Proactive Inspections Program Activity Report

OCTOBER - DECEMBER 2021

VICTORIAN BUILDING AUTHORITY
BUILDING CONFIDENCE

VICTORIA State Government

CONTENTS

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 ensure the work is rectified. Our team includes experienced building inspectors, building surveyors and licensed plumbers, who typically inspect more than 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, 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.

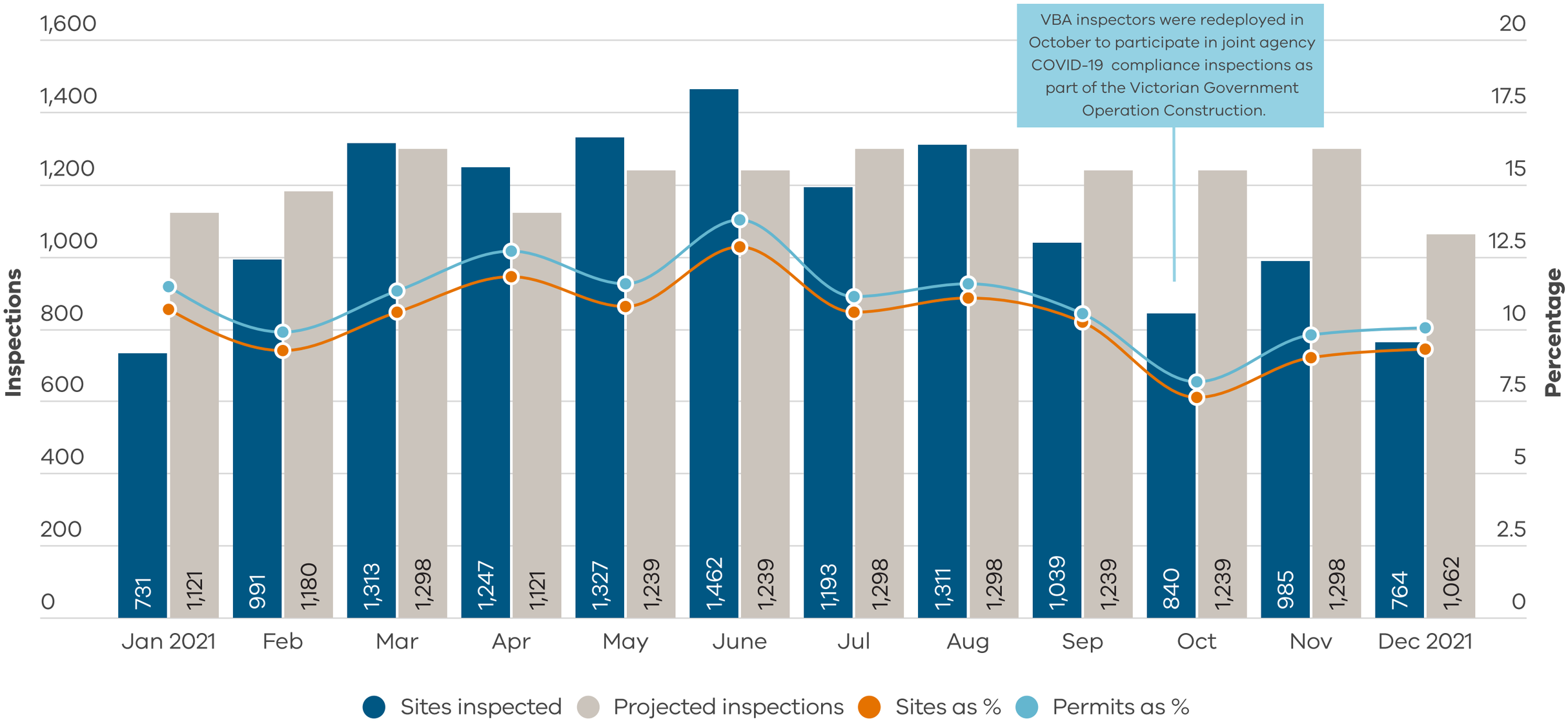
A comprehensive outline of the electronic inspection checklists is detailed in Appendix 2.

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% of new building permits every year.

INSPECTIONS YEAR TO DATE - JANUARY 2021 TO DECEMBER 2021

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. Q2 IN FOCUS

1,034
Plumbing Inspections

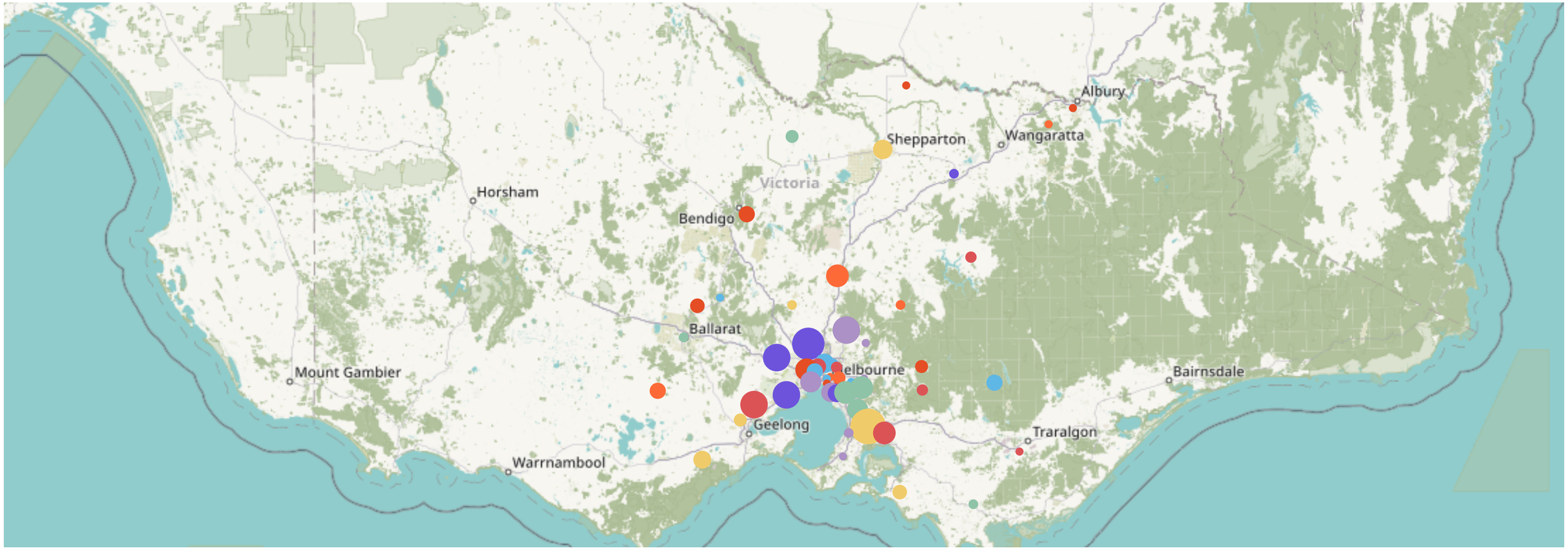
1,555
Building Inspections

A total of 2,589 inspections (comprising 1,555 building and 1,034 plumbing inspections) were conducted across 56 municipalities in Victoria, involving 1,009 builders and 203 building surveyors across the state.

Due to the changing COVID-19 restrictions in 2021, 14 VBA inspectors were redeployed (over four weeks in Q2) to participate in joint agency COVID-19 compliance inspections as part of the Victorian Government Operation Construction.

As a result, fewer (approximately 400) inspections took place than was anticipated for this reporting period.

Q2 INSPECTION MAP – OCTOBER 2021 TO DECEMBER 2021



Larger Dots = More Inspections
https://vba.vic.gov.au/building/complaints-compliance-enforcement/proactive-inspections-program/proactive-inspections-program-reports

2.1. WHAT WE FOUND

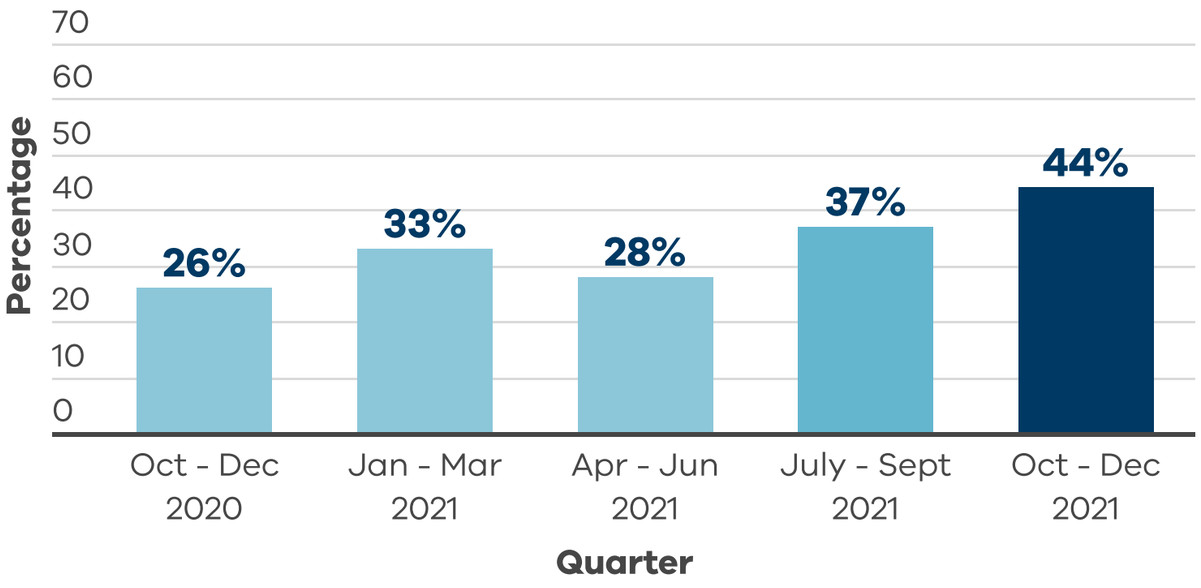
1,130 or 44% of inspections conducted during this quarter (Oct-Dec 2021) identified at least one compliance risk, a significant increase (7%) from the previous quarter (July-Sept 2021). This is the second quarter in a row where a significant increase in compliance risk compared to the previous quarter 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 more practitioners of interest as a result of gained intelligence.

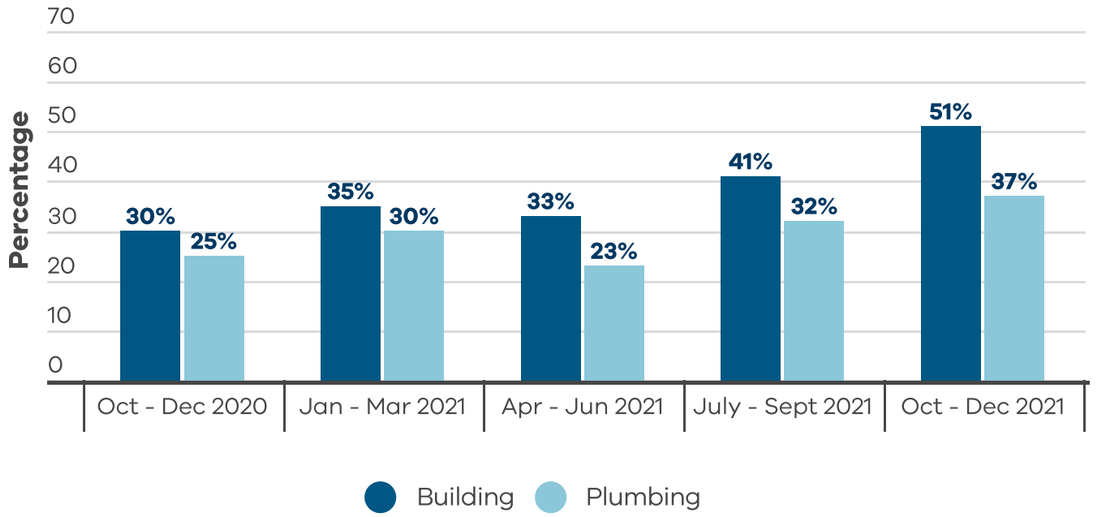
A compliance risk is defined as any non-compliant item (observed in a building under construction) which if not appropriately considered or addressed, has the potential to cause:

- 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.

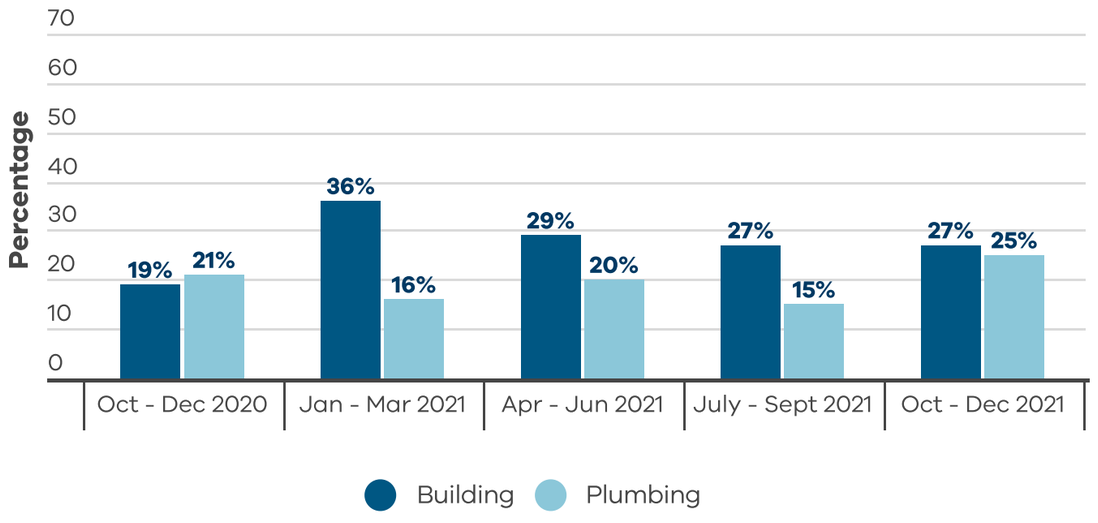
YEAR TO DATE - OBSERVED COMPLIANCE RISK - ALL INSPECTIONS



YTD - OBSERVED COMPLIANCE RISK - DOMESTIC WORKS



YTD - OBSERVED COMPLIANCE RISK - COMMERCIAL WORKS



CRITICAL ISSUE

1.6% 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.

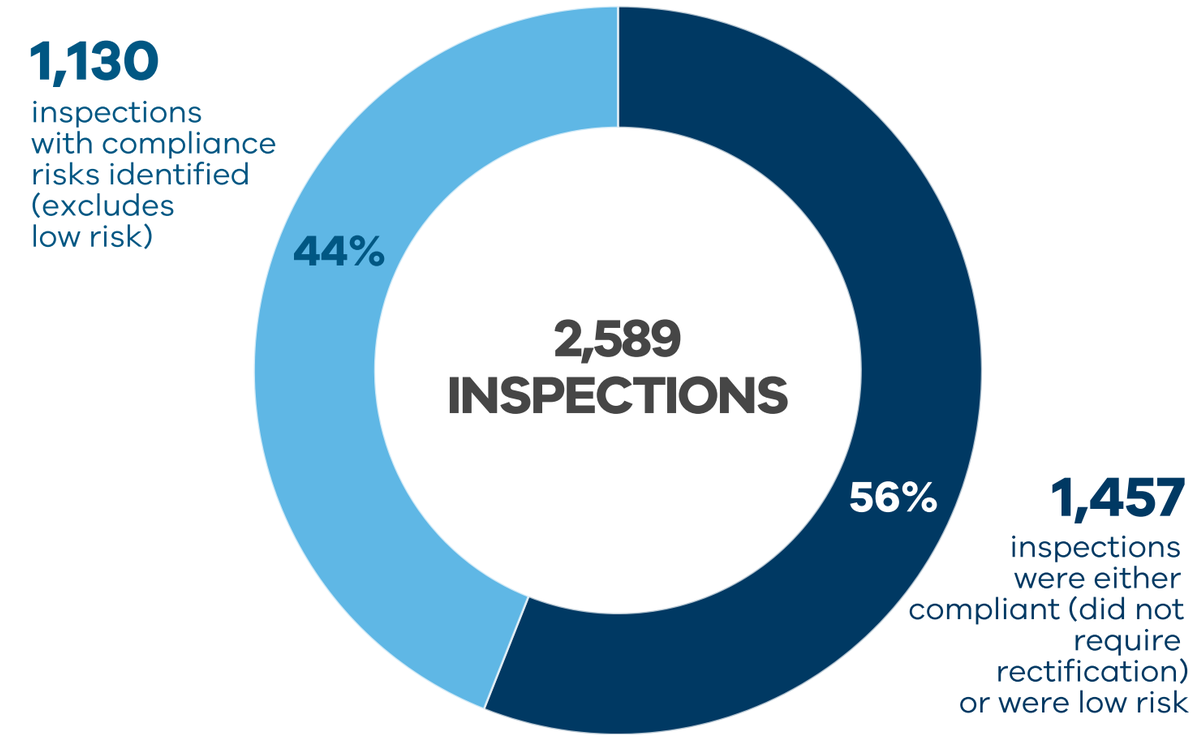
Details of the critical issues are outlined in Appendix 3.

2.2. ACTIONS TAKEN BY THE VBA

The VBA sent 1,130 notifications to practitioners requiring them to respond to the compliance risks identified by the PIP.

Typically:

- 15% to 18% of notifications sent to practitioners result 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 notifications sent to practitioners result in them demonstrating that the work is incomplete rather than non-compliant and will be resolved as the build progresses.
- The remaining notifications of non-compliant work requires the practitioner to rectify the work and for them to provide the relevant building surveyor (RBS) or the VBA with proof that the work was rectified.



2.3. ENFORCEMENT ACTIVITY

The VBA expects the 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 Q2 2021–22, the VBA issued no written Directions-to-Fix.

WHO RECEIVES THE NOTIFICATIONS?

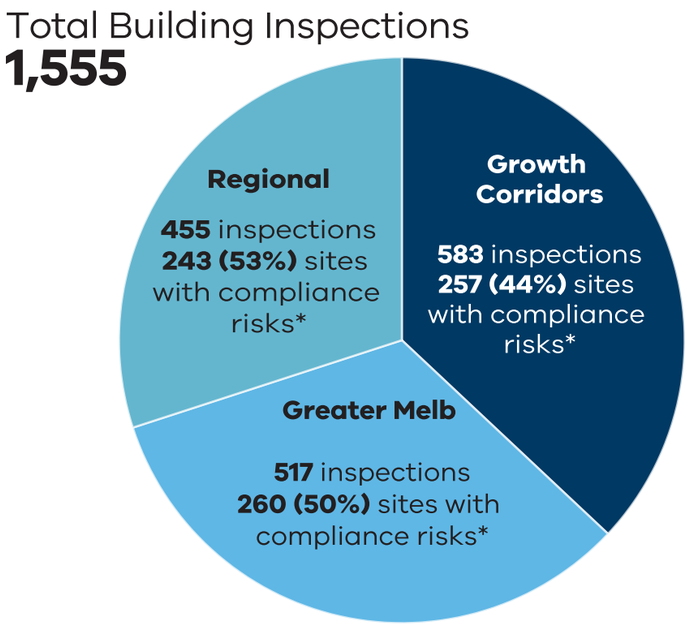
The builder and relevant building surveyor (RBS) are notified when compliance risks are identified. However, the builder is the primary addressee for potentially non-compliant building work if the elements have not been subject to a mandatory inspection stage. Where elements have been subject to mandatory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

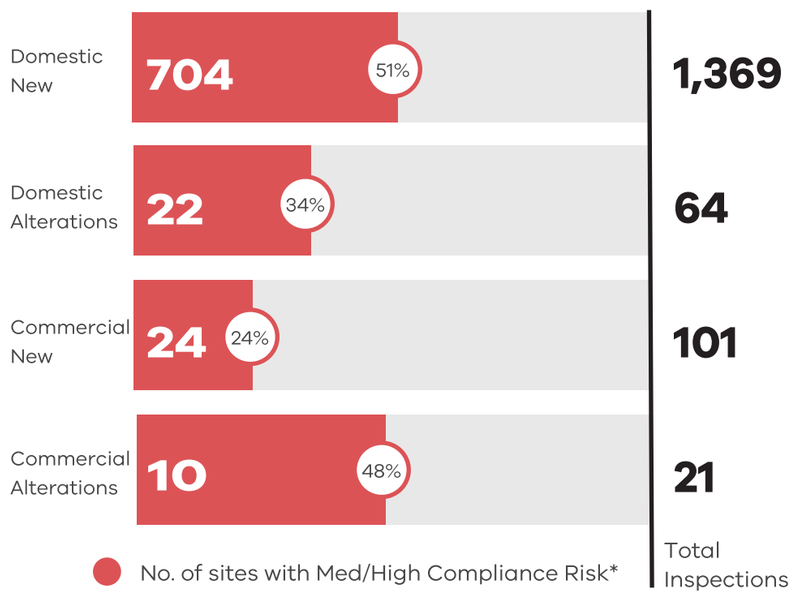
The RBS will also be the primary addressee when the endorsed building permit documentation is considered to lack sufficient information to show compliance for the purposes of the inspection (such as a performance solution) or in situations where the RBS has not considered mandatory items (such as fire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

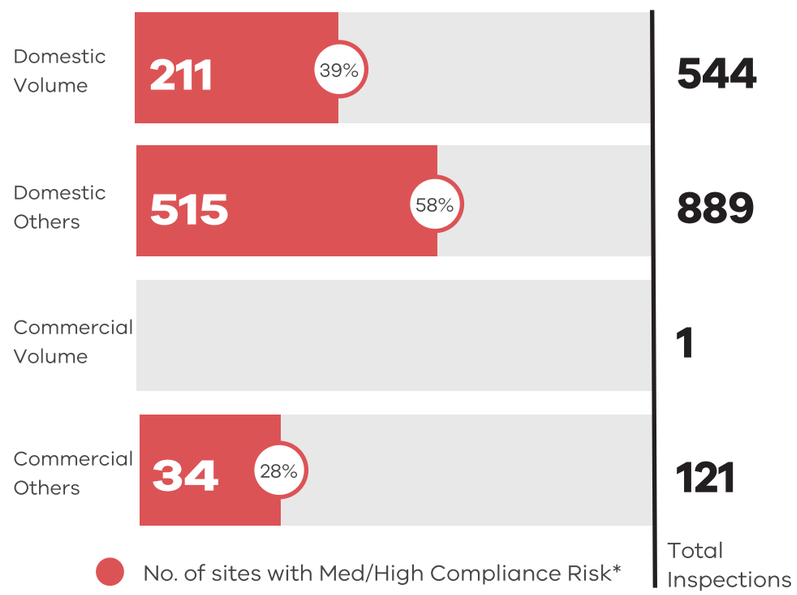
The builder is also the primary addressee for potentially non-compliant plumbing work because the plumber is not named in the building permit documents. The VBA relies on the builder to provide the plumber's details. If provided, the VBA will also notify the plumber of any potential issues.

3. BUILDING INSPECTIONS

3.1. OVERVIEW OF BUILDING INSPECTIONS CONDUCTED IN Q2







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 – a lower prevalence of non-compliant issues was observed on building sites in Growth Corridors of Greater Melbourne (44%) compared to Regional Victoria (53%) and Greater Melbourne (50%).

NEW BUILDS VS ALTERATIONS

Volume – 'New Builds' in Q2 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 (51%), compared to buildings going under Alterations (34%) in domestic building sites.

A different trend was observed in commercial building sites. Buildings undergoing alterations had the highest prevalence of non-compliant issues (48%) compared to New builds (24%).

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.

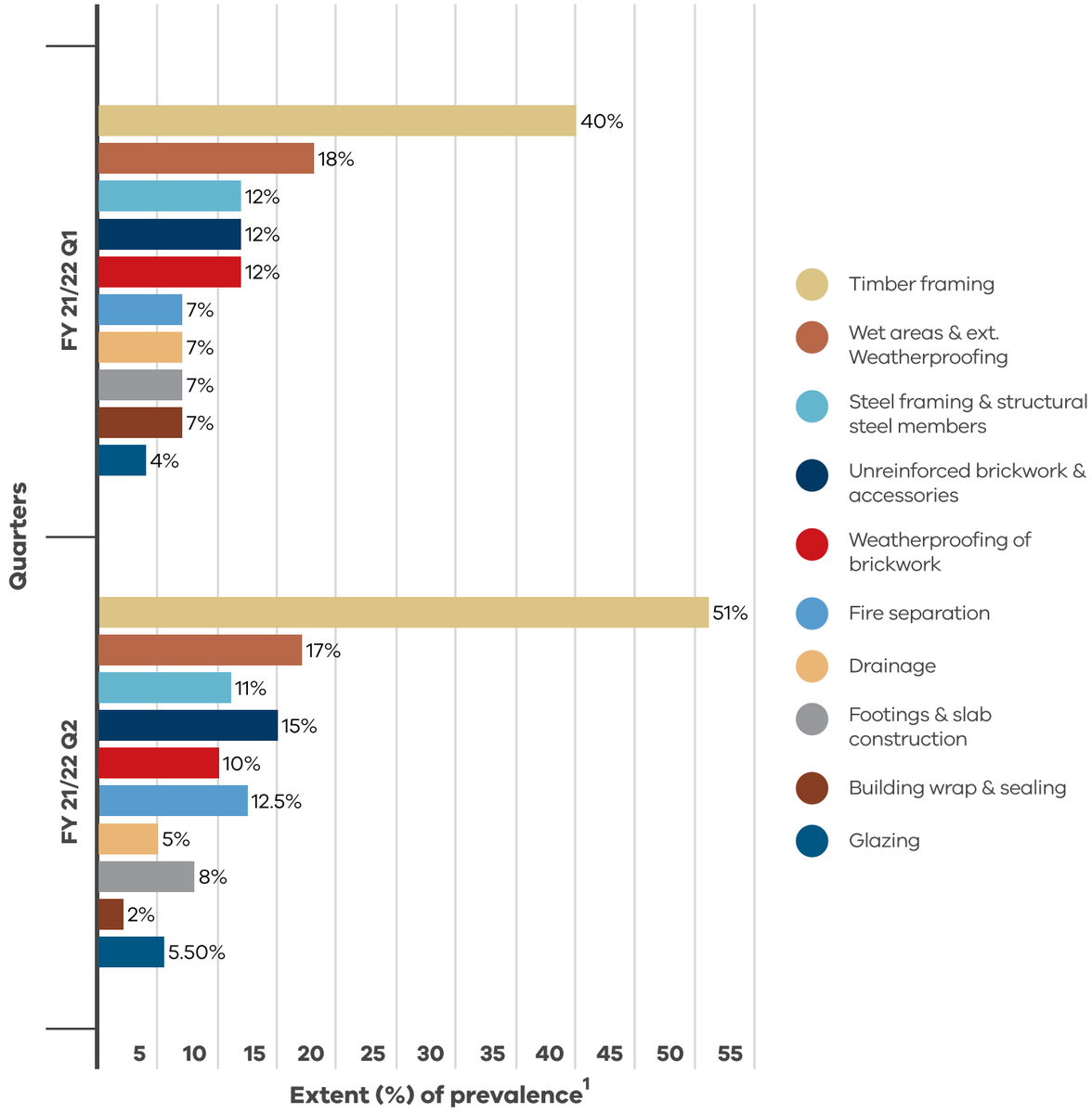
Inspection outcomes – a lower prevalence of non-compliant issues was found during inspections of sites managed by Large Volume builders, compared to all other builders. This is more pronounced in domestic building sites, (39%) compared to 58% in all other builders.

The VBA reviews trends like this to update its risk-based site selection to ensure it selects sites based on the highest risk to the adverse effect on the safety or amenity of future building occupants, and the public.

3.2. OVERVIEW OF WHERE THE COMPLIANCE RISKS ARE FOUND

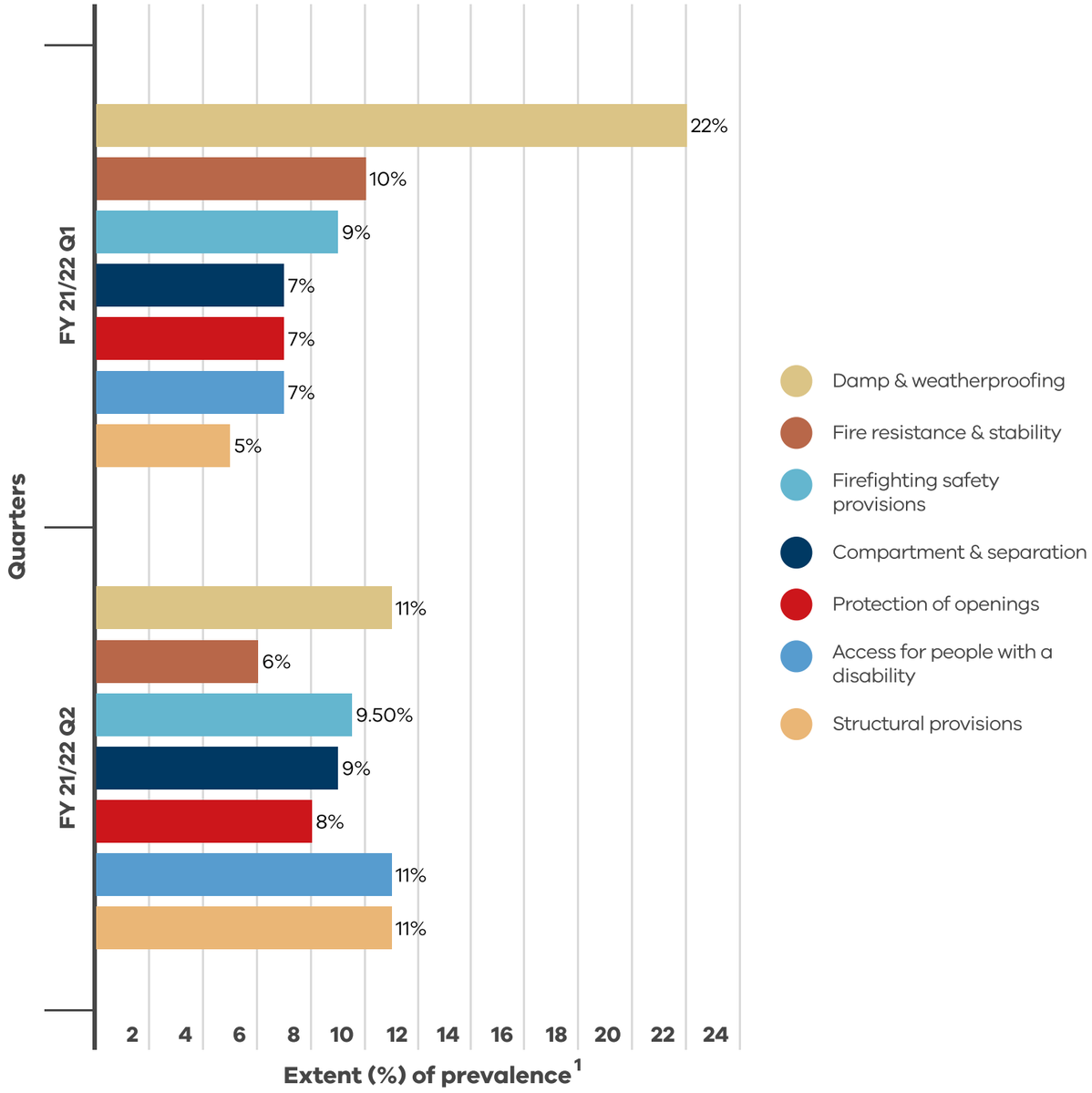
DOMESTIC (CLASS 1)

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



COMMERCIAL (CLASS 2 TO 9)

The most prevalent categories where non-compliance risks are observed (medium and high 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 20,000 elements were assessed across 1,433 domestic building sites in Q2 (an average of 15 elements per inspection), of which 1,384 elements were identified as a compliance risk (across 726 sites) and required rectification or justification. Of these elements, 46 were critical (across 30 sites) and required immediate attention.

Examples of building non-compliances included:

FIRE SEPARATION

- Construction of an external wall (within 900 mm of the adjoining boundary) of two double storey townhouses, in the City of Monash, had openings between the concrete slab edge rebate and Hebel panel junctions that were not sealed to achieve the required 60/60/60 Fire Resistance Level (FRL).

  A VBA notification of high-risk activity was sent to the RBS, who signed-off a performance solution to achieve the required FRL. The builder provided photographic evidence to confirm the installation of the performance solution to the openings.

OCCUPATIONAL HEALTH AND SAFETY ISSUES

- Construction of a dual occupancy dwelling in the City of Greater Geelong had multiple OHS issues. There was no fall protection over the site cut adjacent to the constructed block walls in the units, no safety caps placed over ends of vertical steel reinforcement above block walls, and no shoring provided between the site cut and block walls.

  A referral to WorkSafe was immediately made to manage the rectification of these issues.

EXCAVATION WORKS

- Construction of a Class 1(a) dwelling in the City of Greater Geelong had a deep site cut that exposed fence footings with noticeable subsiding of soil beneath the fence.

  A VBA notification of high-risk activity was sent to the RBS, prompting the RBS to issue the builder with a Directions-to-Fix who took immediate action to stabilise the vertical excavation at the boundary where the fence footings were exposed.

- An excavation for the construction of a spa in the City of Greater Geelong, undermined the concrete slab of the existing dwelling on site. A modified footing was then constructed, adjacent to the existing dwelling to support the slab, however the footing was not designed by an engineer. This resulted in deeper footing depths through the proposed spa location.

  A VBA notification of high-risk activity was sent to the RBS, prompting the RBS to direct the builder to provide approved amended engineering drawings for deepened footing design for the spa, along with certification.

- A site excavation in the construction of a new class 1(a) dwelling in the Moorabool Shire undermined the timber paling fence footings of the adjoining property without any protection, in contravention to Part 7 of the Building Regulations 2018.

  A VBA notification of high-risk activity sent to the builder prompted immediate action to support the fence.

COMMERCIAL (CLASSES 2–9)

Approximately 1,500 elements were assessed across 122 commercial building sites in Q2 (an average of 13 elements per inspection), of which 92 elements were identified as a compliance risk (across 34 sites) and required rectification or justification. Of these elements, 1 was an OHS issue and required immediate attention.

Examples of these issues included:

PROTECTION OF OPENINGS

- An existing mixed-use Class 2 building in the City of Bayside, undergoing structural works, had construction joints between building elements of the party-wall/separating wall (used to house beams) not filled. The required FRL was therefore not met with respect to integrity/ insulation and resistance to the incipient spread of fire in accordance with Clause C3.16 BCA Vol 1.

  A VBA notification of medium-risk activity was sent to the RBS and builder prompting the builder to infill the existing joist holes in the boundary wall. The VBA closed the matter upon receiving evidence of the infilled holes.

DAMP AND WEATHERPROOFING

- Construction of apartments with a basement carpark, within the City of Stonnington, was missing floor wastes to bathroom floors in the single occupancy units, contrary to BCA Volume One - clause F1.11 Provision of floor wastes. Additionally, there were no overflow provisions provided to balconies.

  A VBA notification of medium-risk activity was sent to the builder prompting the builder to provide the VBA with evidence that a performance solution was in place for the floor wastes, and documented proof of overflow provisions for the balconies.

CONSTRUCTION OF EXITS AND STRUCTURAL PROVISIONS

- The external stairways from the required exit doors of a Class 3 and 6(d) building, undergoing alterations in the City of Moonee Valley were not structurally sound and constituted a risk to the life, health and safety of the building occupants.

  The VBA notified the builder, however, the alterations to the stairway were not in the scope of the builder's work, and the matter was referred to the relevant Municipal Building Surveyor to address.

ACCESS FOR PEOPLE WITH A DISABILITY

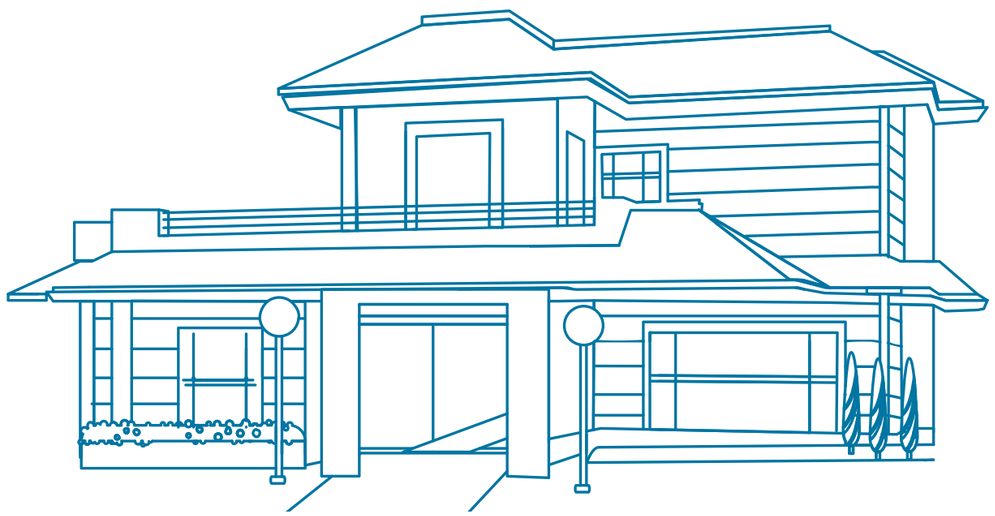
- Construction of three warehouses & associated offices within the City of Melton had multiple issues with the requirement to provide access for people with disabilities:
  - Doors throughout the site did not achieve the required 850mm clear opening as required by AS1428.1 Part 13.2.
  - The ambulant toilets installed across the site did not comply with the required dimensions as nominated under AS1428.1 Part 16.
  - The doors across the site did not provide a 30% luminance contrast between the door leaf and door jamb with the width of the contrasting area required to be 50mm in accordance with AS1428.1 Part 13.1.
  - The principal entrance areas across the site did not have a smooth surface transition as required under AS1428.1-2009 Part 7.2.
  - Glazing decals were not installed on the full height of glazing, capable of being mistaken as an opening contrary to AS1428.1-2009 Part 6.6.
  - Handrails leading to the first-floor area across the sites did not have the minimum 50mm clearance as required by AS1428.1-2009 Part 12 and the elbow of the grab rails installed on site did not extend to the required height of 900-1000mm as per AS1428.1 Part 15.2.7.

A VBA notification of medium-risk activity was sent to the RBS and builder prompting the builder to undertake rectification work. Some items have been rectified however, due to the large number of items requiring rectification and staff shortages, the builder is continuing work to rectify the items.

VBA will close the matter once the VBA receives an amended approved building permit and evidence of the rectified building work is received.

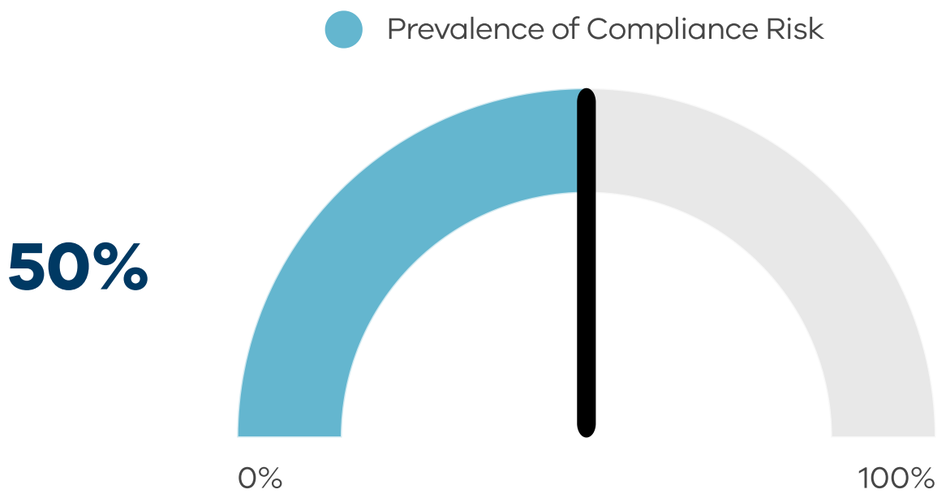
3.4. PREVALENCE OF COMPLIANCE RISKS IN DWELLINGS

SINGLE OCCUPANCY

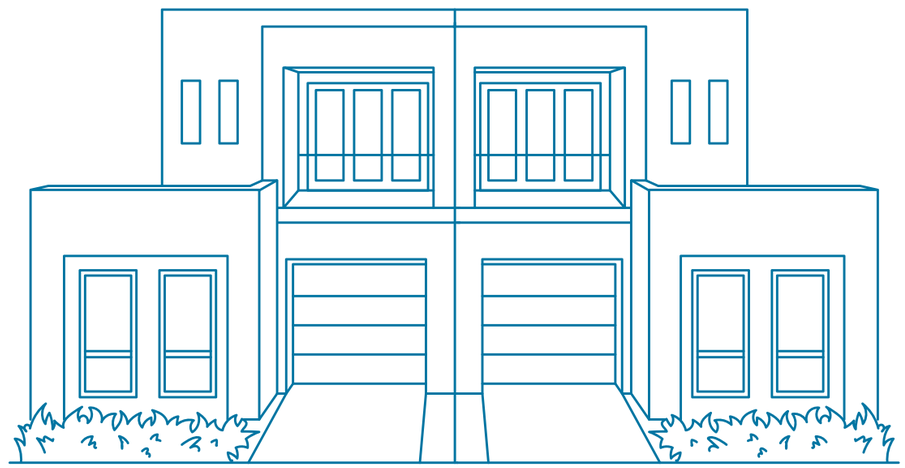


Common Building Issues

- Timber framing
- Wet areas and external waterproofing
- Unreinforced brickwork and accessories
- Fire separation
- Weatherproofing of brickwork
- Steel framing and structural steel members

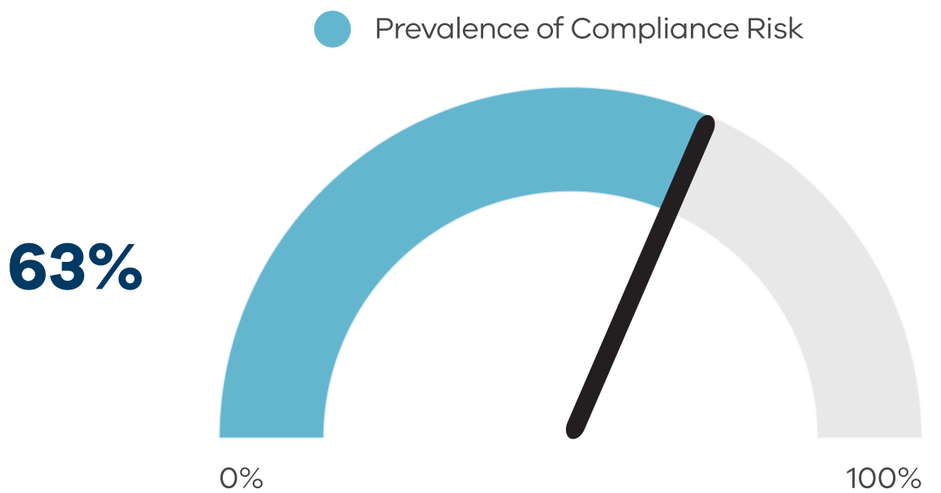


DUAL OCCUPANCY



Common Building Issues

- Timber framing
- Fire separation
- Steel framing and structural steel members
- Unreinforced brickwork and accessories
- Wet areas and external waterproofing
- Drainage



3.5. PREVALENCE OF BUILDING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected in Q2	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	**1,433**	**51%**	• Timber framing • Wet area and external waterproofing • Unreinforced brickwork and accessories • Fire separation • Steel framing and structural steel members • Footings and slab construction • Glazing • Drainage
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9)	**56**	**45%**	• Structural provisions • Compartment and separation • Fire fighting equipment, provision of escape, construction of exits • Fire resistance and stability • Protection of openings • Damp and weatherproofing
Assembly building with no dwellings (Class 9b)	**15**	**15%**	• Construction of exits • Surface and subsurface drainage systems
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**15**	**7%**	• Fire fighting equipment • Compartment and separation
Warehouse, factories and carparks – no dwellings (Classes 7a, 7b, 8)	**36**	**17%**	• Fire fighting equipment • Access for people with a disability • Protection of openings • Structural provisions

3.6. CASE STUDIES

This case study highlights timber frame issues, which were not identified at the mandatory inspection carried out.

CONSTRUCTION OF A NEW CLASS 1A SINGLE STOREY DWELLING

Timber framing issue missed at mandatory frame inspection

Overview

A proactive inspection of a Class 1a building under construction identified non-compliant installation of roof trusses on a timber frame that had not been identified by the building inspector during the mandatory frame inspection.

Seven of the roof trusses were installed backwards meaning the trusses were supported away from the design location. Additionally, framing anchors were not installed between the top chord of the jack truss and the top chord of the truncated girder truss as required by the manufacture's installation guide and AS 4440 - 2004 installation of nail plated timber roof trusses.

Response

A VBA notification of medium risk building activity was sent to the builder and RBS. This prompted the builder to have the truss manufacturer/designer review the trusses, provide a rectification detail, and install the missing framing anchors.

Outcome

The VBA closed the matter after receiving the rectification detail from the truss manufacturer/designer with evidence of the rectified work and the approved re-frame inspection report.

Trusses installed backwards

Framing anchor missing between trusses

3.6. CASE STUDIES CONTINUED

This case study highlights why the requirement for protection work is so important.

CONSTRUCTION OF A UNIT DEVELOPMENT GARAGES AND RETAINING WALL

Damage to the adjoining property and concrete slab issues

Overview

A proactive inspection of a Class 1 building under construction identified a site cut, (900m in depth on the boundary of the site) which had undermined the adjoining property's garage wall. There was no protection work in place or temporary shoring or propping installed along the boundary of the site.

Additionally, the bottom plate of the timber framed wall was overhanging the concrete slab by more than 10mm and the concrete slab's steel reinforcement was exposed; not covered by the minimum 40mm of concrete as required by clause 5.3.2 of AS 2870 – 2011.

Response

A VBA notification of a high-risk building activity was sent to the RBS. This prompted the RBS to issue a Direction-to-Fix to the builder to carry out remedial works as directed by the engineer and approved by the RBS prior to the works commencing.

The RBS also provided the VBA with an amended building permit, amended engineering (underpinning & overhang details), the engineer's site instruction for exposed reinforcement and the Protection works form 7 and associated declaration for no response from neighbour.

Outcome

The VBA closed the matter after the VBA received notification from the RBS that all remedial works were completed as per the directions to fix and evidence of the underpinning works being completed on the adjoining property's garage wall.

Adjoining property's garage wall undermined by site cut on

Exposed concrete slab steel reinforcement

Underpinning of the undermined garage wall

3.6. CASE STUDIES CONTINUED

This case study highlights common Occupational Health and Safety issues on construction sites.

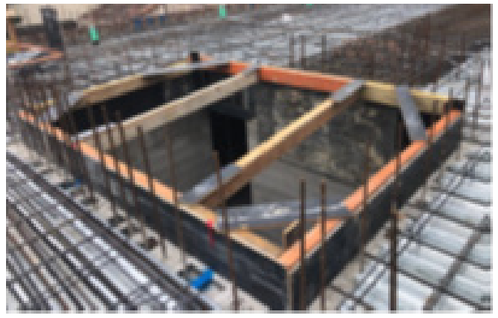
CONSTRUCTION OF A UNIT DEVELOPMENT GARAGES AND RETAINING WALL

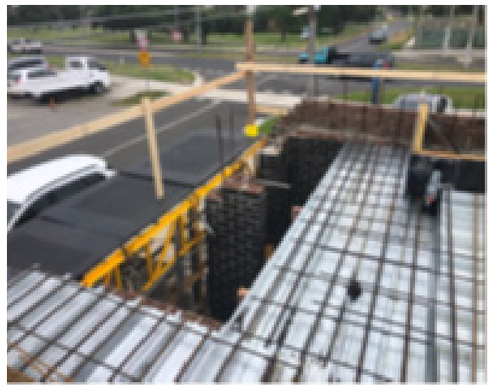
Damage to the adjoining property and concrete slab issues

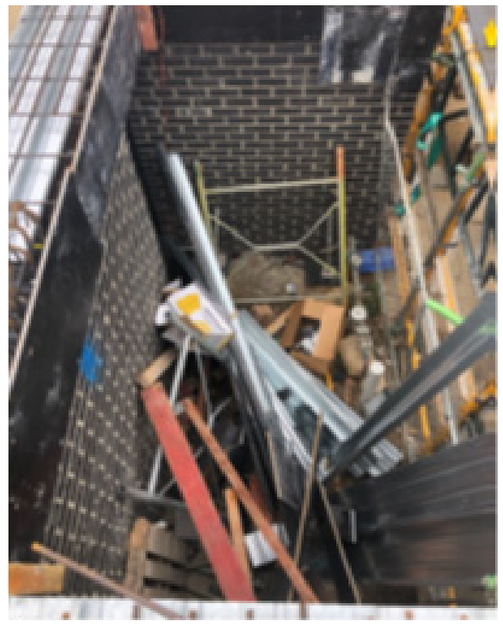
Overview

A proactive inspection of a Class 2 building under construction identified multiple serious safety issues:

- An unreinforced double skin masonry wall was without any bracing, posing a serious threat to people on site and the adjoining property.
- Exposed vertical reinforcement starter bars throughout the first floor were not capped off to prevent injury to workers in accordance with the Occupational Health and Safety Act 2004 requirements.
- Absence of fall protection areas greater than 2.0 m were found throughout the site.
- Poor housekeeping and rubbish including a toilet that was not fit for purpose nor clean at time of inspection.
- Storage of materials throughout the site did not provide for safe egress paths in accordance with Occupational Health and Safety requirements for workers on building sites.
- Absence of fire extinguishers at the time of the inspection. A requirement under NCC:2019 Volume One, Section E1.9 for fire precautions in buildings of Class 2 and above to be in place during construction.







Response

The VBA referred the matter to WorkSafe, and a VBA notification of high-risk building activity was sent to the builder. The builder took immediate action to rectify the issues, which included installation of handrails on all exposed voids and edges and the temporary propping of the free-standing masonry.

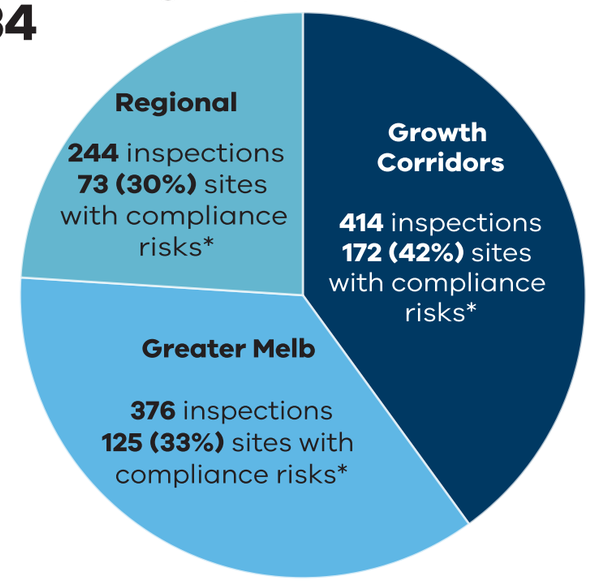
Outcome

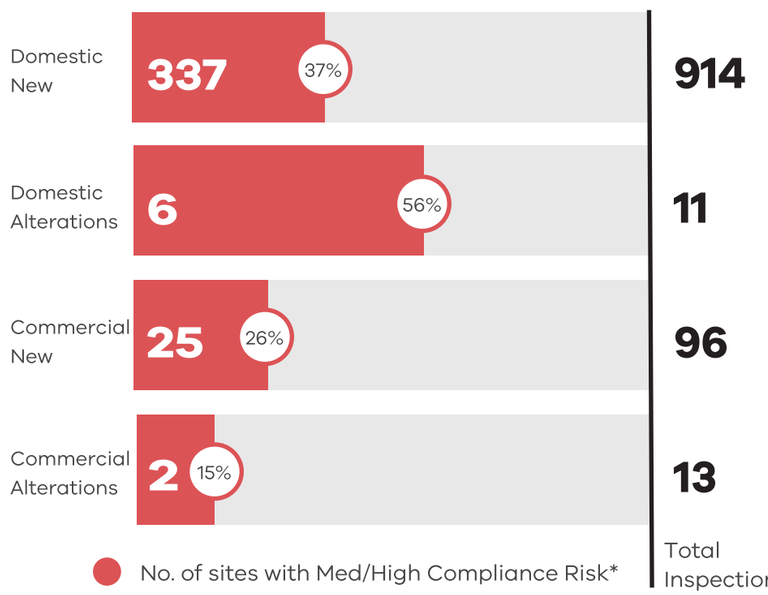
The VBA closed the matter after receiving notification the items were rectified.

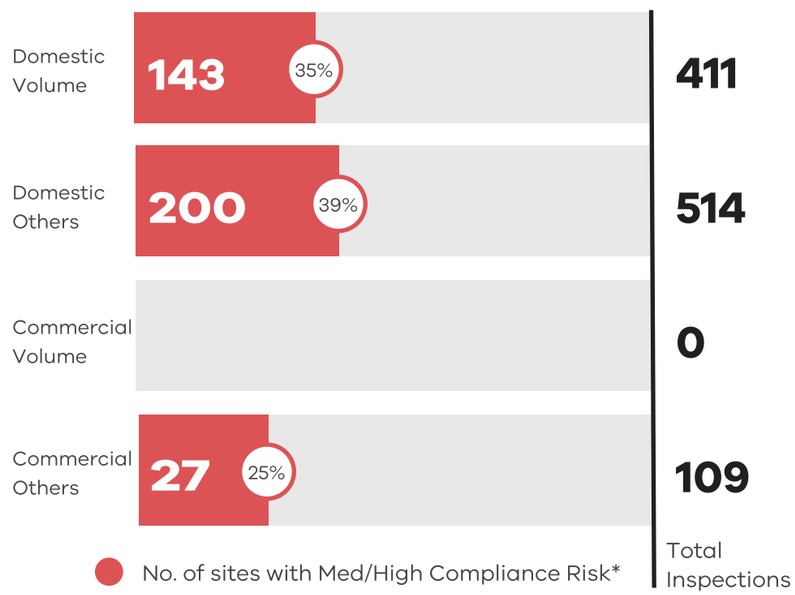
4. PLUMBING INSPECTIONS

4.1. OVERVIEW OF PLUMBING INSPECTIONS CONDUCTED IN Q2

Total Plumbing Inspections
1,034







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 – a higher prevalence of non-compliant issues was observed on building sites in Growth Corridors of Greater Melbourne (42%) compared to Regional Victoria (30%) and Greater Melbourne (33%). This trend is the reverse of what was observed in inspections of building work; a trend that has also remained consistent in the past three quarters.

NEW BUILDS VS ALTERATIONS

Volume – 'New Builds' in Q2 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 buildings undergoing Alterations compared to New builds. The sample size however is too small to confirm a trend.

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 corridors areas of Melbourne.

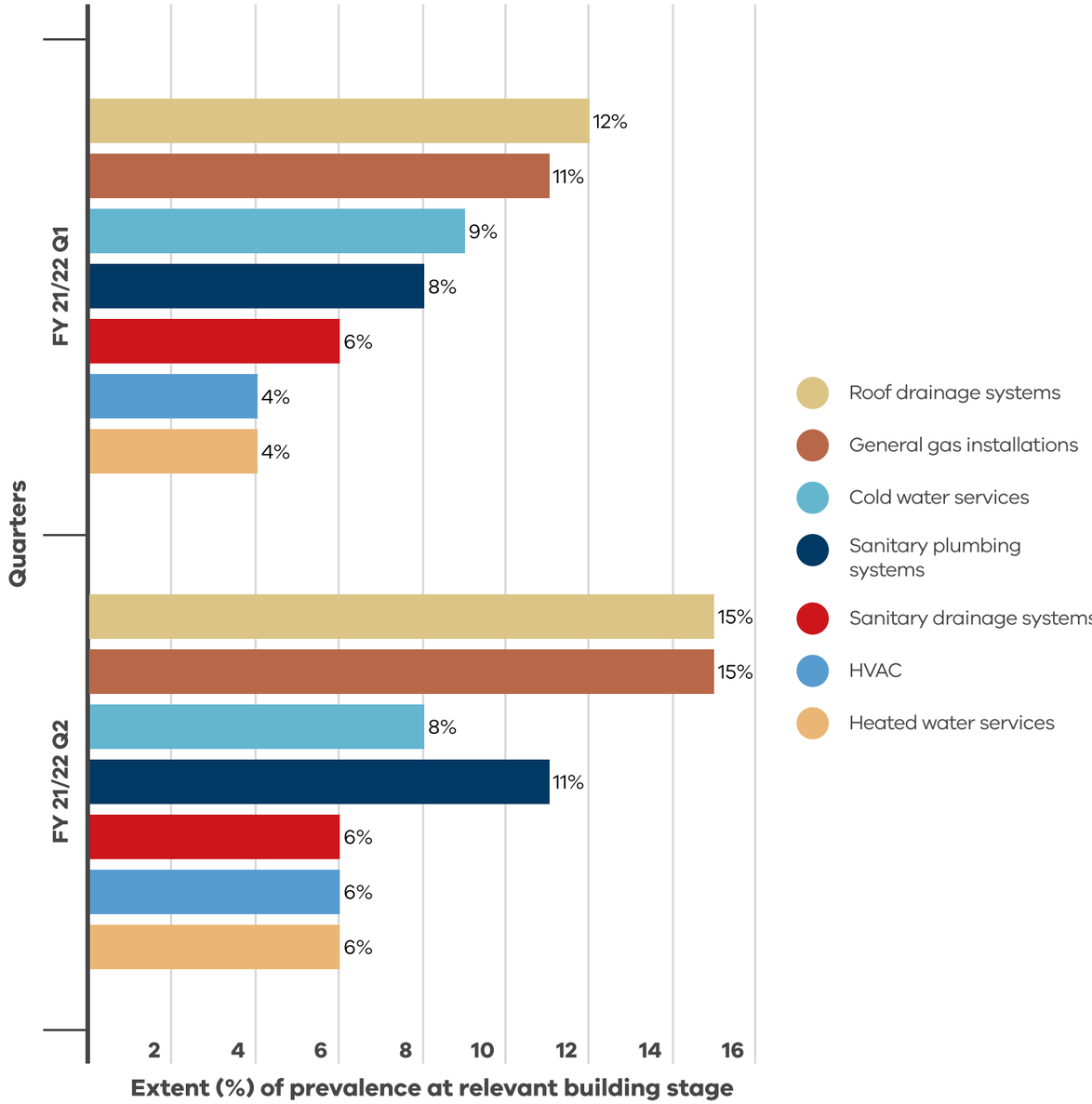
Inspection outcomes – a marginally lower prevalence of non-compliant issues was observed during inspections of sites managed by Large Volume Builders, compared to all other builders. Large Volume builders were not represented in commercial plumbing this quarter.

The VBA reviews trends like this to update its risk-based site selection to ensure it selects sites based on the highest risk to the adverse effect on the safety or amenity of future building occupants, and the public.

4.2. OVERVIEW OF WHERE THE COMPLIANCE RISKS ARE FOUND

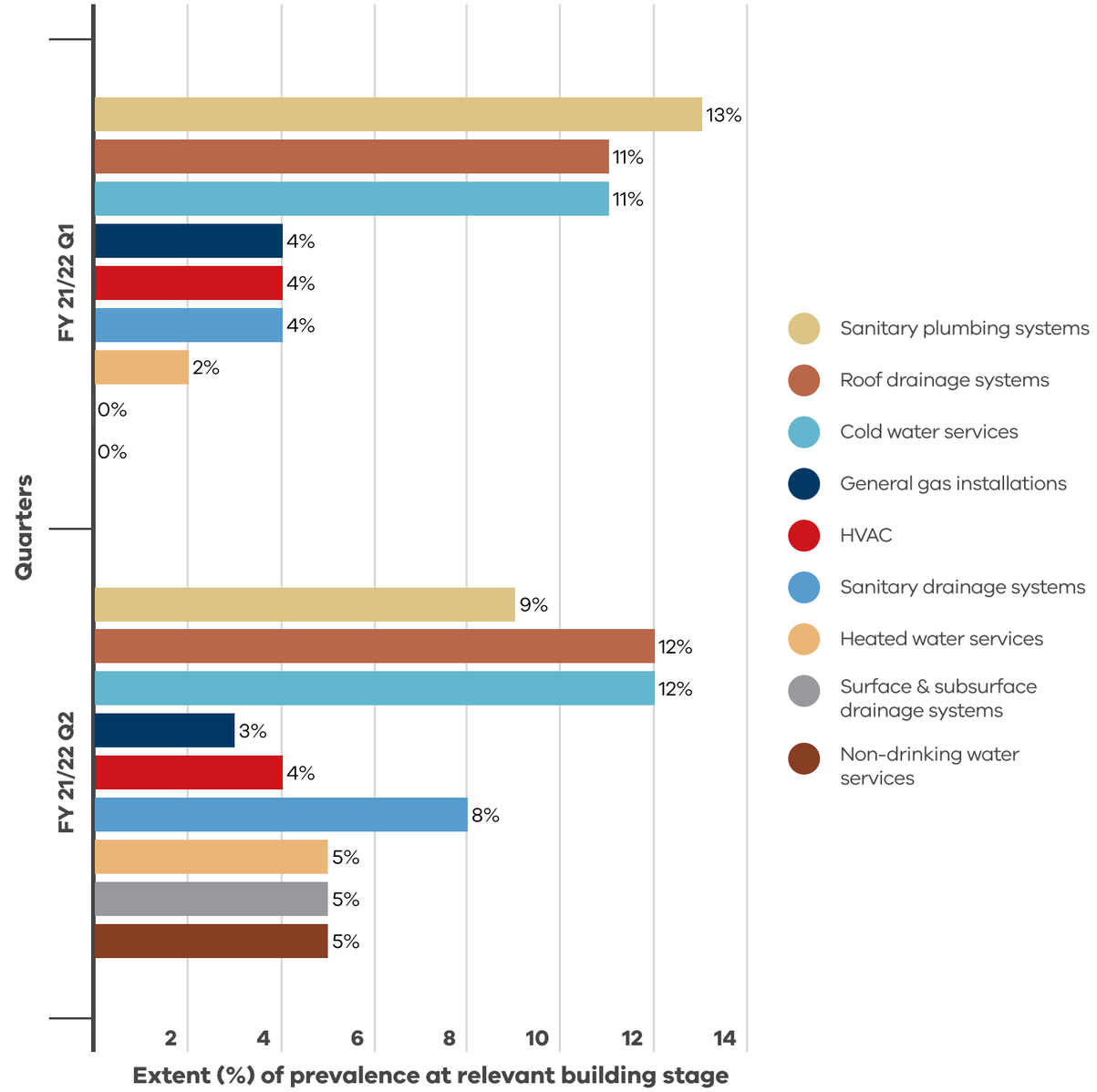
DOMESTIC (CLASS 1)

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



COMMERCIAL (CLASS 2 TO 9)

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 in this quarter go to Section 4.3 ('Overview of Plumbing Compliance Risks').

4.3. OVERVIEW OF PLUMBING COMPLIANCE RISK

DOMESTIC (CLASS 1)

Approximately 10,000 elements were inspected across 925 inspections (an average of 11 elements per inspection) and 627 elements (across 343 sites) were identified as a compliance risk requiring rectification or justification. 15 critical issues (across 10 sites) were found that were mostly OHS issues.

Examples of plumbing non-compliance included:

ROOF DRAINAGE SYSTEMS AND ROOF CLADDING

- Construction of a single occupancy dwelling in the Macedon Shire had multiple roof drainage issues:
    - Undersized roof flashings (under 150mm in width) were used on roof penetrations for solar hot water pipes and evaporative cooler cold-water pipes, at several locations.
    - Several issues with box gutter installations: there were no provision for expansion, they were not discharging into a sump or rain head, and a minimum depth (75mm) at the high end of the box gutter was not achieved.
    - Treated pine was also used as the support for the valley boards and box gutters. Treated pine should not be used as it is incompatible with most gutter materials. Treated pine may only be used if the contact surfaces are lined with a non-abrasive, impervious, non-conducting material.
    - The roof sheet was not fixed to the structure at the required intervals.

A VBA notification of medium-risk activity was sent to the builder ensuring the matters were addressed as the roof plumbing work was still in progress.

SANITARY PLUMBING SYSTEMS AND WATER SERVICES

- Construction of two new single storey dwellings in the City of Hume, had no backflow prevention devices installed as required on flexi shower outlets that reached floor level. A VBA notification of medium-risk activity was sent to the builder prompting the plumber to rectify the issue. The VBA closed the matter upon receiving photographic evidence of the backflow devices installed.
- Construction of three new double storey dwellings and associated garages had water services unprotected in slabs throughout the development. A VBA notification of a medium risk plumbing activity was sent to the builder, prompting the plumber to provide conduit around the services.

SURFACE WATER DRAINAGE ON A BALCONY

- A balcony was erected with undersized drainage (a minimum of 90mm UPVC is required) in a new double storey dwelling under construction, in the City of Bayside. In addition, the above ground balcony had no overflow provisions. A VBA notification of medium-risk activity was sent to the builder prompting the plumber to rectify the issues. The rectification work is in progress.

SUB-SURFACE DRAINAGE

- The storm water piping did not have the appropriate grade (grading backwards) in the construction of a new single storey dwelling, in the City of Greater Shepparton. In addition, the below ground storm water systems had no screenings provided to the stormwater system for support, only natural ground. A VBA notification of medium-risk activity was sent to the builder prompting the plumber to rectify the issues.

COMMERCIAL (CLASSES 2–9)

Approximately 500 elements were inspected across 109 sites and 57 elements (across 27 sites) were identified as a compliance risk requiring rectification or justification.

Examples of plumbing non-compliance included:

ROOF DRAINAGE SYSTEMS AND ROOF CLADDING

- Construction of a Service Station (Class 5 &6) in regional Victoria had multiple roof drainage issues:
    - The rain head had no overflow provision.
    - The high-capacity overflow device for the sump was not installed to the minimum required height.
    - The soaker and parapet flashings, fixed to the roof, were also fixed to the structure and parapets cappings, preventing expansion provision.
    - Parapet capping's did not fall back to the roof or gutter.

Due to the holiday shut down period, rectification work is still in progress and the VBA will close the matter once evidence of the rectified plumbing work is received.

SANITARY DRAINAGE SYSTEMS AND WATER SERVICES

- Construction, by an owner-builder, of fourteen double storey dwellings and basement garages, in the City of Moonee Valley, had multiple issues with sanitary drainage and water services:
    - Proximity issues in several locations - Hot water pipes did not have the appropriate minimum separation of 25 mm from the cold water and potable water services did not have the required 100mm minimum clearance from above ground non-drinking water service.
    - Expansion joints did not have fixed supports as per AS 2032-2006 Clause 6.4.4.
    - A junction was installed on the graded section of drain within 450mm of the vertical section in several locations.

Due to the holiday shut down period, rectification work is still in progress.

The VBA will close the matter once evidence of the rectified plumbing work is received.

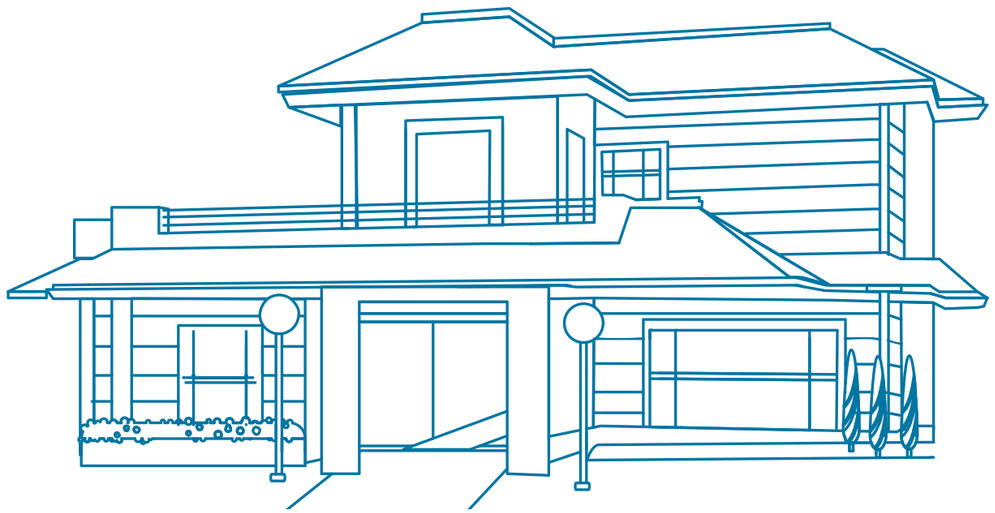
- Construction of a Class 2 mixed-use building in the City of Moreland had multiple sanitary drainage issues including:
    - An 88-degree junction was used on a graded sewer.
    - Omission of expansion provisions on graded drains and stacks throughout the development and no fixed supports for expansion joints that were installed.

Due to the holiday shut down period, rectification work is still in progress.

The VBA will close the matter once evidence of the rectified plumbing work is received.

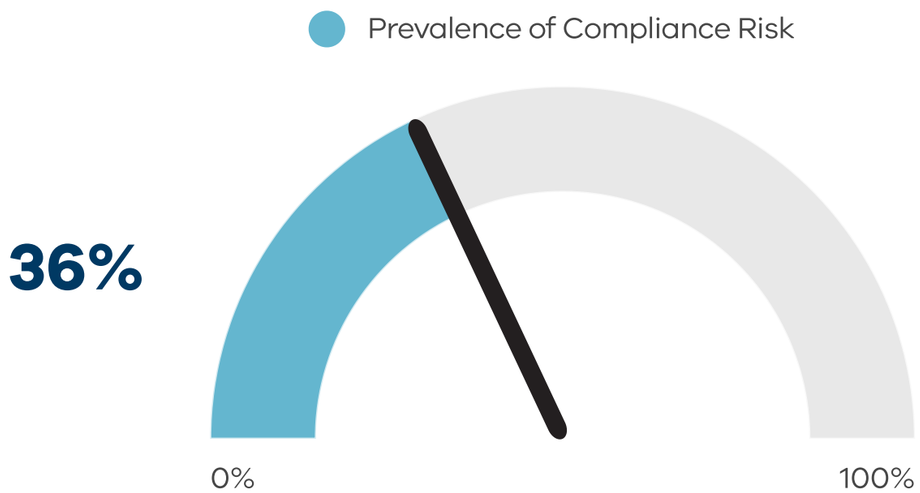
4.4. PREVALENCE OF COMPLIANCE RISKS IN DWELLINGS

SINGLE OCCUPANCY

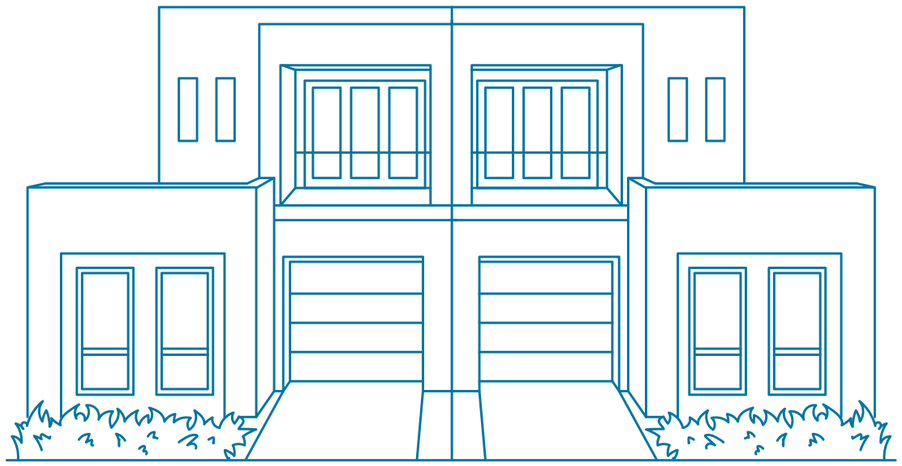


Common Issues

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

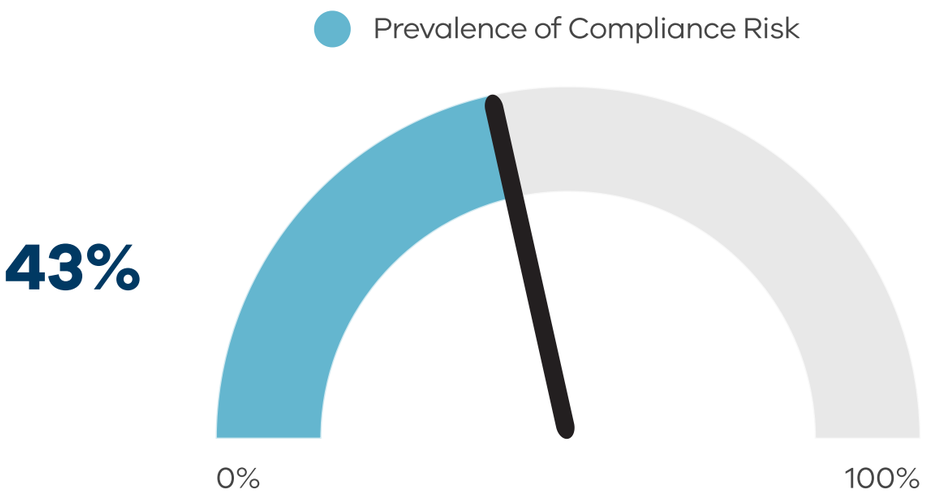


DUAL OCCUPANCY



Common Issues

- Roof drainage systems
- Sanitary plumbing systems
- Cold water services
- General gas installation
- Sanitary drainage systems
- Heated water services



4.5. PREVALENCE OF PLUMBING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected in Q2	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	**925**	**37%**	• Roof drainage systems • Cold water services • Sanitary plumbing systems • Sanitary drainage systems • Heated, ventilation and air-conditioning systems
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9)	**29**	**45%**	• Sanitary plumbing systems • Roof drainage systems • Working >2.0m in height • Cold water services • Sanitary drainage systems
Assembly building with no dwellings (Class 9b)	**19**	**11%**	• Sanitary plumbing systems
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**13**	**15%**	• Sanitary plumbing systems • Roof drainage systems • Firefighting water services
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	**48**	**20%**	• Cold water services • Roof drainage systems • Non-drinking water services • Surface and subsurface drainage systems • Sanitary drainage systems

4.6. CASE STUDIES

The following case studies highlight common roofing faults observed in metal clad roof installations on Class 1a structures.

MULTIPLE ROOF DRAINAGE ISSUES

Overview

A proactive inspection of a Class 1 dwelling under construction identified multiple roof drainage issues:

- Undersized high capacity box gutter sumps and a change of direction in a box gutter.
- Valley gutters fixed directly to the structure.
- Box gutters fixed to the structure, restricting expansion and contraction.
- Eaves and box gutters not installed with appropriate expansion where the length of the gutters requires expansion provisions.
- Roofing debris left on roof and gutters.

Box gutters fixed to the structure

Undersized high capacity sump

Response

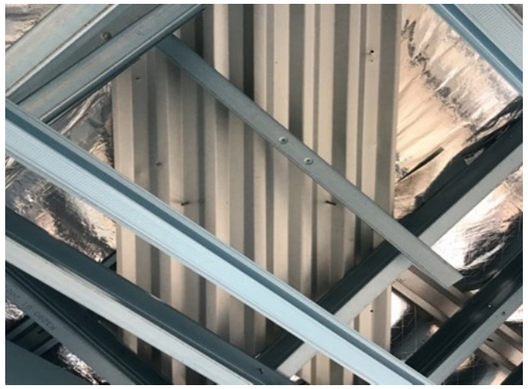
A VBA notification of medium risk plumbing activity was sent to the builder, prompting the builder to direct the roof plumber to rectify the plumbing non-compliances. The pathway to achieving compliance in this case was complex (due to the cost of rectification) and the Roofing Practitioner was provided with the option to achieve compliance through rectification or a performance solution.

Outcome

While some items were rectified, three items (all related to the box gutter) remain non-compliant and the roofing practitioner chose to lodge a Certificate of Compliance for the works. This certificate was then audited under the VBA's Plumbing Audit Program, and the three items related to the proactive inspection were identified.

The Roofing Practitioner has been issued a Rectification Notice and the case remains opened.

Change of direction in a box gutter



Valley gutters fixed to the structure

4.6. CASE STUDIES CONTINUED

The following case studies highlight common roofing faults observed in metal clad roof installations on Class 1a structures.

MULTIPLE ROOF DRAINAGE ISSUES

Overview

A proactive inspection of a Class 1 dwelling under construction by a volume builder in Regional Victoria identified multiple roof drainage issues:

- Insufficient fastening of eaves gutter joints.
- Roofing debris left on roof and gutters.
- Valley gutters fixed directly to the structure.
- Valley gutters not discharging into eaves or box gutters appropriately.

Insufficient fastening of eaves gutter joints

Valley gutters fixed directly to the structure

Response

A VBA notification of medium risk plumbing activity was sent to the builder, prompting the builder to direct the roof plumber to rectify the plumbing non-compliances.

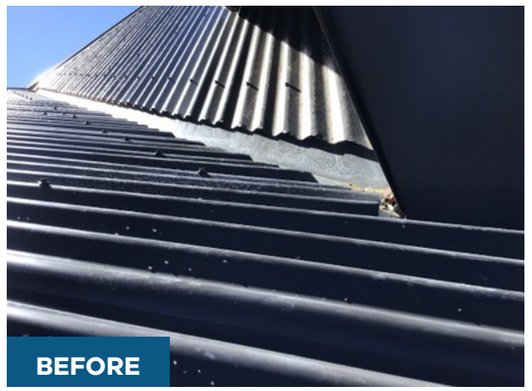
The first three items were promptly rectified. However, observations of valley gutters not discharging appropriately are becoming more prevalent and rectification of this issue is being met with some resistance. This is because, before compliance can be achieved, modifications to the building structure and design is required.

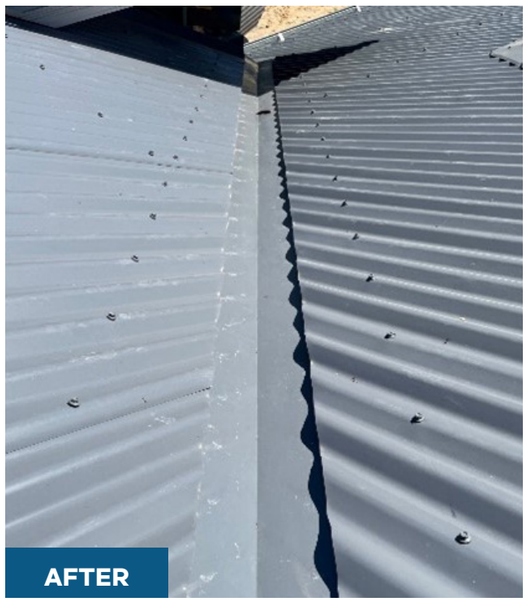
Outcome

After much discussion amongst the VBA inspector, builder and licensed roofing practitioner an understanding was reached between all parties of what was required to achieve compliance.

Modifications were made to the structure of the dwelling and the volume builder confirmed the design of this dwelling has been altered to ensure compliance of valley gutters can be achieved for any future builds.

Valley gutters not discharging into an eaves or box gutter appropriately sump





Both cases highlight that common roofing faults are being found in both Greater Melbourne and Regional Victoria consistently and they demonstrate that the industry should be educating practitioners in methods of achieving compliance to the building standards.

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 1.5 m Deep, site cut over 1.5 m

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 Q2 INSPECTIONS

BUILDING INSPECTIONS

BUILDING

DOMESTIC

no of sites inspections	% of inspections per stage		No. Inspections with Potential issues (excludes low risk)	Top categories of non-compliances	Extent of prevalence (% or n)	No. of inspections with Critical issues	Categories of non-compliances	Frequency	Outcome of critical issues
1,433	Demolition	0.3%	**726** (51%)	Timber Framing	32%	**30** (2%)	OHS items (openings in stairways and working >2.0 m in height and in trenches >1.5 m deep with no fall protection, unsecure ladder, asbestos debris and storage of materials	n13	All items rectified within 48 hours and WorkSafe and/or MBS contacted for the most serious issues.
	Foundations	2%		Wet Areas and external water proofing	18%		Temporary pool fences not installed correctly	n13	All rectified within 48 hours by the builders.
	Footings	7%		Structural steel members	12%		Fire separation	n7	RBS confirmed rectification at 4 sites. VBA continues to work with the RBS to ensure compliance is achieved at 2 sites. Performance solutions to be verified by the RBS at 1 site.
	Frame	49%		Unreinforced Masonary and Assessories	12%		Earthworks/Site cuts >1.5 deep	n4	All rectified sites by the builders, and RBS issued a DtF at one site.
	Lock-up	10%		Weatherproofing of Masonary	12%		Affecting public	n2	All rectified within 48 hours by the builders.
	Fixing	22%		Fire seperation	7%		Protection of Adjoining Property	n1	Builder rectified as per DtF issued by the RBS.
	Final	8%		Drainage	7%		Smoke Alarms	n1	Electrical fit out was in progress.
	Completed	0.6%		Footings and Slabs	7%				
				Building wrap and seal	4%				
				Glazing	4%				

COMMERCIAL

122	Demolition	1%	**34** (28%)	Damp and Weatherproofing	22%	**1** (0.8%)	OHS items (working >2.0 m in height without fall protection	n1	All rectified within 48 hours by the Builders.
	Foundations	4%		Fire resistance and stability	10%				
	Footings	8%		Firefighting safety provisions	9%				
	Frame	44%		Compartment and Separation	7%				
	Lock-up	16%		Protection of Openings	7%				
	Fixing	19%		Access for people with a disability	7%				
	Final	6%		Stuctural provisions	5%				
	Completed	3%							

APPENDIX 3: OVERVIEW OF Q2 INSPECTIONS

PLUMBING INSPECTIONS

PLUMBING

1,034 Proactive inspections

DOMESTIC

no of sites inspections	% of inspections per stage		No. Inspections with Potential issues (excludes low risk)	Top 8 categories of non-compliances	Extent of prevalence (% or n)	No. of inspections with Critical issues	Categories of non-compliances	Frequency	Outcome of critical issues
925	Demolition	0%	**343** (37%)	Roof drainage systems	12%	**10** (1.1%)	Temporary pool fences not installed correctly	n2	All rectified within 48 hours by the builders.
	Foundations	6%		General gas installation	11%		OHS items (Fall barriers missing in 1st-floor and Working >2.0m in height with no fall protections)	n5	All rectified within 48 hours by the builders.
	Footings	10%		Cold Water Services	9%		OHS items working in trenches >1.5m deep	n2	All rectified within 48 hours by the builders.
	Frame	44%		Sanitary plumbing systems	8%		Storage of materials	n1	All rectified within 48 hours by the builders.
	Lock-up	15.5%		Sanitary drainage systems	6%		Sanitary Plumbing systems	n1	Builder rectified.
	Fixing	19%		Heated, Ventilation and Air-Conditioning Systems	4%		Site boundary fence not installed	n1	All rectified within 48 hours by the builders.
	Final	4.5%		Heated Water Services	4%				
	Completed	0%							

COMMERCIAL

109	Demolition	2%	**27** (25%)	Sanitary Plumbing systems	13%	**0** (0%)			
	Foundations	6%		Roof Drainage	11%				
	Footings	17%		Cold Water Services	11%				
	Frame	35%		General gas installation	4%				
	Lock-up	18%		Heated, Ventilation and Air-Conditioning Systems	4%				
	Fixing	12%		Sanitary Drainage systems	4%				
	Final	8%		Heated Water Services	2%				
	Completed	1%							

VICTORIAN BUILDING AUTHORITY

BUILDING CONFIDENCE

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www.vba.vic.gov.au

Email
customerservice@vba.vic.gov.au

Postal Address
PO Box 536
Melbourne VIC 3001

Telephone
1300 815 127

Opening Hours
Monday to Friday
8:30am to 5:00pm

Registered Office
Goods Shed North
733 Bourke Street
Docklands VIC 3008

VICTORIA State Government