Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Building and Energy

Compliance report

A summary of technical building inspections

(Class 1 - residential buildings)

2018/19

May 2020

Contents

1. Introduction

Under the *Building Services (Complaint Resolution and Administration) Act 2011* (the 'CRA Act') the Building Commissioner has the function and power to audit the work and conduct of registered building service providers.

As such, the Department of Mines, Industry Regulation and Safety - Building and Energy Division (Building and Energy) has developed an audit program to monitor whether registered building service providers are complying with their registration requirements and building work is being undertaken to the applicable building standards in accordance with legislation.

The findings of these audits are used to educate building industry participants and inform policy development. Where non-compliant building work is found during the course of an audit, the matter is brought to attention of the builder and, in some cases, the relevant permit authority which has the power to enforce compliance. Further investigations are also undertaken in cases where registered building service providers may have breached their legislation obligations.

This report provides an overview of the findings of Building and Energy's technical inspections of class 1 buildings during 2018-19.

2. Building and Energy's Inspections and Methodology

Building and Energy undertakes two different types of inspections – a Compliance Inspection and a General Inspection.

2.1 Compliance Inspections

With a focus on registration obligations the Building Commissioner is able to designate authorised officers to carry out Compliance Inspections of the work and conduct of registered building contractors and registered building surveying contractors. These inspections are carried out pursuant to the powers under Section 64 of the CRA Act and focus on the registered building service provider.

The intent of Building and Energy's compliance inspections is to monitor the work and conduct of building contractors and to determine whether all the requirements for registration are being met.

Each year Building and Energy selects a number of builders to audit and these are chosen on a random and targeted basis. An average of six buildings per building contractor are inspected in addition to carrying out an examination of the builder's regulatory obligations. An inspection of the building work is referred to as a 'technical' inspection.

2.2 General Inspections

The Building Commissioner's broader, advisory role to monitor how well the building service Acts are operating and how well building standards are being applied is fulfilled by designating authorised officers to carry out General Inspections of building and building surveying work. A General Inspection can be carried out on a random selection of buildings (random General Inspections) or can target particular elements of the design and construction of a building (targeted General Inspections). These inspections are carried out pursuant to the powers under Section 65 of the Complaint Resolution and Administration Act and focus on the building.

An inspection of the building work in a General Inspection is also referred to as a 'technical' inspection.

Data collected during a targeted general inspection is not captured in this report as the information is stored and published separately.[1] However, data collected subsequent to a targeted general inspection is collected, analysed and often discussed in this report – see Section 3.2 – Previous General Inspection and Compliance Reports.

2.3 Inspections Methodology

Once a site is identified for a technical inspection, building inspectors gather and review all the necessary building approvals information about the site prior to conducting the inspection.

Building and Energy has developed a checklist which consists of 184 inspection points which could be considered during the course of a technical inspection (see **Appendix** A) Not all inspection points are assessed depending on the stage of building work completed and whether any completed work has since been concealed due to later works.[2]

Once the inspection is finalised, an Inspection Report is generated which is provided to the registered building service provider.

3. Summary of Inspections and Findings

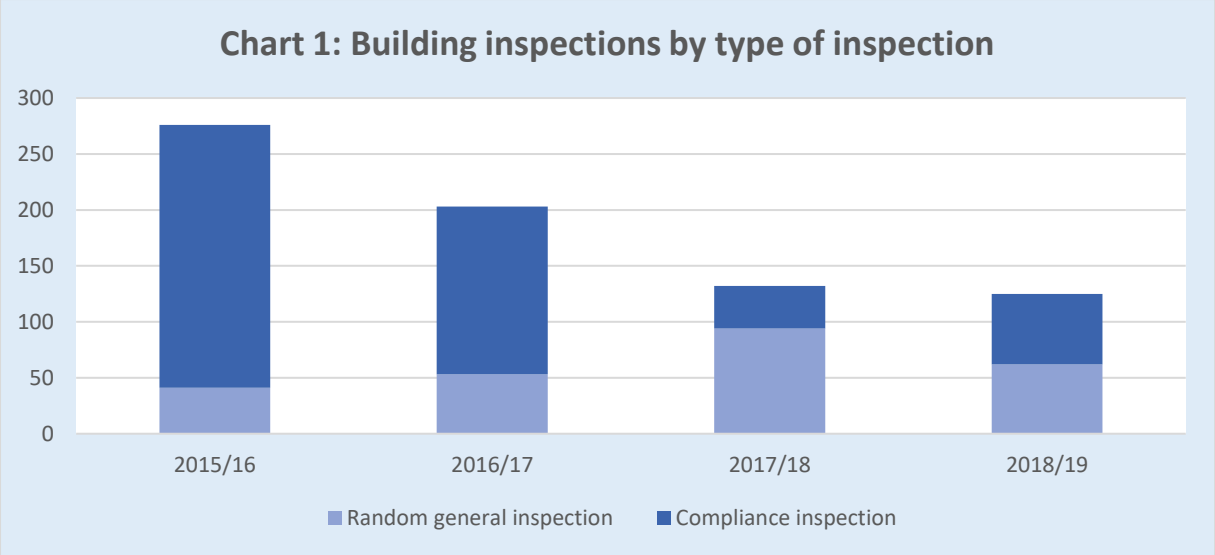
In 2018/19, Building and Energy undertook 125 technical inspections of building work stemming from its Compliance and random General Inspections activities (see **Chart 1**). This number has reduced from 276 inspections in 2015/16 due to Building and Energy commencing

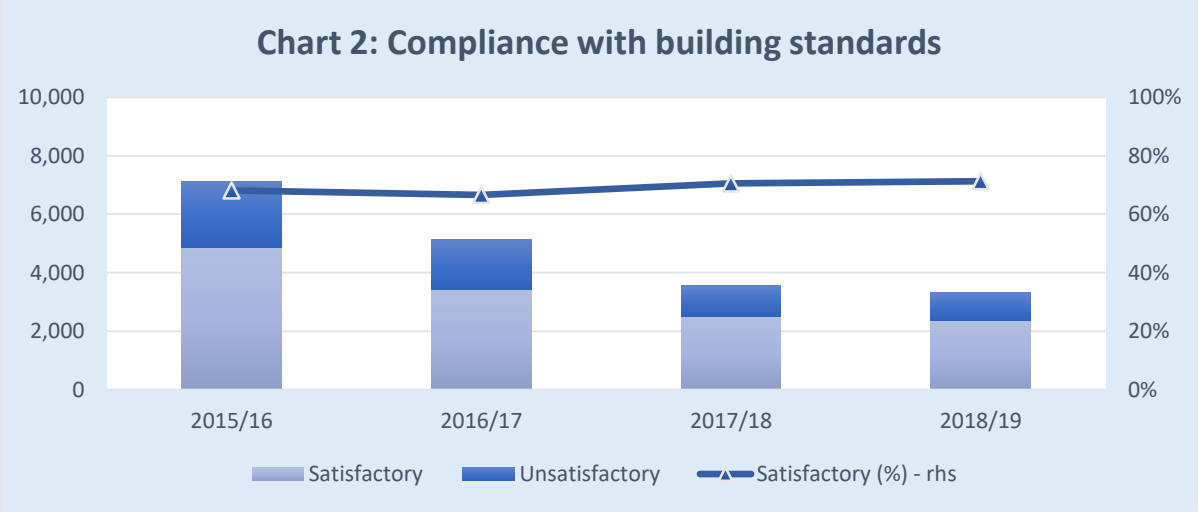
[1] For example, General Inspection Report One – A General Inspection into Metal Roof Construction (2017)

[2] An inspection point is deemed to be unsatisfactory where the building work does not comply with the applicable building standards and/or approved plans. Where the approved plans appear to be inconsistent with the applicable building standards, this information may be referred to the building surveyor audit program. An audit may be commenced on the relevant building surveying contractor in order to assist with their understanding of how to demonstrate compliance.

inspections into other classes of buildings and undertaking targeted General Inspections into specific areas of construction which are reported on separately.[3]

During the 125 technical inspections performed in 2018/19 a total of 3,327 inspection points were assessed by Building and Energy building inspectors. Of these, 2,372 (71%) were deemed to be satisfactory (see **Chart 2**).





A breakdown of satisfactory rates for each inspection point is provided at **Appendix A**.

[3] See General Inspection Reports (link) and Compliance Reports (link)

3.1 Findings by Categories of Building Work

The 184 inspection points are grouped into 24[4] categories of building work which are based on the trade that would likely perform the work and the stage of construction that they would be performed. The total number of inspection points varies within each category.

Compliance rates vary between the different categories (see **Table 1**). Of the 24 categories of building work, there were 12 with a minimum of 40 inspection points assessed during 2018/19. The proportion of inspection points deemed satisfactory for these 12 categories ranged from 18 per cent for termite management to 97 per cent for fire separation.

Table 1: Categories of building work

Category of building work	Number of inspection points	Satisfactory	Unsatisfactory	Total	Satisfactory (%)
Brickwork	26	868	333	1201	72%
Bush fire area requirements	11	23	24	47	49%
Ceilings	5	30	19	49	61%
Drainage work	2	2	1	3	67%
Energy efficiency	6	7	3	10	70%
Excavation work	3	2	5	7	29%
External render and plaster	5	33	8	41	80%
Fire separation	6	137	4	141	97%
Fixtures	10	13	1	14	93%
Glazing	5	2	2	4	50%
Internal render and plaster	6	33	2	35	94%
Painting	11	0	0	0	-
Roof cladding	6	180	17	197	91%
Roof tie down	4	218	80	298	73%
Safe movement and access	7	2	3	5	40%
Slab	19	233	112	345	68%
Steel framing	9	10	1	11	91%
Structural steel	4	129	59	188	69%
Termite management	3	14	64	78	18%

[4] Some types of building work are included in the checklist used by inspectors but are rarely inspected. For example, painting work is rarely inspected by building inspectors as there is a separate inspection program for painting work undertaken by a painting inspector engaged by Building and Energy. The painting inspector has trade specific knowledge and expertise as well as improved access to testing equipment to allow for higher quality inspections. Other inspection points may only be able to be partially determined, e.g. internal/external render and plaster is based on visual appearance and hand touch only and may not pick up inherent mix or moisture content issues.

Table 1: Categories of building work					
Category of building work	**Number of inspection points**	**Satisfactory**	**Unsatisfactory**	**Total**	**Satisfactory (%)**
Timber roof framing	15	379	185	564	67%
Timber wall framing	10	47	25	72	65%
Ventilation	2	0	1	1	0%
Wall and floor finishes	3	3	3	6	50%
Wet areas and external waterproofing	6	7	3	10	70%
Total	**184**	**2372**	**955**	**3327**	**71%**

3.2 Findings in relation to issues identified in previous General Inspection and Compliance Reports

As a follow up to the findings from General Inspection Report One - Roof construction (steel clad, timber-framed) Building and Energy has incorporated the roof construction inspection points into the checklist for the technical inspections.

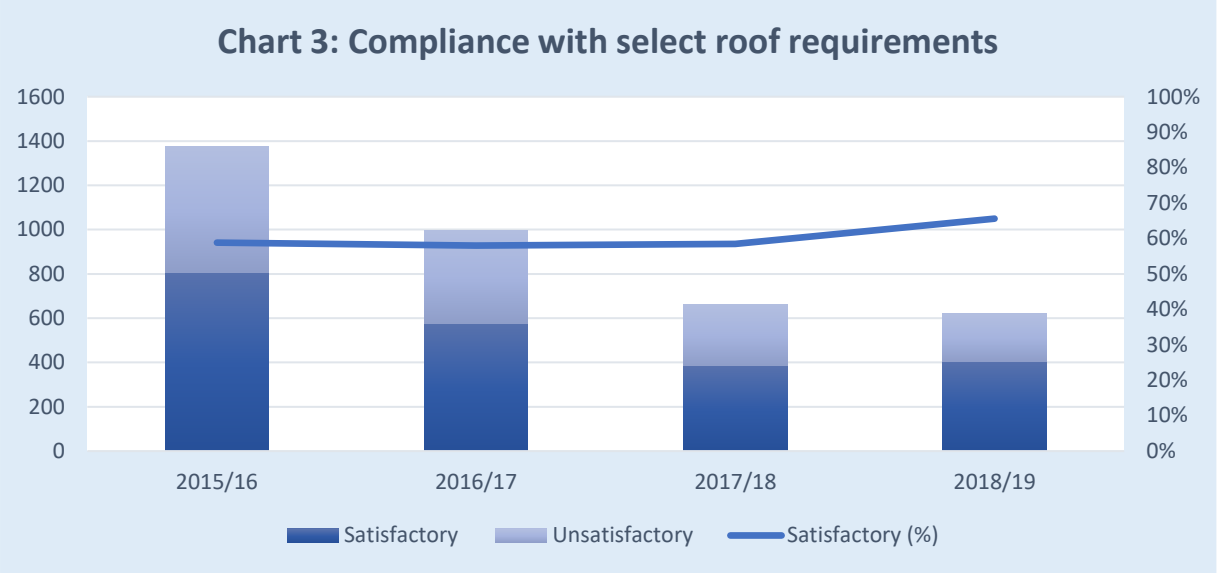
Building and Energy currently look at 13 possible inspection points during a technical inspection that are relevant to the structural 'chain' necessary to provide confidence that a sheet metal clad timber framed roof resist necessary uplift forces.

These are set out in the **Table 2**, including satisfactory rates for 2018/19 and reasons for non-compliance.

Table 2: Roof construction				
Inspection point	**Satisfactory**	**Unsatisfactory**	**Satisfactory (%)**	**Main reasons for unsatisfactory rating**
Corrosion protection type and mass of roof tie down straps	49	24	67%	Galvanised coating insufficient thickness for buildings durability rating.
Attachment and appropriate fixings of roof tie down straps	32	13	71%	Attachment of tie-down straps were not in accordance with engineering specifications.
Collar ties	39	8	83%	Lack of bracing and/or insufficient fixing used for length of collar tie.
Dimensions of roof tie-down straps	71	18	80%	Inappropriate use of perforated tie-down straps. Cross-sectional size of tie-down straps not in accordance

Table 2: Roof construction				
Inspection point	**Satisfactory**	**Unsatisfactory**	**Satisfactory (%)**	**Main reasons for unsatisfactory rating**
				with engineering specifications.
Metal roof battens	25	1	96%	Overdriven nails.
Placement of roof tie down straps	66	25	73%	Spacing of tie-down straps in excess of engineering specifications and/or AS4773. Embedment of tie-down straps above minimum courses from top of wall required in engineering specifications.
Rafter correctly tied down	29	31	48%	Insufficient (number, placement, embedment) attachment of connectors, especially where machine driven nails were used.
Remainder of roof corrections	36	34	51%	Absence of tie-down straps as required. Insufficient (number, placement, embedment) attachment of connectors, especially where machine driven nails were used.
Tie-down of steel member	16	17	48%	Missing or insufficiently attached tie-down rods. Includes bent tie-down rods, rods attached to beams or insufficient welding.
Tie-down of timber roof beams	17	34	33%	Sections of dwellings where there were no tie-downs of timber roof beams. Poor connection of timber roof beam tie-down straps.
Timber roof batten general area sheet roofs	11	0	100%	N/A
Timber roof battens in 1200 mm edge zone for sheet roofs	10	1	91%	Insufficient number of nails used.
Timber truss correctly tied down	5	7	42%	Insufficient connections.

There has been a small improvement in the satisfactory rate for the above 13 roof construction inspection points, rising from 58% in 2015/16 to 66% in 2018/19 (see **Chart 3**).



This improvement is attributed to changes to industry practices in recent times based on recommendations from the Roof Report, including:

- improved documentation for framed roof construction; and
- establishment of an industry reference group.

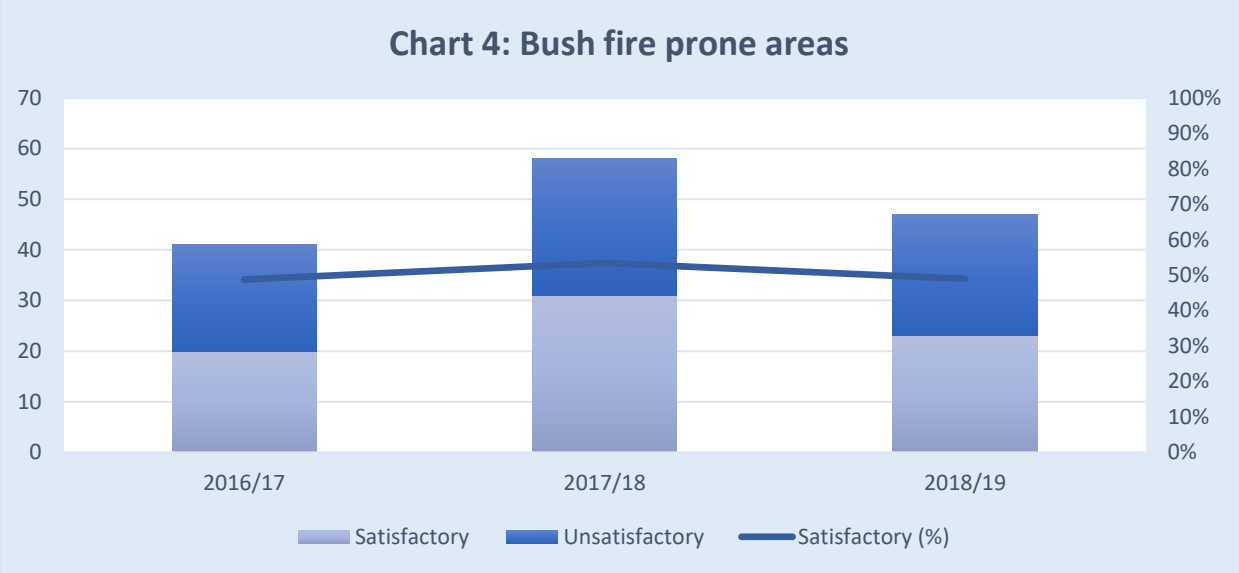
General Inspection Report Three - Bush fire building requirements

The *Building Code of Australia* has contained bush fire construction requirements for prescribed residential buildings located in designated bush fire prone areas since 1996. In Western Australia, the application of these requirements was at the discretion of individual local governments until December 2015 when a bush fire reform package was launched in response to the Perth Hills bush fire of 2011. The reform included amendments to the Building Regulations 2012 which meant that the BCA bush fire construction requirements applied to all construction in a bush fire prone area from 8 April 2016.

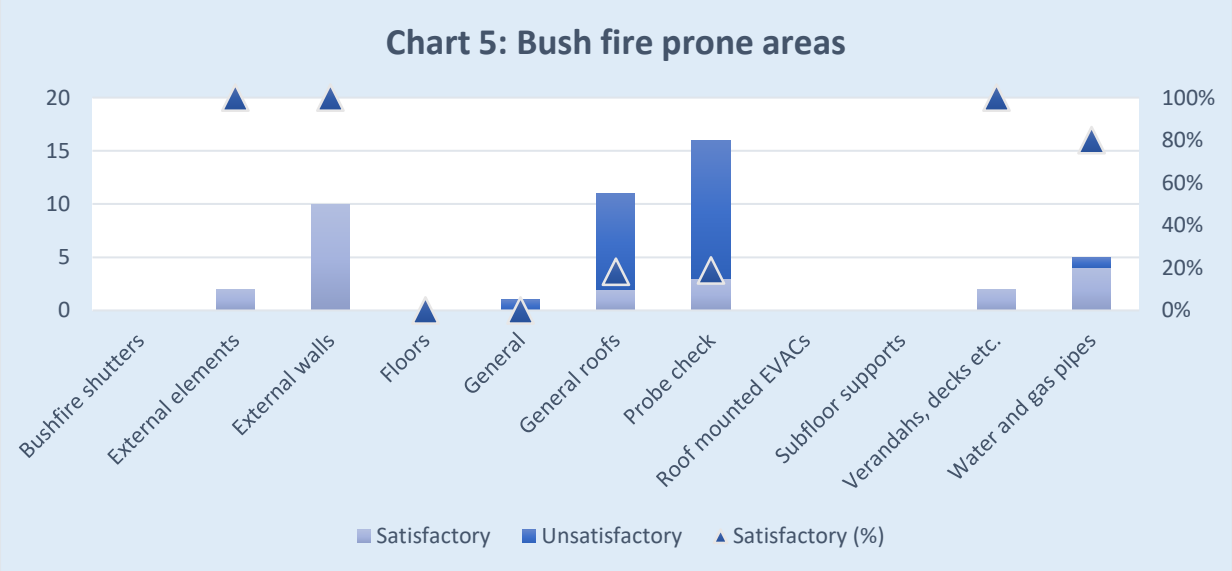
Shortly after the introduction of the new requirements, Building and Energy included bush fire area requirements in the list of inspection points that could be assessed when undertaking a building inspection. These inspection points included assessing that bush fire shutters, subfloor supports, floors, external walls, external glazed elements, roofs, verandahs and water and gas supply pipes were appropriate for the Bushfire Attack Level determined to apply at that property.

In 2017, an assessment of buildings under construction in bush fire prone areas was performed based on inspections conducted as part of the audit program, with it being identified that less than 50 per cent of inspection points assessed had been deemed satisfactory. As a result, it was determined that a general inspection of bush fire prone area requirements would be undertaken, with General Inspection Report Three – Bush fire building requirements in Western Australia released in May 2020.

Less than half of the inspection points relating to bush fire area requirements assessed during 2018/19 were deemed satisfactory (see **Chart 4**).



The main bush fire prone area inspection points deemed unsatisfactory related to roofs and probe checks (see **Chart 5**). For roofs, the main area of concern was the frequent instances where sarking and non-combustible materials were not observed to have filled the gaps between the top of the fascia and underside of roof sheeting. In instances where a probe check was conducted, gaps in excess of the prescribed 3 mm were observed on numerous occasions. This included for weep holes, around barge board flashings, the junction of the exterior masonry wall and the roof space bird board, around windows, joins in the cladding and service and drainpipe penetrations.



Compliance Report – Ceiling construction

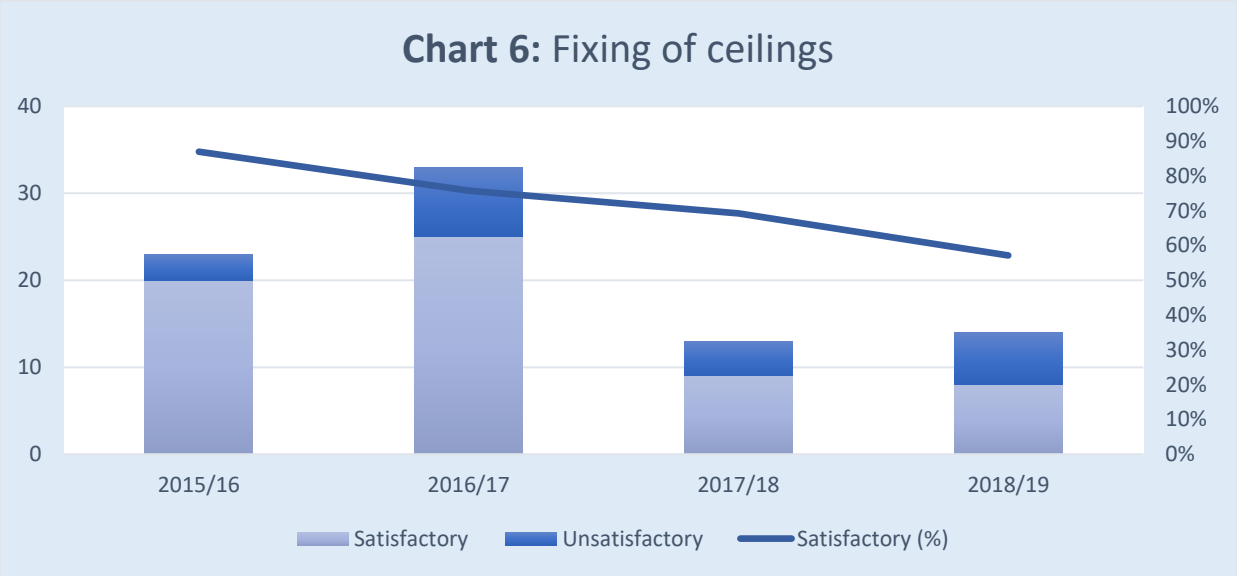
Building and Energy published a Compliance Report - 'Investigation into gypsum plasterboard ceiling collapses'[5] in 2017. This investigation was the result of complaints regarding the collapse or failure of a large section of gypsum plasterboard ceiling sheeting within Western Australian homes between 2014 and 2016. Building and Energy inspected a number of these ceiling collapses, and found that while various factors contributed to the failures, poor application of adhesive was a common occurrence.

There are five inspection points relating to ceiling work that Building and Energy may assess during a building inspection: lining back blocking, lining workmanship, fixing of lining, other lining and cornices.

The narrow 'window of opportunity' for inspecting ceiling work resulted in only 49 inspection points related to ceilings assessed in 2018/19 with (61%) considered satisfactory (see **Chart 6** below).

[5] www.commerce.wa.gov.au/sites/default/files/atoms/files/final_report_-_ceiling_collapses_may_2017_0.pdf

Of concern is the proportion of inspections where the fixing of the ceiling can be assessed which result in an unsatisfactory finding, with the majority of these recorded as being unsatisfactory due to the poor application of adhesives. Six of the 14 properties where the fixing of the ceiling lining could be assessed in 2018/19 were deemed unsatisfactory. In five of these instances, the building inspector recorded that 'smearing' of the adhesive daub resulted in the daub being insufficient, while on one occasion it was noted that the spacing of adhesive daubs and screw fixings was not in accordance with AS/NZS 2589 Gypsum linings – Application and finishing.



3.3 Findings in relation to potential Mandatory Inspections

In mid-2017 the Building Ministers Forum commissioned Peter Shergold and Bronwyn Weir to prepare a report looking into compliance and enforcement systems in Australia's building and construction industry. The Building Confidence: Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia[6] included 24 recommendations, one of which was that 'each jurisdiction require on-site inspections of building work at identified notification stages'.

Shergold and Weir suggested five stages where mandatory inspections could be required:

1. In situ reinforcement in footings/slabs;
2. Frames, including roof constructions;
3. Fire-rated wall systems;
4. Pool barriers; and

[6] Available at: www.industry.gov.au/sites/g/files/net3906/f/July%202018/document/pdf/building_ministers_forum_expert_assessment_-_building_confidence.pdf

5. Final, post-completion of all work.

Mandatory inspections of pool barriers is already a requirement in Western Australia.

In 2018/19 Building and Energy analysed the findings of technical inspections from its audit activities to gauge the level of compliance at the suggested mandatory inspection stages.

Table 3 provides an overview of the findings of inspections conducted in 2018/19 that reflect the proposed stages for mandatory inspection listed above.

Table 3: Potential mandatory inspection findings

Inspection stage	Inspection point	Satisfactory (%) CRIS	Satisfactory (%) 2018/19
In situ reinforcement in footings /slabs	• Slab – Finished work – footing excavation, embedment and foundation material • Slab – Finished work -footings • Slab – Finished work - cracking • Slab – Finished work - parging • Slab – Preparation work - DPM penetrations • Slab – Preparation work - DPM other • Slab – Preparation work – bar chair reinforcement • Slab – Preparation work – re-entrant reinforcement • Slab – Preparation work – cover reinforcement • Slab – Preparation work – steel lap reinforcement	**62%**	**66%**

Table 3: Potential mandatory inspection findings

Inspection stage	Inspection point	Satisfactory (%) CRIS	Satisfactory (%) 2018/19
Frames, including roof constructions	• Roof tie-down – Dimensions of tie down straps • Roof tie-down – Corrosion protection type and mass of tie down straps • Roof tie-down – Placement of tie down straps • Roof tie-down – Attachment and appropriate fixings for tie down straps • Timber roof framing – Rafter correctly tied down • Timber roof framing – Other rafter • Timber roof framing – Timber roof battens in 1200mm edge zone for sheet roofs • Timber roof framing – Timber roof batten in general area sheet roofs • Timber roof framing – Metal roof batten • Timber roof framing – Remainder of roof connections • Timber roof framing – Struts • Timber roof framing – Underpurlins • Timber roof framing – Collar ties • Timber roof framing – Rafter to rafter at ridge connection sheeted roof • Timber roof framing – Timber truss correctly tied down • Timber roof framing – Tie down of timber roof beams • Timber roof framing – Ceiling joists • Timber roof framing – Other compliance • Timber wall framing – Roof • Timber wall framing – Bracing of walls • Timber wall framing – Insulation of walls • Timber wall framing – Bottom plate connection to supporting surface for walls • Timber wall framing – Other walls • Timber wall framing – Connections tie down through to frame • Timber wall framing – Posts and columns to floor • Timber wall framing – Floor joists • Timber wall framing – Floor connections • Timber wall framing – Other floor • Steel framing – Roof connections • Steel framing – Roof tie down • Steel framing – Roof corrosion • Steel framing – Roof framing dimensions • Steel framing – Other roof • Steel framing – Framing dimensions bracing walls • Steel framing – Insulation and thermal breaks for walls • Steel framing – Other walls • Steel framing – Floors	**67%**	**69%**

Table 3: Potential mandatory inspection findings

Inspection stage	Inspection point	Satisfactory (%) CRIS	Satisfactory (%) 2018/19
Fire rated wall systems	• Fire separation – External walls: Within • Fire separation – External walls: Non-combustible materials • Fire separation – External walls: Other • Fire separation – Separating walls: Underside • Fire separation – Separating walls: Other • Fire separation – Smoke alarms: Other	**96%**	**97%**
Final, post completion of all work	• Ceilings – Fixing of linings • Ceilings – Lining of back blocking • Ceilings – Workmanship of linings • Ceilings – Other linings • Ceilings – Cornices • Bush fire area requirements – Probe check • Bush fire area requirements – General= • Bush fire area requirements – Bush fire shutters • Bush fire area requirements – Subfloor supports • Bush fire area requirements – Floors • Bush fire area requirements – External walls • Bush fire area requirements – External glazed elements, assemblies and external doors • Bush fire area requirements – Roof mounted evaporative coolers • Bush fire area requirements – General roofs • Bush fire area requirements – Verandahs, steps, decks and landings • Bush fire area requirements – Water and gas supply pipes	**55%**	**55%**

Appendix A: Detailed Findings by Inspection points

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Brickwork - Total	**868**	**333**	**72%**
Technical - cavity size	80	1	99%
Technical - clean cavity	39	19	67%
Technical - DPC liquid	0	0	N/A
Technical - DPC other	0	3	0%
Technical - DPC physical	4	0	100%
Technical - flashings above openings	33	13	72%
Technical - flashings below openings	3	28	10%
Technical - insulation	6	7	46%
Technical - other cavity	0	0	N/A
Technical - other flashings	10	12	45%
Technical - other wire ties	0	1	0%
Technical - structure	63	13	83%
Technical - wire tie coating	80	4	95%
Technical - wire tie spacing's	19	21	48%
Workmanship - alignment of built in frames	94	6	94%
Workmanship - attachment of built in frames	3	3	50%
Workmanship - bonding	56	25	69%
Workmanship - coarse and openings	76	4	95%
Workmanship - face	59	6	91%
Workmanship - lintel coating and thickness	57	30	66%
Workmanship - other	1	3	25%
Workmanship - other aspects of built in frames	0	0	N/A
Workmanship - Other lintel	3	50	6%
Workmanship - utility	72	6	92%
Workmanship - weepholes	51	56	48%
Workmanship - perpends and joints	59	22	73%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Bush fire area requirements - Total	**23**	**24**	**49%**
Bush fire shutters	0	0	N/A
External glazed elements, assemblies and external doors	2	0	100%
External walls	10	0	100%
Floors	0	0	N/A
General	0	1	0%
General roofs	2	9	18%
Probe check	3	13	19%
Roof mounted evaporative coolers	0	0	N/A
Subfloor supports	0	0	N/A
Verandahs, steps, decks and landings	2	0	100%
Water and gas supply pipes	4	1	80%
Ceilings - Total	**30**	**19**	**61%**
Cornices	5	0	100%
Fixing of linings	8	6	57%
Lining of back blocking	6	13	32%
Other linings	2	0	100%
Workmanship of linings	9	0	100%
Drainage work - Total	**2**	**1**	**67%**
Drainage systems - other	1	1	50%
Drainage systems - water diverted away	1	0	100%
Energy efficiency - total	7	3	70%
Building sealing for conditioned space	0	0	N/A
Ceiling insulation	1	0	100%
Other building sealing	0	0	N/A
Other insulation	2	0	100%
Roof foil installation installed correctly	2	0	100%
Wall insulation	2	3	40%
Excavation work - Total	**2**	**5**	**29%**
Excavation of other	0	1	0%
Excavation of unprotected embankment	1	1	50%
Retaining adequate	1	3	25%
External render and plaster - Total	**33**	**8**	**80%**
Ground level finish of external acrylic	2	3	40%
Ground level finish of external render	9	4	69%
Other external acrylic	0	0	N/A
Other external render	12	1	92%
Workmanship of external acrylic	10	0	100%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Fire separation - Total	**137**	**4**	**97%**
External walls within 900mm	67	3	96%
Non-combustible materials for external walls	69	1	99%
Other external walls	0	0	N/A
Separating walls	0	0	N/A
Smoke alarms	1	0	100%
Underside of roof covering	0	0	N/A
Fixtures - Total	**13**	**1**	**93%**
Benchtop sealing of cupboards	0	0	N/A
Door to frame gaps and alignment for internal doors	5	0	100%
Fixing carpentry	1	0	100%
Furniture of internal doors	1	0	100%
Other cupboards	0	0	N/A
Other internal doors	0	0	N/A
Penetration and sealing of cupboards	0	0	N/A
Sanitary compartment for internal doors	4	1	80%
Supports, joists and heat source proximity of cupboards	0	0	N/A
Workmanship of cupboards	2	0	100%
Glazing - Total	**2**	**2**	**50%**
Other glazing	0	1	0%
Restricted opening for 2nd storey	0	0	N/A
Safety glazing markings	1	1	50%
Straps to frames	0	0	N/A
Window labelling	1	0	100%
Internal render and plaster - Total	**33**	**2**	**94%**
Fixing of linings	1	2	33%
Internal float and set (hardness, curing and workmanship)	12	0	100%
Internal float render	16	0	100%
Other internal float and set	1	0	100%
Other linings	0	0	N/A
Workmanship of linings	3	0	100%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Painting - Total	**0**	**0**	**N/A**
Architraves	0	0	N/A
Ceilings	0	0	N/A
Door frames	0	0	N/A
Eaves	0	0	N/A
External walls	0	0	N/A
Fascia	0	0	N/A
Gutters and downpipes	0	0	N/A
Internal walls	0	0	N/A
Skirting boards	0	0	N/A
Top and bottom edges of doors	0	0	N/A
Window frames	0	0	N/A
Roof cladding - Total	**180**	**17**	**91%**
Fixing of roof sheeting	30	3	91%
Location of downpipes	44	0	100%
Penetration (flues) of roof sheeting	6	0	100%
Gutters	46	11	81%
Spacing and size of downpipes	44	1	98%
Tiles	10	2	83%
Roof tie down - Total	**218**	**80**	**73%**
Attachment and appropriate fixings for tie down straps	32	13	71%
Corrosion protection type and mass of tie down straps	49	24	67%
Dimensions of tie down straps	71	18	80%
Placement of tie down straps	66	25	73%
Safe movement and access - Total	**2**	**3**	**40%**
Balustrade height and spacing's	0	0	N/A
Balustrade structure and handrails	0	0	N/A
Other balustrade	0	0	N/A
Other swimming pool	1	0	100%
Riser and going dimensions of stairs	1	2	33%
Swimming pool barrier	0	1	0%
Swimming pool gate and latch	0	0	N/A

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Slab - Total	**233**	**112**	**68%**
Finished work - alignment	63	13	83%
Finished work - concrete paving (isolation and control joints)	3	9	25%
Finished work - cracking	64	3	96%
Finished work - footing excavation, embedment and foundation material	3	2	60%
Finished work - footings	50	54	48%
Finished work - parging	22	11	67%
Preparation work - bar chair reinforcement	0	0	N/A
Preparation work - clean fill	1	1	50%
Preparation work - cover reinforcement	0	1	0%
Preparation work - DPM other	0	0	N/A
Preparation work - DPM penetrations	0	1	0%
Preparation work - other reinforcement	0	0	N/A
Preparation work - re-entrant reinforcement	0	1	0%
Preparation work - steel lap reinforcement	1	0	100%
Preparation work - placement	1	1	50%
Second storey - propping of temporary suspended slab	5	10	33%
Second storey - set out	6	1	86%
Second storey - slip joints	10	3	77%
Second storey - steel framing of floor trusses	4	1	80%
Steel framing - Total	**10**	**1**	**91%**
Floors	0	0	N/A
Framing dimensions bracing walls	0	0	N/A
Insulation and thermal break for walls	0	0	N/A
Other roof	0	0	N/A
Other walls	0	0	N/A
Roof connections	2	0	100%
Roof corrosion	4	0	100%
Roof framing dimensions	2	0	100%
Roof tie down	2	1	67%
Structural steel - Total	**129**	**59**	**69%**
Columns, roof beams, chamfer and fixings of steel member	43	34	56%
Corrosion protection of steel member	70	5	93%
Other steel member	0	3	0%
Tie down of steel member	16	17	48%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Termite management - Total	**14**	**64**	**18%**
Physical barrier placement	9	64	12%
Termite system - durable notice	1	0	100%
Termite system - other	4	0	100%
Timber roof framing - Total	**379**	**185**	**67%**
Ceiling joists	49	8	86%
Collar ties	39	8	83%
Metal roof batten	25	1	96%
Other compliance	2	11	15%
Other rafter	6	7	46%
Other timber roof beams	3	10	23%
Rafter correctly tied down	29	31	48%
Rafter to rafter at ridge connection sheeted roof	54	5	92%
Remainder of roof connections	36	34	51%
Struts	42	18	70%
Tie down of timber roof beams	17	34	33%
Timber roof batten general area sheet roofs	11	0	100%
Timber roof battens in 1200 mm edge zone for sheet roofs	10	1	91%
Timber truss correctly tied down	5	7	42%
Underpurlins	51	10	84%
Timber wall framing - Total	**47**	**25**	**65%**
Bottom plate connection to supporting surface for walls	13	6	68%
Bracing of walls	12	5	71%
Connection tie down through to frame	2	2	50%
Floor connections	6	4	60%
Floor joists	8	1	89%
Insulation of walls	1	0	100%
Other floor	1	2	33%
Other walls	2	4	33%
Posts and columns to floor	2	1	67%
Roof	0	0	N/A
Ventilation - Total	**0**	**1**	**0%**
Exhaust fans	0	0	N/A
Other ventilation	0	1	0%
Wall and floor finishes - Total	**3**	**3**	**50%**
Floor tiling falls to waste	1	2	33%
Other tiling	0	0	N/A
Tiling workmanship	2	1	67%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Wet areas and external waterproofing - Total	**7**	**3**	**70%**
Other waterproofing	0	0	N/A
Waterproofing of floor and wall junctions	2	1	67%
Waterproofed areas including balconies	1	1	50%
Waterproofing of bath to wall	0	0	N/A
Waterproofing of floor wastes	1	1	50%
Waterproofing of showers	3	0	100%

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