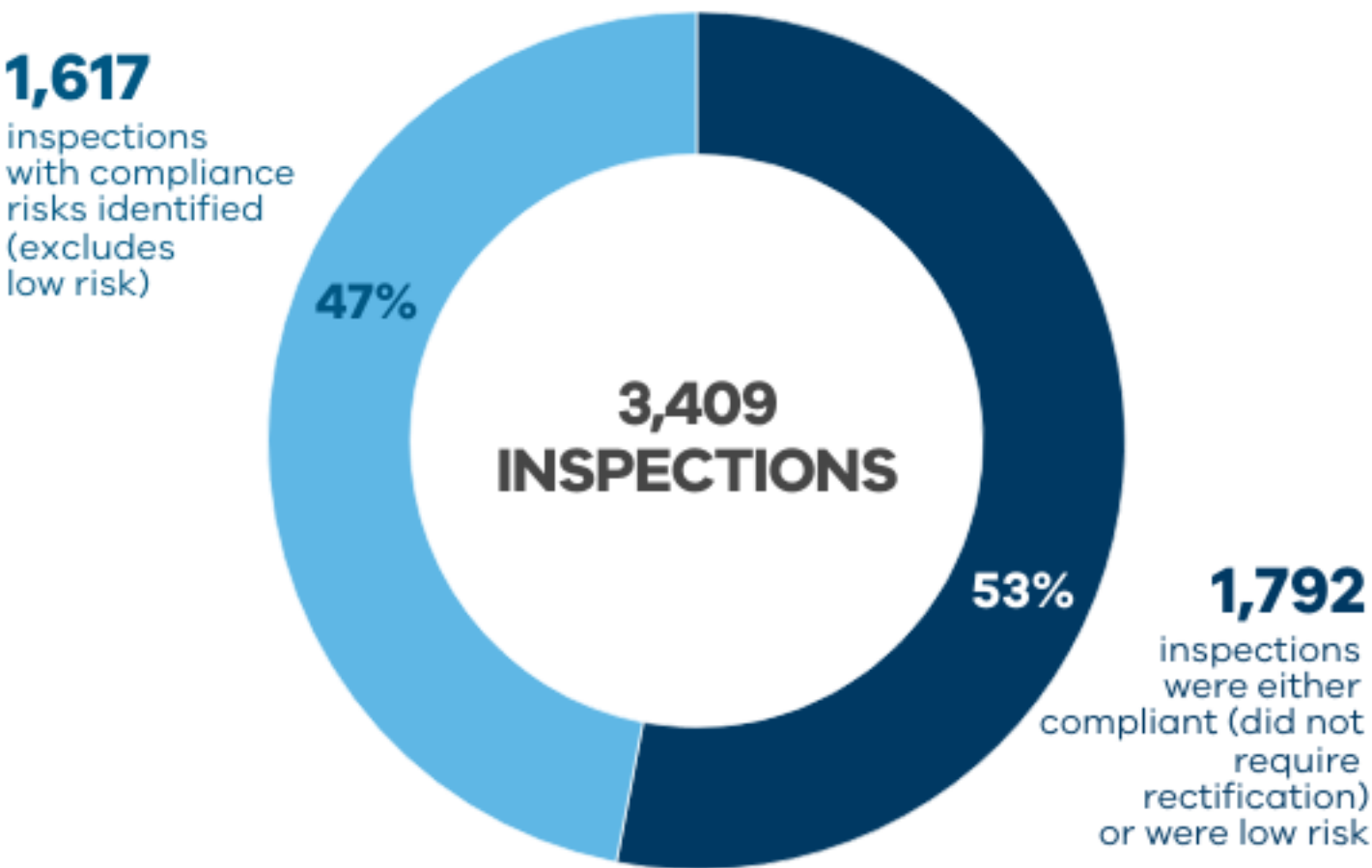
- 15% to 18% of the notifications sent to practitioners resulted in them providing all relevant documents (such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner) showing how the work meets the requirements of the relevant building legislation. This is because practitioners are not currently required to lodge this documentation with the VBA.
- 1% to 2% of the notifications resulted in them demonstrating the work was incomplete rather than non-compliant and would be resolved as the build progresses.
- The remaining notifications of non-compliant work identified required rectification and the practitioners must provide the Relevant Building Surveyor (RBS) or the VBA with proof the work has been brought into compliance.

2.3. ENFORCEMENT ACTIVITY

The VBA expects the relevant building surveyor RBS to manage any required rectification using their enforcement powers.

Typically, a verbal *Direction to Fix* is issued to the builder. However, depending on the severity and risk of the issue, the RBS may choose to issue a written *Direction to Fix* or a *Building Notice* to the builder or owner and notify the VBA. The VBA monitors all sites needing rectification to ensure the appropriate work is carried out.

In exceptional circumstances, the VBA will issue a written *Direction to Fix* 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. In Q3 2021–22, the VBA issued no written Directions to Fix.



WHO RECEIVES THE NOTIFICATIONS?

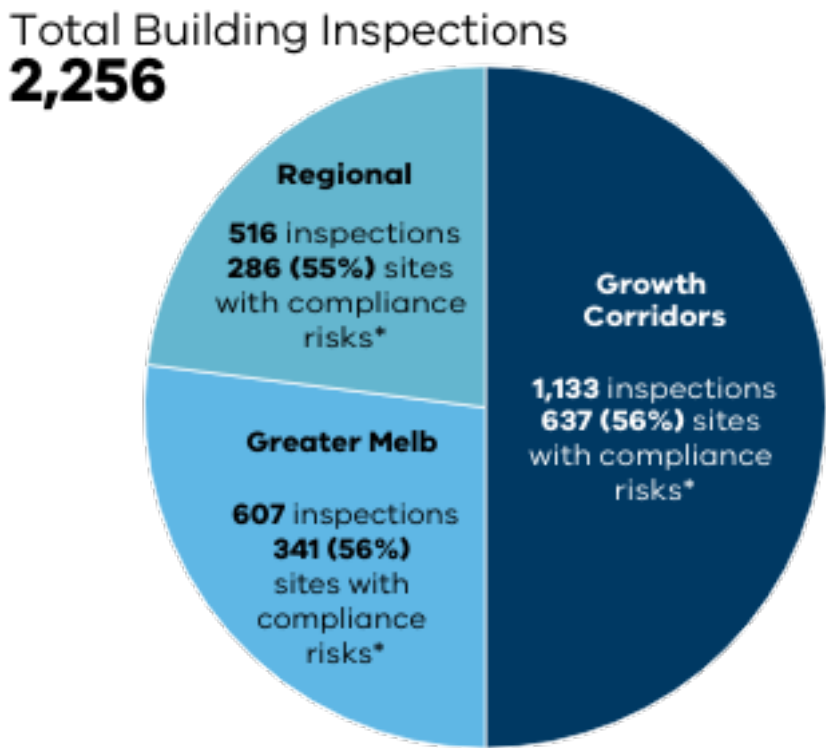
The builder and relevant building surveyor (RBS) are notified when compliance risks are identified. However, the builder is the primary addressee for potentially non-compliant building work if the elements have not been subject to a mandatory inspection stage. Where elements have been subject to mandatory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

3. BUILDING INSPECTIONS

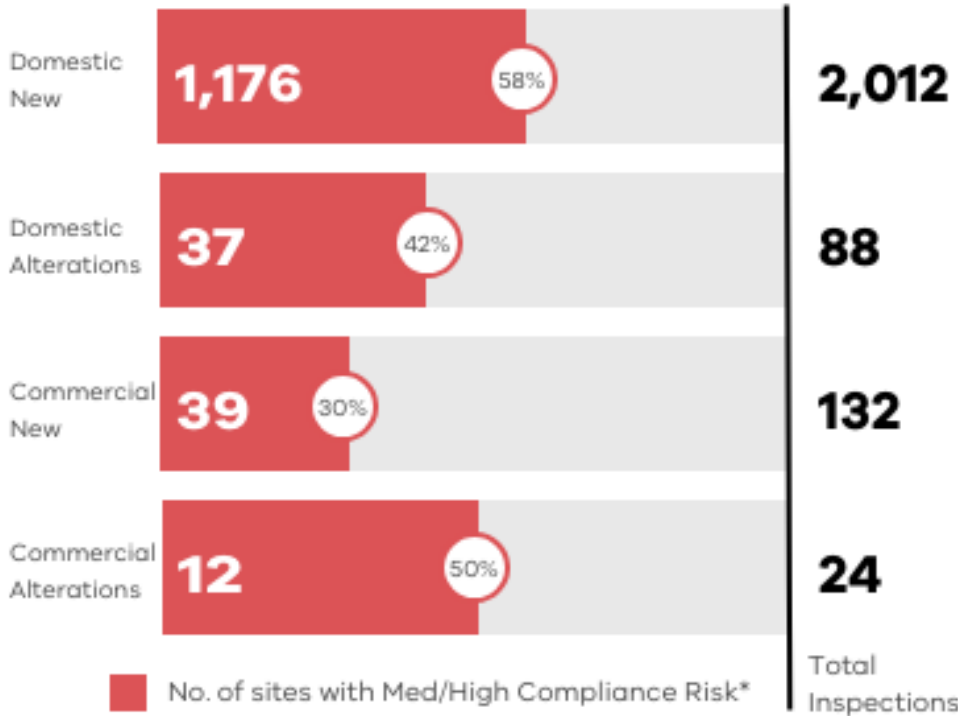
3.1. OVERVIEW OF BUILDING INSPECTIONS CONDUCTED IN Q3



GEOGRAPHIC TRENDS

Volume – Greater Melbourne ‘Growth Corridors’ had the highest number of inspections undertaken as this is where building permit activity is the greatest

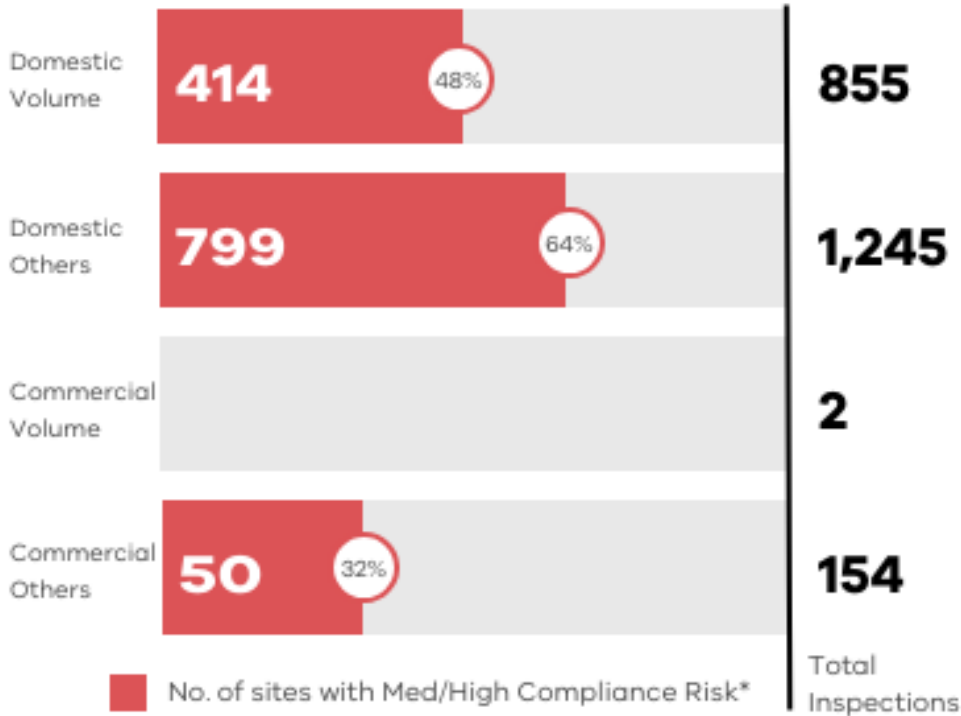
Inspection outcomes – Prevalence of non-compliant issues observed on building sites were consistent across all regions of Victoria. This trend was different from the previous three quarters where Growth Corridors had a lower prevalence of non-compliant issues compared to other regions of Victoria.



NEW BUILDS VS ALTERATIONS

Volume – ‘New Builds’ in Q3 had the highest number of inspections undertaken, where building permit activity is also the greatest.

Inspection outcomes – a much higher prevalence of non-compliant issues was observed during inspections of New buildings (58%), compared to buildings going under Alterations (42%) in domestic building sites. A different trend was observed in commercial building sites. Buildings undergoing alterations had the highest prevalence of non-compliant issues (50%) compared to New builds (30%). These trends were consistent with the previous three quarters.



VOLUME VS OTHER BUILDERS

Volume – ‘Large Volume Builders’, proportionately, have a higher volume of inspections undertaken because Large Volume builders typically build new dwellings in growth corridor areas of Melbourne.

Inspection outcomes comparisons – a lower prevalence of non-compliant issues was found during inspections of sites managed by Large Volume builders, compared to all other builders. This is more pronounced in domestic building sites, (48%) compared to 64% in all other builders. These trends were consistent with the previous three quarters.

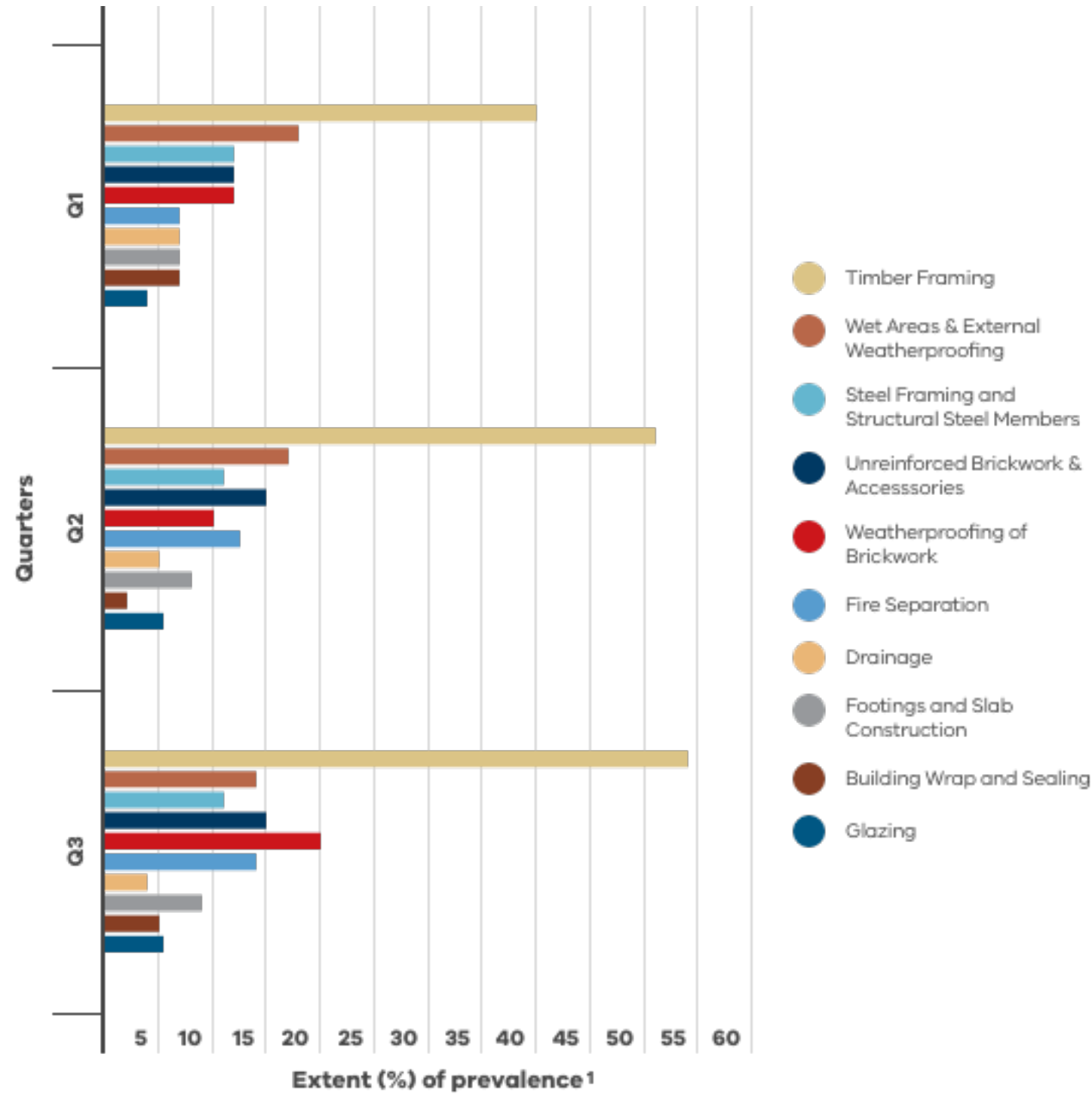
The VBA uses trends to update its risk-based site selection. This ensures sites are selected based on the highest risk of adverse effect on the safety and/or amenity of future building occupants, and the public.

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

3.2. OVERVIEW OF WHERE THE COMPLIANCE RISKS ARE FOUND

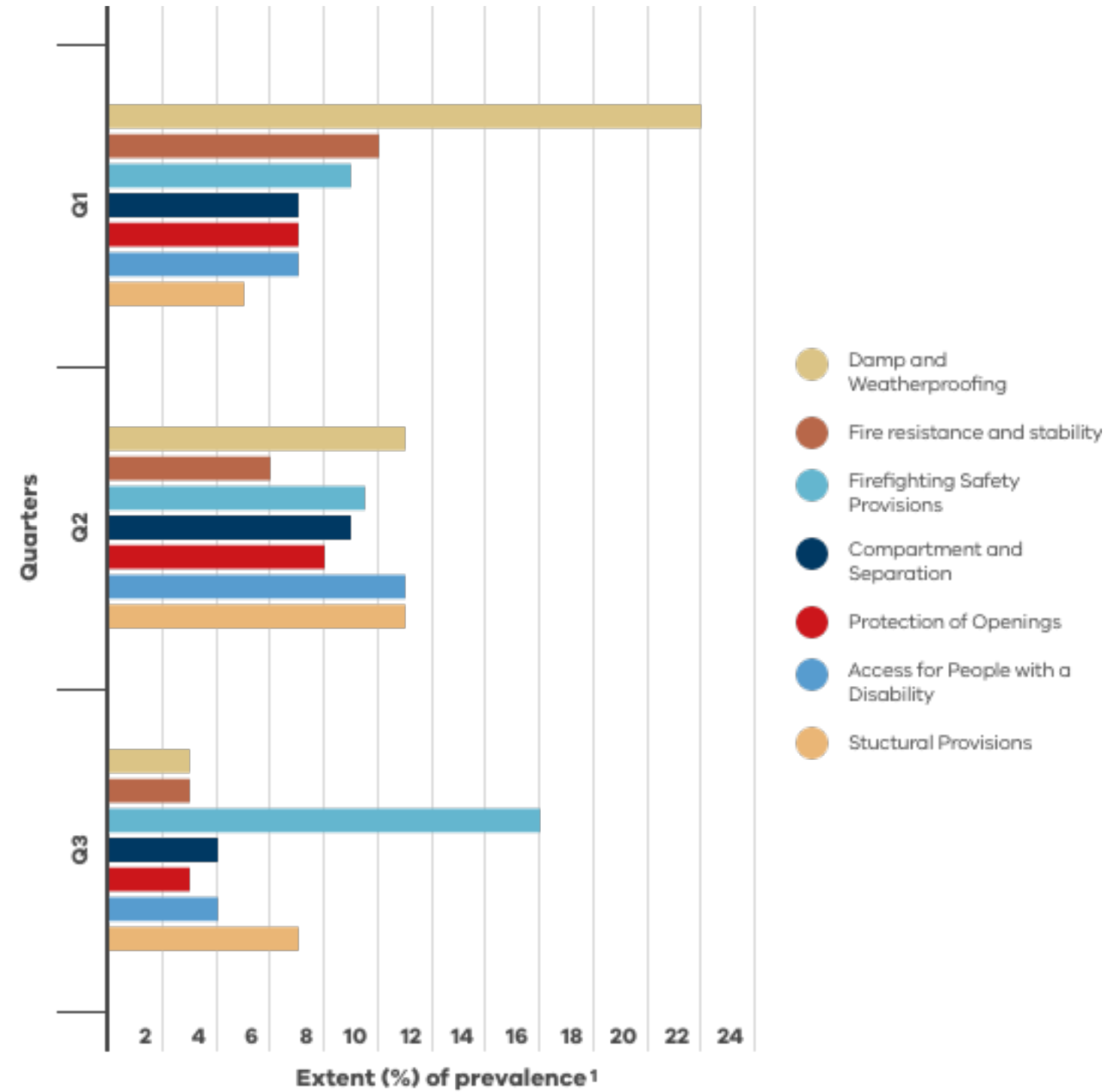
DOMESTIC (CLASS 1)

The most prevalent categories where non-compliance risks are observed (medium and high risk).



COMMERCIAL

The most prevalent categories where non-compliance risks are observed excluding low risk.



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

¹ 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 30,000 elements were assessed across 2,100 domestic building sites in Q3 (an average of 15 elements per inspection), of which 2,444 elements were identified as a compliance risk (across 1,213 sites) and required rectification or justification. Of these elements 77 were critical (across 55 sites), and required immediate attention.

Examples of building non-compliances included:

FIRE SEPARATION

- An external wall (within 900 mm of the allotment boundary) of a Class 1a dwelling, in the City of Melton, was constructed with EPS cladding and no fire rate system. A VBA notification of high-risk activity was sent to the RBS and builder which prompted the builder to remove the EPS cladding from the boundary wall and replace it with a fire rated boundary wall system.

The RBS also responded by directing the builder to ensure the fire rated wall extended past any EPS cladding and to submit an amended building permit with the manufacturers test certificates and installation guidelines showing how and where all changes to the design have occurred. Additionally, the RBS directed the builder to provide an updated energy rating to confirm if energy ratings had changed, and to also amend the endorsed plans if required.

- Construction of a Class 1a dwelling in the City of Whittlesea had Hebel wall panels that terminated short throughout the construction, leaving the timber parapet wall frame exposed. Further, EPS cladding was installed on the boundary without consideration to the required 60/60/60 fire rating requirements. A VBA notification of high-risk activity was sent to the RBS, prompting the RBS to direct the builder to attend to the matter immediately and to arrange an inspection of the fire rating wall system before covering over.

The VBA closed the matter after receiving the endorsed updated building permit documentation from the RBS and photographic evidence of the rectified work including the replacement of EPS panels with Hebel panels on the boundary wall.

PREPARATION

- The foundation of the slab throughout a construction of a Class 1a dwelling, in the City of Hume, had multiple areas (prior to the vapour barrier being installed) that was soft and required re-compacting prior to the placing of pods and steel, in accordance with clause 2.4.5 of AS 2870- 2011. The VBA closed the matter after receiving a record of the pre-slab inspection report approved by the RBS with photographic evidence that the damp / soft areas of the slab had resolved.

UNREINFORCED MASONRY

- Construction of a new Class 1a dwelling in City of Melton, had used insufficient mortar between the bricks throughout the property. A VBA notification of high-risk activity was sent to the RBS and builder, prompting the builder to apply further grouting to the inside building envelope. The VBA closed the matter upon receiving photographic evidence of the rectified work and a certificate of compliance for the work from the RBS.

TIMBER FRAMING AND STRUCTURAL STEEL MEMBERS

- Construction of a new Class 1a dwelling in Macedon Ranges Shire, that had passed a mandatory stage frame inspection, had multiple timber framing and structural steel member issues impacting the structural integrity of the dwelling and included:
 - In several locations, bracing units were not installed in accordance with the building permit documentation, deep joists were not fitted with solid blocking at 1.8m centres. Additional blocking was required in accordance with Cl. 4.2.2.3 of AS1684.2 and all internal non-load bearing braced walls required shear blocks to transfer the shear forces in accordance with Section 8.3.6.9 Fixing of top of bracing walls, of AS1684.2.
 - The construction of the screw piles and steel columns were not in accordance with the approved engineering documentation; the location of a column was moved to the edge of a window in lieu of the corner of the building, changing the load path.
 - The construction of the steel portal, timber lintel to steel column, was not in accordance with the approved engineering documentation. The configuration of the cleats (1 in lieu of f2), stiffener plates and bolting (underside of locating plate) varied considerably.

Additionally, the lower portion of the wall separating the garage from the dwelling had no physical termite barrier and at the time of the inspection, the frame was approved by the building surveyor.

A VBA notification of high-risk activity was sent to the RBS and builder, prompting the builder to rectify the timber framing issues and request amended engineering drawings for the structural steel members. The VBA also requested the details of the practitioner that passed the frame inspection. The VBA will close the matter once the amended engineering plans have been assessed and approved by the RBS.

3.3. OVERVIEW OF BUILDING COMPLIANCE RISK

COMMERCIAL (CLASS 2 TO 9)

Approximately 2,000 elements were assessed across 156 commercial building sites in Q3 (an average of 13 elements per inspection), of which 84 elements were identified as a compliance risk (across 51 sites) and required rectification or justification. There were no critical issues identified.

Examples of these issues included the following issues observed in buildings under construction:

SUB-SURFACE DRAINAGE

- A four-storey apartment complex with a basement carpark under construction, in the City of Moonee Valley, had a finished slab that was below the adjacent surface in lieu of the required minimum of 150mm above the surface as per the approved permit documentation. A VBA notification of medium-risk activity was sent to the RBS prompting the RBS to organise the rectification and amend the building permit accordingly. The VBA will close the matter upon receiving the endorsed building permit documentation.

STRUCTURAL PROVISIONS

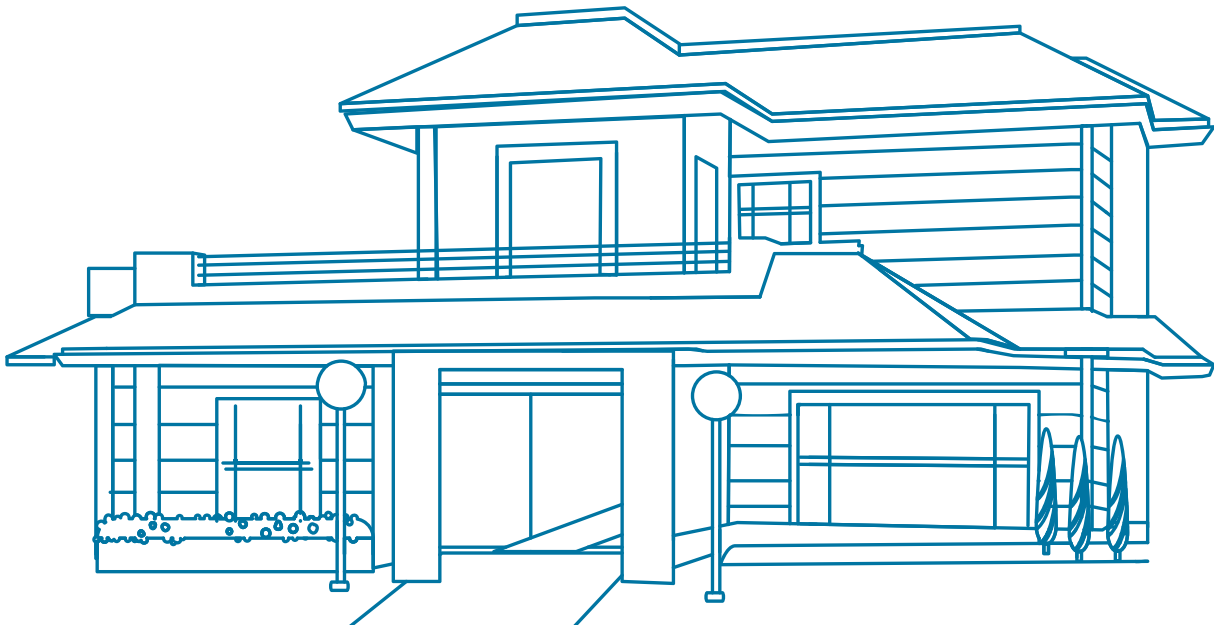
- The steel column in the construction of a Class 5 building, in Surf Coast Shire, had evidence of rust; it had not been provided with corrosion protection complying with Part B1.4 of the NCC 2019 Volume One and the relevant standards. The steel column also has had multiple plastic packers applied to its base. A VBA notification of medium-risk activity was sent to the RBS prompting the RBS to direct the builder to rectify the work. The VBA will close the matter upon receiving the Certificate of Compliance from the relevant engineer.

FIRE FIGHTING EQUIPMENT

- Construction of a four-storey apartment complex in the City of Bayside did not observe the required fire extinguishers to suit Class A, B and C fires and electrical fires on each storey adjacent to each required exit or temporary stairway or exit, in accordance with clause E1.9 BCA Vol 1. A VBA notification of medium-risk activity was sent to the RBS and builder prompting the builder to ensure the extinguishers were mounted in a more easily identifiable location (below the signage).

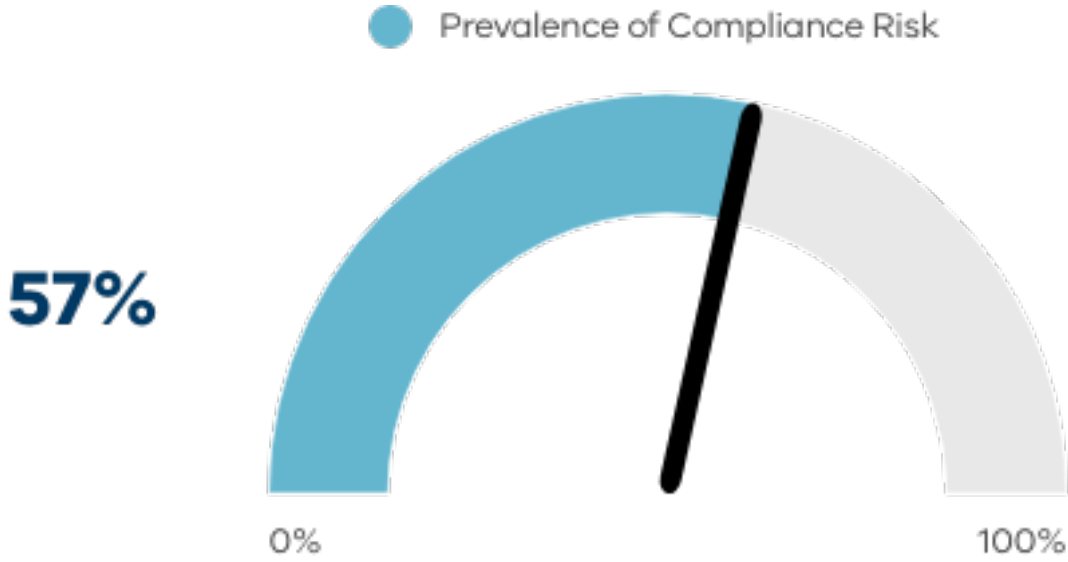
3.4. PREVALENCE OF COMPLIANCE RISKS IN DWELLINGS

SINGLE OCCUPANCY

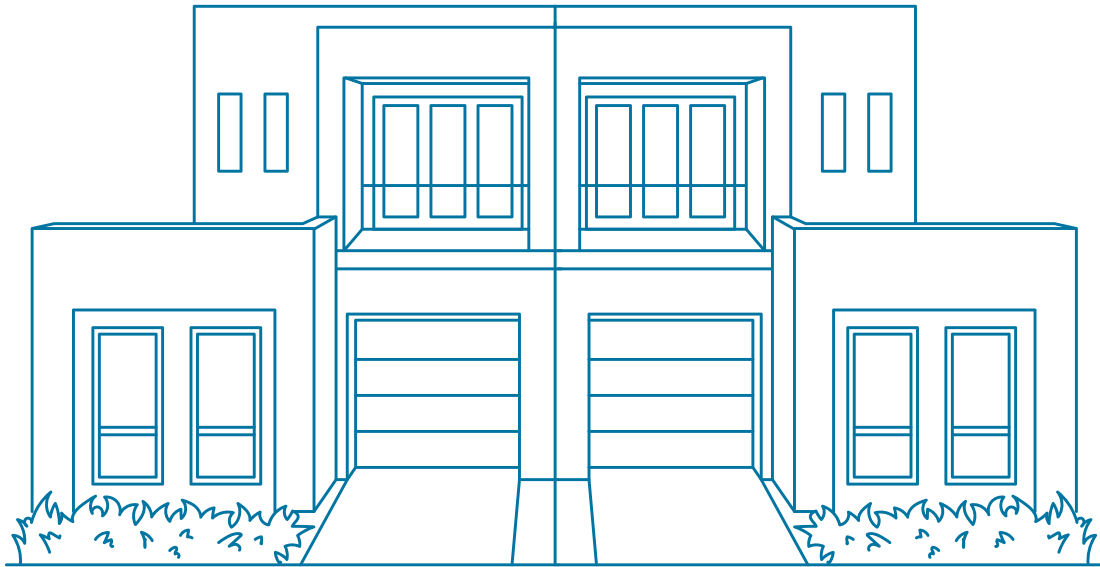


Common Building Issues

- Timber Framing
- Weatherproofing Of Brickwork
- Unreinforced Brickwork and Accessories
- Wet Areas and External Waterproofing
- Fire Separation
- Steel Framing and Structural Steel Members

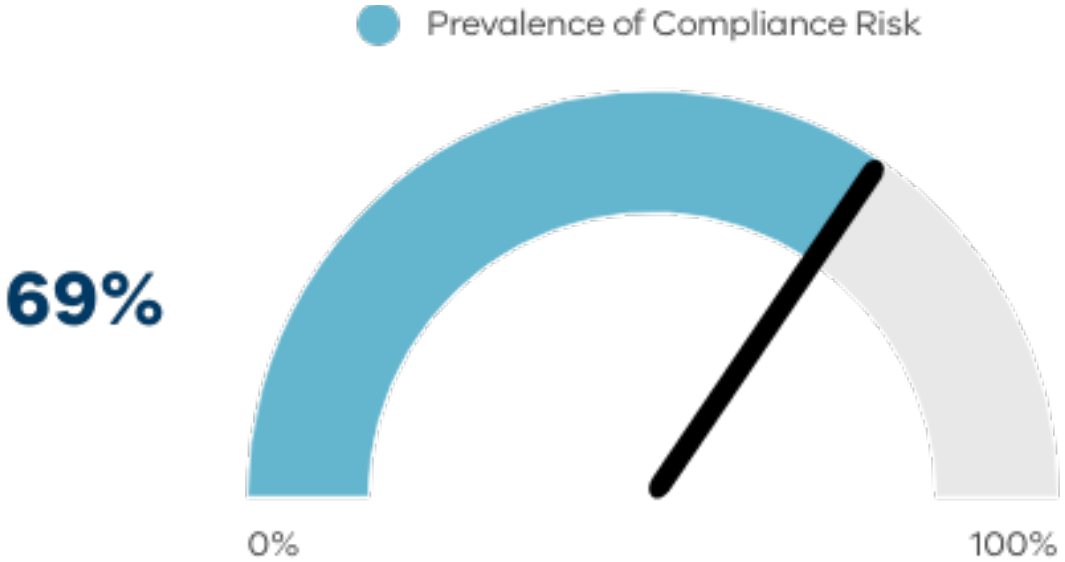


DUAL OCCUPANCY



Common Building Issues

- Fire Separation
- Timber Framing
- Steel Framing and Structural Steel Members
- Footings And Slab Construction
- Unreinforced Brickwork and Accessories
- Wet Areas and External Waterproofing



3.5. PREVALENCE OF BUILDING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected in Q3	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	2,100	58%	• Timber Framing • Unreinforced Brickwork and Accessories • Wet Areas and External Waterproofing • Fire Separation • Steel Framing and Structural Steel Members • Footings And Slab Construction • Building Wrap and Sealing • Drainage
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9a&c)	54	41%	• Fire Fighting Equipment, Provision of Escape, Construction of Exits • Fire Separation • Fire Resistance and Stability • Structural Provisions • Compartment and Separation • Timber Framing
Assembly building with no dwellings (Class 9b)	38	16%	• Fire Fighting Equipment, Provision of Escape, Construction of Exits • Fire Resistance and Stability • Structural Provisions
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	24	33%	• Fire Fighting Equipment • Structural Provisions • Protection of Openings
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	40	38%	• Fire Fighting Equipment • Structural Provisions

3.6. CASE STUDIES

3.6.1. COMMON TIMBER FRAMING ISSUES

In Class 1 and 10 Buildings

Overview

The Proactive Inspection Program (PIP) consistently identifies excessive notching, trenching and holes in studs, plates and in structural timber frame members, which undermines the structural integrity of dwellings.

AS 1684.2-2010 and manufactured engineered wood products (EWPs) allow for cuts, holes and notches only in specific applications. The relevant manufacturer's installation manual and AS 1684.2-2010 provide the detail regarding maximum hole diameter, cuts and notches allowed.

Response

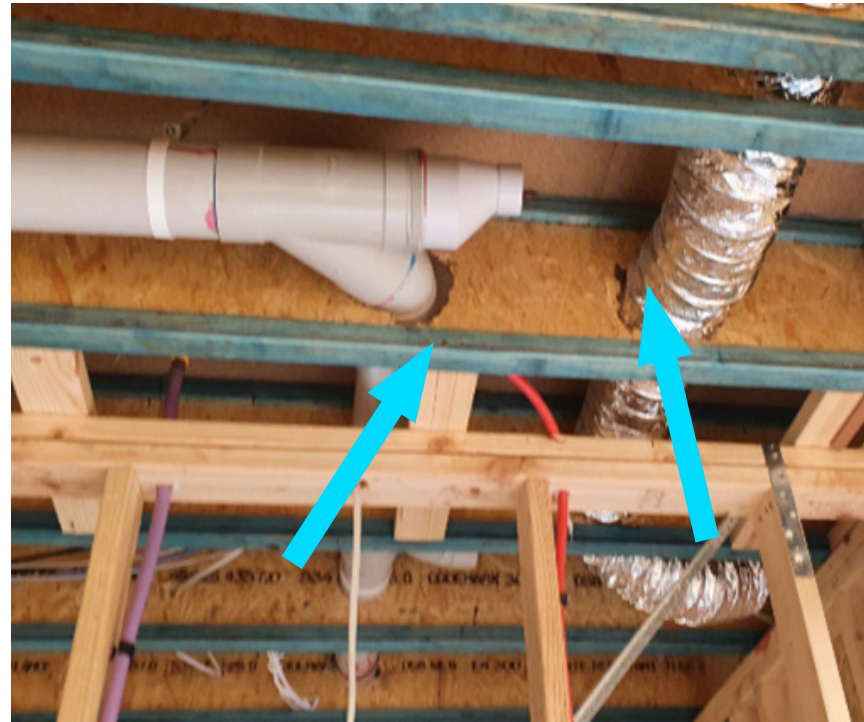
The VBA will notify both the builder and RBS of any excessive notching, trenching and holes in structural timber framing members and will require the issues to be rectified.

The builder must seek clarification on the suitability of rectification work from the RBS prior to work being carried out. In some circumstances the RBS may require a structural engineer or manufacturer of the relevant EWPs to propose a rectification solution to be approved and inspected by the RBS.

Outcome

The VBA will only close these matters once they have received confirmation the rectification work has been inspected and approved by the RBS.

To reduce these issues from reoccurring, the targeted education of trades is required, especially electricians and plumbers. Improved planning at the design stage will assist in negating some of these issues arising. For example, a wall brace unit could be moved from an internal bathroom wall to facilitate the installation of a vent pipe.



3.6.2. CONSTRUCTION OF A FIVE-UNIT DEVELOPMENT

Multiple Issues

This case study highlights how important it is for the VBA to inspect building work under construction, where significant failures can be addressed earlier, and where rectification is often easier therefore avoiding safety, health and amenity impacts on future owners.

Overview

A proactive inspection of a five-unit class 1 development, in Greater Melbourne, observed several issues which included:

- Exposed vital steel reinforcement in multiple areas from cutting and jackhammering the concrete slab.
- Insufficient subfloor ventilation that was not in accordance with Part 3.4.1 of the NCC Vol 2 -2019.
- Installation of the fire rated separating wall between units 1 & 2 (Knauf 25mm Shaftliner) that was not strictly installed in accordance with the manufacturer's tested system installation requirements:
 - The minimum gap clearance of 20-40mm between shaft Liner and stud walls were not met.
 - There were penetrations into the Shaftliner.
 - L Clips to were installed midway of stud walls.

Additionally, mould was apparent on the Shaftliner between both units; not in accordance with the objectives of the Performance Provisions Part 2.2 Damp and Weatherproofing of NCC Vol 2 2019.

Response

A VBA notification of medium-risk building activity was sent to the RBS and the builder prompting them to rectify the issues and obtain supporting documentation demonstrating compliance.

Outcome

The VBA closed the matter after receiving photographic evidence of the rectification works and an engineering report certifying the rectification work on the concrete slab.

Exposed concrete slab steel reinforcement



Insufficient subfloor ventilation



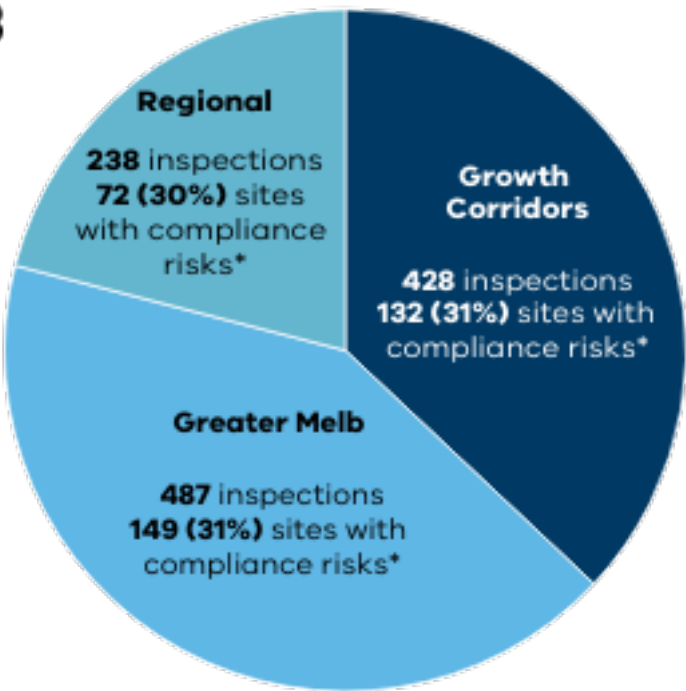
Installation of the fire rated separating wall not in accordance with the manufacturers requirements



4. PLUMBING INSPECTIONS

4.1. OVERVIEW OF PLUMBING INSPECTIONS CONDUCTED IN Q3

Total Plumbing Inspections
1,153

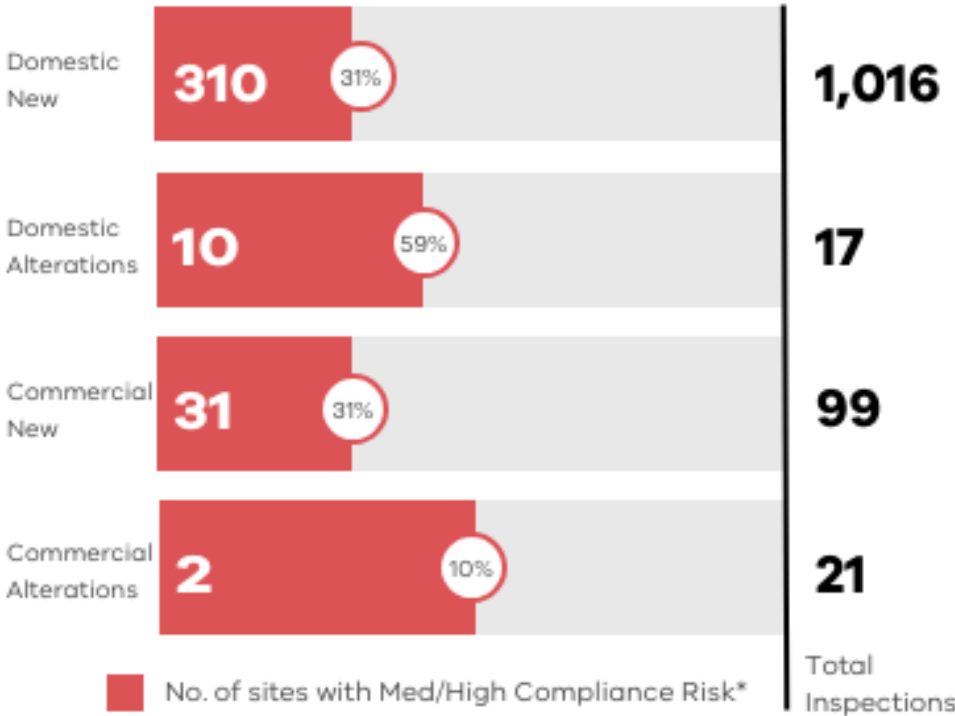


GEOGRAPHIC TRENDS

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

Inspection outcomes – prevalence of non-compliant issues observed during plumbing inspections were consistent across all regions of Victoria.

This trend was different from the previous three quarters where Growth Corridors had a higher prevalence of non-compliant issues compared to other regions of Victoria.



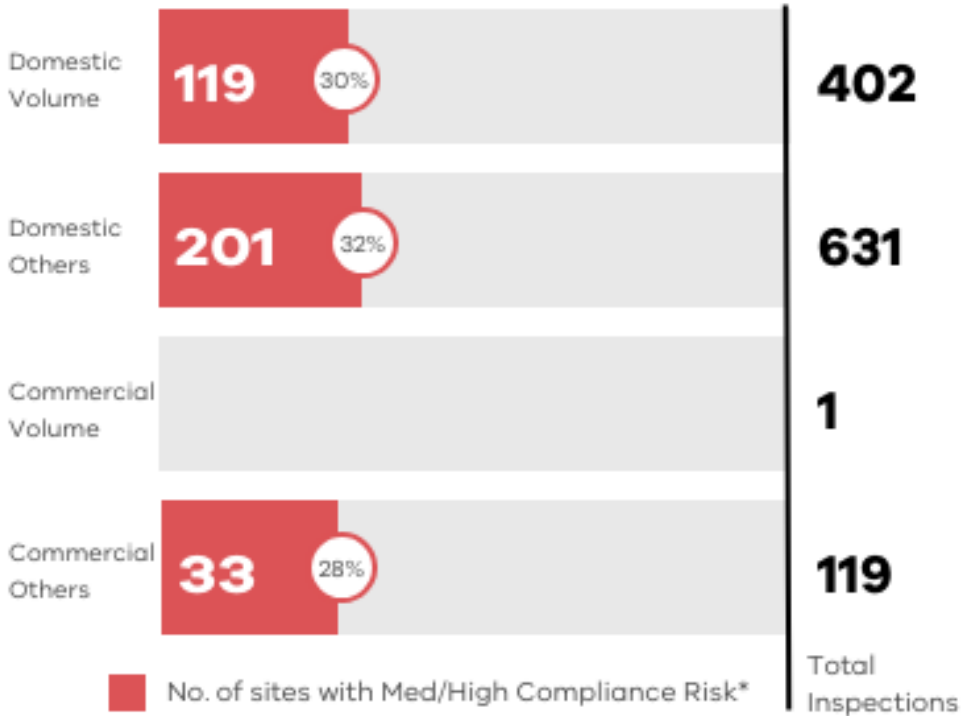
NEW BUILDS VS ALTERATIONS

Volume – ‘New Builds’ in Q3 had the highest number of inspections undertaken, where building permit activity was also the greatest.

Inspection outcomes – a higher prevalence of non-compliant issues was observed during plumbing inspections of domestic buildings undergoing Alterations (59%) compared to New builds (31%).**

The trend was reversed in commercial buildings where the prevalence of non-compliant issues observed were greater in New buildings (31%) compared to buildings undergoing Alterations (10%).**

These trends were consistent with the previous three quarters.



LARGE VOLUME BUILDERS VS OTHER BUILDERS

Volume – ‘Large Volume Builders’, proportionately have a higher volume of inspections undertaken because Large Volume Builders typically build new dwellings in growth corridor areas of Melbourne.

Inspection outcomes comparisons – a marginally lower prevalence of non-compliant issues was observed during inspections of sites managed by Large Volume Builders, compared to all other builders. Large Volume builders were not represented in commercial plumbing this quarter.

These trends were consistent with the previous three quarters.

The VBA uses trends to update 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.

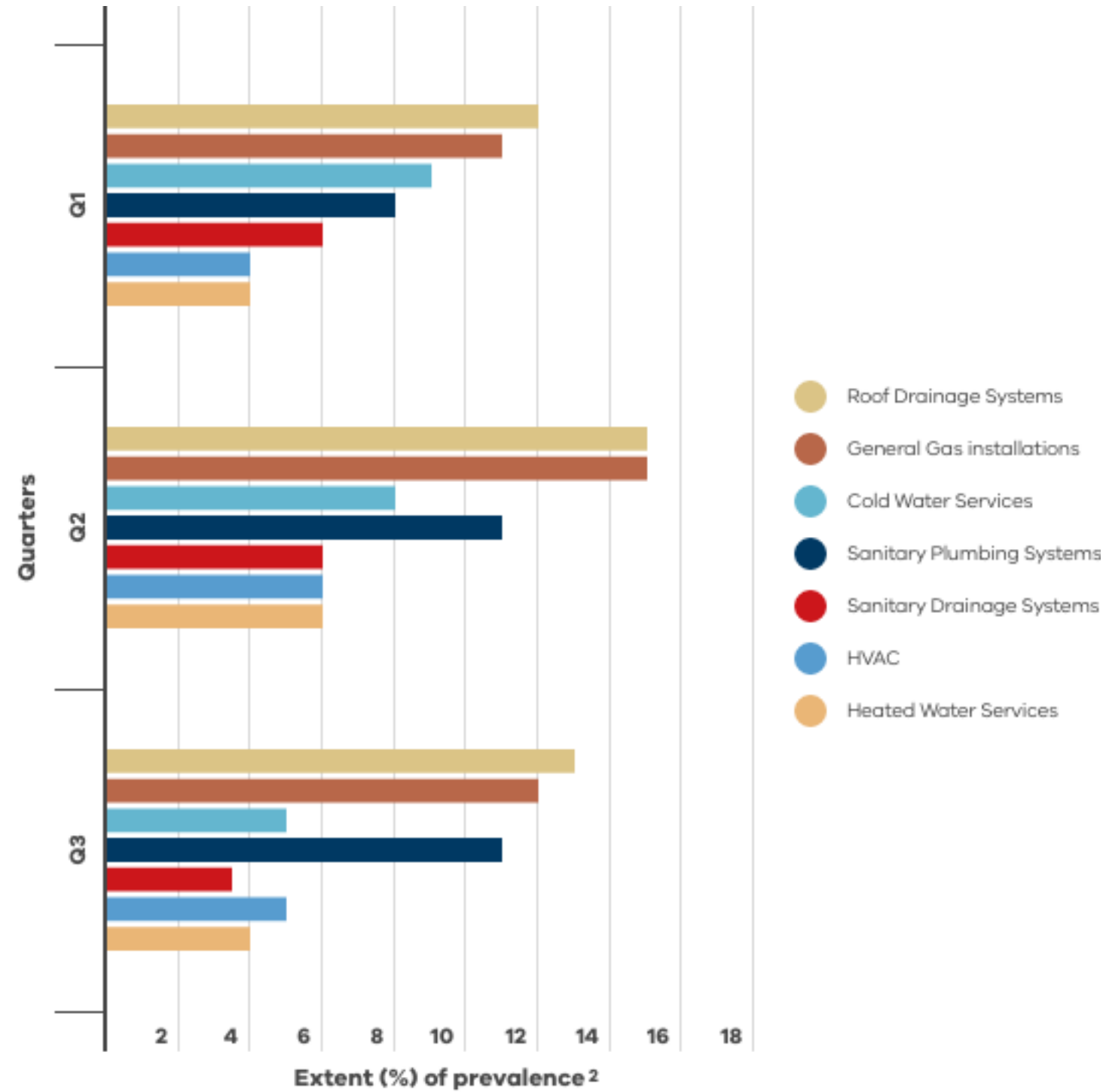
*Number of sites inspected with at least one medium/high compliance risk observed.

**Note: Smaller sample size for Alterations

4.2. OVERVIEW OF WHERE THE COMPLIANCE RISKS ARE FOUND

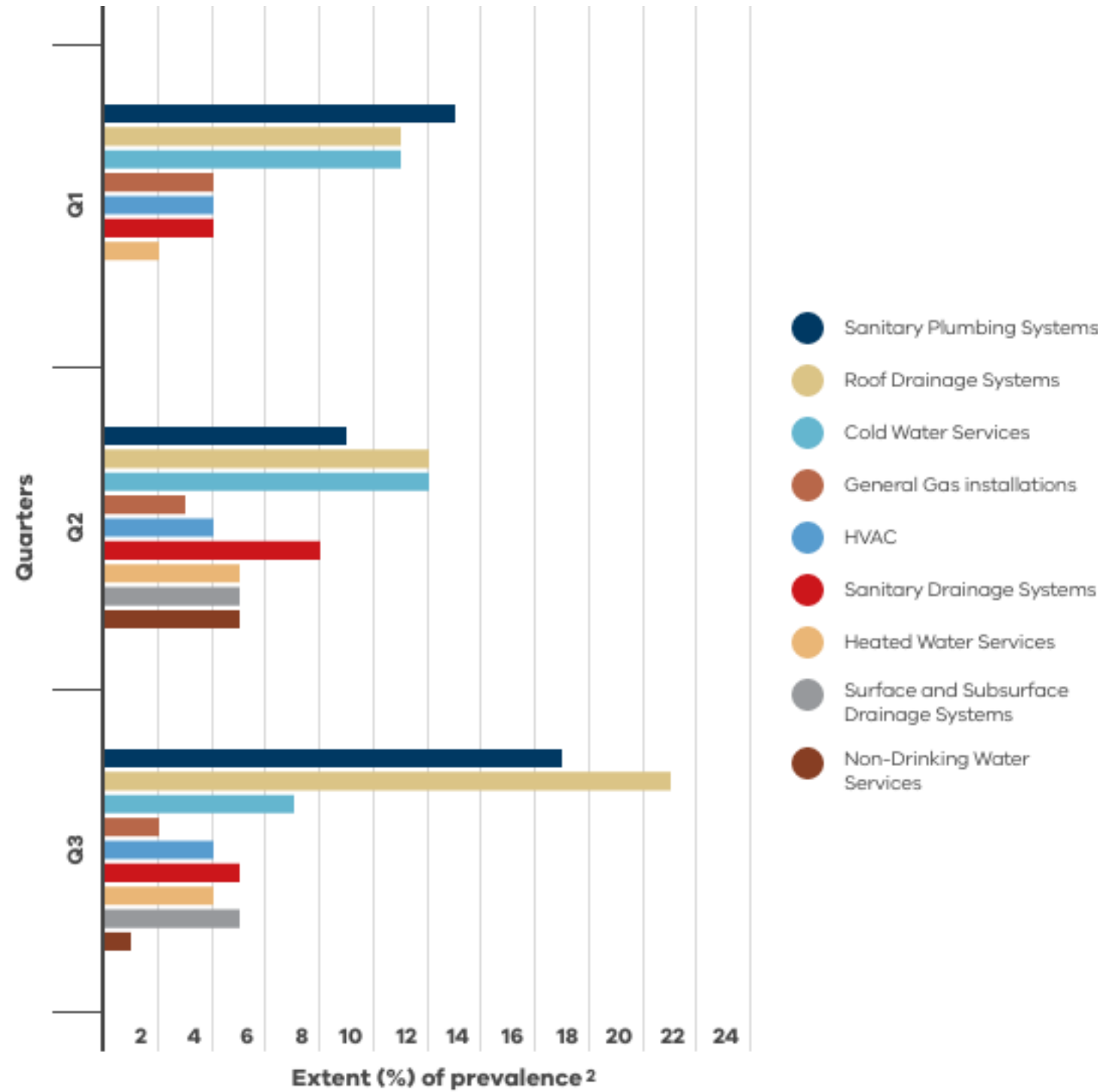
DOMESTIC

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



COMMERCIAL

The most prevalent categories where non-compliance risks are observed (excluding low risk), remain consistent each quarter.



For more information on the nature of non-compliant issues observed this quarter refer to Section 4.3 ('Overview of Plumbing Compliance Risks')

² These are approximate percentages only, which are calculated using the building stage most applicable to the area of compliance risk (i.e. the stage at which the plumbing work is mostly likely to be visible for inspection). For example, the percentage figure of non-compliant roof plumbing items was calculated by excluding the number of inspection performed at foundations and footings stage from the total number of inspections conducted.

4.3. OVERVIEW OF PLUMBING COMPLIANCE RISK

DOMESTIC (CLASS 1)

Approximately 11,000 elements were inspected across 1,032 inspections (an average of 11 elements per inspection) and 573 elements (across 320 sites) were identified as a compliance risk requiring rectification or justification. 24 critical issues (across 13 sites) were found that were mostly OHS issues.

The most common non-compliance observed with the top categories were:

GENERAL GAS INSTALLATION

- Gas flue clearance at a minimum of 500mm above roof is not achieved.
- Insufficient separation of gas piping with other services (electrical and water).
- Gradient to the ducted heater flue grading away from the appliance towards the flue elbow.
- Reversion fittings not installed on the accessible multilayer gas piping.
- Exposed multi-layer gas pipe to UV and Proprietary gas piping not labelled at gas meter.

ROOF DRAINAGE SYSTEMS

- Pressure flashing not constructed appropriately and not fixed at the required intervals and valley gutters not fixed at required intervals.
- Sumps undersize and/or discharge through non-compliant side chutes.
- Soaker flashing undersize and/or soaker flashing installed against the direction of flow and the stand appears to be undersized.
- To support the suspended stormwater, drain at minimum required intervals and to fasten the downpipe at minimum required intervals.
- Several 'box gutter' issues (change of direction, incorrectly terminated, reduced in size and/or insufficient overflow provision, box gutter fixed to frame).
- Multiple flashings/capping issues: Undersized, Missing Pressure flashings and pressure flashings applied to unsmooth brickwork. Spreaders discharging over flashings. Incorrect fall away from roof on parapet capping. Apron flashings not secured at 500mm intervals. Lead flashing not stepped/flushed.

SANITARY DRAINAGE SYSTEMS

- Minimum required separation between Overflow Relief Gully (ORG) and the lowest fixture not met.
- No inspection opening cover and ORG grate not removable.
- Inspection shaft covers not installed and not independently supported.
- No concrete support under drainage bends and sewer drainage with incorrect fall.

SANITARY PLUMBING SYSTEMS

- Sanitary and drainage vents not supported appropriately and drainage vents with insufficient gradient.
- 88-degree junctions installed on a graded sewer.
- Expansion joints not clipped and not installed on above ground sanitary drains.
- Junction fittings installed in exclusion zones at several sites.

HEATED WATER SERVICES

- Several issues with solar hot water pipes: Solar hot water pipes passing under tiles non-compliantly and penetrating the roof through non-compliant flashings (collar flashings not used for water supply roof penetrations) and insufficient clearance from other services (gas and electrical).
- Solar flow and return lines not insulated and/or supported appropriately (not clipped at appropriate intervals).
- Solar flow and return lines installed under roof tiles and not penetrating the roof coverings appropriately.

HVAC

- Insufficient clearance between evaporative cooling unit and drainage vent and flue clearances to combustibles not minimum standards.
- Evaporative cooling unit water connection installed between roof covering and flashing and condensate drains do not discharge over a down pipe.
- Refrigeration pipes cut into load bearing wall.

COLD WATER SERVICES

- Water services not protected through concrete slab.
- Evaporative cooling unit water connection installed between roof covering and flashing and condensate drains do not discharge over a down pipe.
- Issues with separations between water and other services.

COMMERCIAL (CLASSES 2–9)

Approximately 500 elements were inspected across 121 sites and 71 elements (across 33 sites) were identified as a compliance risk requiring rectification or justification.

Examples of plumbing non-compliance included:

SANITARY PLUMBING SYSTEMS

- Construction of a four-storey apartment development, in the City of Stonnington, had multiple issues with sanitary plumbing:
 - A junction was installed on the graded section of drain within 450mm of the vertical section, not in accordance with AS/NZS 3500.2:2018 clause 9.8.4 or 9.8.5.
 - A suspended sewer did not have the appropriate provision for expansion. AS 2032-2006 Clause 6.4.2.4.
- Construction of a multi-storey, Class 2 mixed-use building in the City of Yarra had multiple sanitary plumbing issues including:
 - No provision for expansion at the base of the vertical section of the vents and stormwater pipework as per AS/NZS 2032 2006 cl 6.4.2.3.
 - Unequal junctions installed into the suspended sanitary drainage not installed with the invert of the branch drain installed at least 10mm higher than the soffit of the main drain that it connects to. AS/NZS 3500.2 2018 cl 4.9.1 (c) & Figure 4.9.1 (b).
 - No provision for expansion provided on the graded drainage installations as per AS/NZS 2032: 2006 cl 6.4.

HOT WATER SERVICES

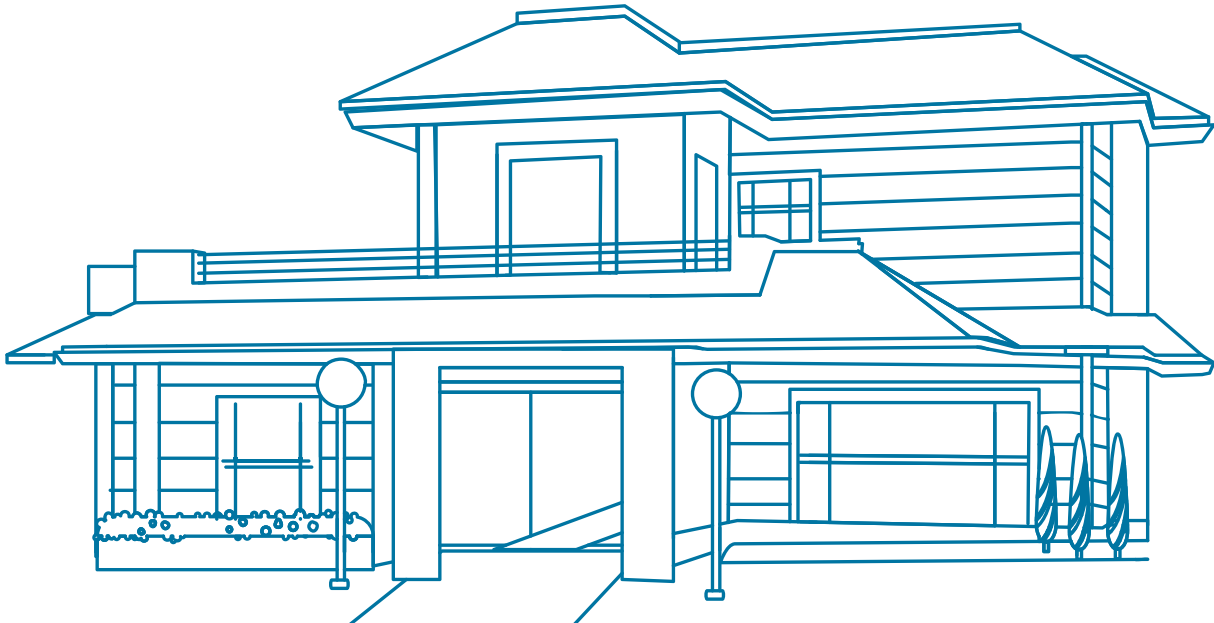
- Construction of a Class 5 building, in the City of Bendigo, had multiple hot water service issues:
 - Inadequate supports between the storage tank and safe waste tray, as required by AS/NZS 3500.4:2018 clause 5.4.5 (b)
 - Drain lines from expansion control or temperature/pressure-relief valves were discharging into a safe tray. AS/NZS 3500.4:2018 clause 5.11.3 (c)
 - Hot water lines did not have the appropriate insulation as required by AS/NZS 3500.4:2018 Clause 8.2
 - The condensate drain did not terminate in an approved manner at the safe waste tray, as required by HB 276 – 2004 Clause 7.8 & AS/NZS 5141:2018 clause 3.3.4.2.

HVAC

- Construction of a Class 7b Warehouse, in the City of Hume, had refrigerant pipework penetrating the metal roofing without a waterproof collar as per HB 276 – 2004 clause 7.5 and inadequate clipping of air-conditioning pipework.
- Construction of a service station, in regional Victoria, had an external roof refrigerant unit mounted in the roof tray restricting drainage; not in accordance with HB 276 2004 clause 7.8 SA HB 39-2015 clause 8.6.1. Additionally, the ducted fan coil unit was not fitted with anti-vibration mount as required by HB 276 – 2004 clause 7.5 AS/NZS 5141:2018 clause 2.4.6.

4.4. PREVALENCE OF COMPLIANCE RISKS IN DWELLINGS

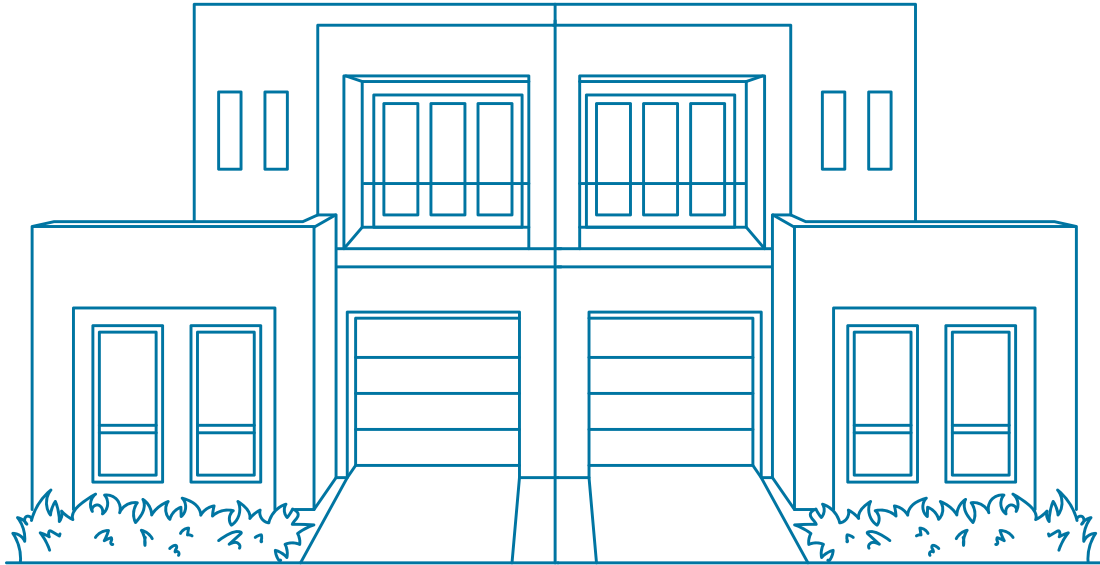
SINGLE OCCUPANCY



Common Plumbing Issues

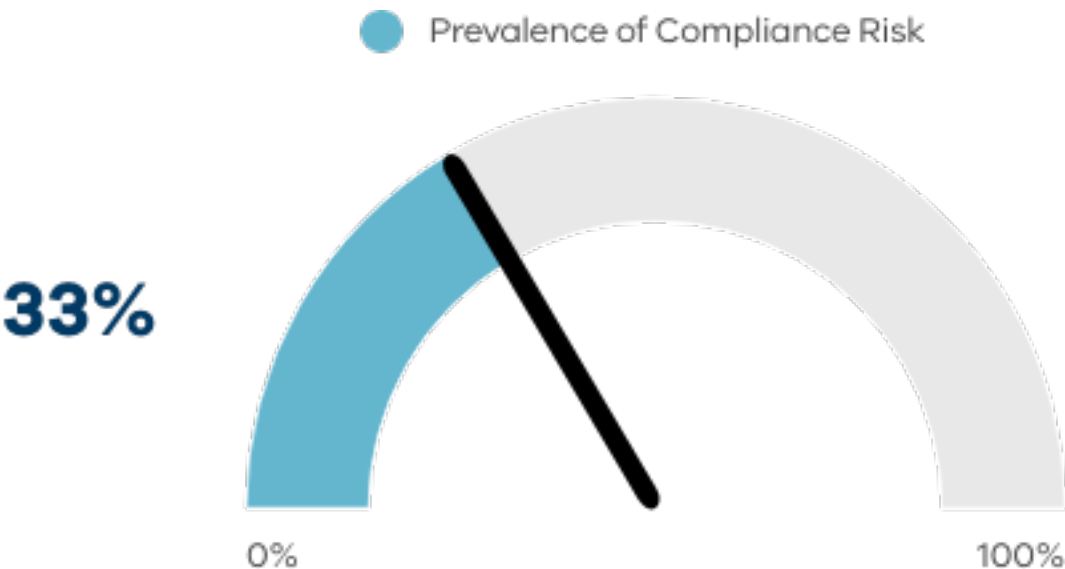
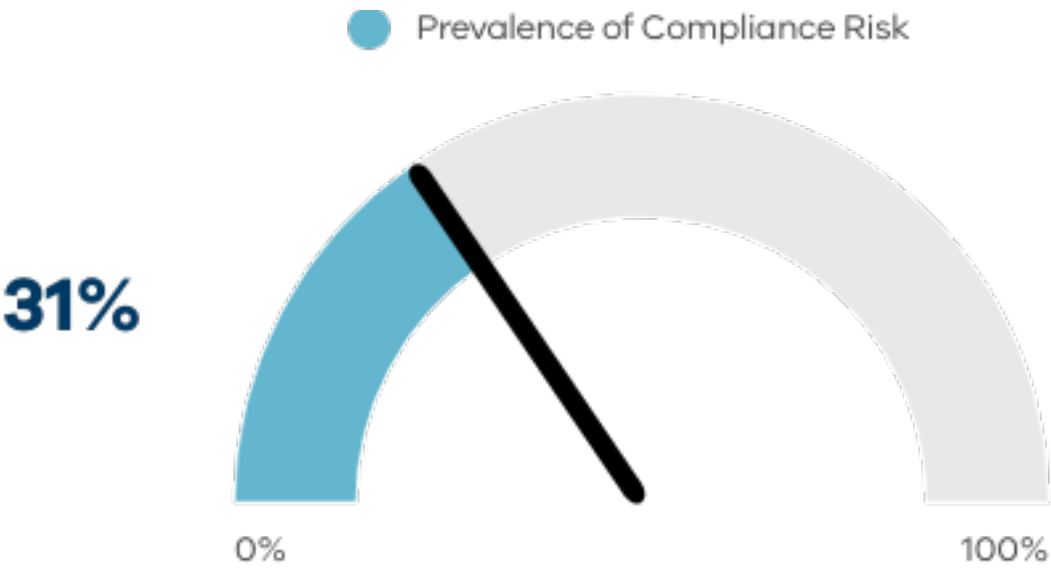
- Roof Drainage Systems
- General Gas Installation
- Cold Water Services
- Heating, Ventilation, and Air-Conditioning Systems
- Heated Water Systems

DUAL OCCUPANCY



Common Plumbing Issues

- Roof Drainage Systems
- General Gas Installation
- Sanitary Plumbing Systems
- Cold Water Services
- Sanitary Drainage Systems



4.5. PREVALENCE OF PLUMBING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected in Q3	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	1,032	31%	• Roof Drainage Systems • General Gas Installation • Sanitary Plumbing Systems • Cold Water Services • Heated, Ventilation and Air-Conditioning Systems
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9a&c)	36	44%	• Sanitary Plumbing Systems • Roof Drainage Systems • Cold Water Services • Sanitary Drainage Systems • Surface and Subsurface Drainage Systems
Assembly building with no dwellings (Class 9b)	30	13%	• Roof Drainage Systems
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	20	32%	• Roof Drainage Systems • Sanitary Plumbing Systems • Sanitary Drainage Systems
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	35	17%	• Roof Drainage Systems • Sanitary Plumbing Systems • Cold Water Services • Surface and Subsurface Drainage Systems

4.6. CASE STUDIES

4.6.1. COMMON SEWER AND SANITARY DRAINAGE SYSTEMS ISSUES

In multi-level apartment buildings with basement car park

Overview

Non-compliant construction (to building lines), of sewer drainage surge, and overflow protection in ground floor fixtures, are commonly observed in multi-level apartments developments (with little free open garden area).

Response

Compliance to meet sewer drainage surge and overflow protection standards is sought by the VBA in all instances to prevent the services failing and impacting the amenity of the building for its occupants.

The VBA will send a medium risk notification to the builder directing the builder to provide the details of the responsible plumber, and to ensure the plumber rectifies the non-compliant plumbing work.

Outcome

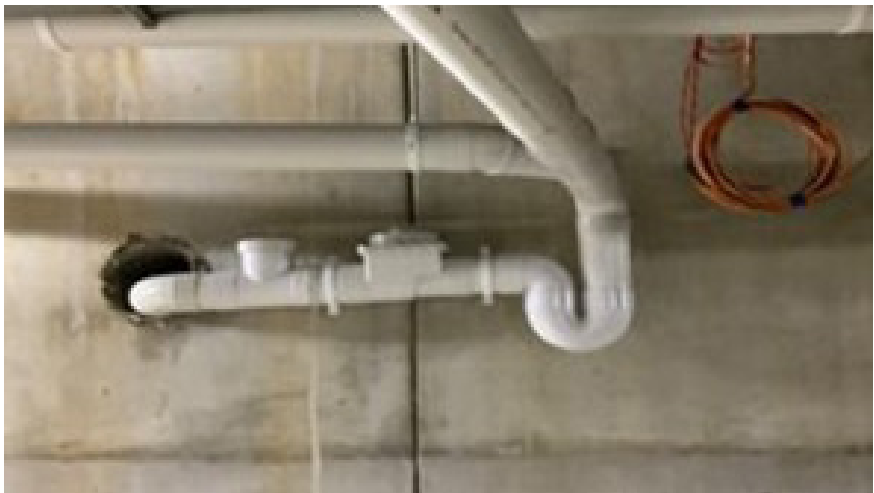
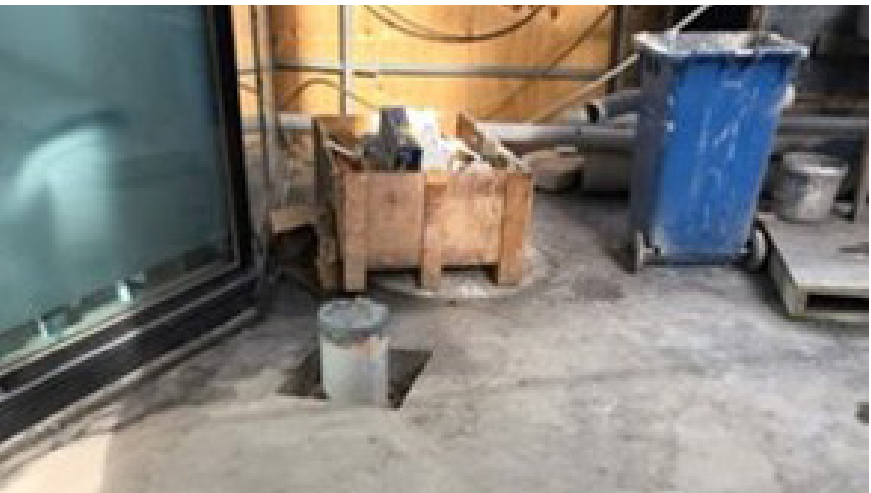
The VBA will require proof of rectification and often requires documentation from the relevant engineer certifying the compliance of the sewer drainage surge and overflow protection before they close such matters.

Compliance to sewer drainage blockage or surging resulting from downstream sewerage systems is generally achieved through the installation of a 'reflux valve' assembly at the point of discharge for the property however, in some cases, the surge protection by means of a reflux valve is installed non compliantly and/or overflow protection within the property to protect the ground floor fixtures is not being achieved.

Non-compliant positioning of Reflux Valve



No Overflow provision to protect ground floor fixtures



4.6.2. MULTIPLE SEPARATION OF SERVICES ISSUES

In Class 2 buildings

Overview

Insufficient separation of services is consistently observed during proactive inspections of Class 2 buildings due to the limited space in common areas to run services through and multiple trades being involved in their installation at various stages of the construction.

The services most commonly without enough clearance from each other are electrical, gas and water services and, to a lesser extent, sanitary drains and HVAC.

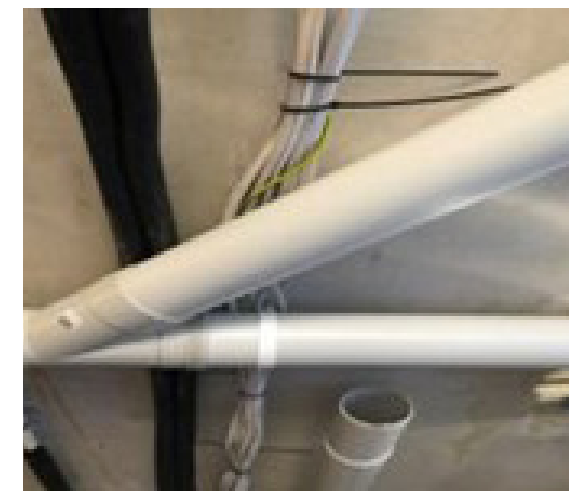
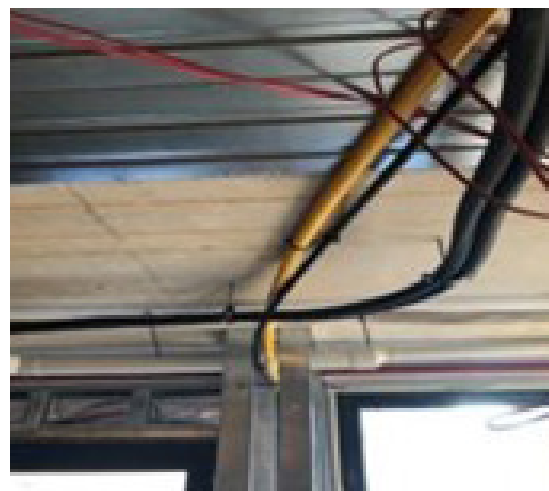
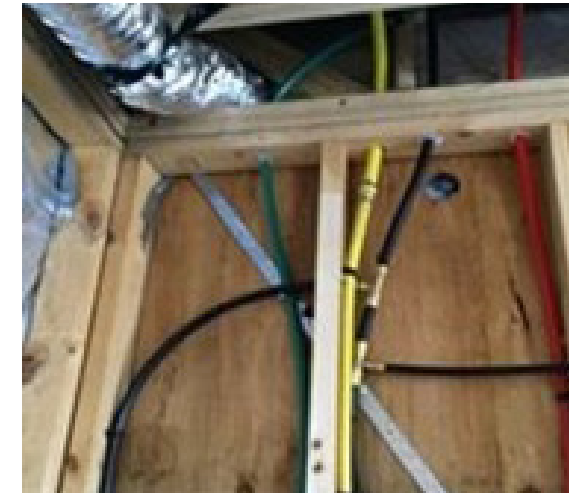
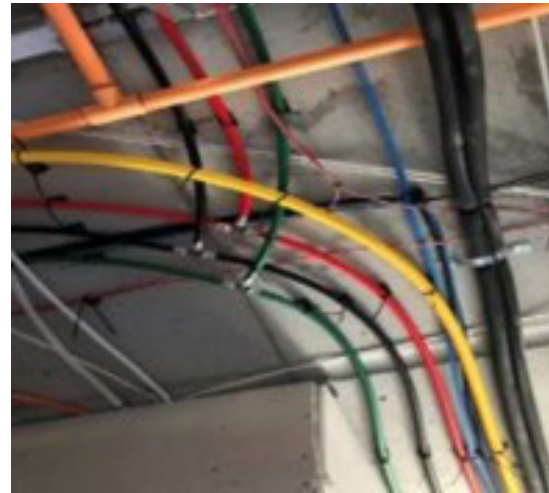
Response

Compliance to meet the separation standards is sought by the VBA in all instances to prevent services failing and impacting the amenity of the building for its occupants.

The VBA will send a medium risk notification to the builder which directs the builder to provide the details of the responsible plumber, and to ensure the plumber rectifies the non-compliant plumbing work.

Outcome

The VBA will ensure the services are reinstalled to meet the appropriate separation requirements between services. Building practitioners are also encouraged to consult with the affected trades prior to installation of their services to ensure that the services are installed to their correct compliant location to achieve separation.



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5. APPENDICES

APPENDIX 1: 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 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 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST

SECTION ONE

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

APPENDIX 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST CONTINUED.

SECTION TWO

Guidance on building work relevant to residential inspections and is broken down into different building stages under the National Construction Code of Australia BCA Vol 2 (class 1 and 10)

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

SECTION THREE

Guidance on building work relevant to commercial inspections and is broken down into different building stages under the National Construction Code of Australia BCA Vol 1 (class 2 to 9)

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: Services and Equipment 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 Halls, Public Transport Buildings

Section J: Energy Efficient 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.

APPENDIX 2: PROACTIVE INSPECTIONS PROGRAM - ELECTRONIC CHECKLIST CONTINUED.

SECTION FOUR

Guidance on requirements under the Plumbing Regulations 2018, NCC: Plumbing Code of Australia Volume 3 2019 Victorian section and relevant standards that apply to residential and commercial properties in the following categories.

Water Services (Section B of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:1:2018 and 3500:4:2018) - Cold Water Services, Heated Water Services, Non-Drinking Water Services, Firefighting Water Service

Sanitary plumbing and drainage systems (Section C of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:2:2018) - Sanitary Plumbing Systems and Sanitary Drainage Systems

Stormwater Drainage Systems (Section F of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:3:2018) - Roof Drainage Systems, Surface and Subsurface Drainage Systems

Heating, Ventilation and Air-conditioning (Section G of the NCC PCA Vol 3 2019 Vic)

On-Site Wastewater Systems (Section G of the NCC PCA Vol 3 2019 Vic and AS/NZS 3500:2:2018) - On-Site Wastewater Management Systems; On-Site Liquid Trade Waste Systems

Gas Installations as per AS/NZS 5601:1:201 General Gas Installation, Type A Servicing Work, Type A Conversion Work

Unlicensed plumber in the relevant field Unlicensed in: Drainage, Fire Protection, Gas fitting, Irrigation, mechanical, Roofing -Sanitary Water Supply

SECTION FIVE

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

OHS Practices at the site and hazards etc.

Scaffolding Makeshift working platforms, Guard Rails & Kick boards

Electrical Risk Exposed Live Electrical, Power leads & Power boards

Excavation Working in trenches over 1.5m Deep, site cut over 1.5m

Asbestos Debris or removal

Temporary Fencing Site entry is restricted or affecting public

Amenity and housekeeping at the site Rubbish control, materials storage and site toilets

Fall risks Working over 2m in height (Opening in platforms/stair voids, Secured access ladders

Structure Stability Adequate temporary propping & bracing

COVIDSafe Requirements A separate checklist is used during COVID restrictions and covers adherence to mandatory COVIDsafe requirements; physical-distancing, mask wearing, worker limits, QR codes and evidence of a COVIDSafe plans.

IF THESE ITEMS PRESENT AN UNACCEPTABLE RISK, THE RELEVANT CO-REGULATORS ARE CONTACTED IMMEDIATELY BY THE BUILDING INSPECTOR.

APPENDIX 3: OVERVIEW OF Q3 INSPECTIONS

BUILDING INSPECTIONS

		No. of sites inspections	% of inspections per stage	No. Inspections with Potential issues (excludes low risk)	Top categories of non-compliances	Extent of prevalence (%) ¹	No. of inspections with Critical issues	Categories of non-compliances	Frequency	Outcome of critical issues
BUILDING	DOMESTIC	2,100	Demolition	1,213 (58%)	Timber Framing	54%	55 (2.6%)	OHS items (openings in stairways and working >2.0 m in height and in trenches >1.5 m deep with no fall protection, unsecured ladder, asbestos debris and Balustrades handrails	n11	All items rectified within 48 hours and WorkSafe and/or MBS contacted for the most serious issues.
			Foundations		Wet areas and External Water proofing	14%		Walls and Carports on Boundaries	n2	One site the builder rectified wall by removing 270mm from height where average height was 3198 mm and the other site applied for a Report and Consent from Council to maintain height of wall.
			Footings		Structural Steel Members	11%		Temporary pool fences not installed correctly	n10	All rectified within 48 hours by the builders.
			Frame		Unreinforced Masonary and Assessories	15%		Fire Separation	n20	RBS confirmed rectification at 13 sites. VBA continues to work with the RBS to ensure compliance is achieved in the re-remaining sites.
			Lock-up		Weatherproofing of Masonary	20%		Wall Cladding	n2	EPS removed and bluebeard cladding was installed at 1 site. RBS assessed that a fire rated wall was not required, and the VBA's assessment of this interpretation is in progress.
			Fixing		Fire Seperation	14%		Earthworks/Site cuts >1.5 deep	n9	Rectified by the Builder at 8 sites and 1 are still in progress and with the RBS.
			Final		Drainage	4%		Affecting Public	n4	All rectified within 48 hours by the Builders.
			Complete		Footings and Slabs	9%		Protection of Adjoining Property	n2	Builder rectified as per DtF issued by the RBS.
					Building Wrap and Seal	5%		Timber Framing	n2	Rectified by builder and evidence of mandatory inspection provided by RBS.
					Glazing	5.5%		Structural Steel Members	n1	Structural Steel Members are awaiting approval from engineer.
BUILDING	COMMERCIAL	156	Demolition	51 (33%)	Damp and Weatherproofing	3%	0 (0%)	OHS items (working >2.0 m in height without fall protection)	n1	All rectified within 48 hours by the Builders.
			Foundations		Fire Resistance and Stability	3%				
			Footings		Firefighting Safety Provisions	16%				
			Frame		Compartment and Separation	4%				
			Lock-up		Protection of Openings	3%				
			Fixing		Access for People with a Disability	4%				
			Final		Structural Provisions	7%				
			Completed							

¹ 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'

APPENDIX 3: OVERVIEW OF Q3 INSPECTIONS

PLUMBING INSPECTIONS

		No. of sites inspections	% of inspections per stage	No. Inspections with Potential issues (excludes low risk)	Top categories of non-compliances	Extent of prevalence (%) ²	No. of inspections with Critical issues	Categories of non-compliances	Frequency	Outcome of critical issues
P L U M B I N G	DOMESTIC	1,032	Demolition	320 (31%)	Roof Drainage Systems	13%	13 (1.3%)	OHS items - working in trenches >1.5m deep	n2	All rectified within 48 hours by the builders.
			Foundations		General Gas Installation	12%		OHS items (Fall barriers missing in 1st-floor and Working >2.0m in height with no fall protections, guard rails and kick-boards and unsecured ladders)	n12	All rectified within 48 hours by the builders.
			Footings		Sanitary Plumbing Systems	11%		Temporary pool fences not installed correctly	n4	All rectified within 48 hours by the builders.
			Frame		HVAC	8%		OHS items - Asbestos debris	n1	All rectified within 48 hours by the builders.
			Lock-up		Cold Water Services	6%		OHS items - Power leads and power boards at risk of electrical shock	n1	All rectified within 48 hours by the builders.
			Fixing		Sanitary Drainage Systems	4%				
			Final		Heated Water Services	4%				
			Completed							
	COMMERCIAL	121	Demolition	33 (27%)	Sanitary Plumbing Systems	17%	1 (0.8%)	OHS items - Openings in Platforms/Stair Voids	n1	All rectified within 48 hours by the builders.
			Foundations		Roof Drainage	21%				
			Footings		Cold Water Services	7%				
			Frame		General Gas Installation	2%				
			Lock-up		HVAC	4%				
			Fixing		Surface And Sub-Surface Drainage	5%				
			Final		Sanitary Drainage Systems	5%				
			Completed		Heated Water Services	4%				

² These are approximate percentages only, which are calculated using the building stage most applicable to the area of compliance risk (i.e. the stage at which the plumbing work is mostly likely to be visible for inspection). For example, the percentage figure of non-compliant roof plumbing items was calculated by excluding the number of inspection performed at foundations and footings stage from the total number of inspections conducted.