VICTORIAN BUILDING AUTHORITY

BUILDING CONFIDENCE

Proactive Inspections Program (PIP) Activity

April – June 2020

VICTORIA State Government

Contents

1. About

The VBA's Proactive Inspections Program (PIP) is an early intervention regulatory initiative that identifies and reduces non-compliant building and plumbing work in Victoria. PIP involves teams of building and plumbing inspectors inspecting building and plumbing works under construction throughout Victoria.

Our PIP team includes experienced building inspectors, building surveyors and licensed plumbers. They undertake a large volume of inspections of both domestic and commercial sites, typically visiting over 900 sites each month. Inspections are generally focused on either building work only or plumbing work only.

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

When our inspectors identify compliance risks (potential non-compliant building and plumbing work), they provide a written notification to the practitioner requiring any issues to be addressed. For potential non-compliant items, the practitioner responsible (whether the builder, plumber or building surveyor) must respond to the VBA within 14 days and within 3 days for more serious issues. Critical life safety issues are actioned immediately by contacting the practitioner and the surveyor by telephone, as well as co-regulatory agencies such as WorkSafe.

In some circumstances, we will issue a Direction to Fix (DTF) requiring work to be carried out to resolve the most critical issues. For example, where non-compliant wall cladding is identified, a DTF will be issued requiring its removal before an occupancy permit is issued.

The VBA uses a risk-rating scale (Appendix 1) to determine the level of scrutiny it will apply to a potential issue. The scale considers the potential adverse effects on the future safety of the building occupants and people nearby, and on the amenity of the building.

1.1. Benefits

The benefits of the PIP are improved safety and compliance outcomes for building and plumbing work in Victoria through early identification and rectification, and in some cases by taking other enforcement action. By inspecting work under construction, the VBA can address significant failures early, resulting in better outcomes for all involved; rectification is often easier and less costly (and the cost of rectification is covered by practitioners not the owner) and it avoids impacting the safety, health, and amenity of future occupants if the compliance risk had remained 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 the industry.

1.2. How proactive inspections are conducted

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

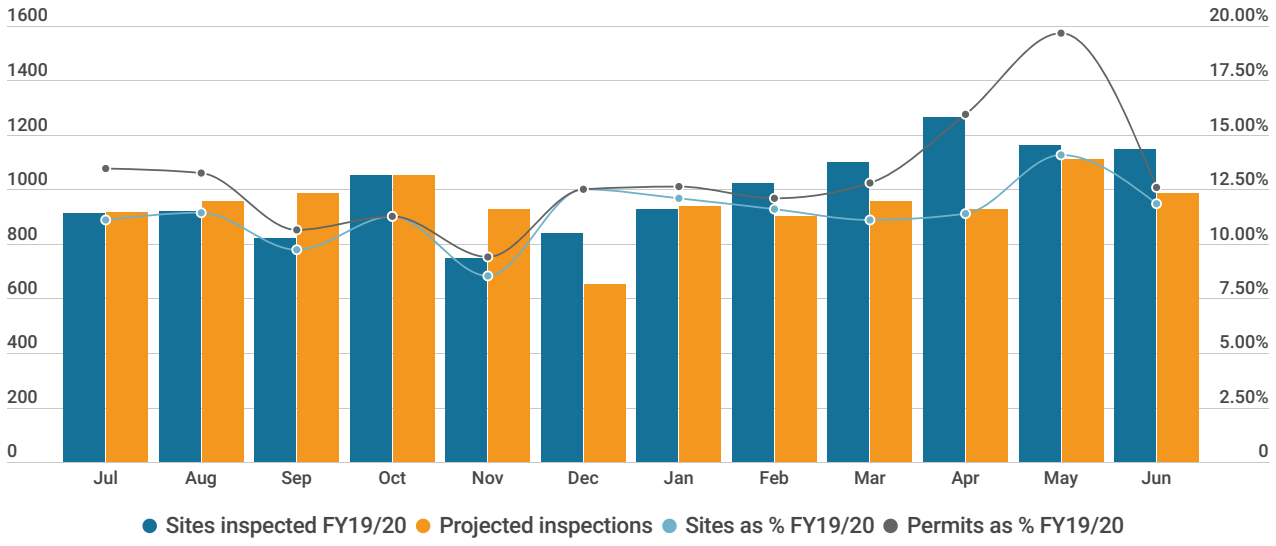
- Building and plumbing work broken down into different building stages under the National Construction Code of Australia BCA Vol 1 and Vol 2.
- Mandatory requirements under the Building Act, Building Regulations 2018 and Plumbing Regulations 2018 and displaying permit information.
- Occupational Health 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 (Environmental Protection Authority, WorkSafe and/or Energy Safe Victoria) are contacted immediately by the building or plumbing inspector.

The VBA is working with stakeholders to develop guidance summarising key inspection components for particular classes of buildings.

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

1.3. Performance year to date

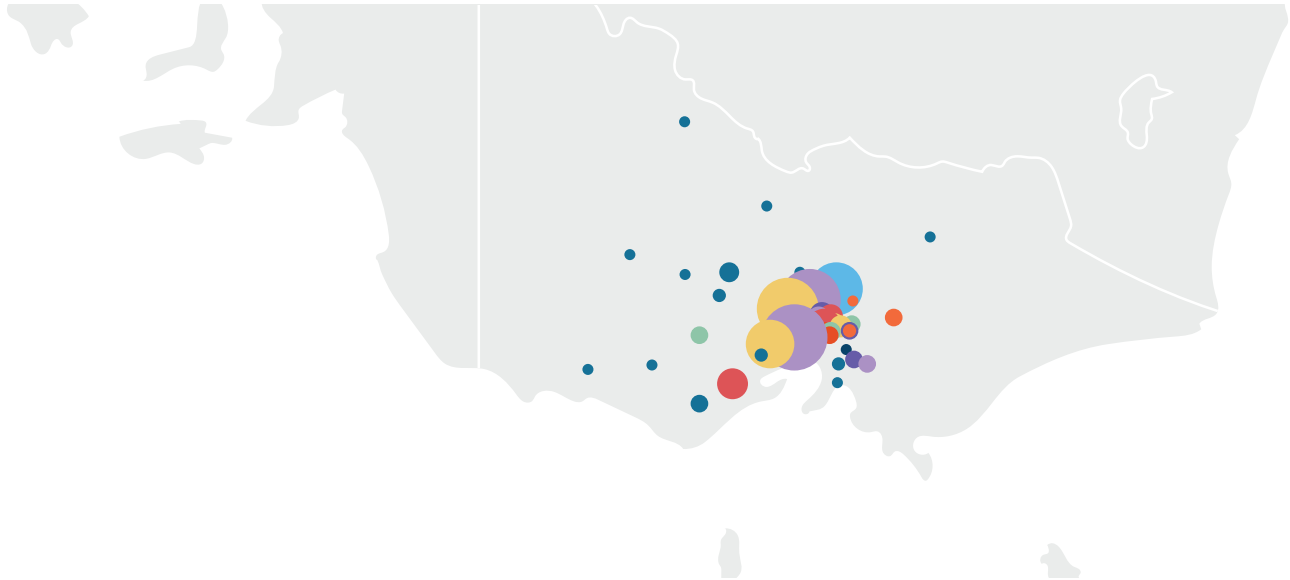
The graph below illustrates the number of sites inspected each month and shows how the VBA is tracking against the Minister's Statement of Expectations to inspect 10 per cent of new building permits every year.



Goal: Inspect 10% of new building permits each year.

2. Q4 in focus

A total of 3575 inspections (2468 building and 1107 plumbing) were conducted across 46 municipalities throughout Victoria (predominantly selected according to defined risk factors), covering 1432 builders and 227 building surveyors across the state. The defined risk factors assign a higher risk rating on building permits that relate to buildings for human occupation and to building permits related to practitioners who conduct higher volumes of work.



https://vba.vic.gov.au/building/complaints-compliance-enforcement/proactive-inspections-program/proactive-inspections-program-reports

2.1. What we found

One quarter of the inspections found compliance risk which, if not appropriately considered or addressed, had the potential of causing:

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

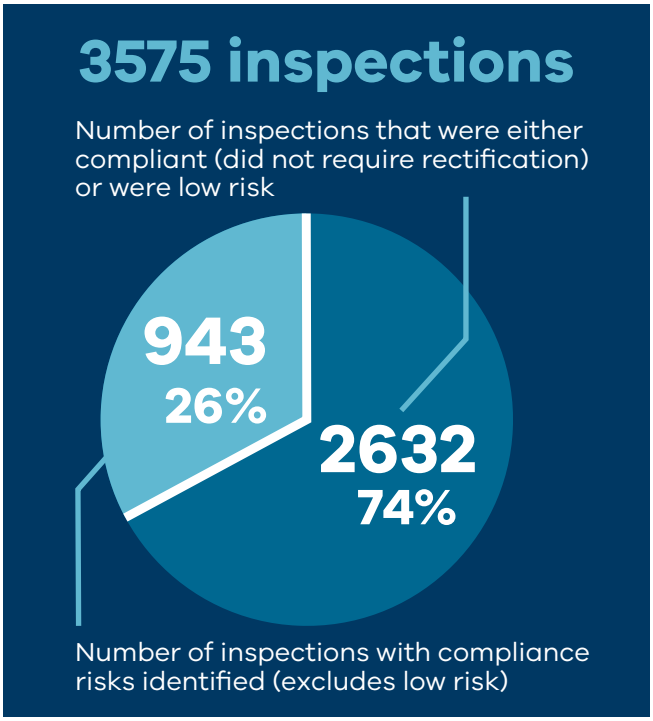
Data on low risk elements are not included in this report as they are considered unlikely, if left untreated, to cause any adverse effects. Examples of low-risk items include site signage not visible, rubbish not controlled, or no toilet on site.

Critical issues

One percent of the inspections identified non-compliant issues that if left untreated, would almost certainly result in adverse effects on safety and/or amenity or financial loss for future occupants or loss of structural integrity. These inspections also included sites that had OHS risks which were referred to the relevant regulator.

2.2. Action taken by the VBA

The compliance risks identified resulted in the VBA sending 943 notifications to practitioners.



Who receives the notifications?

Both the builder and the Relevant Building Surveyor (RBS) are notified when compliance risks are identified however, the builder is the primary addressee for potential 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 as they are the party who attests to the building work as being compliant.

The RBS will also be the primary addressee where permit documentation is lacking information such as a performance solution or where the RBS has not considered mandatory items such as fire separation in dual occupancy buildings.

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

Typically, these notifications require the practitioners to:

- provide any relevant documentation (such as an approved performance solution, engineering drawings or certificate of compliance from a registered practitioner) showing how the work meets the requirements under the building legislation – this is because practitioners are currently not required to lodge this documentation with the VBA; or
- demonstrate the work is incomplete rather than non-compliant and will be resolved as the build progresses; or
- provide the RBS/VBA with proof the work has been brought into compliance (e.g. provide photographs).

While some issues are resolved where the builder can demonstrate the work is under way or a performance solution has been applied, a large proportion of the non-compliant work identified requires rectification[1]. The VBA's PIP data collection and reporting is being further developed and a break-down of how many and types of elements that required rectification will be available in subsequent data releases.

2.3. Enforcement activity

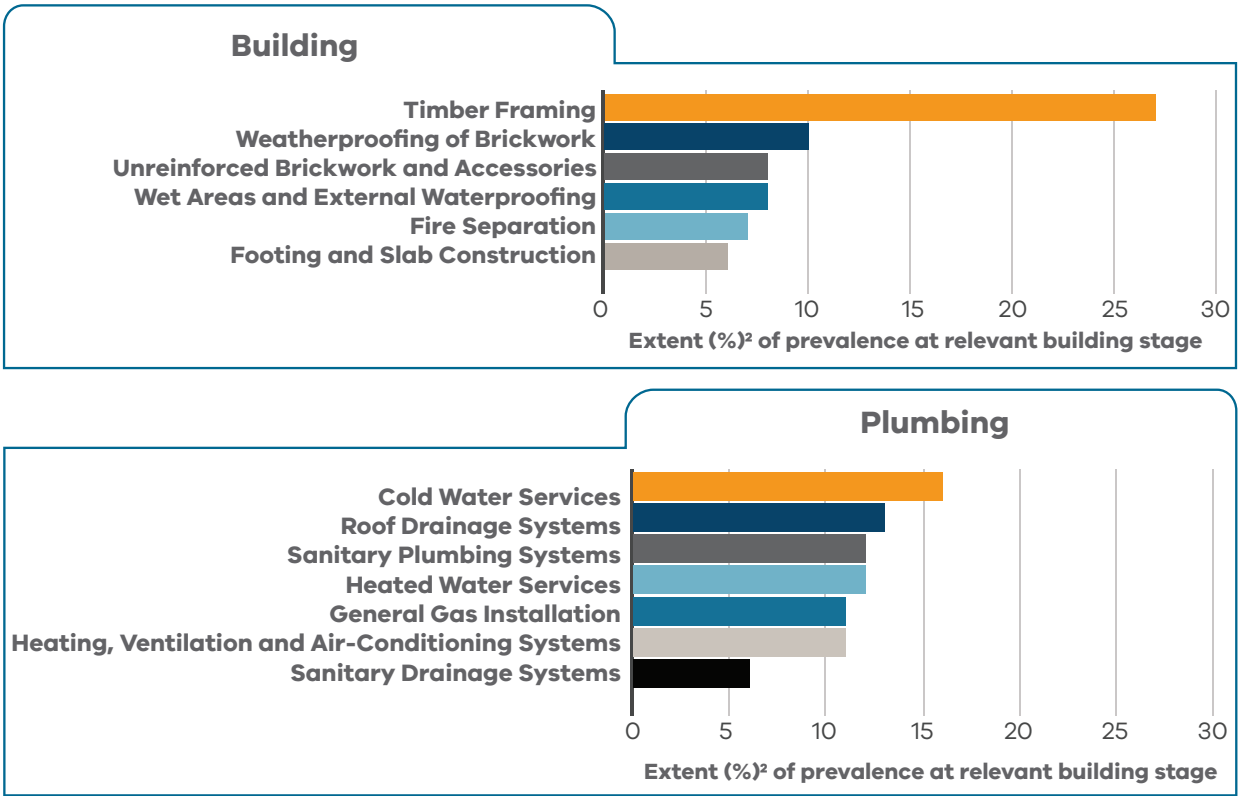
The RBS is expected to manage any rectification required, using their enforcement powers. Typically, a verbal DTF is issued to the builder, however, depending on the severity and risk of the issue, the RBS may choose to issue a written DTF to the builder and notify the VBA.

The VBA will monitor all sites requiring rectification to ensure the appropriate work is carried out and in exceptional circumstances, the VBA will issue the DTF to the builder instead of the RBS. Such circumstances include where the RBS is responsible for the non-compliance or where an issuance of the occupancy permit is imminent, and the VBA wants to ensure the non-compliance is addressed before the property is handed over to the purchaser. In Q4, there were no DTFs issued by the VBA.

3. Overview of compliance risks found

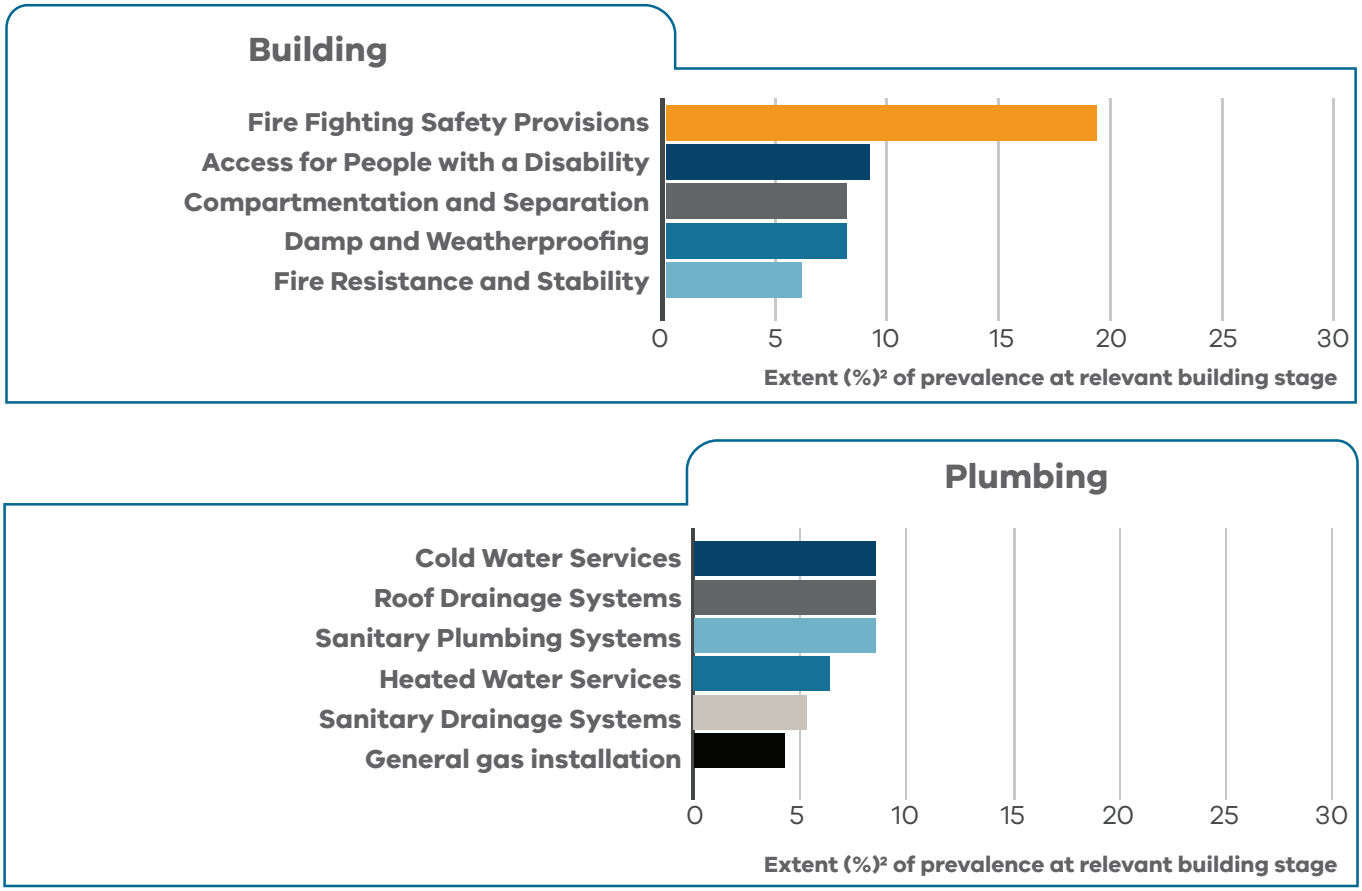
The most prevalent issues split between plumbing and building are tabled below:

Domestic



1 A sample of 100 inspections were considered and revealed 76% required rectification and the remaining 24% did not require rectification because the building surveyor could provide performance solution documentation (in 19% of cases) and because the work was in progress (in 5% of cases).

Commercial



Appendix 3 covers a more detailed view of the proactive inspections undertaken, more information on prevalent compliance risk elements and how critical items were rectified.

3.1. Detailed overview of compliance risks

Building

Domestic (Class 1)

Approximately 63,000 elements were assessed across 2221 domestic building sites in Q4 (an average of 28 elements per inspection), of which 1449 elements were identified as a compliance risk and required rectification or justification. Of these elements, 56 were critical (across 31 sites) and were in the following categories:

Fire separation and fire resistance and stability

- No mineral wool packer' installed in brick cavity at 6 sites from a volume builder.

Earthworks

- Issues with deep site cut at 4 sites and absence of protection works in place for 2 sites.
- One of these sites had an unprotected vertical site cut approximately 3m deep and was referred to WorkSafe.

2 These are approximate percentages only, which are calculated using the building stage most applicable to the area of compliance risk (i.e. the stage at which the item can be most easily viewed for inspection). For example, the percentage figure for timber framing was calculated by dividing the number of inspections with compliance risks identified at the 'frame' stage by the total number of inspections conducted at the 'frame' stage.

Swimming pool safety

- There were missing or inadequate barriers around swimming pools at 3 sites and inadequate temporary swimming pool barriers at 2 sites. The VBA made contact with the responsible builders who organised immediate rectification of these issues.

Unreinforced Brickwork

- Construction of a double-storey dwelling in the City of Stonnington had unreinforced brickwork; brick ties had not been fixed to the timber frame in accordance with AS.4773.2-2015 and brick pier on eastern ground floor boundary was not engaged with external wall.

Wet Areas and External Waterproofing

- In a construction of a double storey dwelling, plaster coating was used to fill the gap between the bottom of the shower walls and the floor of the shower area.

OHS (reported to WorkSafe on same day) and public safety

- Inadequate OHS provisions at 19 sites ranging from no fall protection for second storey windows, doors and balconies, no balustrade provided to first floor balcony and access not restricted, makeshift platforms, ladders and openings in platforms/ stair voids. These serious matters are referred to WorkSafe on the same day and/or rectified immediately.
- Site entry restrictions inadequate at one site with fence openings to a bulk excavation with soil collapse in places and exposed reinforcement. Immediate action was taken by the VBA to prevent site access.

Commercial (Classes 2–9)
Approximately 3938 elements were assessed across 247 sites (an average of 16 elements per inspection), of which 164 elements were identified as a compliance risk requiring rectification or justification. Of these elements 6 were critical and covered the following categories:

Multiple compliance risks identified when the issue of Occupancy Permit was imminent

- Construction of Class 3 building (a new student accommodation building in the City of Melbourne) had multiple items (listed below) requiring rectification when the occupancy permit was due to be issued.

Protection of openings

- Inspections found unprotected penetrations through the walls of the building which are required to have an FRL, raising concerns the fire performance of these building elements will not be maintained during fire. The registered building surveyor advised that a DtF was issued to seal the penetrations in accordance with either the fire engineering report or Spec C1.15 of the NCC.

Construction of Exits (barriers to prevent falls)

- The planter box located on the upper storey balcony reduced the effective height of the balcony barrier, raising concerns that planter box could facilitate climbing by children.

Access for People with a Disability

- Safety decals had not been installed to frameless or fully glazed doors, including any glazing capable of being mistaken for a doorway or opening, preventing people who are visually impaired from walking through the glass due to visibility issues.

Firefighting

- A mixed-use residential apartment, retail and car park development in the City of Melbourne had no precautions installed (in accordance with E1.9) during construction. There were no live hydrants on each floor, only fire extinguishers.

Plumbing

Domestic (Class 1)
Approximately 10,600 elements were inspected across 935 sites (an average of 11 elements per inspection) and 922 elements were identified as a compliance risk requiring rectification or justification. No critical issues were found. The most serious compliance risks were in the following categories:

Roof drainage systems

- Roof sheets throughout a double-storey development were not turned down at the ends and downpipe spreaders at the rear of the property were discharging over flashings.
- Undersized sumps.
- No overflow provision has been provided for the box gutter installation.
- Omission of expansion joints throughout the suspended storm water drain installation.
- Pressure flashings used on rough brickwork throughout new single-storey dwelling & associated garages development.

Heated water services

- No tempering device installed.
- No inspection shaft or overflow relief gully has been provided for each dwelling.
- The clearances for services around hot water pipes have not been achieved. Part B2 - Heated Water Services.

Water services

- The backflow-prevention device is not adequate for the hazard rating.
- The flexible hand-held shower head can reach the spill level of the toilet pan.

Commercial (Classes 2–9)
Approximately 800 elements were inspected across 172 sites (an average of 5 elements per inspection) and 74 elements were identified as a compliance risk requiring rectification or justification. No critical issues were found. The most serious compliance risks were in the following categories:

Cold and Hot Water Services

- Cold water services do not have the appropriate separation from other services, such as electrical cables, gas or communication conduits.
- A construction of a three-storey residential apartment and car park development in the City of Greater Geelong had multiple cold-water installation issues. Below ground rainwater tanks (interconnect with the potable water supply) were only installed with a dual check valve and rainwater lines were not appropriately labelled.
- In multiple inspection sites, where shower outlets do not have the required physical air gap, backflow preventions were not installed.

Water services

- A construction of a new school had multiple non-compliance risks identified and included proximity issues between drainage vents and power cables, 50mm waste pipe not correctly supported and incorrectly graded and length of pipe exceed 2.5 m with no evidence of ventilation.

Fire Fighting services

- A construction of warehouse, canopy and office in the City of Greater Geelong had a hose reel impeded by stored equipment, and signage had not been installed.

Heating, ventilation and air conditioning

- Alterations and additions to an existing office building in the City of Darebin had an inaccessible roof mounted condenser and drains terminating to a tundish without an air gap.
- An internal fit-out of an office building in the City of Melbourne had ductwork crushed in several sections and non-compliant strapping supporting the ductwork throughout the installation
- Duct work had incorrect hangers and clearance to flue was too close.
- A construction of a new school had several areas of air conditioning/refrigeration pipework not insulated correctly.

Hot water services

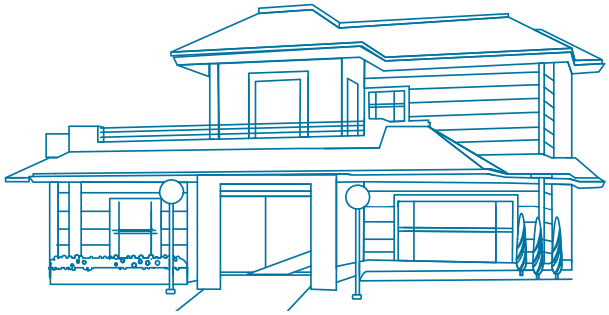
- Hot water services do not have the appropriate separation from other services (electrical cables).
- In a warehouse development in the City of Wyndham, the drain from the pressure temperature relief valve discharged directly into the safe tray.
- An internal fit-out of an office building, in the City of Melbourne, had proximity issues between hot water services and electrical cable throughout the mezzanine floor.

Sanitary drainage systems

- No expansion joint or inspection openings on pipework through slab on a sixth-floor apartment building.
- In two different warehouse development (City of Whittlesea and Greater Geelong) there were no overflow relief gullies installed

3.2. Prevalence of compliance risks in single and dual occupancy dwellings

Single occupancy



Prevalence of compliance risks

Building 27%

Plumbing 28%

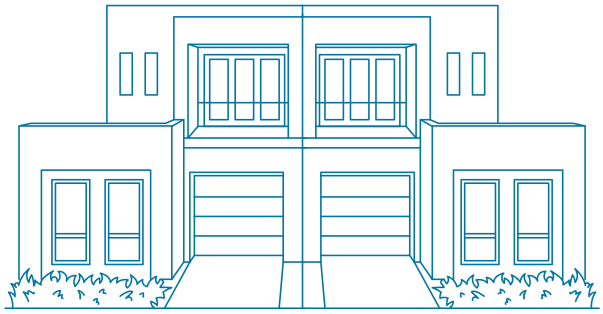
Common building issues

Timber framing
Unreinforced masonry
Fire separation
Wet Areas and External Waterproofing

Common plumbing issues

Cold water services
General gas installations
Roof drainage systems
Heated water services
Sanitary plumbing systems (above ground)

Dual occupancy



Common building issues

Timber framing
Fire separation
Unreinforced masonry
Openings in platforms/stair voids
Working >2.0 m in height

Prevalence of compliance risks

36% **Building**

35% **Plumbing**

Common plumbing issues

Roof drainage systems
Cold water services
General gas installations
Heated water services
Sanitary plumbing system

3.3. Prevalence of compliance risks by class

			Areas of serious compliance risk	
Class	**No of sites inspected**	**% of compliance risks across class**	**Building**	**Plumbing**
Domestic (Class 1 and 10)	**3156**	**27%**	• Timber Framing • Unreinforced Masonry • Fire Separation • Wet Areas & External Waterproofing • Masonry Accessories	• Heated Water Services • Sanitary Plumbing Systems • Roof Drainage Systems • General Gas Installation • Cold Water Services
Apartments ≥2 Sole Occupancy (Class 2 + mixed use) and Group dwellings and hospitals (Class 3,4, 9)	**154**	**22%**	• Fire Safety Provisions • Access for People with Disability • Room Heights • Damp & Weatherproofing • Sanitary and Other Facilities	• Sanitary Plumbing Systems • Heated Water Services • Cold Water Services • General Gas Installations
Assembly building with no dwellings (Class 9b)	**73**	**14%**	• Fire Safety Provisions • Fire Resistance and Stability • Sanitary and Other Facilities	• Non-Drinking Water Services • Roof Drainage Systems • Cold Water Services • Heated Water Services
Office buildings and cafes, shops & markets with no dwellings (Class 5 and 6 + mixed use)	**134**	**22%**	• Fire Safety Provisions • Access for People with a Disability • Fire Resistance and Stability • Damp and Weatherproofing	• Sanitary Drainage Systems • Roof Drainage Systems • Sanitary Plumbing Systems • Heating, Ventilation and Air-Conditioning Systems
Warehouse & factories no dwellings (Class 7b & 8)	**58**	**28%**	• Protection of Openings • Access for People with a Disability • Fire Safety Provisions	• Roof Drainage Systems • Sanitary Plumbing Systems

4. Case studies

Partial Demolition, Alterations and Additions to an Existing Class 1 dwelling

Serious Fire separation, structural steel members and timber framing issues

A proactive inspection, carried out after the mandatory frame stage, identified multiple structural issues ranging from inadequately supported point loads to missing fixings and lintels. Issues included steel floor beams cut to allow fall on plumbing services, timber floor joist excessively notched, fixing brackets missing from first floor framing and double-skin brick work missing brick ties.

The inspection also identified the building had not been brought into conformity with the current Building Regulations 2018, as the alterations constituted more than 50% of the original volume of the building. In these circumstances the RBS is required to consider structural adequacy and the safety of the people using the building in relation to fire protection. There was a timber infill wall in the lower level carrying existing brick wall and point loads, lintels for brickwork over openings were not installed, and under-purlins and a ridge-board were penetrating the masonry separating wall.

The VBA contacted the builder who addressed the matters by engaging the structural engineer to supply justification on the structural adequacy of some of the items raised. The builder then carried out rectification work to bring the remaining items into conformity with the current building regulations.

Alterations & additions to existing Class 1 dwelling

Site Cut issue and Temporary pool fencing

A proactive inspection of a Class 1 building revealed three high risk issues. These were; an unprotected 3m deep vertical site cut (which was referred to Worksafe), the possible undermining of footing of the adjoining wall on boundary due to the installation of plumbing piping and the removal of a pool safety barrier for the installation of a basement.

A VBA notification of high-risk building activity sent to the construction company prompted immediate action by the company to address the matters raised, including completing a detailed safety audit of the site. The company provided the VBA with a structural engineer's report and photographic evidence of the actions taken to protect the adjoining property and proof that a temporary fence had been erected around the pool.

Plumbing in a Class 1 dwelling

Trench for Sanitary drain exceeds allowable depth

The VBA conducted an inspection on a below ground sanitary drain and identified the depth of the trench was 2320mm, in breach of the Compliance Code Excavation 2019. As a result, a Not Ready notice was issued, and work ceased at the site immediately. A report was prepared and sent to WorkSafe. The builder met all plumbing contractors to discuss trench safety requirements. The inspection of the drain was re-offered for a drainage inspection.

ACP found on a commercial building more than three storeys high

Serious cladding issue

A proactive inspection of a ten-storey mixed-use commercial office fit out revealed Aluminium Composite Panel (ACP) cladding installed to the existing façade of the building. Approval for the work occurred after the commencement of Minister's Guideline 14 (MG-14). A determination of the Building Appeals Board had not been submitted with the application for a building permit for the use of the Prescribed Combustible Product.

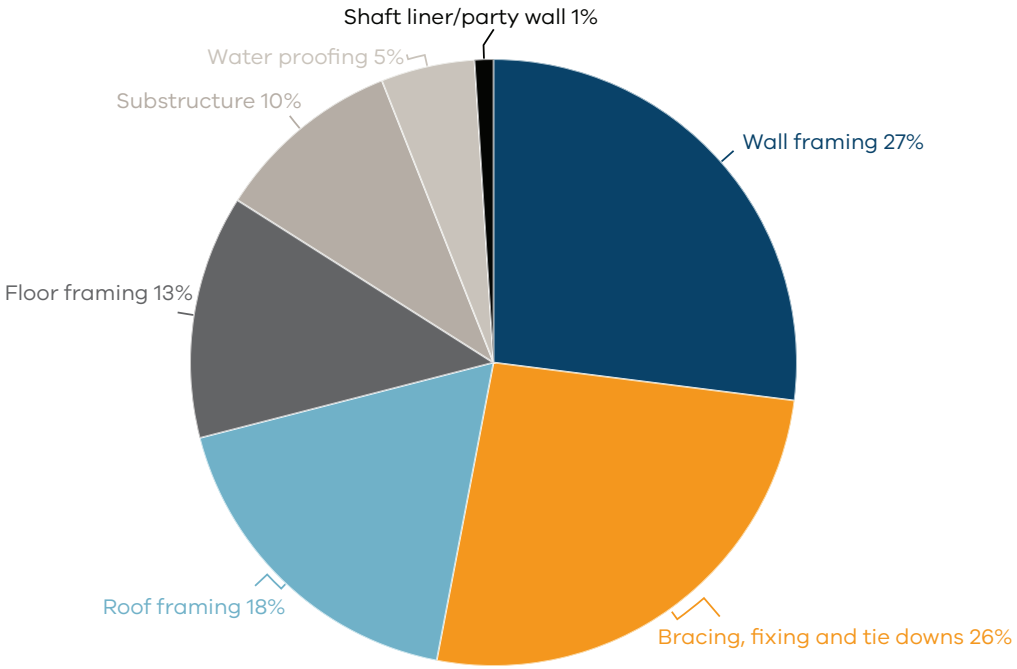
The VBA notified the RBS who issued a building notice to the owner to show cause why the ACP should not be removed. The builder and owner have taken responsibility for the non-compliance and the combustible ACP cladding is in the process of being replaced with compliant non-combustible cladding.

5. Specific compliance risk in focus - timber framing

Non-compliant timber framing elements are consistently the most common issues found during inspections of domestic building work. Given the importance of timber framing to the structural integrity of a building, the VBA considers the age of building permits when selecting sites, to maximise the chances of inspecting construction sites at frame stage.

Due to the potential structural failure of the premises, many timber framing issues are rated among the more serious risks the VBA deals with and they require the builder to provide proof of rectification before the VBA will close the case.

Where timber framing non-compliances are found



Common problems under timber framing

Compliance Risk	Prevalence*	Timber Framing Location
Non-compliant penetrations due to services.	**18%**	Bracing and Wall Frames
Insufficient fixing, for example, nails used instead of hold bolts or failure to use two nails per stud in various items.	**8%**	Sheet Bracing, Wall Bracing, Truss Grips, Speed Bracing
Class 1 timber frame sits on garage slab or porch slab.	**8%**	Sub Structure
Bottom plate overhang> 30 mm.	**6%**	Floor Frames
Nogging items missing or non-continuous plates.	**6%**	Wall Frames
Install shear blocks over non load bearings braced walls.	**5%**	Roof Frames
Lintels missing from window and door openings.	**4%**	Roof Frames

** Percentage calculated based on a 60% sample size of all timber framing compliance risks (n281) in Q4*

Practice changes

Every quarter, the VBA discovers a portion of non-compliant items after the frame had passed a mandatory frame stage inspection and the VBA notifies the RBS and/or Building Inspector responsible.

Depending on the extent of the non-compliance(s), the matter may be escalated to consider if an investigation and potential disciplinary action should be taken against the practitioner(s).

This closer monitoring of timber framing by the VBA appears to be having a flow-on effect to industry. VBA inspectors are informed by builders that they are noticing Registered Building Surveyors are focusing more closely on mandatory stage inspections, with a decrease in the number of non-compliances identified by the Private Building Inspector/Surveyor as a direct result of the closer monitoring.

6. Appendices

Appendix 1: Proactive Inspections Program - risk rating scale

Risk rating matrix - 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

Provision and display of permit information

Part 12 - Building Administration - Building Permit Levy

Building Permits (16(1) works without a Building Permit, not as per Building Permit, 24A - Appropriate Class, OB certification, DBI if work >$16,000, RBP where >$5000

Occupancy Permit

Part 5 Siting - Building Regulations -
(All sections ,73 to 97)

Part 6 Protection Works - Building Regulations,

Part 8 Building work in Special Area - Building Regulations -
(All Sections 132, 150, 152, 153,154, 155)

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 - site entry is restricted or affecting public

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, Exist 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.

SECTION FOUR

Guidance on requirements under the plumbing regulations that apply to residential and commercial properties.

Section B: Water Services - Cold Water Services, Heated Water Services, Non-Drinking Water Services, Firefighting Water Services

Section C: Sanitary Plumbing and Drainage - Sanitary Plumbing Systems and Sanitary Drainage Systems

Section D - Stormwater Drainage Systems - Roof Drainage Systems, Surface and Subsurface Drainage Systems

Section E: Heating, Ventilation and Air-Conditioning

Section F: On-Site Wastewater Systems - On-Site Wastewater Management Systems; On-Site Liquid Trade Waste Systems

Reg C: Gas Installations - General Gas Installation, Type A Servicing Work, Type A Conversion Work

Reg A: Unlicensed Plumber in Relevant Field- Unlicensed in: Drainage, Fire Protection, Gas fitting, Irrigation, mechanical, Roofing -Sanitary Water Supply

Reg B: Poor Standards

SECTION FIVE – OHS elements

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

If these items present an unacceptable risk, the relevant co-regulators are contacted immediately by the building inspector.

Appendix 3 - Detailed view of Q4 proactive inspections

BUILDING

2468 Proactive inspections

	No Sites Inspected	% of Inspections per STAGE	No. Inspections with Compliance Risk (excludes low risks)	Top categories of non-compliances	Extent of prevalence (%3 or n)	No. of inspections with Critical issues (OHS items not included)	Categories of Critical issues	Frequency (n)	Outcomes of Critical issues
Domestic	2221	Demolition 0.5% Foundations 4% Footings 8% Frame 29% Lock-up 15% Fixing 28% Final 15% Completed 0.5%	**590 (27%)**	**Timber framing** - Penetrations >25mm through top plates. Strong backs not installed in accordance with installation guidelines. Tie down of bottom plates missing for load bearing walls with sheet roof. Veranda post to beam connections not bolted. Shear blocking missing over non load bearings braced walls. Missing or inadequate bracing. Durability of timber frame. Timber framing overhanging bottom plate support. Lintels missing from window and door openings. Nogging items missing or non-continuous. **Weatherproofing of brickwork** - No window flashings. Weep holes not provided. Damp proof course set back too far. Garage external retaining wall is not waterproofed below ground level. **Unreinforced brickwork and accessories** - Control joints not maintained adjacent to windows and doors. Brick ties not installed to required spacing. Brick ties not fixed to timber frame. Lentil has not been provided above electrical box beside control joint. Damp proof course not flush with face of brick work Expansion ties upside down. **Wet areas and external water proofing** - No waterproof plaster. Splash backs / wet area tiling not waterproofed. Lack of water stops. Bath hob not as per standard. Plaster coating used to fill a gap between the bottom of the shower walls and the floor. No overflow provision provided to front balcony. No stepdown between the dwelling and garage. No water stops to floor junctions in bathroom. **Fire separation** - Fire separation and shaftliner walls not installed, damaged, or not installed as per manufactures guidelines. Aluminium clips not attached to both side of the wall. Mineral wool not packed between brick veneer and shaft-liner. Rock wool insulation not installed to separating roof space. EPS has been installed across the separating wall. Garage brick walls on boundaries have gaps of greater than 200mm (~ 280mm) below non-combustible roof covering. **Footings and slab construction** - Exposed steel. Bricks overhanging edge rebate of concrete slab. Service pipes running through beams. Concrete cut out for relocation of plumbing. Void formed under edge beam. Primary concrete slab was not formed correctly to house plan to support structural frame. Infill of concrete to under load bearing point on external garage wall.	27% 10% 8% 8% 7% 6%	**31 (1.4%)**	OHS items Preparation and earthworks, temporary bracing and propping Fire Separation Safe movement (swimming pool access) Timber Framing, steel framing & Structural Steel members Protection of adjoining property and affecting public Unreinforced Masonry and accessories Wet Areas and External Waterproofing	n19 n9 n7 n7 n3 n3 n2 n1	Referred to relevant co regulator on same day Builder rectified issues (n7), Work was in progress on one site and engineering documents provided for the other site. RBS confirmed installation as per manufacturers specifications (n4), performance solution documents provided for 2 sites and builder rectified the remaining site. Builder rectified issues (n6) Work was in progress at one site. Builder rectified issues Builder rectified issues Builder rectified issues Builder rectified issue
Commercial	247	Demolition 1% Foundations 5% Footings 3% Frame 41% Lock-up 15% Fixing 13% Final 16% Completed 6%	**53 (21%)**	**Fire Safety Provisions (Fire Fighting Equipment, Construction of Exits and Provisions of Escape) -** Insufficient fire extinguisher on site. No live hydrants only fire extinguishers. Fall from ramp exceeds 1m without balustrade. Combustible cladding near and above exit door. Door handles to exit above 1.1m. Exit potential to be blocked (bollard in wrong location). **Access for People with a Disability** - Insufficient turning space in various locations in common areas and accessible sanitary facility. Plan shows sliding door without required clearances. Ambulant toilet and toilet seat not installed. **Compartmentation and Separation** - doorway to plant room accommodating equipment required to operate during an emergency has not been provided with fire door achieving FRL -/120/30. Main Switch Board located internally without fire separation. **Damp and Weatherproofing** - Water resistant surface material not installed in falls to floor waste. Substrates not water resistant. Weep holes below concrete paving. **Fire Resistance and Stability** - Timber in walls (required to be non-combustible). ACP installed on one façade has fire engineering report requested. Possible ACP and EPS cladding on Building. Steel beam has not been coated with vermiculite fire protection on all sides. **Protection of Openings** - Several penetrations through walls and floors requiring FRL. Fire doors not tagged.	19% 9% 8% 8% 6% 6%	**6 (2.4%)**	Fire Fighting Equipment Provision of Escape Compartmentation and Separation Access for People with a Disability Room heights Surface and Subsurface Drainage Systems	n1 n1 n1 n1 n1 n1	Builder rectified issue Performance solution documents provided Performance solution documents provided Builder rectified issue Performance solution documents provided Builder rectified issue

Appendix 3 - Detailed view of Q4 proactive inspections

PLUMBING

1107 Proactive inspections

	No of sites inspected	% of inspections per STAGE	No of inspections with compliance risks	Top categories of compliance risks	Extent of prevalence (% or n)
Domestic	935	Demolition 1% Foundations 5% Footings 5% Frame 35% Lock-up 20% Fixing 21% Final 12%	**264 (28%)**	**Heated water services** - Separation with other services. Pipe work not protected from damage. Water pressure exceeding 500kpa. Pipework not lagging through concrete slabs or footings. Pipework not sealed or lagged through the timber frame. Hand-held shower reaches shower base without appropriate backflow prevention. **Roof drainage systems** - Flashings fixed incorrectly. Box gutters change direction. Box gutter does not discharge trough a sump or rain head. Downpipe pop installed inside gutter. Insufficient fixing of eaves gutter joints. Valley has not achieved the minimum 180 mm in width. No provision for expansion of eaves gutters. Omission of expansion joints throughout the suspended storm water drain installation. Undersized items e.g. sumps, flashings, box gutters, rain heads **Sanitary plumbing systems** - Sanitary drainage vent terminates within 5 m of the evaporative cooler. Inadequate pipe support on sanitary vents. The installation of drainage vents has damaged the timber frame. Drainage vents are undersized. 88–degree junctions installed on a graded sewer. Omission of or incorrect installation of expansion assemblies on stacks. **Heated water services -** Separation issues with other services. Solar hot water pipe lagging not weather resistant or UV rated. Insufficient clearances of solar hot water pipe from solar sensor wire. Pressure relief drain terminates in an unsafe matter for the operator. Hot water unit pipework not insulated appropriately. **General gas installation** - Insufficient separation of gas piping to other services (electrical and water). Multilayer Gas lines not protected where exposed to UV. Flue off the ducted heating unit was not independently supported and a bolted sleeve was not installed. Gas flues do not have the appropriate clearances from return walls and openings to building. Proprietary Gas piping not labelled adjacent to the gas meter. Gas pressure and or polyethylene pipe installed above ground and or below buildings. No reversion fitting provided. **Heating, Ventilation and Air-Conditioning Systems** -Inadequate pipe support for the refrigeration and hydronic pipe work. Crushed ductwork and tight bends. Evaporative cooler to close to a gas flue. Ductwork is not supported appropriately. Ductwork joints have not been fixed and sealed appropriately. **Sanitary Drainage Systems** - sewer does not have appropriate surcharge and overflow provision. No inspections shaft, boundary trap or Overflow relief gully has been installed. The overflow relief gully does not have the appropriate separation from the shower outlets.	27% 22% 22% 20% 20% 16% 10%
Commercial	172	Demolition 1% Foundations 5% Footings 9% Frame 28% Lock-up 16% Fixing 26% Final 15%	**36 (21%)**	**Cold Water Services** - Shower outlets do not have require air gap. Separation with other services. Backflow protection for the appropriate degree of hazard has not been provided at the interconnection of the potable water supply to the rainwater for underground tanks. Rainwater lines are not appropriately labelled. **Roof Drainage Systems** - Box gutters do not have appropriate provision for expansion. Apron flashings and Parapet capping are fixed at intervals exceeding 500 mm. Downpipe spreaders are not constructed appropriately. Box gutter sumps are undersized. Concealed downpipes not sealed and secured appropriately. Box gutters reduce in size and changes direction. **Sanitary Plumbing Systems** - No inspection openings or expansion joints have been provided at base of the stacks. Expansion assemblies are not clipped. Graded sewer does not have appropriate provision for expansion. Above ground sewer does not have the appropriate grade (fall) or support. Above ground drainage is not vented appropriately. Flat sewer reduces have been on the graded sections of drain. Sewer junctions have been installed too close to the vertical and or graded section of the above ground drains. **Heated Water Services** - Pipework does not have the appropriate separation from other services. Pressure temperature relief drains do not terminate in a safe or approved manner. Associated pipework and valves attached to a hot water unit have not been insulated appropriately. Hot water units in safe trays were installed appropriately. Pressure temperature relief drains do not have the appropriate air gap above safe wastes or tundishes. **Sanitary Drainage Systems** - No expansion joint or inspection openings on pipework through slab. 88° junction used on grade the graded sewer. Overflow relief gully could not be located. **General gas installation** - Insufficient separation of gas piping with other services (electrical and water). Five instantaneous hot water services installed internally in a cupboard behind a roller door without external ventilation. Polyethylene pipe has been installed above ground.	8% 8% 8% 6% 5% 4%

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