VICTORIAN BUILDING AUTHORITY

BUILDING CONFIDENCE

# Proactive Inspections Program

## Activity report

### July – September 2020

VICTORIA State Government

# Contents

# 1. About

The VBA's Proactive Inspections Program (PIP) is an early-intervention regulatory initiative that identifies and reduces noncompliant building and plumbing work in Victoria. PIP involves teams of inspectors inspecting building and plumbing works under construction. Our PIP team includes experienced building inspectors, building surveyors and licensed plumbers. Typically, they inspect more than 900 domestic and commercial sites each month. Inspections focus on either building or plumbing work.

In line with the Minister's Statement of Expectations, our goal is to inspect 10 per cent of all building permits issued each year in Victoria. 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.

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

In some circumstances, the VBA will issue a Direction to Fix to resolve the most critical issues. For example, where noncompliant wall cladding is identified, we will issue a Direction to Fix, requiring the cladding's removal before an occupancy permit is granted.

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

## 1.1. Benefits

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

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

## 1.2. How we conduct proactive inspections

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

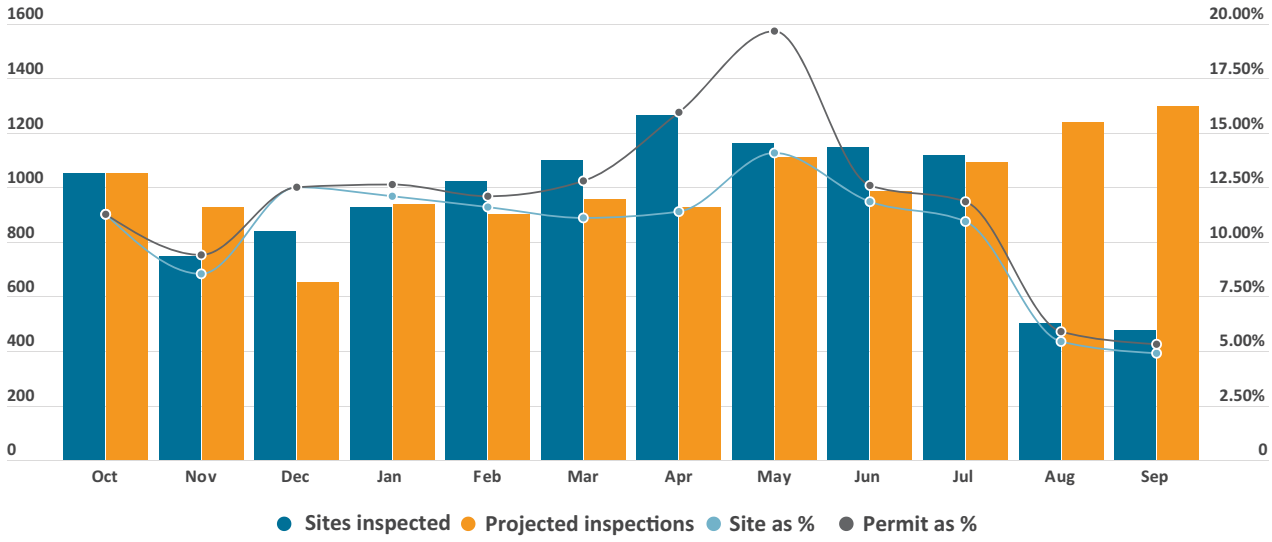
- building and plumbing work broken down into different building stages under the National Construction Code – Volumes 1 and 2 (Building Code of Australia)
- mandatory requirements under the Building Act 1993, Building Regulations 2018 and Plumbing Regulations 2018
- the display of permit information
- occupational health and safety (OHS) elements such as working at heights, temporary fencing, adequacy of propping and bracing and working in trenches. If any OHS items present an unacceptable risk, the relevant co-regulators (Environment Protection Authority, WorkSafe or Energy Safe Victoria) are contacted immediately by the building or plumbing inspector.

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.

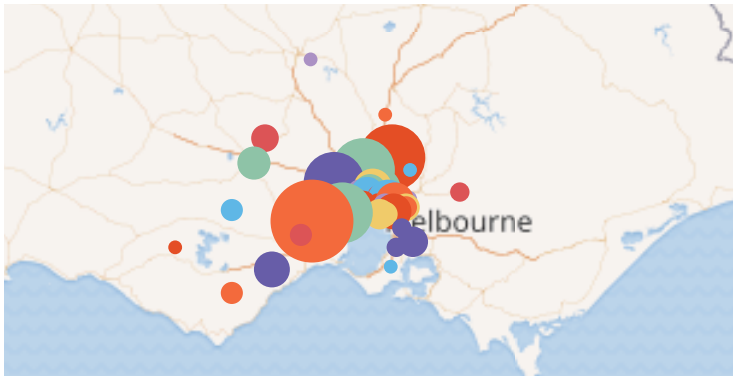



Goal: Inspect 10% of new building permits each year.

# 2. Q1 in focus

A total of 2064 inspections (comprising 1537 building and 527 plumbing inspections) were conducted across 46 municipalities in Victoria, covering 962 builders and 216 building surveyors across the state. The defined risk factor, used to select sites for inspection, assign a higher risk rating to building permits that relate to buildings intended for human occupation and to practitioners who conduct higher volumes of work.

Overall, fewer inspections were conducted during Q1 2020–21 due to the escalation of COVID-19 infections in July 2020 and the limitations placed on movement around the community. When the Victorian Government announced a State of Disaster, the VBA reduced its field activity to ensure the safety of both the community and VBA staff. However, during this time, the proportion of commercial inspections increased to 14%, up from 10% in the previous quarter (April - June 2020) and 6% in Jan - March 2020. This was a result of a deliberate focus to maintain the number of commercial inspections. Due to all plumbing inspectors residing in Melbourne, there were much fewer plumbing inspections conducted and the percentage of commercial plumbing inspections were not maintained, down to 8% from 16% in the previous quarter.




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

## 2.1. VBA's coronavirus response

Just prior to restrictions, the VBA swiftly managed the safety of field staff by immediately suspending field activity (including PIP inspections) while the VBA developed its COVIDSafe plan and organised infection control training for field staff – a prerequisite before staff could resume inspections.

### Safety first

The VBA's key objective during restrictions was 'safety first', which involved operating in ways that protected our staff and the community and reduced movement between sites.

During August and September 2020, 16 metropolitan-based inspectors (12 building and 4 plumbing inspectors), representing 55 per cent of VBA field staff, were redeployed to work that could be completed from home. The remaining officers continued with field activities, taking the following safety precautions:

- Adherence to VBA COVIDSafe guidelines
- Use of comprehensive personal protective equipment (PPE)
- Proactive assessment of construction sites to ensure COVIDSafe compliance prior to entry
- Engagement with site-specific COVIDSafe measures, and
- Retaining detailed records of movement around the community, in accordance with work permit requirements.

### Regulatory approach

The VBA reviewed its regulatory approach during coronavirus restrictions to ensure that any inspections activity focused on potential high-risk matters. Our core priorities during this period remained to ensure buildings are safe and well-built and that regulation supports a thriving building industry.

In response to the announcement of stage 4 coronavirus restrictions, we scaled-back our field presence during August and September 2020. Operating in accordance with health and safety guidelines, we targeted our inspection activities on sites that posed the highest potential risk to future occupants. 6 building inspectors and 1 plumbing inspector continued inspecting commercial building sites in metropolitan Melbourne while also-inspecting domestic sites in growth corridors (and coronavirus hotspots) to ensure on-site compliance with COVIDSafe requirements.

### Monitoring of COVIDSafe compliance

During Stage 4 restrictions, VBA inspectors monitored compliance with COVIDSafe requirements on building sites and included recording information on adherence to mandatory COVIDsafe requirements:

1. Physical-distancing
2. Mask wearing
3. Worker limits
4. COVIDSafe plans in place

Most of the sites observed during August and September 2020 complied with COVIDSafe requirements. However, 3 per cent of commercial sites and 13 per cent of domestic sites were noncompliant.

Most breaches related to more than one worker not wearing a face mask. For example, in August 2020, 175 sites were inspected in metropolitan Melbourne. Of these sites, inspectors observed mask breaches on 16 sites, physical-distance breaches on 4 sites and a work-limit breach on one site. On 3 occasions, clear breaches of COVIDSafe requirements were observed and details of these sites were passed on to Victoria Police.

VBA inspectors also reported an increase in vacant sites. For example, between 12 and 18 August 2020, only 6 sites were reported as vacant, but between 2 and 8 September 2020, inspectors reported 32 vacant sites.

With Stage 4 restrictions easing in late September 2020, the VBA stepped up its audit and inspection activity in response to an expected increase in construction activity. While redeploying our field staff, the VBA continued adhering to the government's COVIDSafe principles:

- Ensure physical-distancing
- Wear a face covering or personal protective equipment
- Maintain hygienic work practices by following VBA guidelines
- Respond quickly to illness – if unwell, stay home
- Limit the number of staff who have close contact and, avoid enclosed spaces by targeting open-air construction sites

## 2.2. What we found

Twenty-six per cent of inspections conducted during the quarter identified compliance risk which, if not appropriately considered or addressed, had the potential to cause:

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

This was the same rate of compliance risk observed between April and June 2020, but a lower rate than that observed in January to March 2020 (31%).

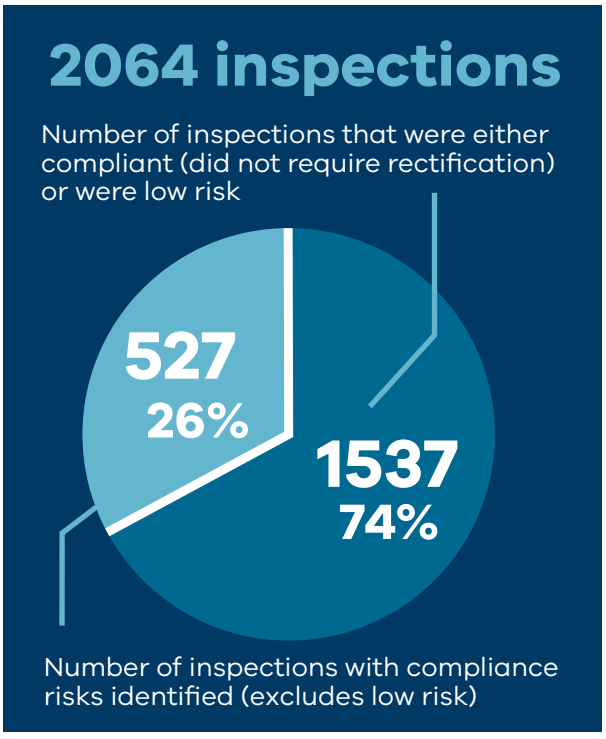
Data on low-risk elements are not included in this report because they are considered unlikely to cause any adverse effects if left untreated. Examples of low-risk items include site signage not being visible, uncontrolled rubbish on site or no on-site toilet.

**Critical issues**

One per cent of inspections identified noncompliant issues of a severity that could result in adverse effects on safety or amenity, financial loss for future occupants or loss of structural integrity if left untreated. This rate is consistent with PIP findings during the previous two reported quarters (January 2020 to June 2020). Sites with OHS risks are reported in this category, with breaches referred to the relevant regulator.

## 2.3. Action taken by the VBA

The VBA sent 527 notifications to practitioners requiring them to respond to the compliance risks identified by the PIP.




**Who receives the notifications?**

The builder and relevant building surveyor (RBS) are notified when compliance risks are identified. However, the builder is the primary addressee for potentially noncompliant 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 because they are the party who attests that the building work is compliant.

The RBS will also be the primary addressee when permit documentation lacks information (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 noncompliant 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.

Typically, these notifications require practitioners to:

- provide all 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 of the relevant building legislation – this is because practitioners are not currently required to lodge this documentation with the VBA
- demonstrate that the work is incomplete rather than noncompliant and will be resolved as the build progresses, or provide the RBS or the VBA with proof the work has been brought into compliance (for example, by forwarding photographs of rectified work).

While some issues can be resolved once the builder demonstrates the work is underway or built under a performance solution, a large proportion of noncompliant work identified by PIP requires rectification. Of the closed inspections in Q1, 75% of the sites required at least one item to be rectified and only 1% of the sites had work still in progress. The balance (24%) of sites inspected, with non-complient items were able to provide performance solutions/engineering documents to confirm compliance.

## 2.4. Enforcement activity

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

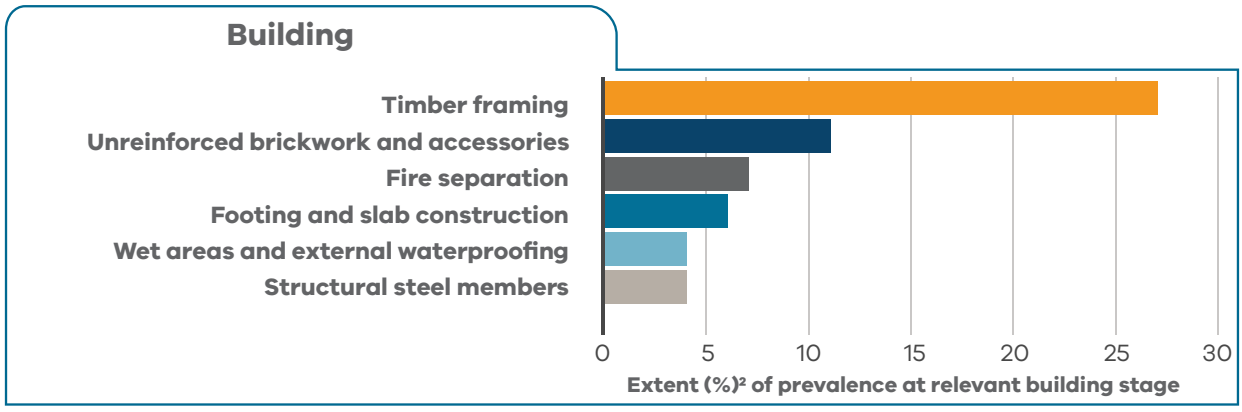
The VBA monitors all sites needing rectification to ensure the appropriate work is carried out. In exceptional circumstances, the VBA will issue a written Direction to Fix to the builder instead of the RBS. This may occur when the RBS appears to have contributed to the noncompliance or where the issuance of an occupancy permit is imminent and the VBA wants to ensure the noncompliance is addressed before the property is handed over to the owner. In Q1 2020–21, the VBA issued no written Directions to Fix.

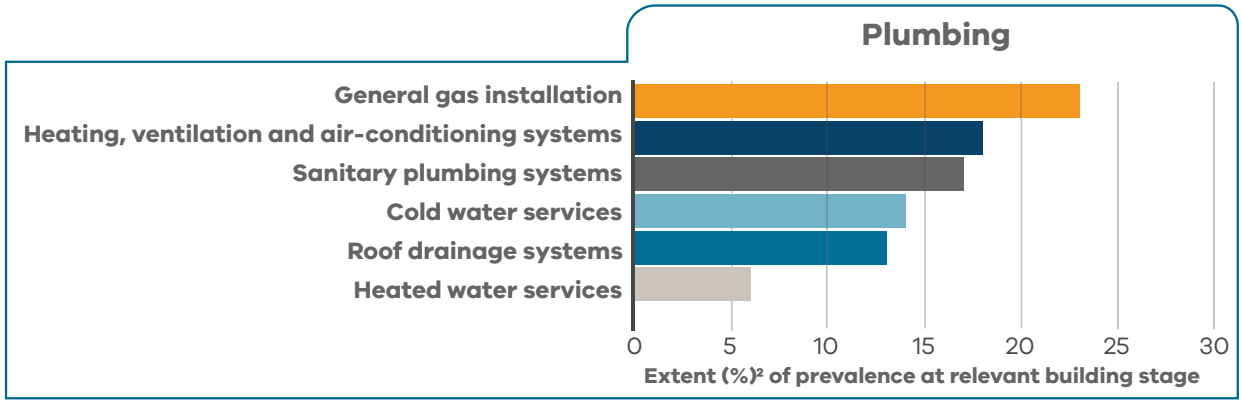
# 3. Overview of compliance risks found

The most prevalent issues (excluding low risk non-compliance risks), fall into the following categories of building and plumbing work:

## Domestic

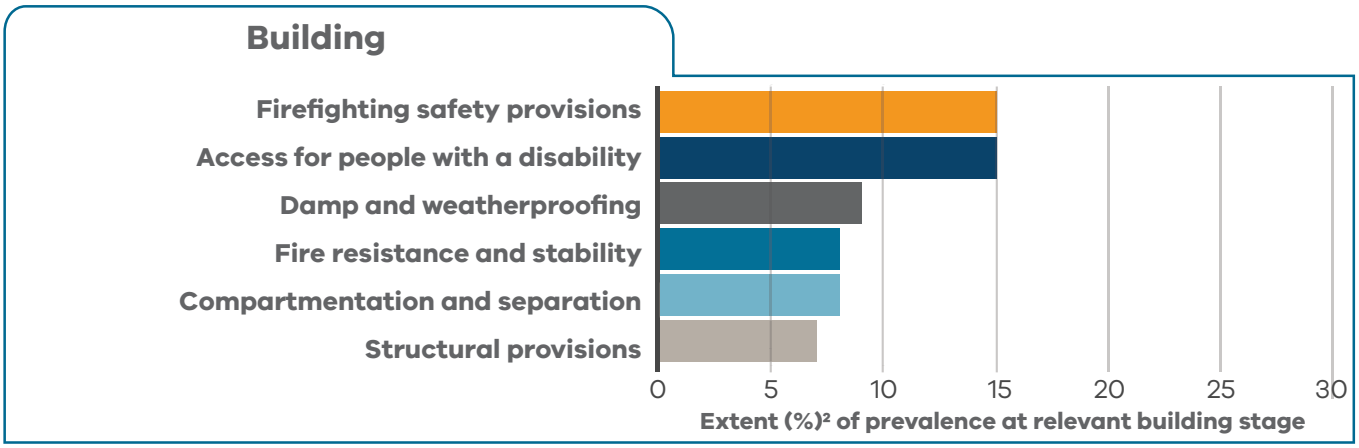
Timber framing items are regularly the top non-compliant issue found by the VBA in domestic building work, consistently contributing to greater than 25% of all non-compliances found in the last three quarters. In addition to timber frames being a focus of the VBA's proactive site selection, a key contributor to the high rate of non-compliance is the large number of building elements inspected at timber framing stage. The remainder of the top 6 building issues have generally remained consistent across the past three quarters, typically contributing between 5 and 10% of all non-compliance identified through the PIP. The top 6 issues in plumbing also remain constant in each quarter.



## Commercial

Non-compliant issues in commercial building work have also remained consistent over the last three quarters. The 6 most common categories of non-compliance identified each quarter have been fire provisions (including firefighting equipment, construction of exits and provisions for escape), access for people with a disability, fire resistance and stability, damp and weatherproofing, compartment and separation and structural provisions. Overall, non-compliance rates in these buildings remained generally stable, even though the volume of inspections increased in the last two quarters as part of the VBA's focus during COVID restrictions. The VBA also focused on COVIDSafe compliance on such sites during Q1, observing good levels of adherence to COVIDSafe rules.




Plumbing commercial is not included because the sample size was too small. Plumbing inspections during stage 4 coronavirus restrictions were somewhat reduced because the majority of plumbing inspectors reside in stage 4 regions of Victoria.

Appendix 3 provides more detailed reporting of the proactive inspections undertaken during the quarter, including information on prevalent compliance risk elements and details of how critical items were rectified.

## 3.1. Detailed overview of compliance risks

## Building

**Domestic (Class 1)**

Approximately 32,000 elements were assessed across 1288 domestic building sites during the quarter (an average of 28 elements per inspection), of which 584 elements were identified as a compliance risk requiring rectification or justification. Of these elements, 20 were critical (across 12 sites) and fell into the following categories:

### Earthworks

Deep site cuts at 4 sites, found to compromise the safety of the public at 1 site and adjoining owners at 2 other sites, were escalated to the RBS and included:

- A 2.6m deep site cut along a pedestrian footpath without appropriate precautions to protect the public and footpath from being undermined.
- Footings of an adjoining property undermined by approximately 500mm due to a shear site cut adjacent to the property.
- Masonry garage of an adjoining property undermined due to a 1.2m deep site.

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

- A temporary barrier was missing around a swimming pool at one site and, at another site, an inspector found a noncompliant safety barrier constructed with numerous open gaps greater than 100 mm and a boundary barrier less than 1800 mm high. The VBA contacted the builder responsible, who organised immediate rectification of these issues.
- An existing window, which formed part of a safety barrier, was removed from an existing dwelling, but the building permit did not include alterations to the swimming pool barrier.
- Alterations were made to a swimming pool barrier without a valid building permit in force.

### Fire separation, fire resistance and stability

- Four sites had separating walls that were not installed in accordance with the manufacturer's guidelines.
- A separating wall using lightweight construction was not installed as per the manufacturer's installation manual. No 16 mm firestop plasterboard was installed as required at the mid-floor and roof junction.
- In the City of Maribyrnong, construction of the shaftliner separating wall system between 2 double-storey dwellings fell short of the external timber wall-frame face, contrary to the manufacturer's installation requirements. The separating-wall shaftliner is required to extend to be at least flush with the external face of the external timber-framed wall, with the remainder of the cavity sealed off with an appropriate fire-seal insulation to ensure the fire-rating integrity of the wall is maintained at this junction.

### OHS and public safety

Inadequate OHS provisions were identified at 4 sites during the quarter. The sites had:

- No fall protection to upper-storey stairwell floor openings.
- No fall protection to perimeter window openings to the upper storey on four units.
- No perimeter handrails provided to first-floor level for fall protective measures.

**Commercial (Classes 2–9)**

Approximately 3150 elements were assessed across 202 sites (an average of 16 elements per inspection), of which 123 elements were identified as a compliance risk requiring rectification or justification. Of these elements, 6 were critical (across 3 sites) and fell into the following categories:

### Placement of steel reinforcement

- Proactive inspection on a double-storey yacht club (Class 9b) identified issues with the placement of the steel reinforcement of a large suspended slab which was not in line with the approved engineering drawings for the slab.

### No fall protections

- In the City of Wyndham, construction of a new single-storey Class 5 building had no fall protection around an exposed bored pier.

### Multiple compliance risk identified and no building permit

- In the City of Brimbank, construction of a new 2-storey Class 5 building had multiple high-risk issues, including smoke detectors located within 400mm of air supply openings contrary to AS1670.1 Clause 5.1.4 and a first-floor office (greater than 200m2) with no accessibility elevator.
- In addition, the building permit for completion had not been issued and works had proceeded beyond the permitted staged permit. These works included building services (fire hydrants and hose reels, electrical and mechanical work) and ground and first floor office fit out. The relevant building surveyor issued a building notice to the owners that was later cancelled after representation by the owner was made and a building permit was issued to complete the works.

## Plumbing

**Domestic (Class 1)**

Approximately 5,800 elements were inspected across 528 sites (an average of 11 elements per inspection) and 251 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:

### General gas installations

- Gas-fittings too close to other services (hot water and electrical) observed at several sites.
- In the City of Greater Geelong, construction of a premises had a gas line through the timber frames studs, greater than 25 per cent of the breadth of the studs, and the gas line did not have the appropriate separation from the electrical cables.
- In the City of Darebin, construction of a dual-occupancy premises had below ground gas fittings too close to other services and the fittings were not lagged for corrosion.
- In the City of Wyndham, construction of a premises had ducted heaters set up on feet rather than a platform and incorrect clip used for securing flue and gas.
- In the City of Whittlesea, several construction sites had premises with gasfitting lines that did not provide for reversion to standard annealed tube; standard thread had not been provided prior to first and last branch.

### Roof drainage systems

- Several box gutters reduced in size at multiple sites, causing incorrect discharge of roof water and potential blockages.
- In the City of Hobsons Bay, construction of a new single-storey premises had unfolded valley gutter (into eaves gutter) and no expansion in eaves gutter over a 20m length.
- In the City of Hume, construction of a single-storey premises had sump and box gutter with no overflow provisions; sumps were not sized correctly with a minimum length of 400mm.
- In the City of Ballarat, a new 2-storey dwelling had rain-head overflows needing to be 25mm below the sole of the box gutter so, in the event of a blockage, the rain-head overflow will discharge the roof water clear of the building.
- In the City of Moreland, construction of a 2-storey dual-occupancy premises had multiple issues with roof draining. The box gutters changed direction, reduced in size and were fixed throughout the structure with no provision for expansion. In addition, sumps were discharged through side chutes and overflow omitted on first-floor rain heads.
- In several locations, expansion joints were not installed or included, missing expansion joints from a suspended storm-water drain installation and on PVC downpipes at 6m intervals.

**Commercial (Classes 2–9)**

Approximately 250 elements were inspected across 46 sites; 5 sites were identified as having a compliance risk. No critical issues were found. The most serious compliance risks were:

### Sanitary drainage systems

- In the City of Darebin, construction of a 7-storey Class 2 mixed-use development had belowground drainage too close to electrical services.
- In the City of Glen Eira, construction of a 4-storey residential apartment building above basement car parking had no provision for expansion provided on the graded drainage installation in basement on all drains as per AS/NZS 2032: 2006 cl 6.4. Additionally, there were 100 x 88-degree junctions used in the graded section which is not in accordance with AS/NZS 3500.2 2018 cl 6.6.2.3.
- In the City of Greater Geelong, construction of a sanitary drain in a mixed-use residential complex was undersized.

### General gas installations and water services

- Construction of the same 4-storey residential apartment building (above) had electrical services too close to gas installations and water services in several locations.

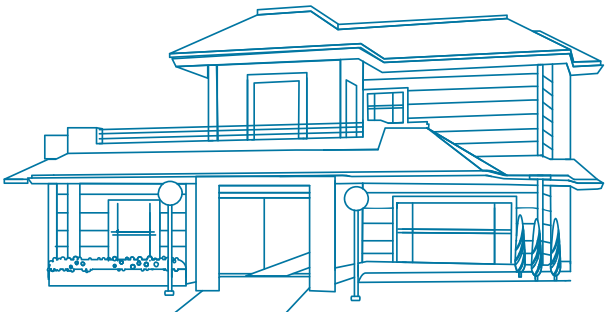
### Sanitary plumbing systems

In the City of Hume, construction of a warehouse and associated office had several sanitary plumbing issues:

- The expansion assemblies of both stacks had not been installed immediately upstream of the entrance to a vertical stack AS/NZS 2032 2006 cl 6.4.2.4 (a).
- Branch from the vertical sections of the sewer stack had been installed within 600mm below the bend to the graded section of drain (AS/NZS 3500.2:2018 clause 9.8.5).
- A level invert taper (LIT) had been used off-centre in the suspended sanitary drainage pipes. The soffit of the pipework is to remain in common alignment as per AS/NZS 3500.2 2018 cl 6.6.2.1.

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

### Single occupancy



Prevalence of compliance risks

**Building** 26%

**Plumbing** 26%

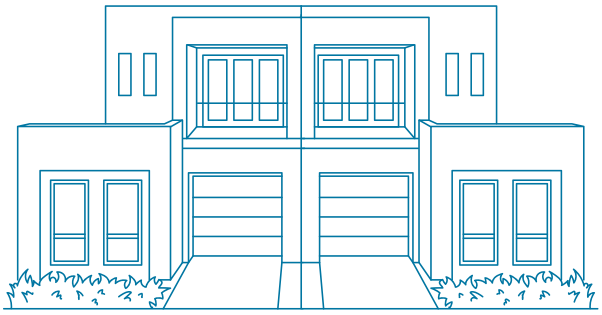
**Common building issues**

Timber framing
Unreinforced masonry and accessories
Fire separation
Wet Areas and external waterproofing
glazing

**Common plumbing issues**

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

### Dual occupancy



**Common building issues**

Fire separation
Timber framing
Unreinforced masonry and accessories
Footing and slab construction
Structural steel members

Prevalence of compliance risks

**33%** **Building**

**18%** **Plumbing**

**Common plumbing issues**

General gas installation
Cold water services
Heating, ventilation and air-conditioning systems
OHS items
Roof draining systems

## 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) | **1816** | **26%** | • Timber Framing<br>• Unreinforced Masonry<br>• Fire Separation<br>• Footings and slab construction<br>• Wet Areas & External Waterproofing | • General gas installation<br>• Heating, ventilation and air-conditioning systems<br>• Roof Drainage Systems<br>• Sanitary plumbing systems<br>• Water services |
| Apartments ≥2 sole occupancy (Class 2 + mixed-use) and group dwellings and hospitals (Classes 3, 4, 9) | **107** | **10%** | • Fire Safety Provisions<br>• Timber framing | • Sanitary Plumbing Systems<br>• General Gas Installations |
| Assembly building with no dwellings (Class 9b) | **41** | **29%** | • Fire Safety Provisions<br>• Fire Resistance and Stability<br>• Sanitary and Other Facilities | • Non-Drinking Water Services<br>• Roof Drainage Systems<br>• Cold Water Services<br>• Heated Water Services |
| Office buildings and cafes, shops and markets with no dwellings (Classes 5, 6 + mixed use) | **72** | **33%** | • Fire Safety Provisions<br>• Access for People with a Disability<br>• Damp and Weatherproofing | • Sanitary Drainage Systems<br>• Roof Drainage Systems<br>• Sanitary Plumbing Systems<br>• Heating, Ventilation and Air-Conditioning Systems |
| Warehouse and factories and carparks – no dwellings (Classes 7a, 7b, 8) | **28** | **32%** | • Fire safety provisions<br>• Fire resistance and stability<br>• Access for people with a disability | • Roof Drainage Systems<br>• Sanitary Plumbing Systems |

# 4. Case studies

## Plumbing in a Class 1 dwelling

*Sanitary drainage systems issues*

A consistent issue seen in proactive plumbing inspections, particularly affecting 2-storey dwellings, is the use of 88-degree junction installed on the aboveground sewer. This installation is not permitted on graded suspended sewer because junctions must not be greater than 45 degrees, as stated in the AS/NZS 3500.2:2018 Clause 4.9.

The use of these junctions on grade can cause a build-up of material leading to sewer blockages. Most of these junctions are used on sewer stack work in 2-storey dwellings, and blockages at these junctions can be difficult to access, resulting in great expense to consumers to remove the blockage.

The VBA notified the builder and relevant building surveyor of all 88-degree junction installations on aboveground sewers. The builder must rectify the issues and provide the VBA with evidence to verify compliance.

## Construction of double-storey yacht club (Class 9b)

*Insufficient reinforcement in large suspended concrete slab*

Proactive inspection on a double-storey yacht club construction found inadequate fall protection from an open lift well and identified an incorrect placement of the steel reinforcement of a large suspended slab. The steel placement was not in line with the approved engineering drawings for the slab.

A VBA notification of high-risk building activity sent to the builder prompted immediate action to address the matters. The builder provided documentary evidence (supplied by the design engineer) indicating the correct placement of the reinforcing steel and clarifying items considered acceptable by the engineer.

Photographic evidence was also provided to indicate the site had been made safe with fall protection. The relevant building surveyor also acknowledged acceptance of documentary evidence and included a certificate of compliance.

## Plumbing in a mixed-use Class 3 dwelling

*Sanitary drainage systems issues*

A proactive inspection on a mixed-use residential complex found that the sanitary drain was undersized. The installed vented drain could only have a maximum loading of 165 units. However, the plans had approximately 272 units that would be serviced by this drain.

A VBA notification of the undersized drain (100mm pipe) was sent to the developer who subsequently arranged for the drain to be replaced with a larger 150mm pipe. The VBA closed the matter after the developer provided comprehensive photographic evidence of the pipework being replaced.

## Construction of a new Class 1 dwelling

*Work beyond parameters of the building permit and serious sub-standard work*

Proactive inspection of a Class 1 building

- Roof design – The corrugated roof had a 10-degree pitch containing valley gutters. This contravenes the Australian Standards which do not allow valley gutters in roof pitches below 12.5 degrees. A substantial pitch is required to waterproof the roof. The builder confirmed the appointment of a new licensed roof plumber to rectify the roof.
- Sub-surface draining – Drainage trenches installed within 1500mm of the dwelling had a soil profile that required a 300mm compacted clay plug. The builder confirmed the plumber had been contacted to rectify.

- Timber frame – There was no post-beam connection to an alfresco area as per engineering plans, and fixings were missing to stirrup or post connections. The constructed LVL bearers were exposed and not suitably treated for prolonged exposure to weather (having no damp proof course between masonry and bottom). The builder contacted the carpenter to install missing fixings, and the engineer revealed structures were built beyond parameters of the building permit (endorsed), with multiple compliance risks issues across several structures and work.

A VBA notification of high-risk building activity, sent to the builder and relevant building surveyor, prompted the relevant building surveyor to inspect the site and immediately issue a stop work notice. The relevant building surveyor also advised the VBA they would oversee all items needing rectification, including the following issues:

- Masonry structures – Two masonry walls had been constructed which were not on the endorsed drawings, including one which was constructed over an easement and the surrounding sewage and storm-water pits (where a 'report and consent' of the service authority is required).The relevant building surveyor immediately arranged a stop work order and the builder confirmed that the walls will be demolished.
- Earthworks – The site cut did not reflect the engineering drawing and the required fall-away from the base of the building was not achieved, allowing water to pond beneath the dwelling. Builder confirmed that a new site cut had been organised.
- Slab construction – A considerable bottom plate overhang of approximately 60mm was observed between the garage and dwelling. The engineering drawings nominate the wall as an internal load-bearing wall. The builder engaged the engineer to provide a method of rectification.
- Subfloor – Inadequate ventilation to the areas constructed with a subfloor and sections of the subfloor. External walls did not have external lining installed to protect building fabric from external elements. Additionally, the ground-surface levels (adjacent to the ground-floor slab-finish floor level) beneath the subfloor area do not provide for adequate freeboard to prevent water ingress to the ground-floor walls and building interiors.
- Wall cladding – Not installed as per manufacturer's guidelines, with no flashing material installed and no metal shelf angle to close the cavity at the bottom of the panels. No allowance for control (AJ) joints provided in the installation of the Hebel. Builder arranged for the reinstallation of the wall to include compliant ventilation and vertical joints spacing, and an inspection was scheduled on site for the RBS to approve.

The RBS cancelled the stop work notice after he inspected the site and was satisfied the items nominated in his notice were complied with, which related to work carried out contrary to the building permit's approved documentation and without first obtaining a building permit for the brickwork structures.

Due to the number of noncompliant items that require substantial work, the RBS committed to monitoring the rectification of all items and notifying the VBA of their rectification.

# 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 Q1 proactive inspections

**BUILDING**

**1490 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 | 1288 | Demolition 0.4%<br>Foundations 3.5%<br>Footings 4%<br>Frame 27%<br>Lock-up 14%<br>Fixing 25%<br>Final 12%<br>Completed 2% | **338 (26%)** | **Timber framing** - Penetrations >25mm through top plates. Strong backs not installed in accordance with manufactures installation guidelines. Missing or inadequate bracing.<br>**Unreinforced brickwork and accessories** - Control joints not maintained adjacent to windows and doors. Brick ties not fixed to timber frame. Lintil has not been provided above electrical box beside control joint. Non galvanised lintel installed in garages.<br>**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. Combustible EPS cladding installed within 1.8m of another building on the same allotment. Timber weatherboards installed to external wall within 900mm of the allotment boundary.<br>**Footings and slab construction** - Exposed steel. Bricks overhanging edge rebate of concrete slab. Slab has been cut through by plumber, Slab has been cut through to foundation and vapour and termite barrier required to be rectified as well as slab.<br>**Structural Steel members** - Web stiffeners not installed in structural steel as per the approved engineering design. Appropriate corrosion protection not provided to lintels. Structural grout missing from base plates of SHS, steel beam to timber beam connections not installed as per approved engineering design. Holes cut in web of structural steel member.<br>**Wet areas and external water proofing** -No water stop installed around the bath hob beneath the bath flange. No water stop installed between floor junctions. No water-resistant plasterboard installed around bath framing and laundry trough area. | 27%<br>11%<br>7%<br>6%<br>4%<br>4% | **12 (0.9%)** | OHS items | n4 | Referred to relevant co regulator on same day |
| | | | | | | | Earthworks (finished ground level sloping towards dwelling) | n1 | RBS issued a stop work notice and DTF to the builder who subsequently rectified the issue |
| | | | | | | | Earthworks (deep site cuts affecting public and adjoining properties) | n3 | RBS issued a stop work notice and DTF to the builder who subsequently rectified the issue |
| | | | | | | | Fire Separation | n4 | Builder rectified issues |
| Commercial | 202 | Foundations 5%<br>Demolition 1%<br>Footings 3%<br>Frame 41%<br>Lock-up 15%<br>Fixing 13%<br>Final 16%<br>Completed 6% | **53 (26%)** | **Fire Safety Provisions (Fire Fighting Equipment, Construction of Exits and Provisions of Escape)** - Fire Hydrant Clearance of 1m not provided. Building Permits is missing report and consent applications relating to Regulation 129. 1m clearance for escape provisions not met in various situations; near principle pedestrian entry, toilets and change rooms. Incorrect construction of exist; the going dimensions of several of the concrete steps were measured at less than 250mm. Cupboard with cavity slider installed under non-fire-isolated stairway. Sanitary facilities have been constructed under the non-fire isolated stairway.<br>**Access for People with a Disability** - Turning space at hallway termination, Plan shows sliding door without clearances. No entry/exit point provided in accordance with D3.10. No ambulant toilet or toilet seat and backrest does not have minimum luminance contrast.<br>**Damp and Weatherproofing** - Weep holes of brickwork are located below the adjacent concrete level. No minimum vertical upturn of external waterproof membrane installed. Water resistant substrate not installed in shower.<br>**Fire Resistance and Stability** - Combustible timber noggings installed in external walls required to be non-combustible.Steel beam has not been coated with vermiculite fire protection on all sides.<br>**Compartmentation and Separation** -Shaftliner not installed as per the manufactures guidelines including absence of required mineral wool between the brick veneer and the shaftliner junction, running services in the gap between the shaftliner and timber framework. Shaftliner parti wall studs have not been vertically aligned in accordance installation manual. Missing alumnium brackets on both sides of shaftlines. Penetrations in shaftliners. Damage to shaftliner in several location. Unprotected openings within 3m of the allotment boundaries.<br>**Structural Provisions** - Roof bracing has been incorrectly installed, wall bracing is missing and incorrectly fixed to frame, tie downs of timber frame to concrete slab not installed, load points from truncated girder trusses have been inadequately supported. Inadequate back propping of suspended slab, connection of pre-cast concrete panels to slab not installed as per approved engineering design. | 16%<br>15%<br>9%<br>9%<br>8%<br>7% | **3 (1.5%)** | OHS items (Exposed bored pier without any restrictions) | n1 | Builder rectified issues on same day |
| | | | | | | | Fire Fighting Equipment and Smoke Hazard Management | n2 | Builder rectified issues |
| | | | | | | | Lift Installation requirements Access for People with a Disability | n1 | Builder provided documents |
| | | | | | | | Structural Provisions (footings) | n1 | Builder rectified issues |
| | | | | | | | Works not as per building permit | n1 | Engineering documents clarified works were within permit |

## Appendix 3 - Detailed view of Q1 proactive inspections

**PLUMBING**

**574 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** | 528 | Demolition 1%<br>Foundations 5%<br>Footings 5%<br>Frame 35%<br>Lock-up 20%<br>Fixing 21%<br>Final 12% | **133 (25%)** | **General gas installation** - Insufficient separation of gas piping with other services (electrical and water). Gas lines not UV protected, and fittings were not lagged for corrosion. Flue off the ducted heating unit was not clipped. Gas piping not labelled at gas meter. No reversion fitting provided.<br>**Heating, Ventilation and Air-Conditioning Systems** - According drain not discharging over down pipe causing corrosion to roof sheets and eaves gutters. Refrigeration pipe incorrectly laid and clipped. Crushed ductwork and tight bends. Evaporative cooler to close to gas flue. Sewer vent is within 5 m of the evaporative cooler installation.<br>**Sanitary plumbing systems** - no backflow prevention at several site. Non-potable (recycled) water pipes has been installed too close to other water supplies and cold-water service has been installed too close to drainage. A sewer branch has been used in the vertical section of a sewer stack within the 600mm exclusion zone. Smart wastes were installed using brass screws on sewer drainage which are not corrosion resistant. 88–degree junctions installed on a graded sewer.<br>**Cold water services** - Separation with other services. Omission of pressure limiting valve. Absence of lagging through slabs footings. Evaporative cooler water supply has not been penetrated through the roof correctly. Separation between recycled water and cold water has not been achieved.<br>**Roof drainage systems** - Down pipe spreaders are terminating over flashings/capping's and discharging the water onto roof sheets. Omission of expansion joints. Unfolded valley gutter (into eaves gutter) with no expansion in eaves gutter over 20-meter length. Several 'box gutter' issues (change of direction, incorrectly terminated, reduced in size and / or overflow provision. Sumps discharging through side chutes.<br>**Heated water services** - Solar hot water pipes did not have the required clearance from other services. Hot water and electrical separation issues. Solar hot water panels not fitted with anti-frost valves. | 23%<br>18%<br>17%<br>14%<br>13%<br>6% |
| **Commercial** | 46 | Demolition 1%<br>Foundations 5%<br>Footings 9%<br>Frame 28%<br>Lock-up 16%<br>Fixing 26%<br>Final 15% | **5 (10%)** | **Sanitary Drainage Systems** - Main sewer is undersized. No provision for expansion provided on the graded drainage installation in basement on all drains, LIT upside down and branches in exclusion zone.<br>**Surface and Subsurface Drainage System** - Minimum cover on stormwater has not been achieved in sections. Electrical and stormwater separation issues .<br>**Sanitary Plumbing Systems** - Connection within the vertical restriction zone. LITs off centre, incorrect location of expansion joints on both stacks.<br>**General gas installation -** Gas and water separation issues. UV protection required on gas pipe. | n4<br>n1<br>n1<br>n1 |

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