VICTORIAN BUILDING AUTHORITY

PROACTIVE INSPECTIONS PROGRAM

Activity Report

FINANCIAL YEAR 2022-23 Q2

VICTORIA State Government

ABORIGINAL ACKNOWLEDGEMENT

The VBA respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely. We pay our respects to their Elders past and present. We recognise and value the ongoing contribution of Aboriginal 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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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 1000 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 predefined risk-factors, such as buildings intended for human occupation, buildings that are more than two storeys or costs of works.

- **Intelligence based -** 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 (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 issues. 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 In some circumstances, the VBA will issue a Direction to Fix (DtF) to resolve the most critical issues. For example, where non-compliant wall cladding is identified, the VBA will issue a DtF 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, 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, the VBA's 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

The 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, covered by the practitioner, rather than the owner. Rectification also greatly decreases the possibility of negative impacts on the safety, health and amenity of future occupants, especially when compared to a building where the compliance risk remains undetected or unresolved. Information and intelligence gathered through the PIP enables the VBA to provide advice on building and plumbing standards, and education and training in to 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 (NCC) – 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.

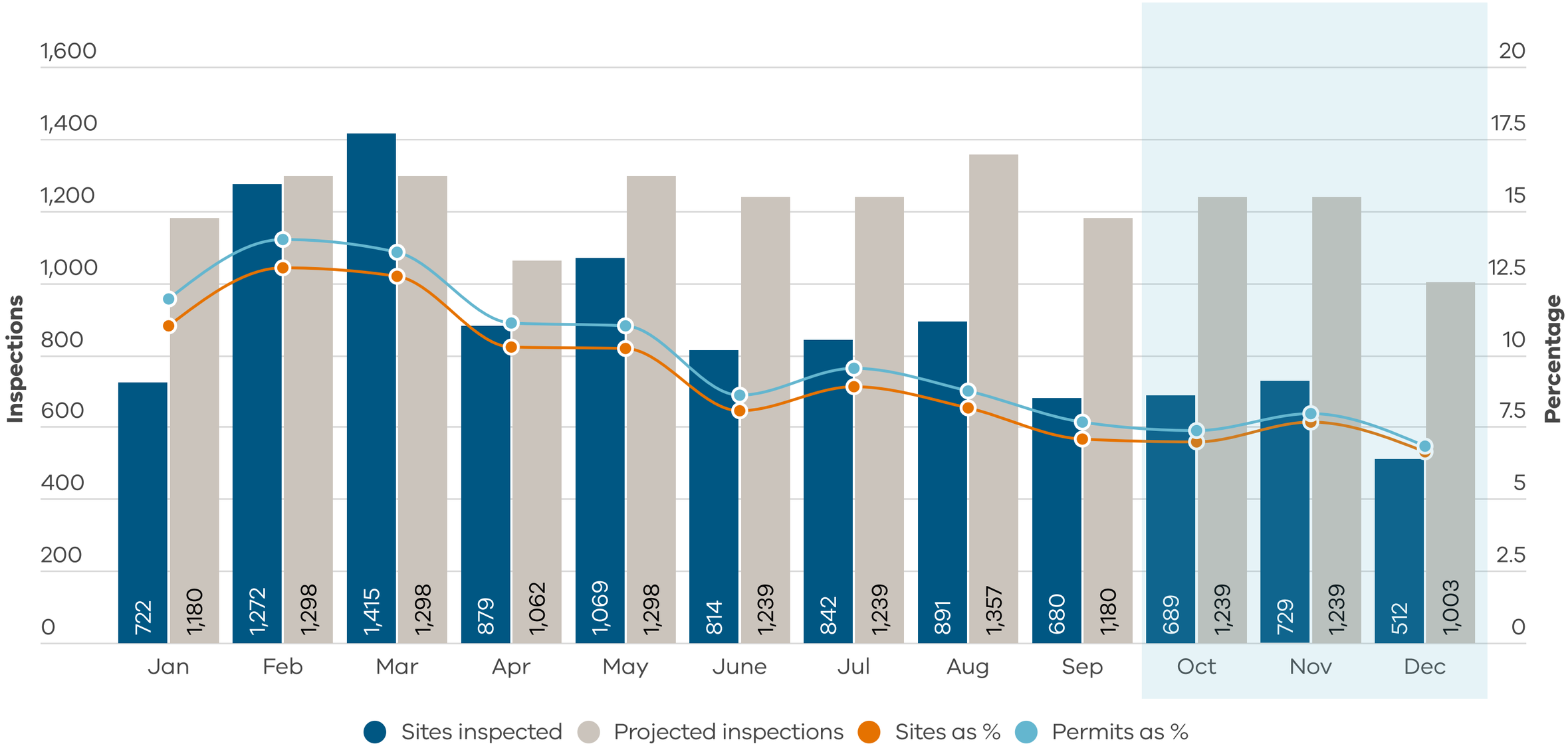
A comprehensive outline of the electronic inspection checklists is detailed in Appendix 2.

2022–23 QUARTER 2 (Q2) PERFORMANCE

2.1 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 per cent of new building permits every year.

INSPECTIONS Q2 – OCTOBER TO DECEMBER 2022



Projected inspections are based on a full financial year forecast of building permit activity across Victoria, 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.

TOTAL INSPECTIONS – 2022–23 Q2

1084
Plumbing Inspections

855
Building Inspections

A total of 1939 inspections (comprising 855 building and 1084 plumbing inspections) were conducted across 50 municipalities in Victoria, involving 802 Builders and 188 building surveyors.

INSPECTION MAP – 2022–23 Q2

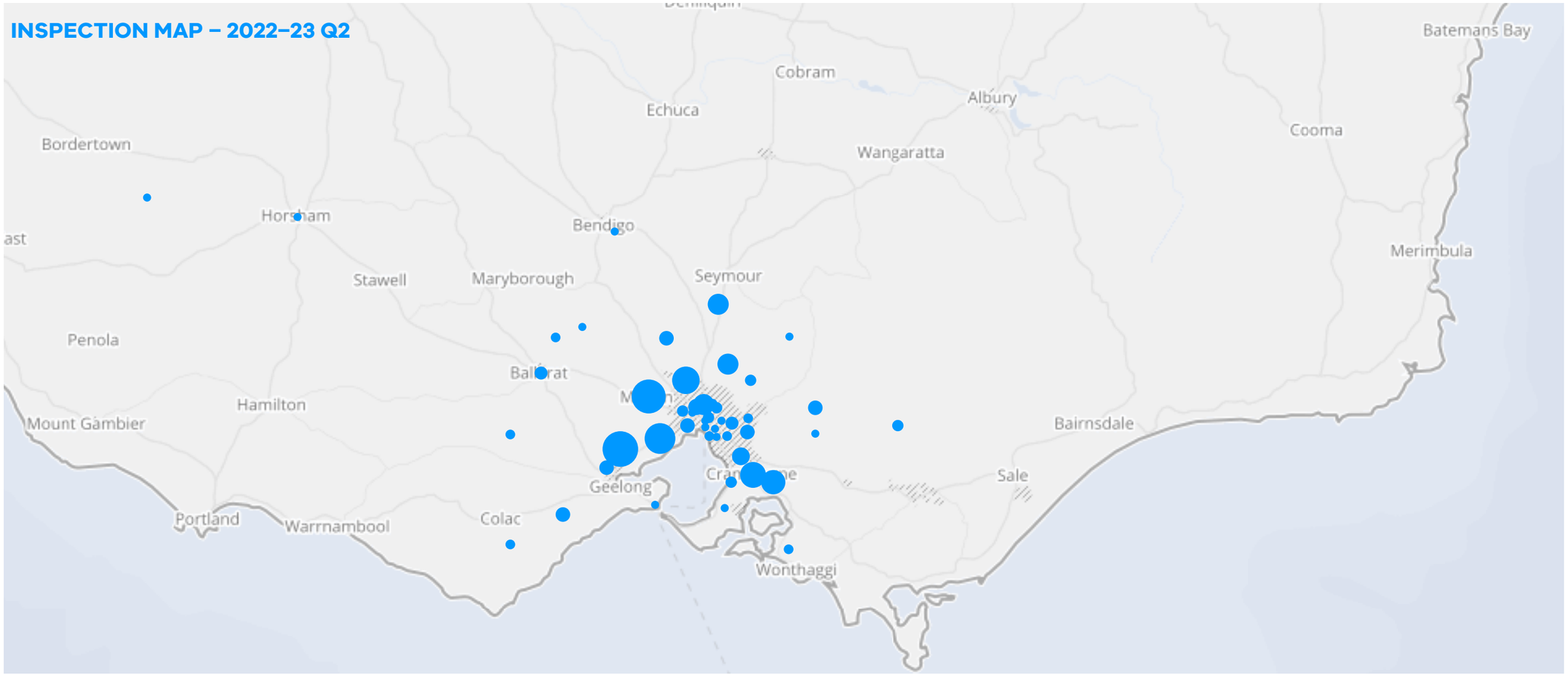


Figure 1: The dots represent the municipalities in which inspections occurred. The size of the dots correlates to the number of inspections.
View the interactive map:

NUMBER OF INSPECTIONS AT CONSTRUCTION STAGE 2022–23 Q2

The graphs below illustrate the number of inspections per construction stage throughout the financial year.

BUILDING INSPECTIONS

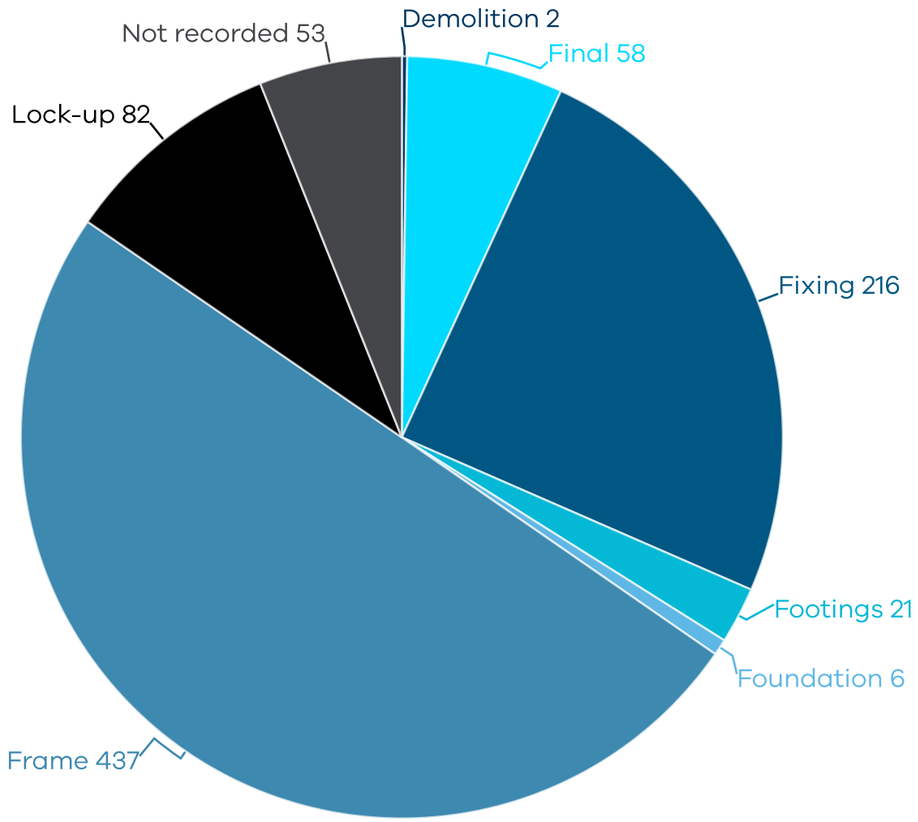


Figure 1.1: This figure shows the breakdown of the stages in which proactive building inspections were undertaken.

PLUMBING INSPECTIONS

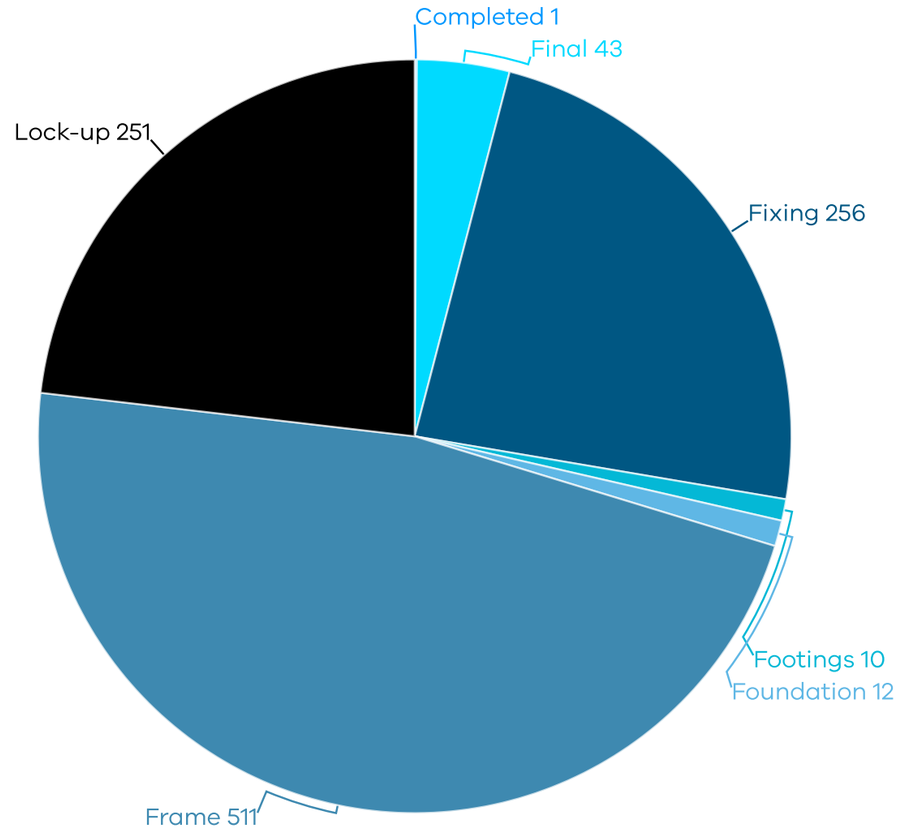


Figure 1.2: This figure shows the breakdown of the stages in which proactive plumbing inspections were undertaken.

2.2. WHAT WE FOUND

A total of 892 (46 per cent) of inspections conducted during the quarter identified at least one compliance risk - a five per cent decrease from the previous quarter. The drop in overall compliance risk observed was due to a change in the proportion of plumbing to building inspections undertaken this quarter. Historically, proactive inspections have comprised of a proportion of around 60 per cent building and 40 per cent plumbing,however this quarter plumbing inspection accounted for 55 per cent of all inspections. Building inspections typically have a higher prevalence of issues when compared to plumbing inspections.

OBSERVED COMPLIANCE RISK – ALL INSPECTIONS

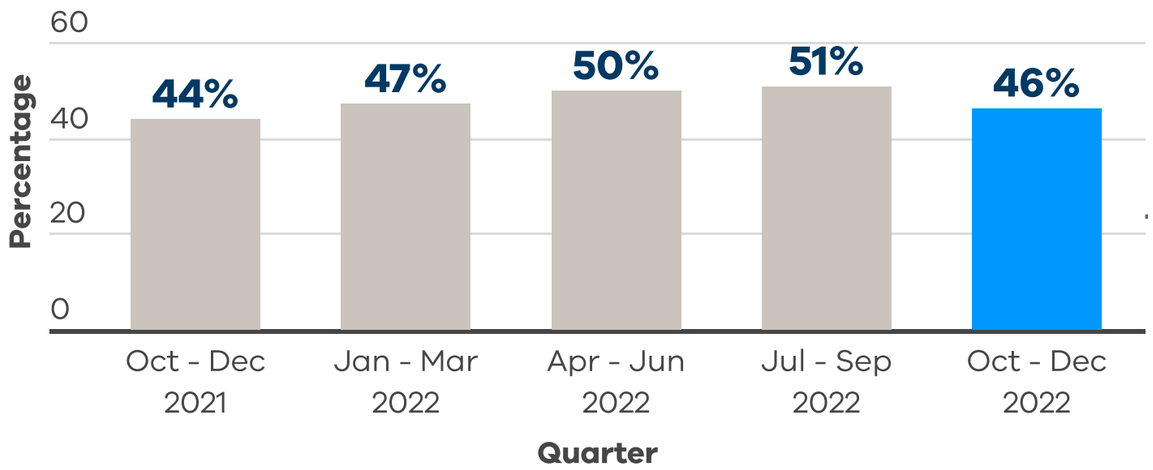


Figure 1.3: This graph shows the percentage of compliance risks observed during proactive inspections over the past year.

CRITICAL ISSUE

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

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

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

OBSERVED COMPLIANCE RISK – DOMESTIC WORKS

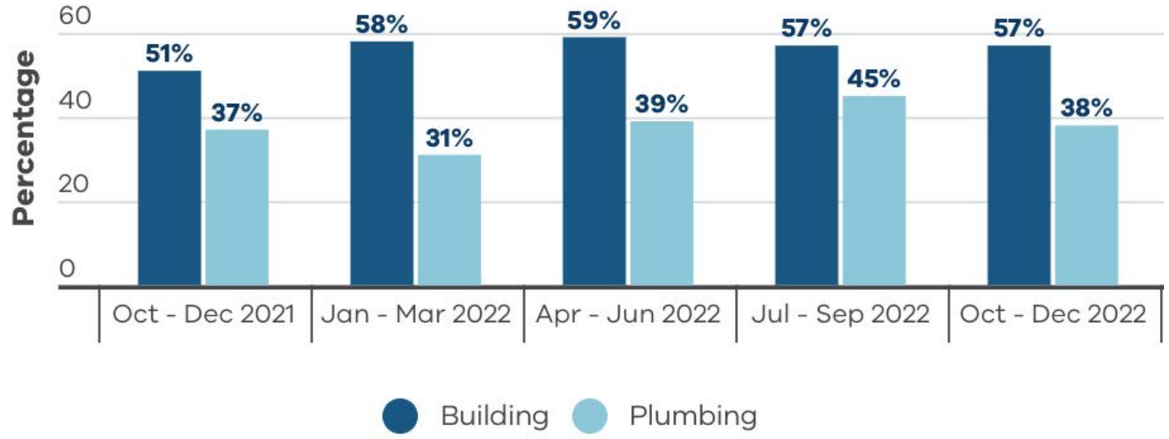


Figure 1.4: This graph shows the percentage of compliance risks (split between plumbing and building) observed during proactive inspections of domestic works over the past year.

OBSERVED COMPLIANCE RISK – COMMERCIAL WORKS

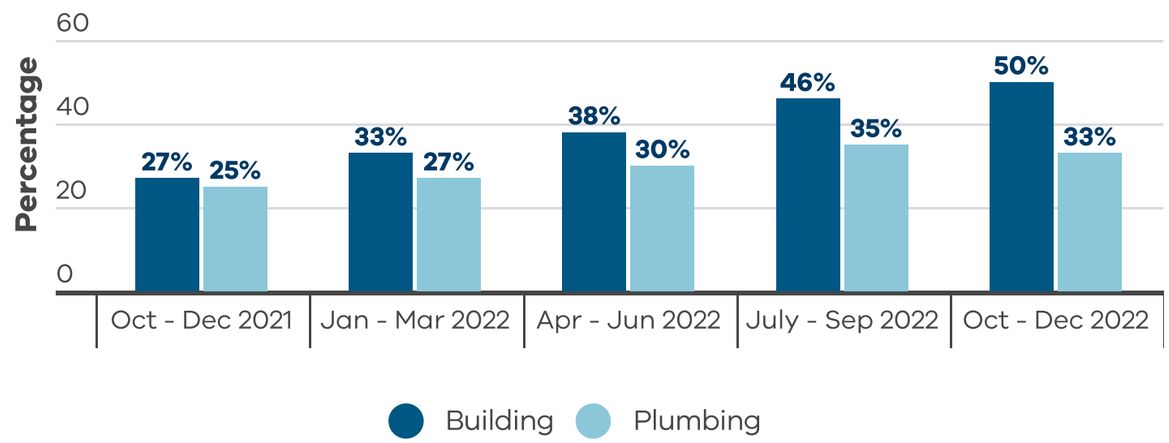


Figure 1.5: This graph shows the percentage of compliance risks (split between plumbing and building) observed during proactive inspections of commercial works over the past year.

2.3 ACTIONS TAKEN BY THE VBA IN 2022–23 Q2

The VBA sent 892 notifications to practitioners, requiring them to respond to the compliance risks identified by the PIP. Typically:

- 15 to 18 per cent of notifications sent to practitioners result in them providing all relevant documents, such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner, demonstrating how the work meets the requirements of the relevant building legislation. This is because practitioners are not currently required to lodge this documentation with the VBA.
- 1 to 2 per cent 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 typically require 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.

2.4 ENFORCEMENT ACTIVITY

The VBA expects the RBS to manage any required rectifications using their enforcement powers. Typically, a verbal DtF is issued to the builder. However, depending on the severity and risk of the issue, the RBS may choose to issue a written DtF or a Building Notice to the builder or owner and notify the VBA.

The VBA monitors all sites that require rectification to ensure the appropriate work is carried out. In exceptional circumstances, the VBA will issue a written DtF to the builder instead of the RBS. This may occur when the RBS appears to have contributed to the non-compliance or where the issuance of an occupancy permit is imminent and the VBA wants to ensure the non-compliance is addressed before the property is handed over to the owner. During this quarter the VBA issued no written DtF notices.

OBSERVED COMPLIANCE RISK – ALL INSPECTIONS

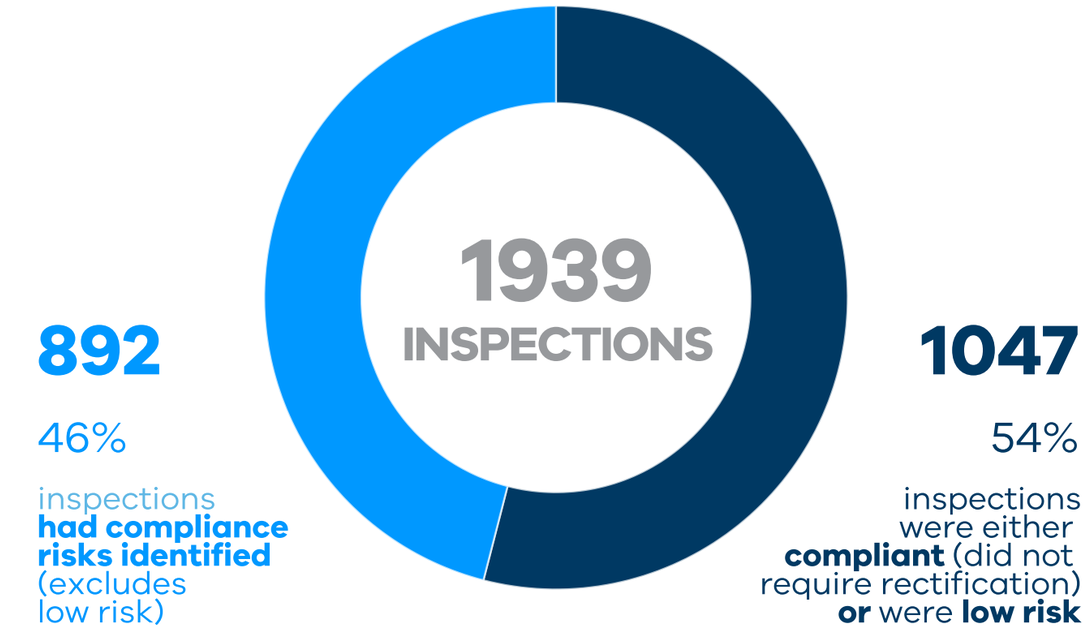


Figure 1.6: This chart shows that 892 or 46 per cent of the proactive inspections observed during the quarter identified at least one compliance risk.

WHO RECEIVES THE NOTIFICATIONS?

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

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

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

BUILDING INSPECTIONS 2022-23 Q2

3.1. OVERVIEW OF BUILDING INSPECTIONS CONDUCTED 2022–23 Q2

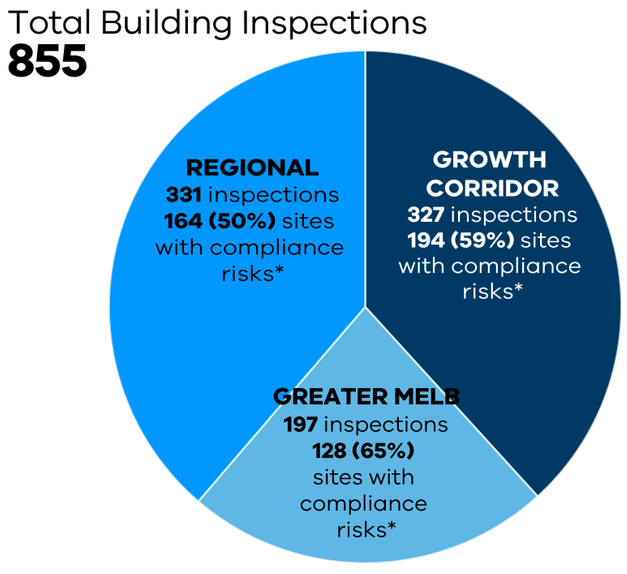


Figure 1.7: This chart shows the geographic trends in proactive inspection non-compliance rates in building inspections.

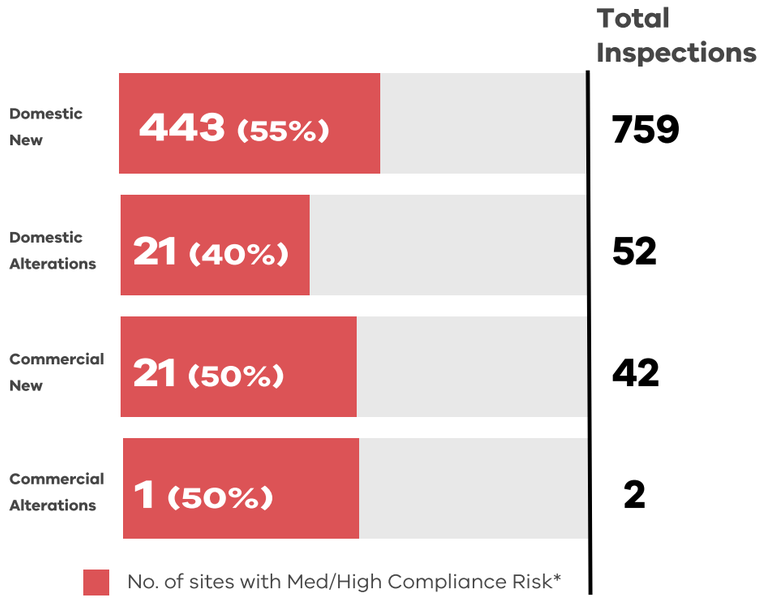


Figure 1.8: This graph compares rates of non-compliance in building work between new builds and alterations.

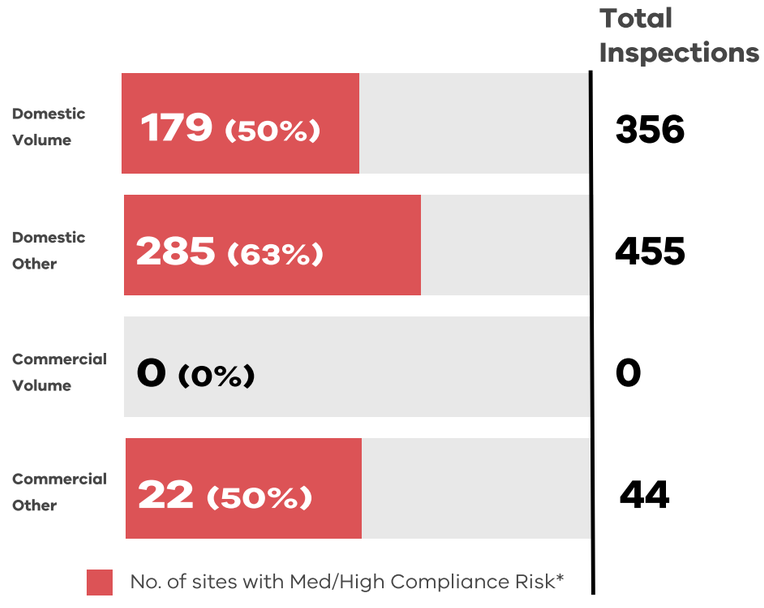


Figure 1.9: This graph compares rates of non-compliance in building work between volume builders and all other builders.

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 lowest in regional Victoria and highest in Greater Melbourne (excluding growth corridors), a trend which has been consistently repeated across previous quarters.

NEW BUILDS VS ALTERATIONS

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

Inspection outcomes – A much higher prevalence of non-compliant issues were observed during inspections of New Builds, compared to buildings undergoing 'Alterations' in domestic building sites, a trend which has been consistently repeated across previous quarters.

VOLUME VS OTHER BUILDERS

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

Inspection outcomes comparisons – A higher prevalence of non-compliant issues were found during inspections of sites managed by Large Volume Builders, compared to all 'Other Builders.' This is the first quarter where Large Volume Builders had the highest prevalence.

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

COMMON NON-COMPLIANCE DOMESTIC - 2022–23 Q2

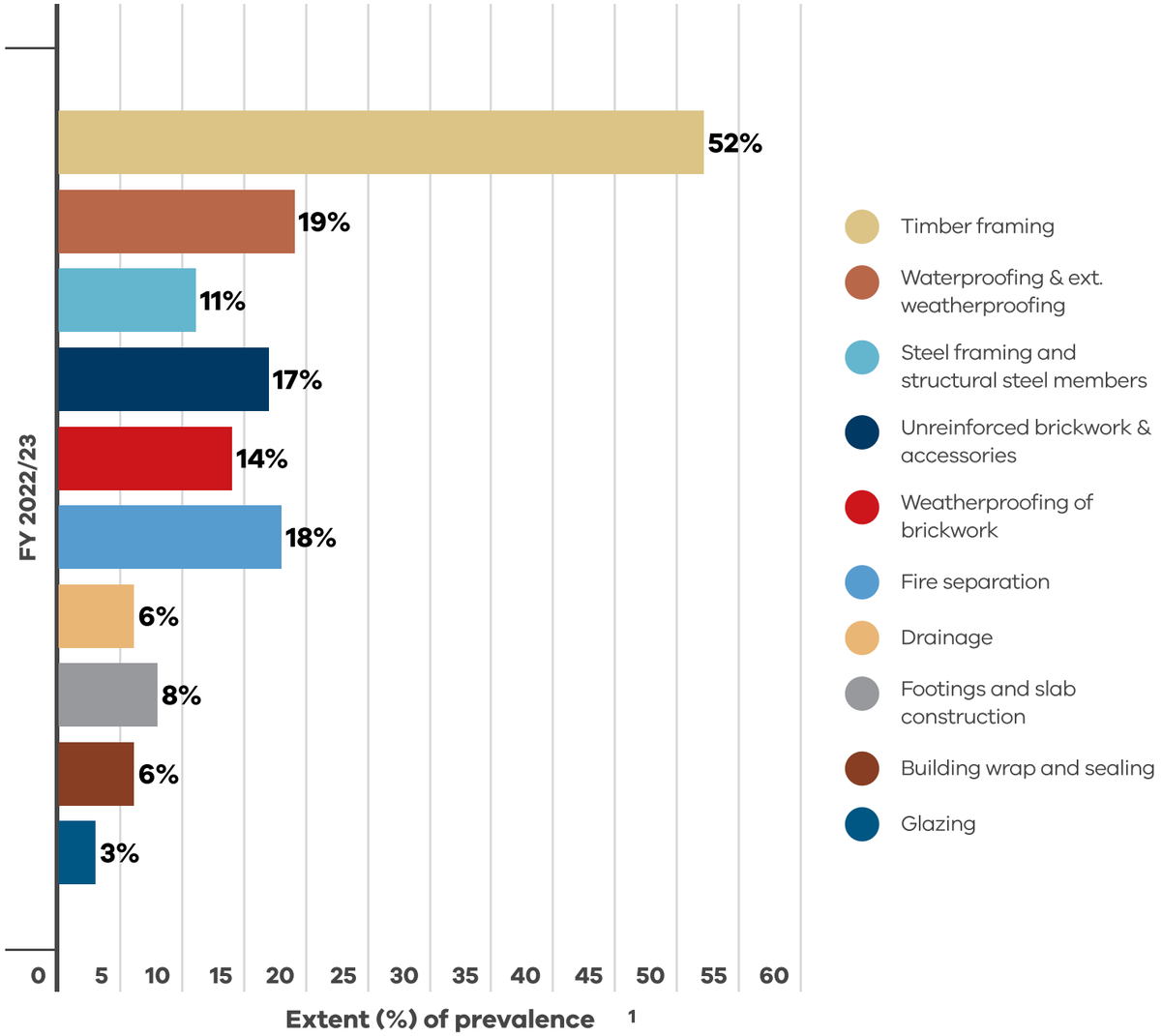


Figure 2: This graph shows the most prevalent categories where non-compliance risks are observed (medium and high risk) in domestic building inspections.

COMMON NON-COMPLIANCE COMMERCIAL - 2022–23 Q2

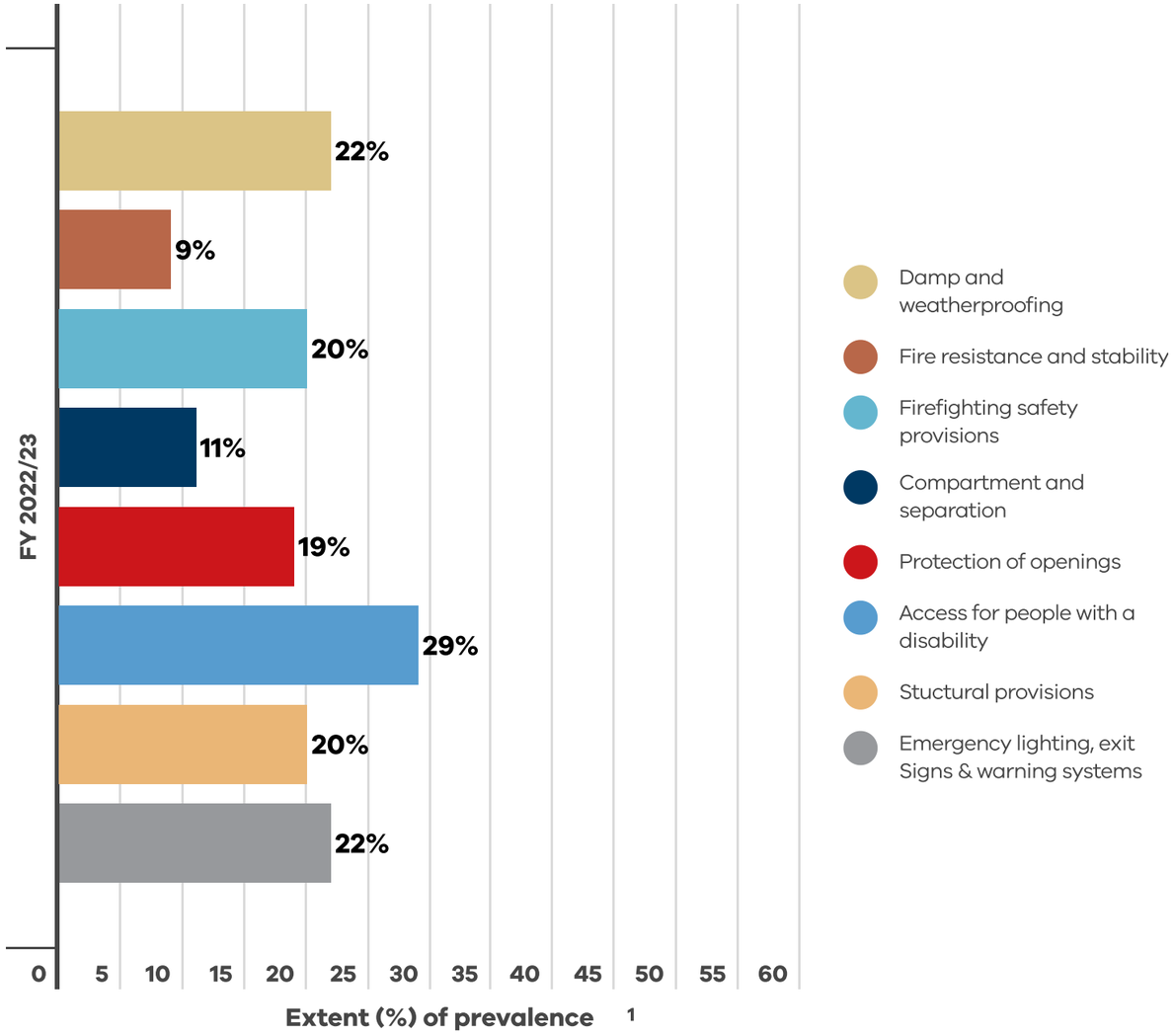


Figure 2.1: This graph shows the most prevalent categories where non-compliance risks are observed (medium and high risk) in commercial building inspections.

[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'.

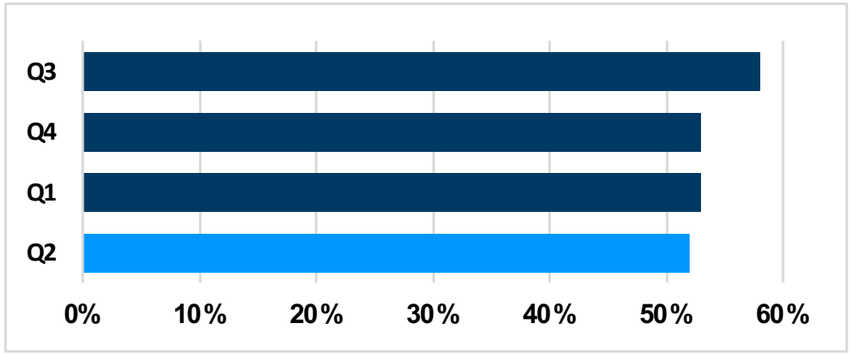
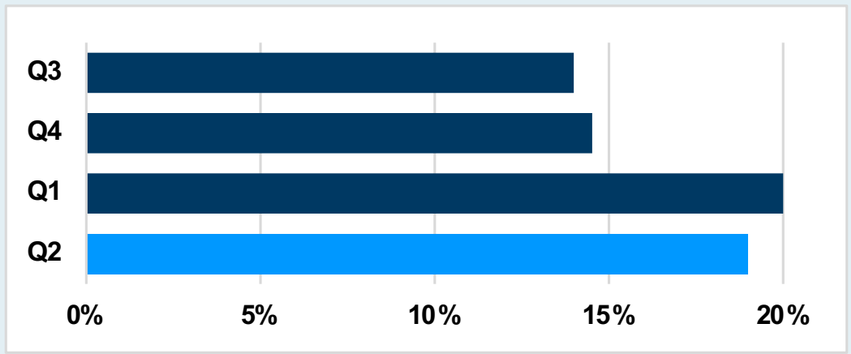
For more information on the nature of non-compliant issues observed in this quarter go to Section 3.3 ('Overview of Building Compliance Risks').

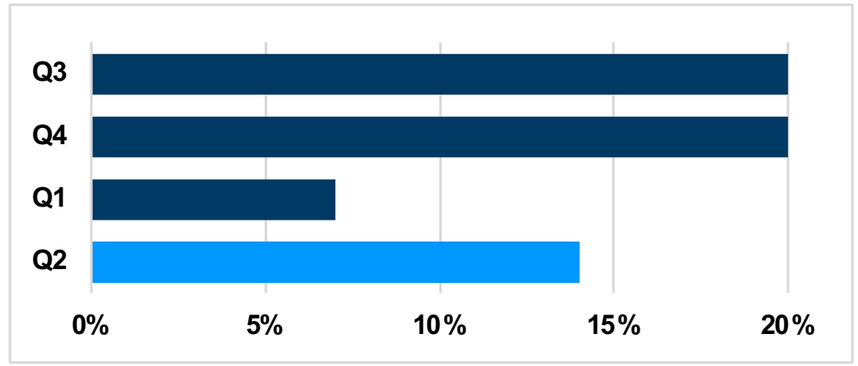
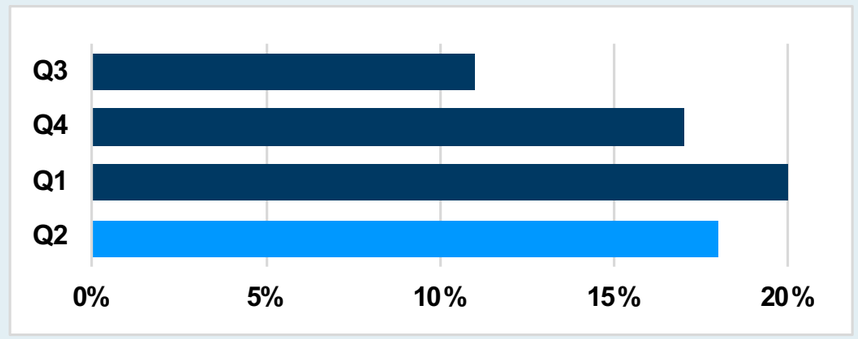
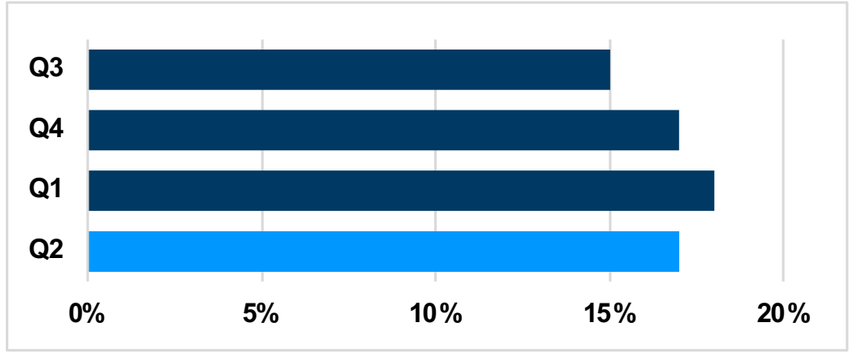
3.3. OVERVIEW OF BUILDING COMPLIANCE RISK DOMESTIC (CLASS 1)

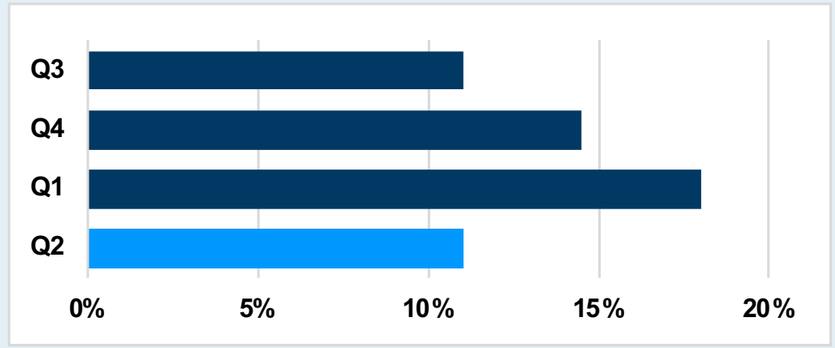
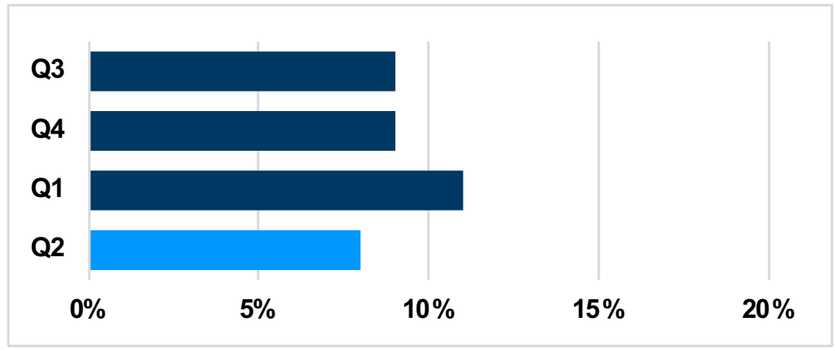
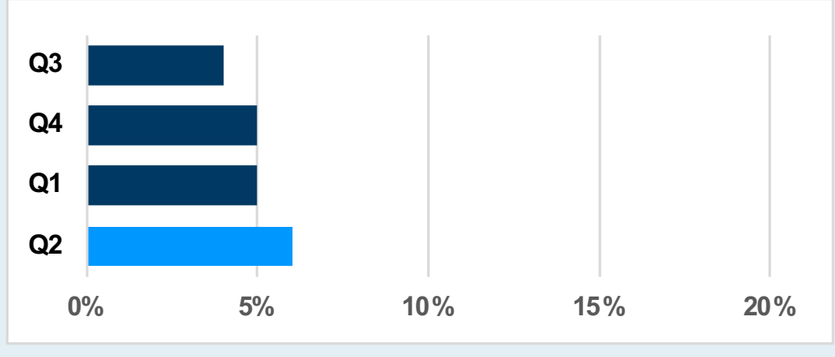
DOMESTIC (CLASS 1)

Approximately 12,000 elements were assessed across **811 domestic building sites** during this quarter (an average of 15 elements per inspection), of which **958 elements** were identified as a compliance risk (**across 464 sites**) and required rectification or justification. Of these elements **46 were critical** (**across 30 sites**) and required immediate attention. The most common non-compliances observed within the top eight categories were:

The most common non-compliances observed within the TOP EIGHT CATEGORIES

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Timber framing	266	• Non-compliant penetrations due to services (mostly plumbing). • Insufficient fixing. For example, nails used instead of hold bolts or failure to use two nails per stud in various items. • Bottom plate overhand >10mm. • Lintels missing from windows and door openings. • Half trusses not braced at ends as per AS4440 - Installation of nailplated timber roof trusses.	
Wet areas and external water proofing	47	• Water stops not installed in wet areas - around bath hob, beneath bath flange, shower enclosures, wet area thresholds and doors, floor junction of wet areas. • Standard plaster board used behind laundry troughs. • Shower/bathroom waterproofing damaged.	

Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Weatherproofing of brickwork	**15**	• Flashings missing around openings or not installed as required by manufacturer. • Damp proof course not extending to full part of walls. • Weep-holes to windows and other openings missing, weep-holes obstructed at garage slab, rendered weep-holes not cleaned out. • Head flashings missing and not installed to brick openings.	
Fire separation	**74**	• Fire separating boundary wall system not installed in accordance with manufacture installation requirements - no silicone along bottom track, no 20mm gap between frame and shaft liner, L clips are placed mid-way, clips not located at every stud, no mineral wool installed at wall junctions, brackets not installed on both sides of separating wall, use of damaged panels, using nails and not screws. • Gaps and holes in fire separation system between dwellings	
Unreinforced brickwork & accesssories	**94**	• No Lintel over meter box. • Brick ties missing or not attached to studs and expansions ties upside down. • No double row of ties at top of brick wall. • No expansion foam within articulation joints. • No gaps at window where articulation joint is located and required.	

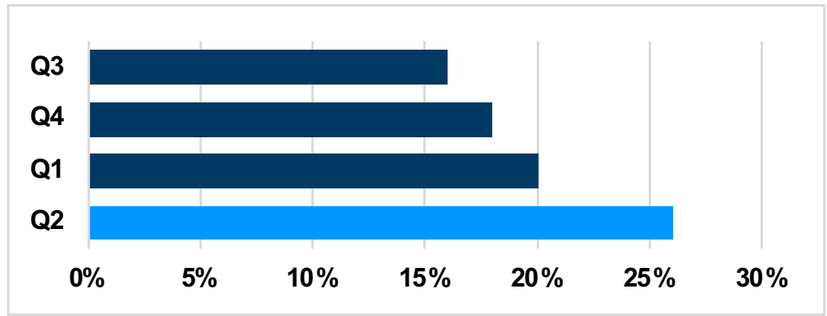
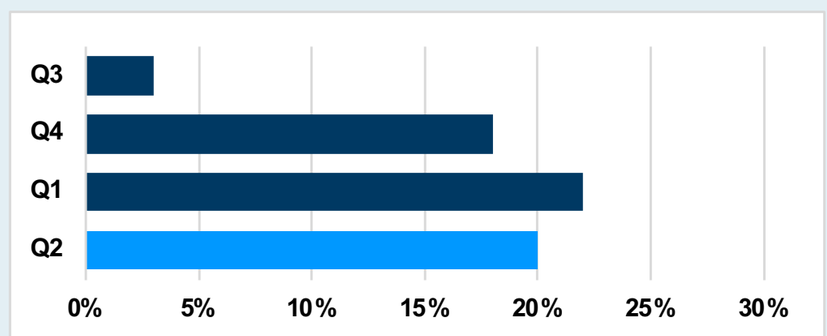
Building Category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Steel framing and structural steel member	**64**	• Lintels not galvanised. • No structural grout under base plate of columns. • Structural integrity - insufficient tightening of bolts at baseplates and steel member connection missing bolts and nuts not tightened to maintain structural integrity.	
Footings and slab construction	**67**	• Brickwork overhang. • Reinforcing steel has exposed in the slab edge. • Slab cut for plumbing services.	
Drainage	**35**	• Water pooling around foundations. • No step down in garages, step-downs less then 50m from dwellings. • Garage slabs lower than ground level without appropriate drainage. • Finished floor level of dwelling below finished surface level.	

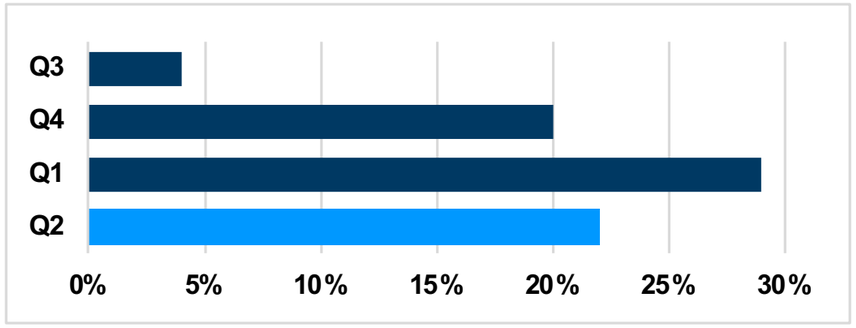
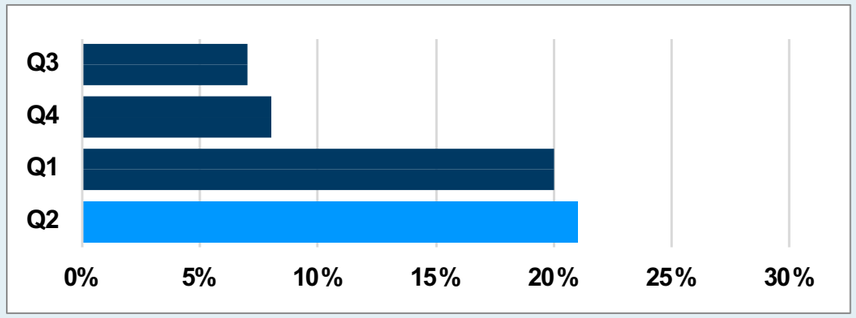
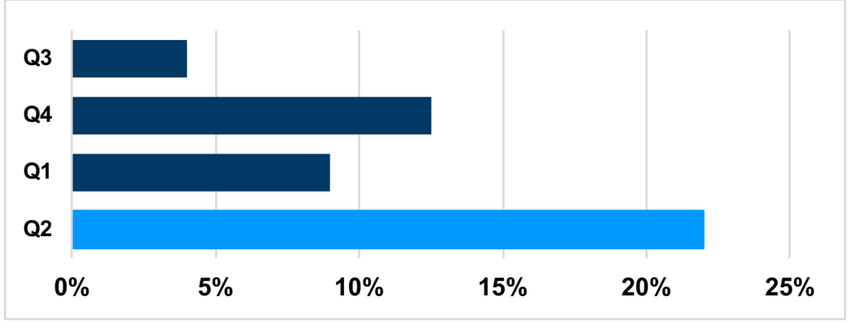
3.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

COMMERCIAL (CLASS 2 TO 9)

Approximately **550 elements** were assessed across **44 commercial building sites** during this quarter an average of 13 elements per inspection, of which 53 elements were identified as a compliance risk (**across 22 sites**) and required rectification or justification. There were no critical issues identified. The most common non-compliances observed this quarter within the top categories are:

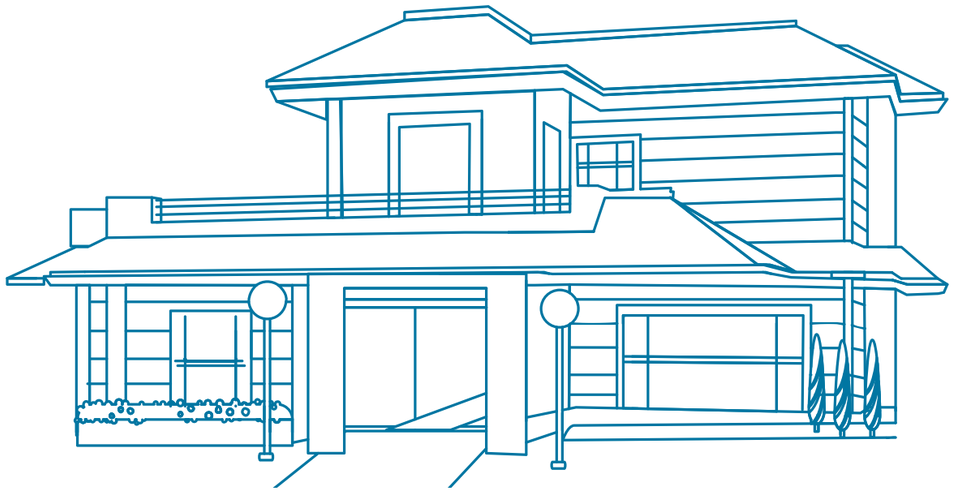
The most common non-compliances observed within the TOP FIVE CATEGORIES

Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Fire safety provisions	**19**	• No temporary portable fire extinguishers provided to site or installed to every floor during construction. • Clearance between fire hydrant not achieved e.g. clearance around the valve handwheel to the fire hydrant. Minimum width of 1m not provided between hydrant and stair balustrading between basement and ground floor fire isolated stair well. • Booster assembly located within 10m of the front wall of the building without compliant shield wall. • Fire isolated exit riser heights are not consistent with adjacent riser variations greater than 5mm. • Fire-resistant door-sets have not been installed in accordance with AS1905, jamb cavities have not been backfilled in accordance with the section 5.	
Damp and weatherproofing	**20**	• No thresholds at doorways (to bathrooms, units). • No threshold between internal and external balcony. • No overflow provision provided to external balconies. • Inadequate fall for floor wastes in bathroom.	

Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Access for people with a disability	**3**	• Accessible carparking space not provided for in carpark as required by D3.5 (a) of volume 1 of the BCA. • Circulation space not provided (2070mm x 1450mm not met). • Decals not contrasting.	
Structural provisions	**9**	• Structural integrity compromised for service openings. • Steel frame has section mixed with timber framing. • Exposed steel at slab edge and to accommodate the relocation of plumbing services.	
Emergency lighting, exit signs & warning systems	**4**	• Emergency lights missing over stairway. • Secondary exits signs missing, (in basement and the ground level stair discharge) not in accordance with E4.5 BCA.	

3.4. PREVALENCE OF BUILDING COMPLIANCE RISKS - SINGLE OCCUPANCY VS DUAL OCCUPANCY

SINGLE OCCUPANCY



Common Building Issues

- Timber Framing
- Waterproofing and external weatherproofing
- Unreinforced brickwork and accessories
- Steel framing and structural steel members
- Weatherproofing of brickwork
- Fire separation

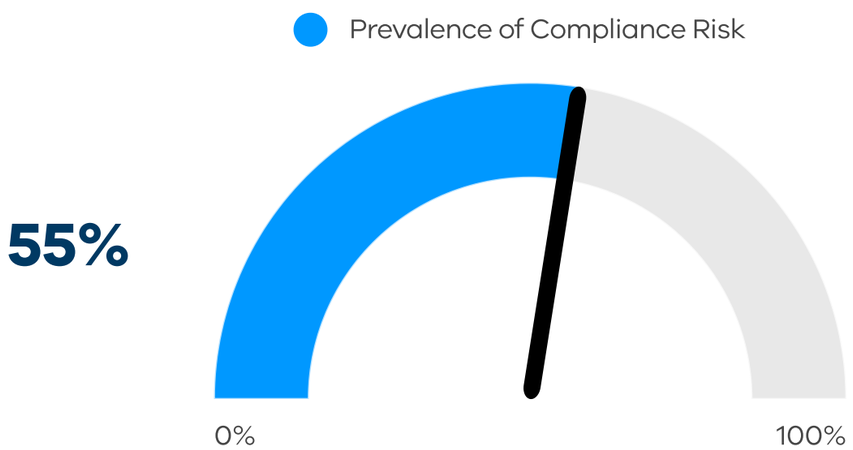
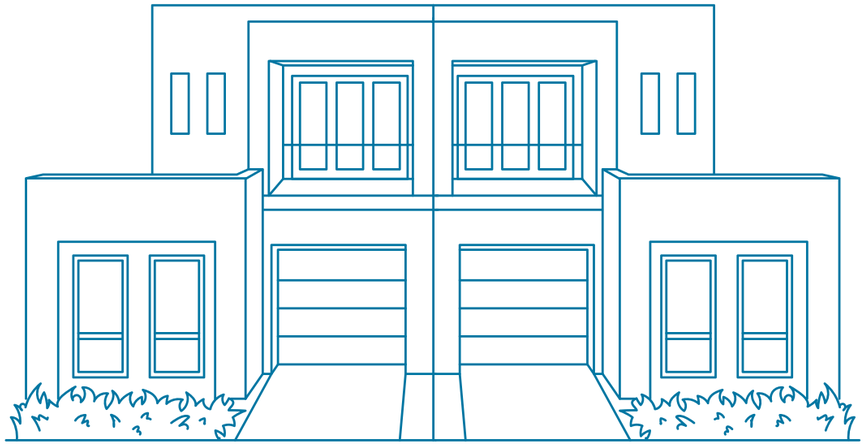


Figure 2.3: This graph shows the prevalence of compliance risks observed in building inspections of single occupancy dwellings.

DUAL OCCUPANCY



Common Building Issues

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

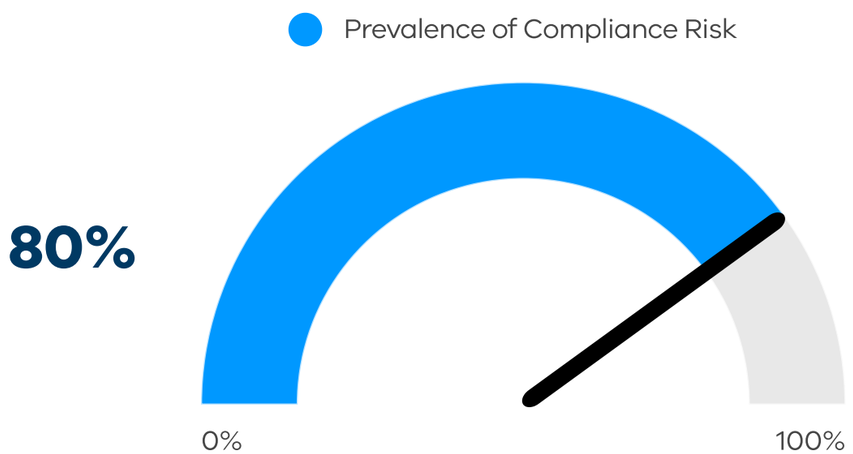


Figure 2.4: This graph shows the prevalence of compliance risks observed in building inspections of dual occupancy dwellings.

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)	**811**	**57%**	• Timber framing • Waterproofing and external weatherproofing • Unreinforced brickwork and accessories • 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, 9)	**24**	**58%**	• Fire fighting equipment, provision of escape, construction of exits • Structural provisions • Protection of openings • Emergency lighting, exit signs and warning systems
Assembly building with no dwellings (Class 9b)	**8**	**13%**	• Fire fighting equipment • Damp and weatherproofing • Access for people with a disability • Emergency lighting, exit signs and warning systems

Class	No. of sites inspected in Q2	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**5**	**40%**	• Fire fighting equipment • Protection of openings • Structural provisions
Warehouse, factories and carparks – no dwellings (Classes 7a, 7b, 8)	**7**	**71%**	• Structural provisions • Access for people with a disability • Provision of escape, construction of exits • Emergency lighting, exit signs and warning systems

PLUMBING INSPECTIONS 2022-23 Q2

4.1. OVERVIEW OF PLUMBING INSPECTIONS CONDUCTED Q2

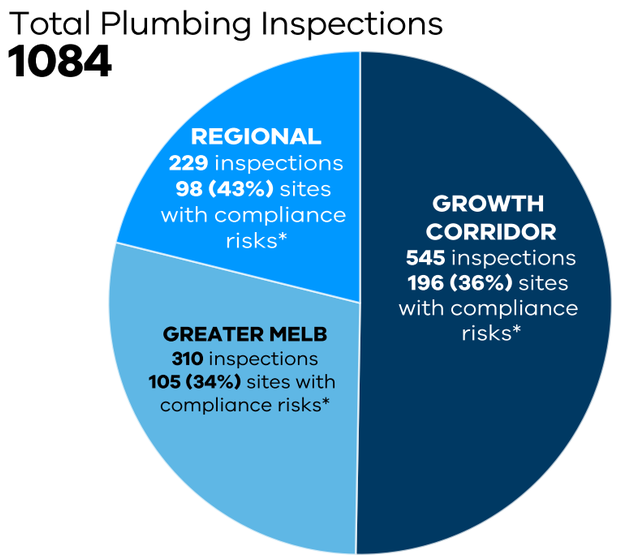


Figure 2.5: This chart shows the geographic trends in proactive inspection non-compliance rates in plumbing inspections.

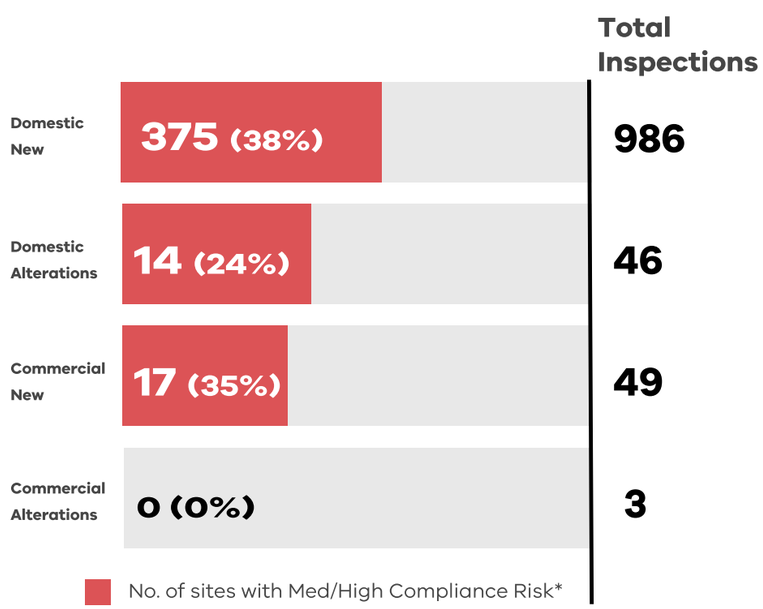


Figure 2.6: This graph compares rates of non-compliance in plumbing work between new builds and alterations.

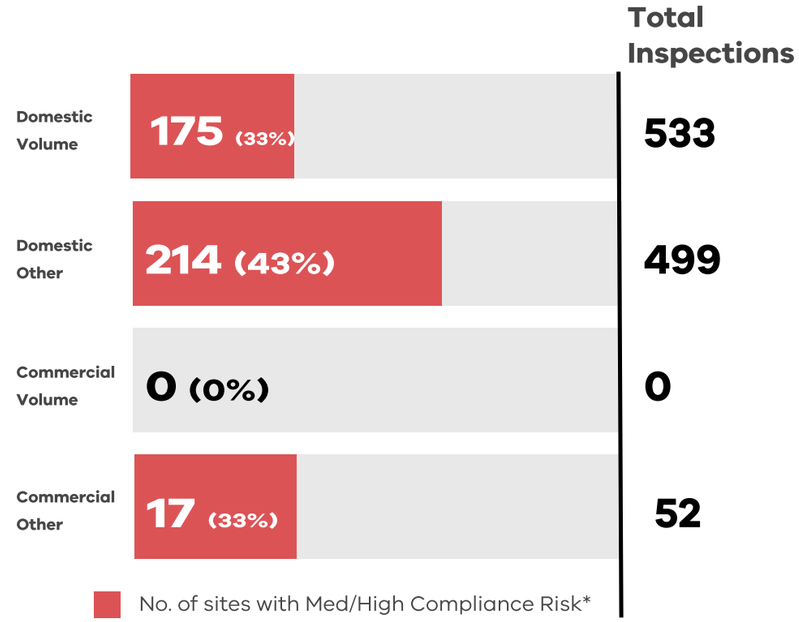


Figure 2.7: This graph compares rates of non-compliance in plumbing work between volume builders and all other builders.

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 lowest in 'Regional' Victoria. This trend is different to previous quarters, where non-compliance rates were mostly consistent across all areas of Victoria.

NEW BUILDS VS ALTERATIONS

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

Inspection outcomes – A higher prevalence of non-compliant issues were observed during plumbing inspections of New Builds, in comparison to buildings undergoing 'Alterations.' This trend in compliance risk is the reverse with the previous quarter.

LARGE VOLUME BUILDERS VS OTHER BUILDERS

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

Inspection outcomes comparisons – Prevalence of non-compliant issues observed during plumbing inspections were lower in Large Volume Builders compared to all 'Other Builders.' This trend in compliance risk is consistent with the previous quarter.

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.

4.2. OVERVIEW OF WHERE THE COMPLIANCE RISKS ARE FOUND

COMMON NON-COMPLIANCE DOMESTIC - 2022–23 Q2

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

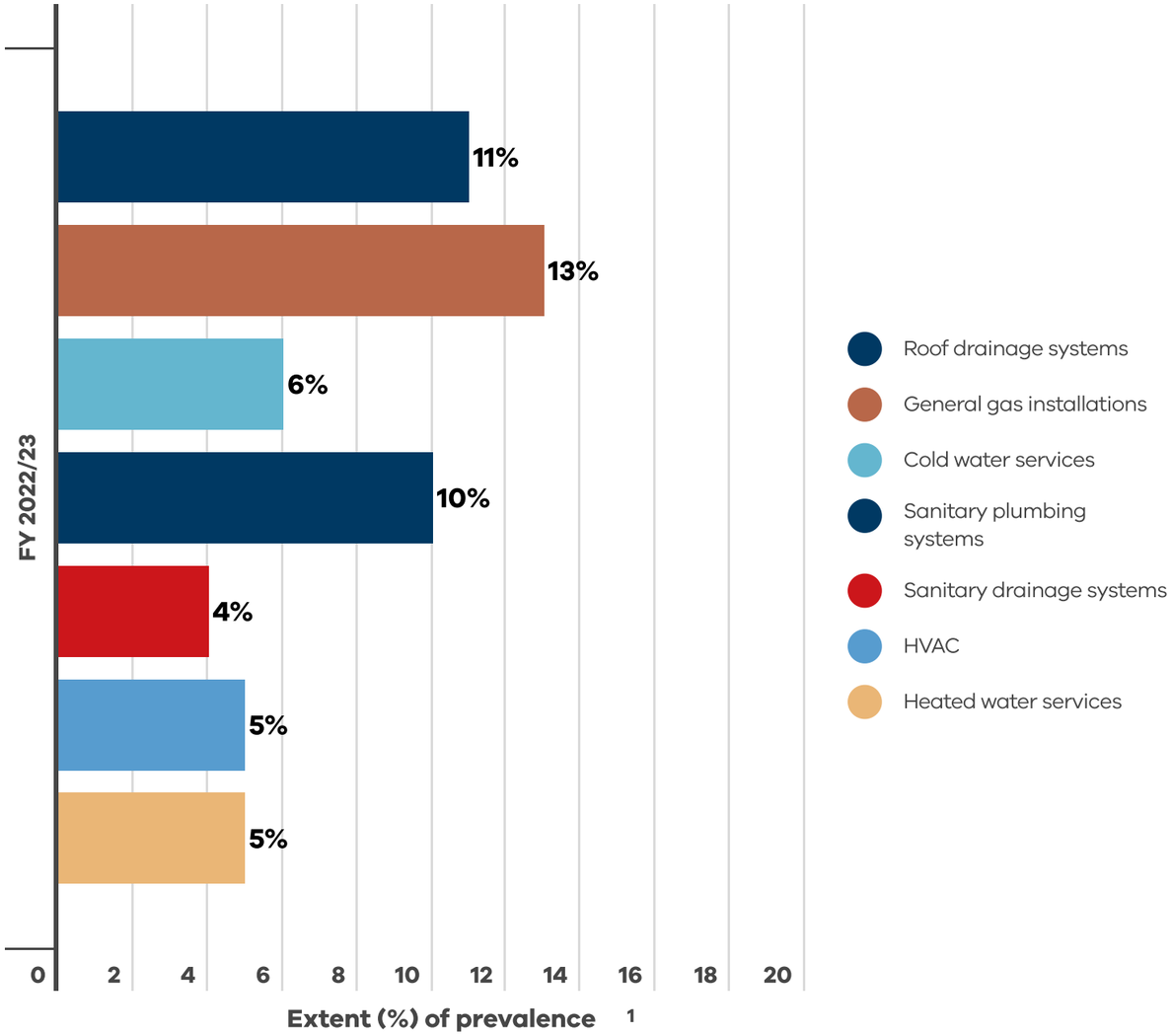


Figure 2.8: This graph shows the most prevalent categories where non-compliance risks are observed (medium and high risk) in domestic plumbing inspections.

COMMON NON-COMPLIANCE COMMERCIAL - 2022–23 Q2

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

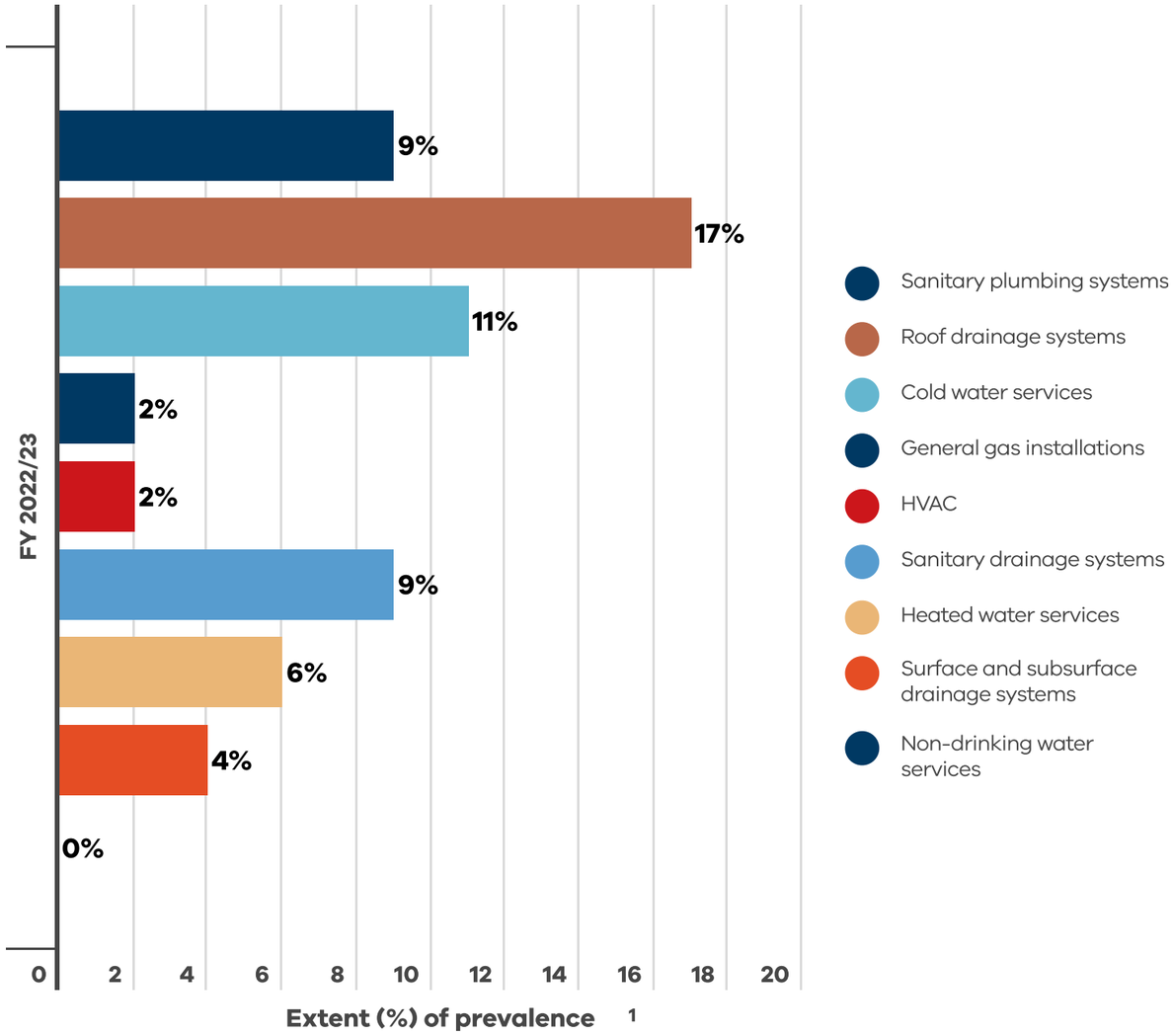


Figure 2.9: This graph shows the most prevalent categories where non-compliance risks are observed (medium and high risk) in commercial plumbing inspections.

[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'.

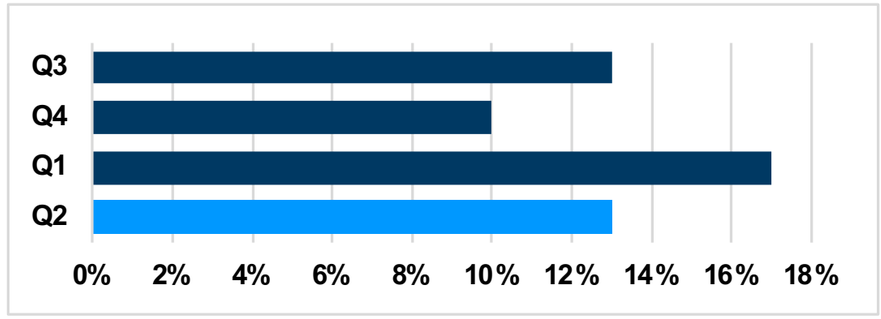
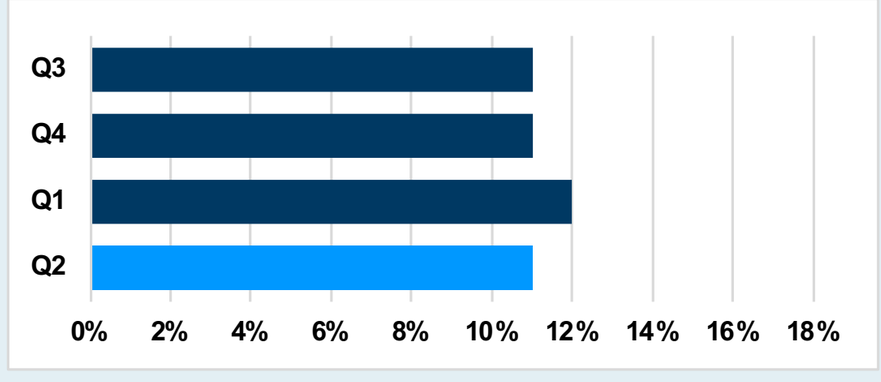
For more information on the nature of non-compliant issues observed this quarter go to Section 4.3 ('Overview of Plumbing Compliance Risks).

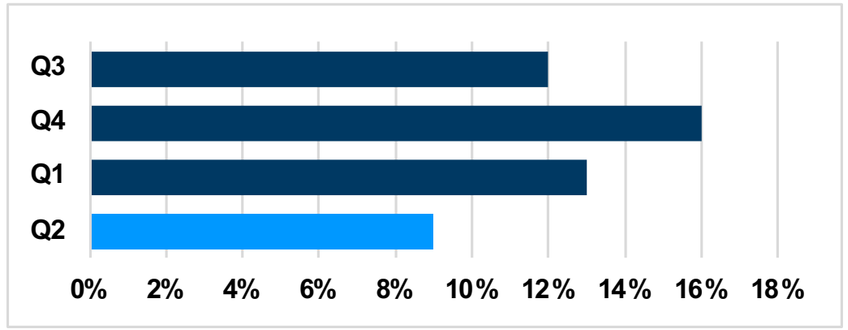
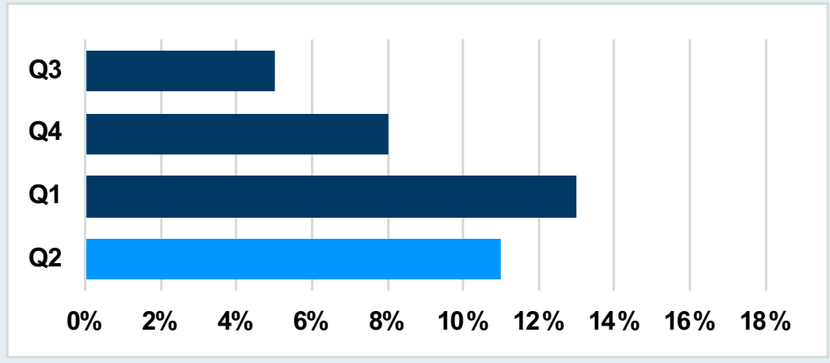
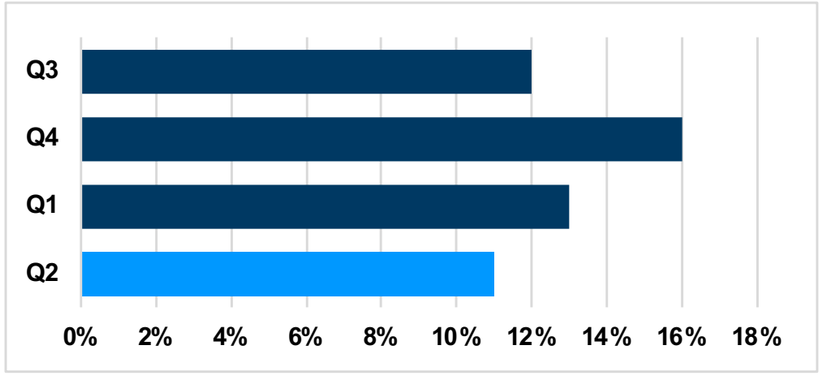
4.3. OVERVIEW OF PLUMBING COMPLIANCE RISK DOMESTIC (CLASS 1)

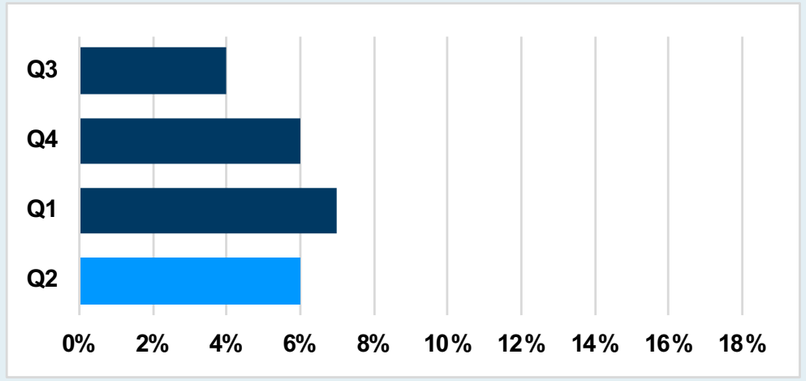
DOMESTIC

Approximately **11,000 elements** were inspected across **1032 inspections** (an average of **11 elements** per inspection) and **673 elements** (across **389 sites**) were identified as a compliance risk requiring rectification or justification. A total of 15 critical issues (across 11 sites) were observed, which were mostly OHS issues. The most common non-compliances observed within the top six categories are:

The most common non-compliances observed within the TOP SIX CATEGORIES

Plumbing category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
General gas Installation	127	• 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	103	• Pressure flashing not constructed appropriately and not fixed at the required intervals, valley gutters not fixed at required intervals. • Sumps undersize and/or discharge through non-compliant side chutes. • Soaker flashing undersized and/or soaker flashing installed against the direction of flow and stand appears to be undersized. • Inadequate support of suspended stormwater drains and downpipes. • 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.	

Plumbing category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Sanitary plumbing systems	**102**	• Sanitary and drainage vents not supported appropriately, 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.	
Cold water services	**64**	• Water services not protected through concrete slab. • Evaporative cooling unit water connection installed between roof covering, flashing and condensate drains do not discharge over a down pipe. • Issues with separations between water and other services	
Sanitary drainage systems	**43**	• 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.	

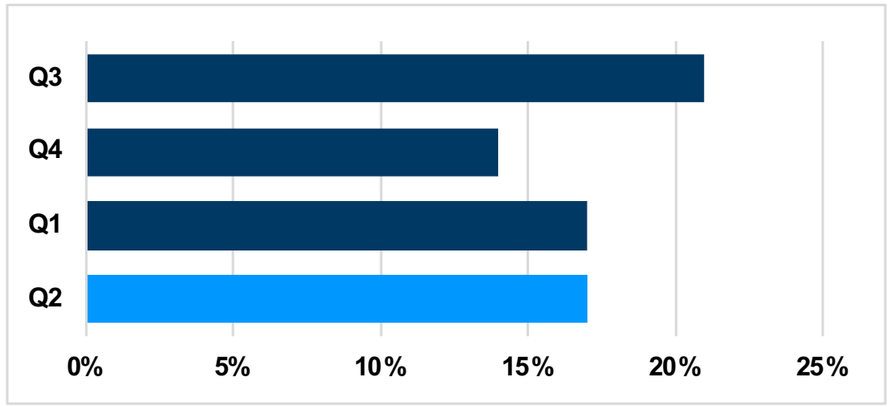
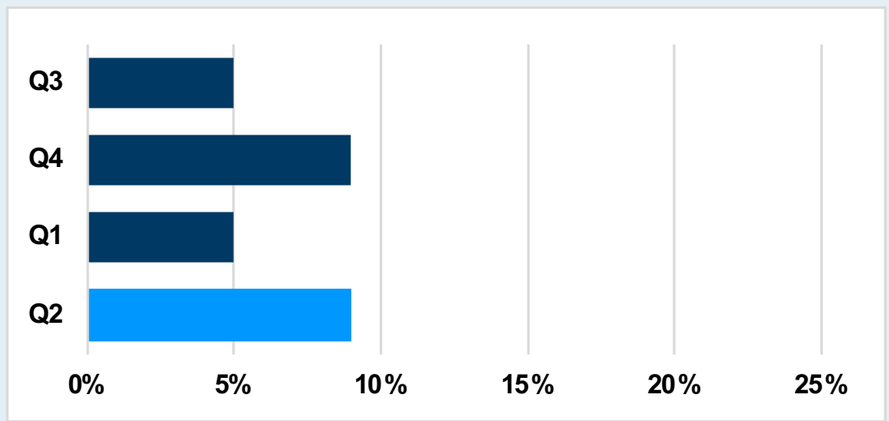
Plumbing category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Heated water services	**48**	• Several issues with solar hot water pipes: Solar hot water pipes passing under tiles non-compliantly and penetrating the roof through a non-compliant flashing (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.	

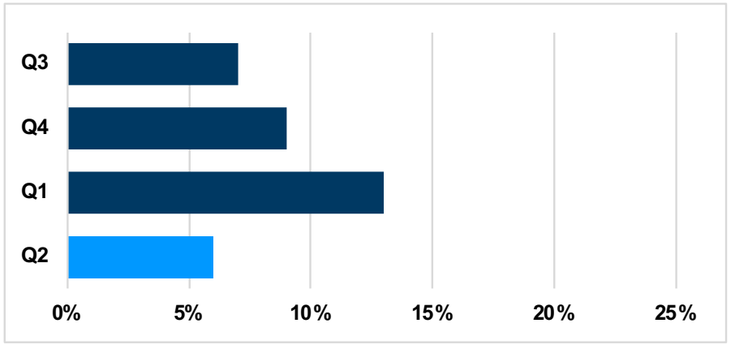
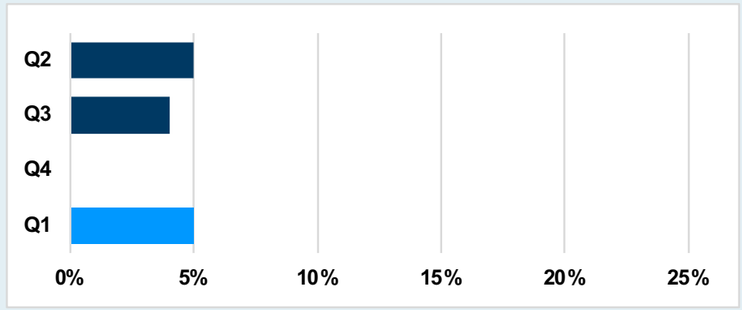
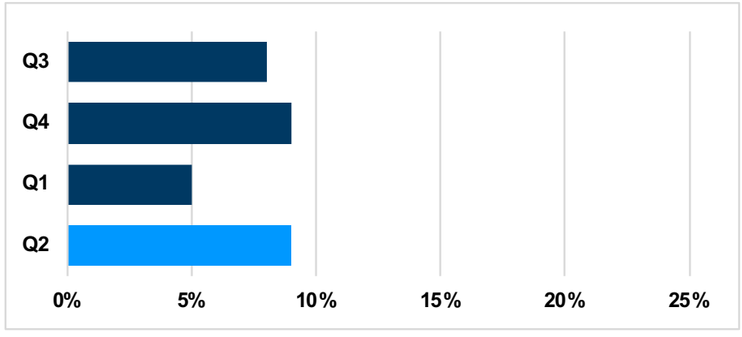
4.3. OVERVIEW OF COMMON NON-COMPLIANT ITEMS OBSERVED

COMMERCIAL (CLASSES 2–9)

Approximately 2,000 elements were inspected across **95 sites** and **72 elements** (**across 33 sites**) were identified as a compliance risk requiring rectification or justification. No critical issues were found. The most common non-compliances observed within the top six categories are:

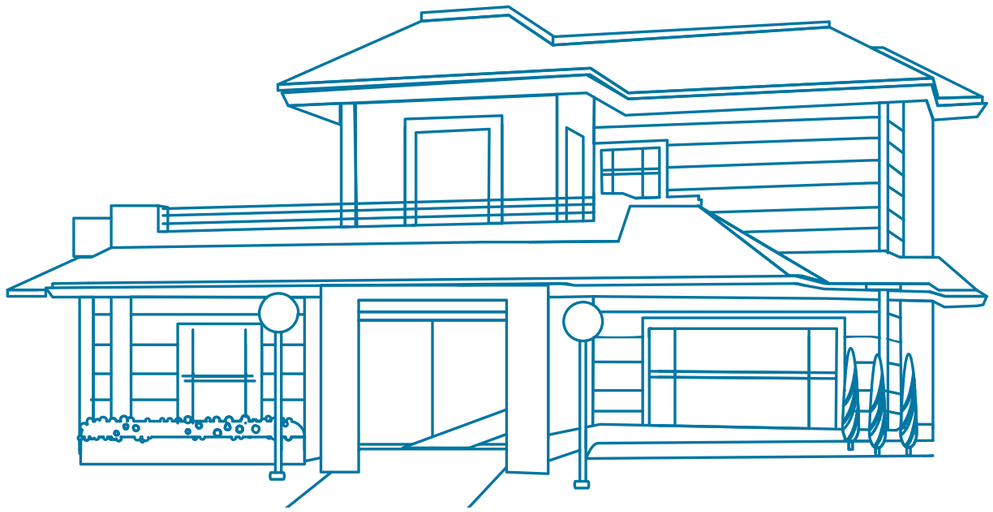
The most common non-compliances observed within the TOP FIVE CATEGORIES

Building category	No. of non-compliant items in category	Common non-compliance in each category	Prevelance per quarter
Roof drainage Systems	**8**	• Sumps undersize and/or discharge through non-compliant side chutes. • Insufficient width of box gutter for commercial (200mm). Several box gutter issues: incorrectly terminated, reduced in size and/or insufficient overflow provision. • Roofing: valley gutter installed on a four-degree pitched roof, upper roof discharging uncontrolled onto the lower roof, valley catchment exceeding 20sqm of roof.	
Sanitary plumbing systems	**4**	• 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.	

Plumbing category	No. of non-compliant items in category	Common non-compliance in each category	Prevalence per quarter
Cold water	5	• Backflow prevention required on flexible shower hoses that reach the floor and toilet. • Insufficient separation from electrical and gas services and recycled water, fire and water services clipped together. • No pressure limiting devices installed into meter assembly. • Water service not protected through slab.	
Heated water services	3	• Insufficient separation from electrical services. • Solar hot water copper pipework not lagged in ceiling space.	
Services sanitary drainage systems	4	• Minimum required separation between ORG and the lowest fixture not met. • No concrete support under drainage bends and sewer drainage with incorrect fall.	

4.4. PREVALENCE OF PLUMBING COMPLIANCE RISKS - SINGLE OCCUPANCY VS DUAL

SINGLE OCCUPANCY



Common Plumbing Issues

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

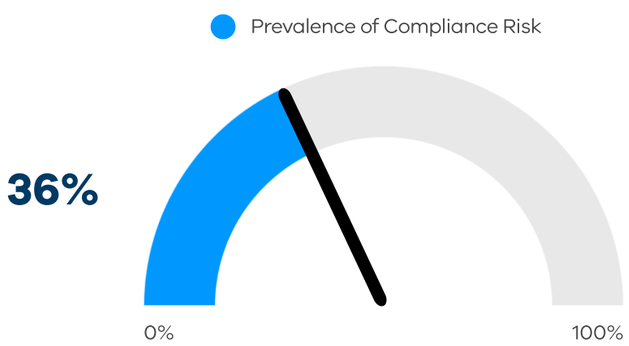
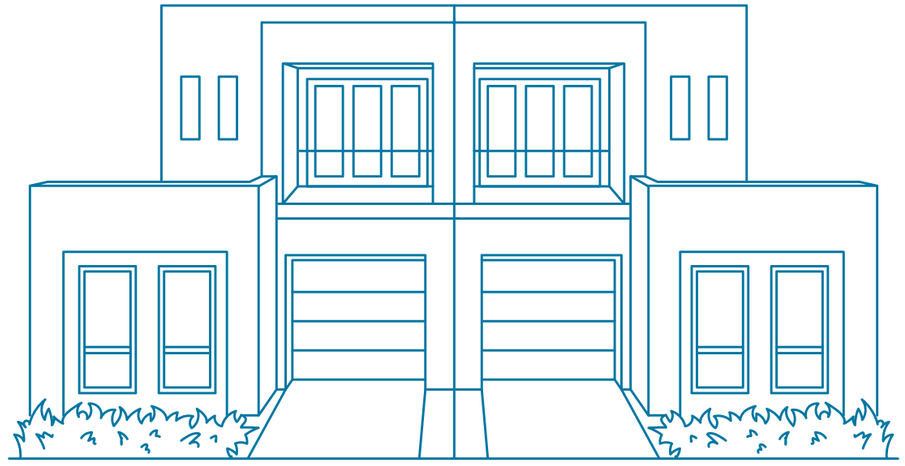


Figure 3: This graph shows the prevalence of compliance risks observed in plumbing inspections of single occupancy dwellings.

DUAL OCCUPANCY



Common Plumbing Issues

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

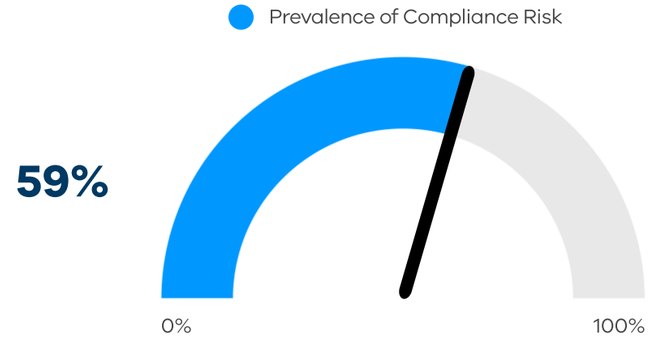


Figure 3.1: This graph shows the prevalence of compliance risks observed in plumbing inspections of dual occupancy dwellings.

4.5. PREVALENCE OF PLUMBING COMPLIANCE RISKS BY CLASS

Class	No. of sites inspected	% of compliance risks across class from all inspections	Areas of serious compliance risk for building
Domestic (Class 1 and 10)	**1032**	**38%**	• General gas installation • Sanitary plumbing systems • Cold water services • Roof drainage systems • Sanitary drainage systems
Apartments ≥2 sole occupancy (Class 2 + mixed use) and group dwellings and hospitals (Classes 3, 4, 9)	**12**	**33%**	• Subsurface drainage • Sanitary plumbing systems
Assembly building with no dwellings (Class 9b)	**17**	**35%**	• Roof drainage systems • Heated water services • Cold water services
Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use)	**2**	**100%**	• Sanitary drainage systems • Unlicensed/unregistered in roofing
Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8)	**21**	**24%**	• Roof drainage systems • Cold water services • Unlicensed/unregistered in roofing

5. A CLOSER LOOK AT PROACTIVE INSPECTIONS OF WATERPROOFING AND WEATHERPROOFING

Water damage has the potential to severely impact the amenity and structure of a building. This issue routinely tops the list of defects encountered in buildings and in complaints to the VBA, claims to the Victorian Managed Insurance Agency (VMIA) and disputes to the Domestic Building Dispute Resolution Victoria (DBDRV). The Proactive Inspections Program targets buildings under construction, and waterproofing and weatherproofing elements are regularly assessed for compliance.

From July 2021 to December 2022, a total of 2592 properties (under construction) were inspected, where waterproofing and weatherproofing elements were assessed for compliance[1]. Of those inspections, 467 (17 per cent) identified at least one compliance risk related to preventing water damage to buildings from internal wet areas (bathrooms and laundries) and from external above ground membranes (balconies). These inspections were spread across 54 municipalities, 287 builders and 77 building surveyors.

The most common waterproofing and weatherproofing issues observed was the absence of water stops/ flashing from wet areas (41 per cent), such as bath hobs, beneath bath flanges, shower enclosures and door/floor junction of wet areas. The next most prevalent issues were incomplete waterproofing membrane over water stops and perimeter flashing (19 per cent), standard plasterboard installed at WC basin/laundry troughs (9 per cent) and balconies without drainage provisions (7 per cent).

The VBA deems the lack of inadequate waterproofing and weatherproofing as a serious risk and contacts the builder to rectify the work. The builder is then required to provide the RBS or the VBA with proof that the work is rectified.

The VBA also undertakes research and partnered with VMIA and Victoria University to examine indoor mould and moisture damage in Victorian residential buildings. The research identified improvement opportunities for building design, certification, construction, inspection and improved guidance for waterproofing. Further information on this research can be found on the VBA's website. A Practitioner Education Series webinar, focused on Waterproofing of Wet Areas, will be delivered on 23 March 2023. Head to the VBA website to watch this webinar.

[1] Compliance to 3.8.1 Wet Areas and External Waterproofing or Part F1 – Damp and Weatherproofing under the National Construction Code of Australia.

BREAKDOWN OF NON-COMPLIANT WATERPROOFING AND WEATHERPROOFING ISSUES[1] OBSERVED

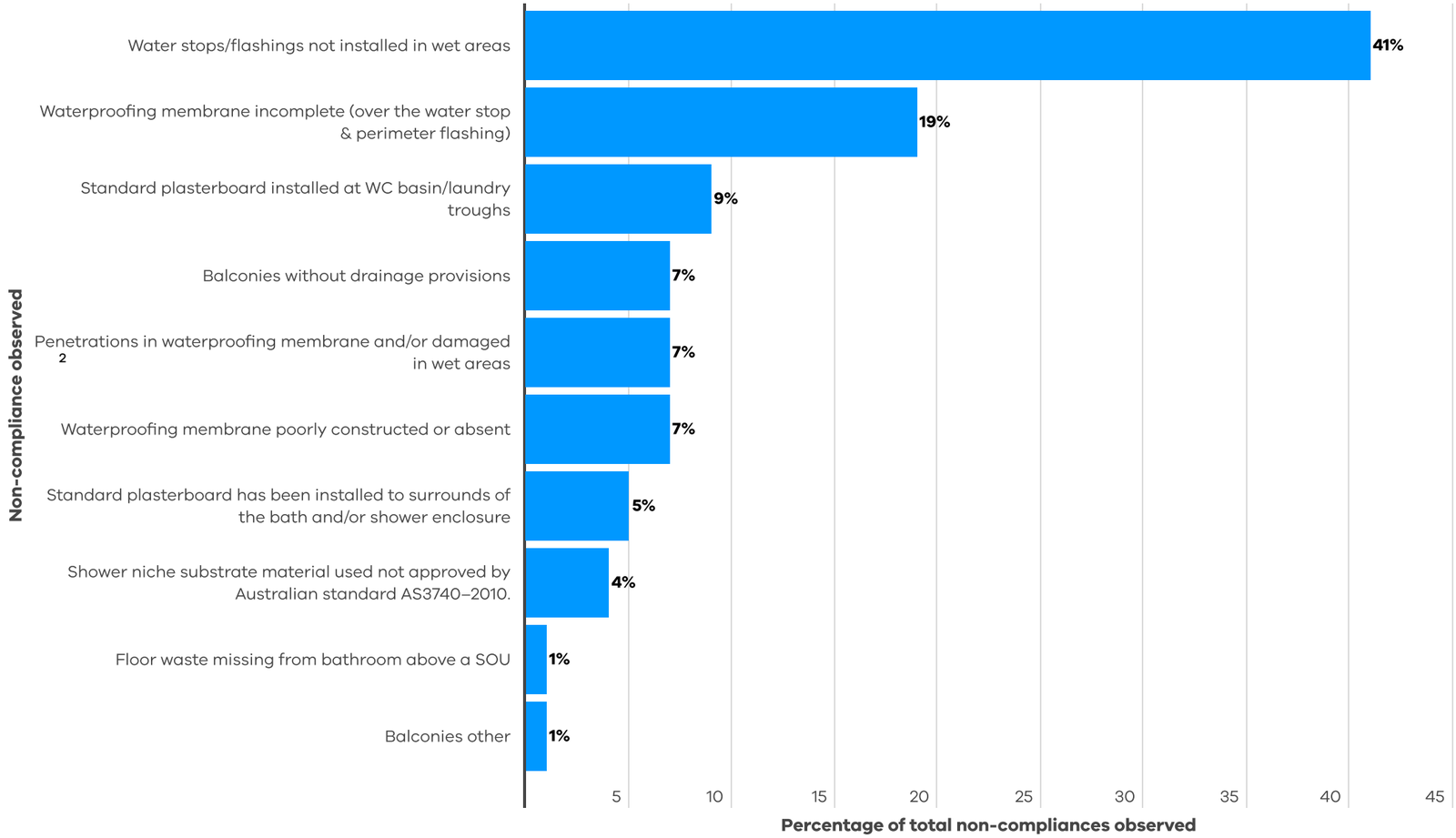


Figure 3.2: This graph shows a breakdown of non-compliant waterproofing and weatherproofing issues observed in building inspections from July 2021 to December 2022.

[2] Issues in this category included defective taping, absence of waterproofing in WC, waterproofing of window frames incomplete, waterproofing applied after the installation of cabinetry and skirting boards installed before waterproofing membrane and perimeter flashing installations.

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 that is consistent with work in progress and is reasonably expected to be resolved as work progresses.
LOW RISK (LOW-IMPACT)	It is unlikely that the compliance risk, if left untreated, would cause an adverse effect on the safety and/or amenity of the occupants. Financial loss for future occupants or loss of structural integrity is unlikely.
MEDIUM RISK	It is possible that the compliance risk, if left untreated, would cause an adverse effect on safety and/or amenity of the occupants/public. Financial loss for future occupants or loss of structural integrity is possible.
HIGH RISK	It is almost certain that the compliance risk, if left untreated, would cause an adverse effect on the safety and/or amenity of the occupants/public. Structural integrity would be significantly compromised and/or total loss of project value would be incurred.

APPENDIX 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

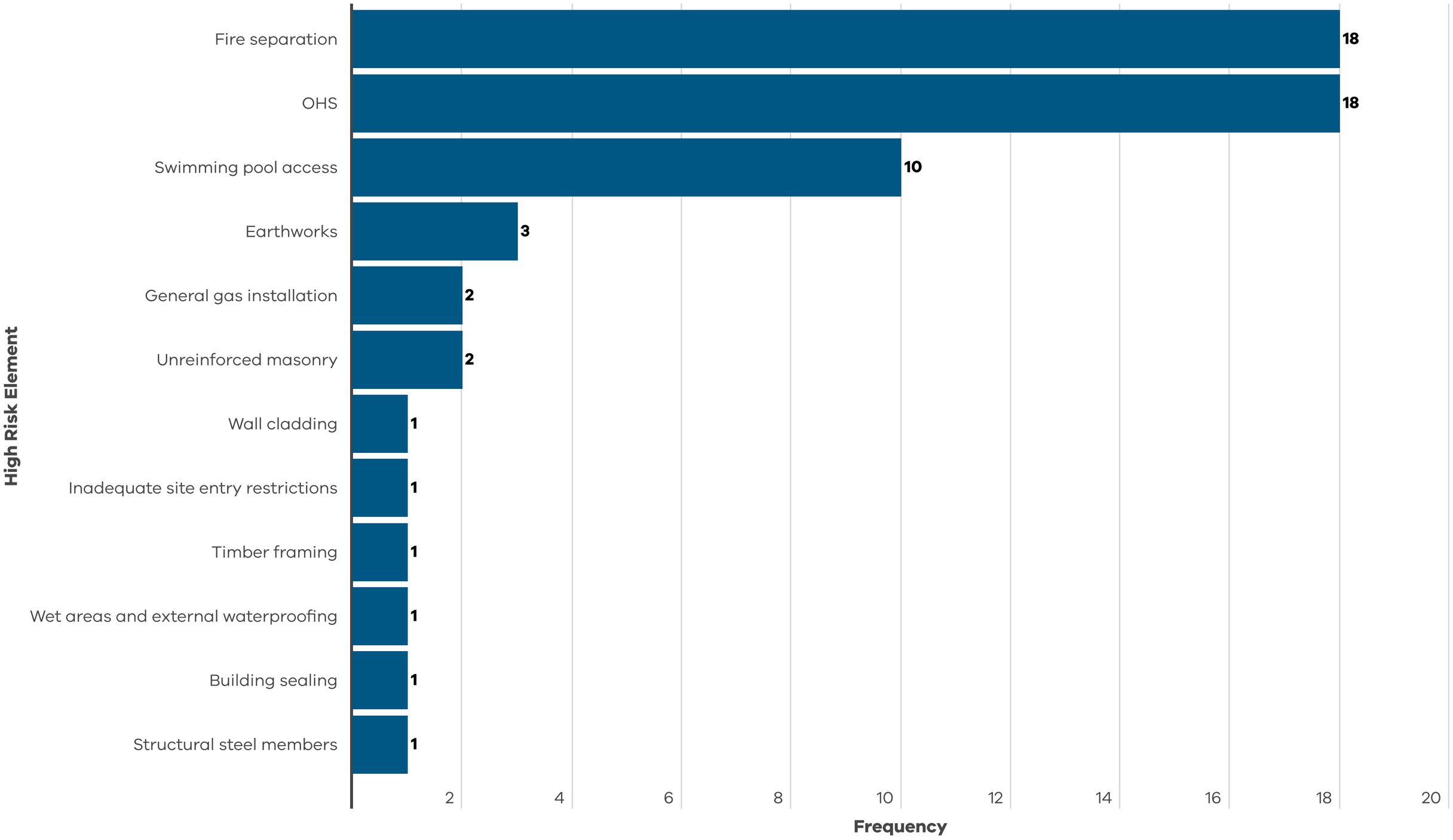
Fall risks Working over 2m in height (Opening in platforms/stair voids, Secured access ladders

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: HIGH RISK INSPECTIONS - COMPOSITION OF HIGH RISK ELEMENTS 2022-23 Q2



Victorian Building Authority

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