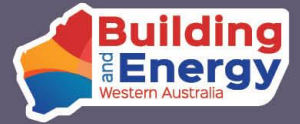




Government of Western Australia
Department of Mines, Industry Regulation and Safety



Compliance report

**A summary of technical
building inspections (Class 1 -
residential buildings)**

2019/20

June 2021

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1. Introduction

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

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.

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 obligations under the legislation.

This report provides an overview of the findings of Building and Energy's technical inspections of class 1 buildings during 2019-20.

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

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

General Inspections are carried out on a random selection of buildings (random General Inspections) or 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

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

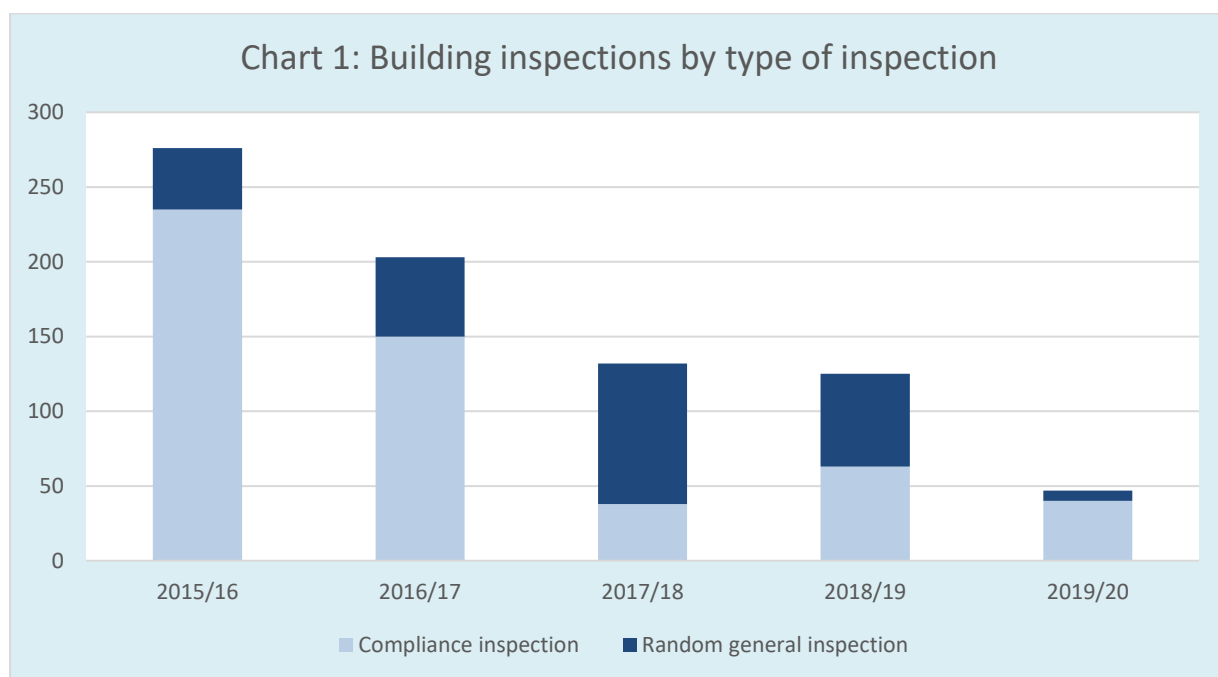
Once the inspection is finalised, an Inspection Report is generated which is provided to the registered building service provider.

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.

3. Summary of Inspections and Findings

In 2019/20, Building and Energy undertook 47 technical inspections of building work stemming from its Compliance and random General Inspections activities (see **Chart 1**).³ This number has reduced from 125 inspections in 2018/19 due to the prioritisation of inspections into other classes of buildings and undertaking targeted General Inspections into specific areas of construction which are reported on separately.⁴

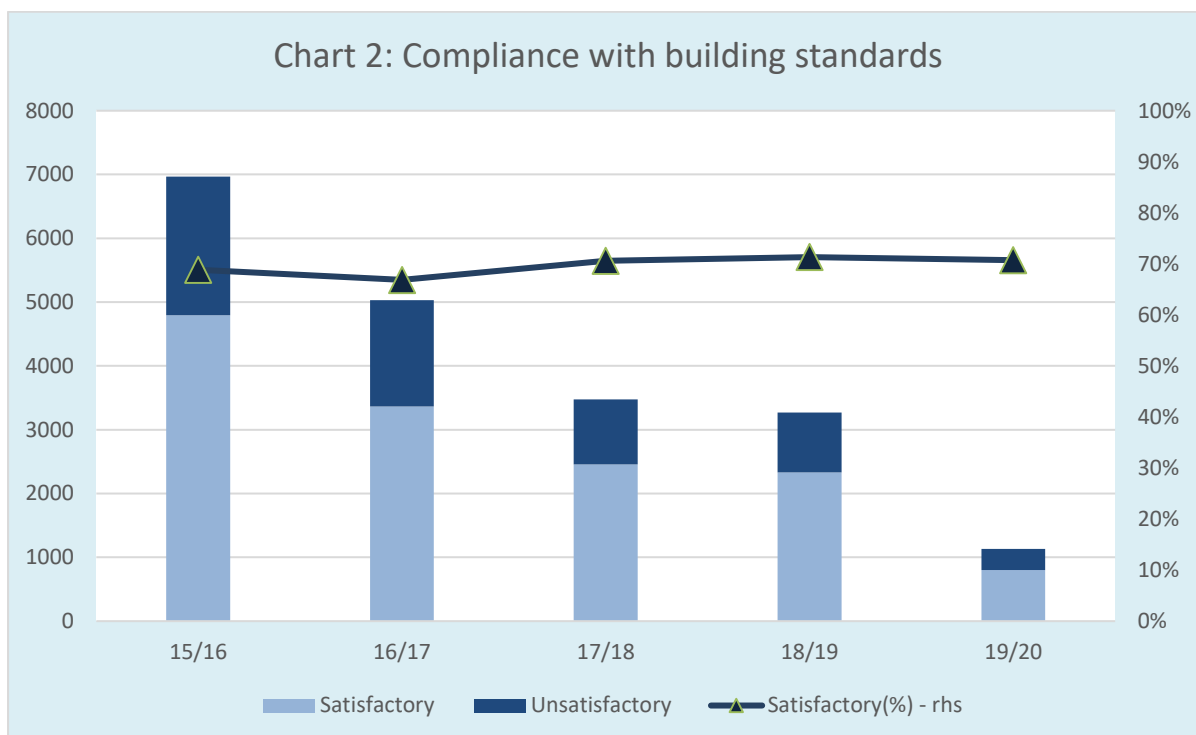


During the 47 technical inspections performed in 2019/20 a total of 1,131 inspection points were assessed by Building and Energy. Of these, 800 (71%) were deemed to be satisfactory (see **Chart 2**). This is consistent with the historical satisfactory rate which has been 71 per cent for the past three financial years.

Satisfactory rates for each inspection point is provided at **Appendix A**.

³ The findings in this report are not intended to represent a systemic

⁴ See 'Downloads' tab at www.commerce.wa.gov.au/building-and-energy/compliance-reports.



3.1. Findings by Categories of Building Work

Of the 184 inspection points on Building and Energy’s inspection checklist, 177 were looked at during at least one inspection in 2019/20. These inspection points are grouped into 24⁵ 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, two areas of interest have been identified as part of this report, being roof tie downs (80 inspection points assessed with 54 per cent assessed as satisfactory), and timber wall framing (42 inspection points at 31 per cent satisfactory). While other categories of building work had a low satisfactory rate, they were generally from a lower number of inspections or not likely to result in a structural issue.

⁵ 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 (%)
Brickwork	26	316	84	400	79%
Bush fire area requirements	11	2	5	7	29%
Ceilings	5	21	3	24	88%
Drainage work	2	0	0	0	N/A
Energy efficiency	6	1	3	4	25%
Excavation work	3	6	4	10	60%
External render and plaster	5	15	1	16	94%
Fire separation	6	35	2	37	95%
Fixtures	10	10	3	13	77%
Glazing	5	1	2	3	33%
Internal render and plaster	6	12	2	14	86%
Painting	11	0	0	0	-
Roof cladding	6	59	9	68	87%
Roof tie down	4	43	37	80	54%
Safe movement and access	7	3	1	4	75%
Slab	19	105	46	151	70%
Steel framing	9	6	0	6	100%
Structural steel	4	33	16	49	67%
Termite management	3	8	22	30	27%
Timber roof framing	14	102	58	160	64%
Timber wall framing	10	13	29	42	31%
Ventilation	2	1	0	1	100%
Wall and floor finishes	3	5	1	6	83%
Wet areas and external waterproofing	6	3	3	6	50%

3.2. Reports

Roof tie downs

In 2014, Building and Energy undertook its first general inspection into a specific issue, being 'General Inspection Report One: A general inspection into metal roof construction in Western Australia'⁶. The general inspection was prompted by a number of factors, including that expert analysis of high-wind events indicated that in most events roof damage was caused at less than the design wind speed.

As a result of the findings of the general inspection, Building and Energy has continued to closely monitor building standards associated with roof construction and to issue advice or technical documents to assist builders to comply with the applicable standards.

One of the areas of concern addressed in the general inspection report was the use of roof tie downs. While Building and Energy observed an increase in compliance in this area since the release of the general inspection report, there was a decline in compliance during 2019/20.

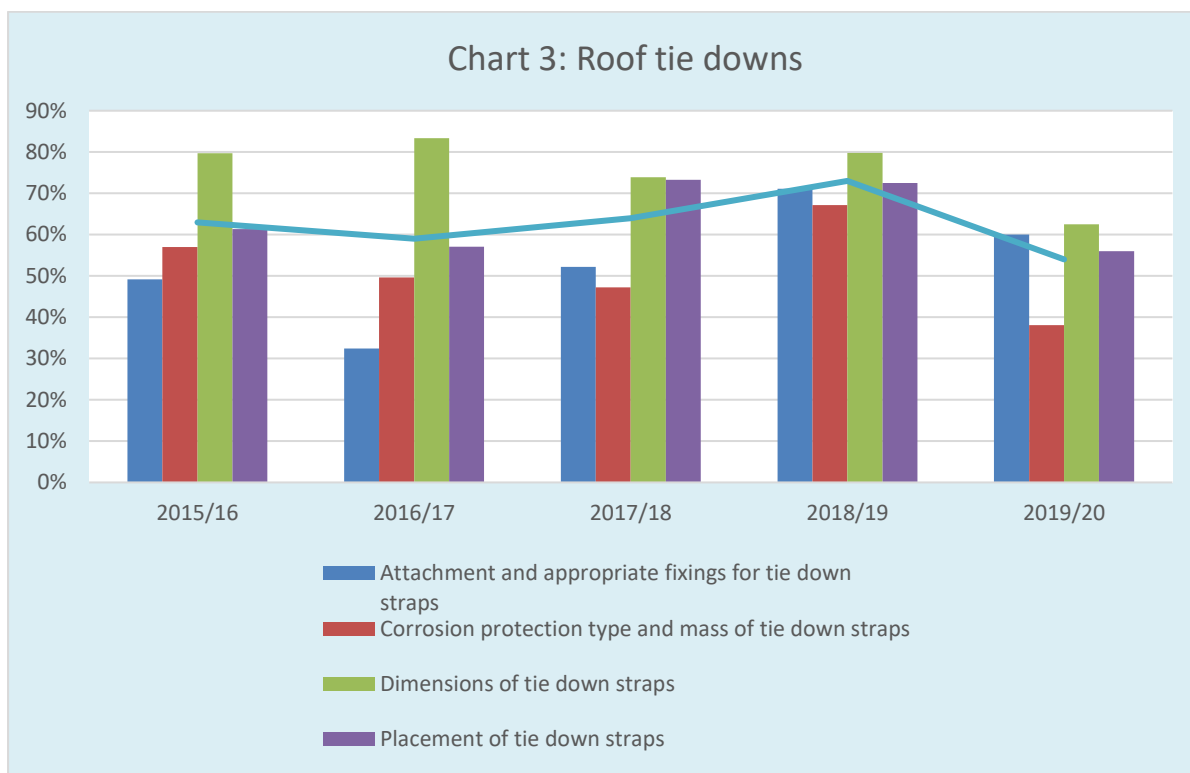
Since the release of general inspection report one Building and Energy has observed an increase in the number of tie down fixings in roof construction; however, while this indicates a greater effort towards compliance, the manner of tie-down is still being incorrectly applied in some instances.

As can be seen in Chart 3, during 2019/20 the proportion of roof tie down elements assessed as satisfactory was 54 per cent, down from 73 per cent in 2018/19. This decline was across all roof tie down inspection points, including:

- attachment and appropriate fixings for tie down straps (60 per cent down from 71 per cent);
- corrosion protection type and mass of tie down straps (38 per cent down from 67 per cent);
- dimensions of tie down straps (63 per cent down from 80 per cent); and
- placement of tie down straps (56 per cent down from 73 per cent).

⁶ Available at:

https://www.commerce.wa.gov.au/sites/default/files/atoms/files/general_inspection_report_2016.pdf

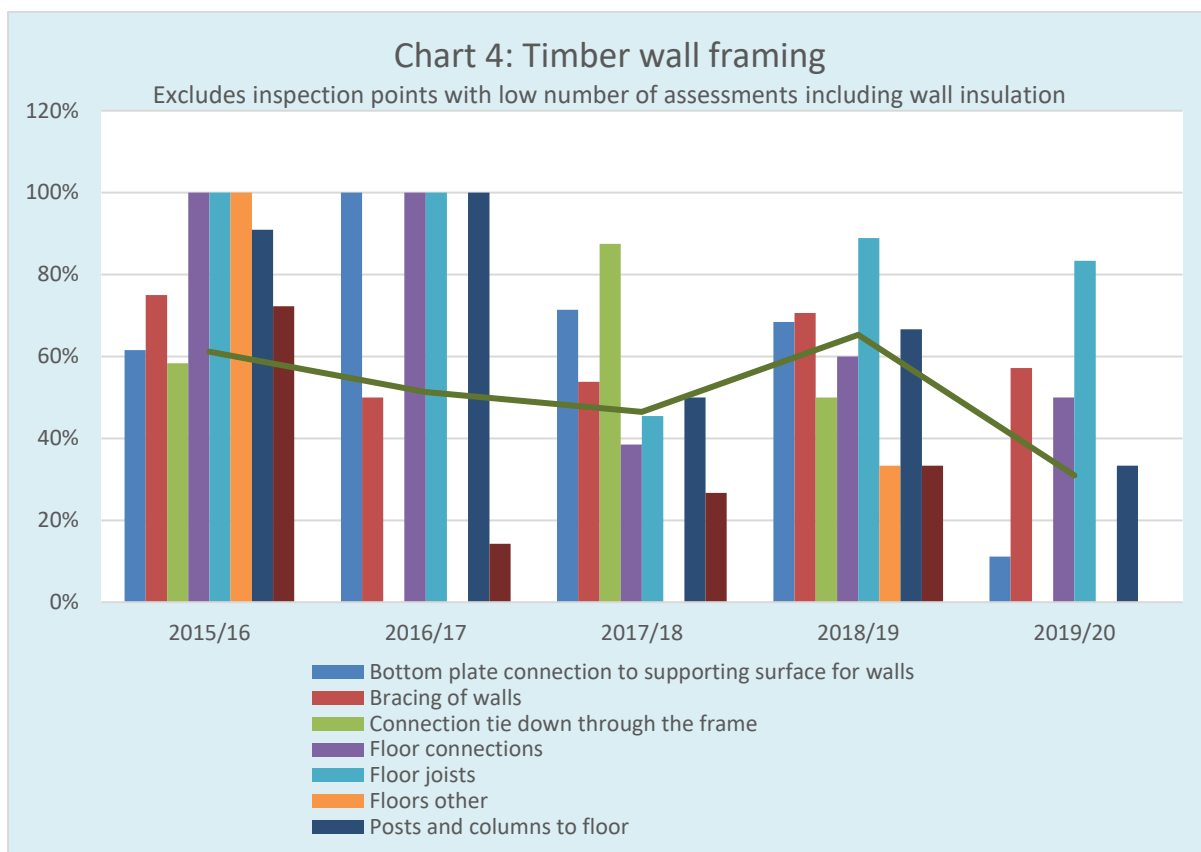


Building and Energy has continued to monitor roof construction through the class 1a technical inspections, and continues to work with industry to ensure building contractors understand the requirements for roof tie downs.

Timber wall framing

Ensuring appropriate connections through the timber wall frame are an important part in ensuring structural integrity of a building. As such, it is concerning to Building and Energy that the proportion of timber wall framing inspection points fell to 31 per cent in 2019/20, down from 65 per cent in 2018/19 (see Chart 4).

This included only one of nine assessments of a bottom plate connection to supporting surface for walls as being satisfactory and zero of nine assessments of the connection tie down through the frame as being satisfactory.

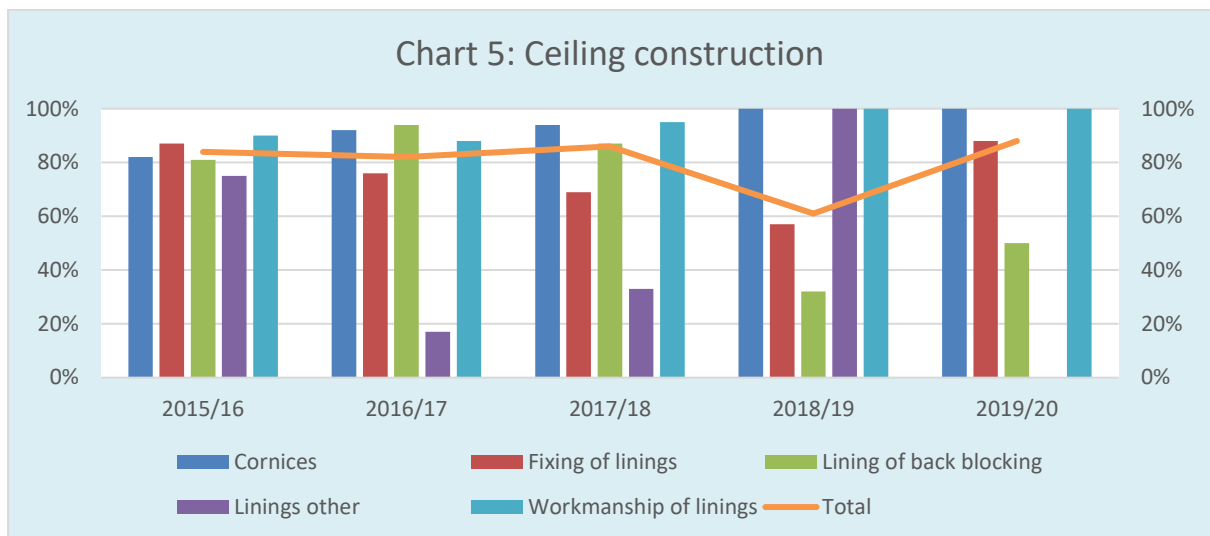


Ceiling Construction

Building and Energy published a Compliance Report – ‘Investigation into gypsum plasterboard ceiling collapses 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 24 inspection points related to ceilings assessed in 2019/20 with (88%) considered satisfactory (see chart 5).



Feedback

Building and Energy uses data collection to support reporting measures that enable a story to be told, including of long-term trends. Building and Energy regularly reviews data collection and analysis and adapts reporting measures. Data is used to inform education and training requirements for the industry, and the development of forward auditing. If you wish to make a suggestion or provide comment on the manner in which data is collected, analysed and reported please direct your feedback to: bcinfo@dmirs.wa.gov.au

Appendix A: Detailed Findings by Inspection points

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Brickwork - Total	316	84	79%
Technical - cavity size	25	0	100%
Technical - clean cavity	9	9	50%
Technical - DPC liquid	1	0	100%
Technical - DPC other	0	1	0%
Technical - DPC physical	2	0	100%
Technical - flashings above openings	9	1	90%
Technical - flashings below openings	7	11	39%
Technical - flashings other	1	1	50%
Technical - insulation	3	3	50%
Technical - other cavity	1	0	100%
Technical - structure	22	4	85%
Technical - wire tie coating	29	2	94%
Technical - wire tie other	0	2	0%
Technical - wire tie spacing's	16	2	89%
Workmanship - alignment of built in frames	27	0	100%
Workmanship - attachment of built in frames	4	0	100%
Workmanship - bonding	21	6	78%
Workmanship - coarse and openings	25	0	100%
Workmanship - face	22	1	96%
Workmanship - lintel coating and thickness	23	6	79%
Workmanship - other	4	0	100%
Workmanship - other aspects of built in frames	1	1	50%
Workmanship - other lintel	2	11	15%
Workmanship - perpends and joints	24	2	92%
Workmanship - utility	27	1	96%
Workmanship - weepholes	11	20	35%
Bushfire area requirements - Total	2	5	29%
Bush fire shutters	0	0	N/A
External glazed elements, assemblies and external doors	0	0	N/A
External walls	1	0	100%
Floors	0	0	N/A
General	0	1	0%
Probe check	1	3	25%
Roof mounted evaporative coolers	0	0	N/A
Roofs	0	0	N/A
Subfloor supports	0	0	N/A
Verandahs, steps and landings	0	0	N/A
Water and gas supply pipes	0	1	0%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Ceilings - Total	21	3	88%
Cornices	6	0	100%
Fixing of linings	7	1	88%
Lining of back blocking	2	2	50%
Linings other	0	0	N/A
Workmanship of linings	6	0	100%
Drainage work - Total	0	0	N/A
Drainage system - water diverted away	0	0	N/A
Drainage systems - other	0	0	N/A
Energy efficiency - Total	1	3	25%
Building sealing for conditioned space	0	0	N/A
Building sealing other	0	0	N/A
Ceiling insulation	0	1	0%
Insulation other	0	1	0%
Roof foil insulation installed correctly	1	0	100%
Wall insulation	0	1	0%
Excavation work - Total	6	4	60%
Excavation of other	0	2	0%
Excavation of unprotected embankment	3	1	75%
Retaining adequate	3	1	75%
External render and plaster - Total	15	1	94%
External acrylic other	0	0	N/A
External render other	6	0	100%
Ground level finish	5	0	100%
Ground level finish of external acrylic	0	0	N/A
Workmanship of external acrylic	4	1	80%
Fire separation - Total	35	2	95%
External walls other	0	0	N/A
External walls within 900mm	17	2	89%
Non-combustible materials for external walls	18	0	100%
Separating walls	0	0	N/A
Smoke alarms	0	0	N/A
Underside of roof covering	0	0	N/A

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Fixtures - Total	10	3	77%
Benchtop sealing of cupboards	1	1	50%
Cupboards other	0	1	0%
Door to frame gaps and alignment for internal doors	3	0	100%
Fixing carpentry	0	0	N/A
Furniture of internal doors	0	0	N/A
Internal doors other	0	0	N/A
Penetration and sealing of cupboards	1	0	100%
Sanitary compartment for internal doors	4	0	100%
Supports, joists and heat source proximity of cupboards	0	0	N/A
Workmanship of cupboards	1	1	50%
Glazing - Total	1	2	33%
Other glazing	0	0	N/A
Restricted openings for 2nd storey	0	1	0%
Safety glazing marking	1	0	100%
Straps to frames	0	0	N/A
Window labelling	0	1	0%
Internal render and plaster - Total	12	2	86%
Fixing of linings	0	2	0%
Internal float and set	0	0	N/A
Internal float and set (hardness, curing and workmanship)	6	0	100%
Internal float render	5	0	100%
Linings other	0	0	N/A
Workmanship of linings	1	0	100%
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

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Roof cladding - Total	59	9	87%
Fixing of roof sheeting	10	1	91%
Gutters	16	6	73%
Location of downpipes	14	1	93%
Penetration (flues) of roof sheeting	3	0	100%
Spacing and size of downpipes	15	0	100%
Tiles	1	1	50%
Roof tie down - Total	43	37	54%
Attachment and appropriate fixings for tie down straps	6	4	60%
Corrosion protection type and mass of tie down straps	8	13	38%
Dimensions of tie down straps	15	9	63%
Placement of tie down straps	14	11	56%
Safe movement and access - Total	3	1	75%
Balustrade height and spacings	0	0	N/A
Balustrade other	0	0	N/A
Balustrade structure and handrails	0	0	N/A
Riser and going dimensions of stairs	3	0	100%
Swimming pool barrier	0	1	0%
Swimming pool gate and latch	0	0	N/A
Swimming pool other	0	0	N/A

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Slab - Total	105	46	70%
Finished work - alignment	25	6	81%
Finished work - concrete paving (isolation and control joints)	0	3	0%
Finished work - cracking	29	2	94%
Finished work - footing excavation, embedment and foundation material	0	0	N/A
Finished work - footings	19	16	54%
Finished work - parging	18	4	82%
Preparation work - Bar chair reinforcement	0	0	N/A
Preparation work - clean fill	1	0	100%
Preparation work - cover reinforcement	0	0	N/A
Preparation work - DPM other	0	1	0%
Preparation work - DPM penetration	1	0	100%
Preparation work - DPM placement	1	1	50%
Preparation work - other reinforcement	0	0	N/A
Preparation work - re-entrant reinforcement	0	0	N/A
Reinforcement - steel lap reinforcement	1	0	100%
Second storey - propping of temporary suspended slab	2	7	22%
Second storey - set out	4	2	67%
Second storey - steel framing of floor trusses	1	0	100%
Second storey- slip joints	3	4	43%
Steel framing - Total	6	0	100%
Floors	0	0	N/A
Framing dimensions bracing walls	1	0	100%
Insulation and thermal breaks for walls	0	0	N/A
Roof connections	2	0	100%
Roof corrosion	1	0	100%
Roof framing dimensions	1	0	100%
Roof other	0	0	N/A
Roof tie down	1	0	100%
Walls other	0	0	N/A
Structural steel - Total	33	16	67%
Columns, roof beams, chamfer and fixings of steel members	14	11	56%
Corrosion protection of steel members	12	1	92%
Steel members other	0	1	0%
Tie down of steel members	7	3	70%
Termite management - Total	8	22	27%
Physical barrier placement	5	20	20%
Termite system - durable notice	0	1	0%
Termite system - other	3	1	75%

Inspection point	Satisfactory	Unsatisfactory	Satisfactory (%)
Timber roof framing - Total	102	58	64%
Ceiling joists	14	1	93%
Collar ties	11	2	85%
Metal roof batten	2	0	100%
Other compliance	3	5	38%
Rafter correctly tied down	8	12	40%
Rafter other	2	3	40%
Rafter to rafter at ridge connection sheeted roof	15	3	83%
Remainder of roof connections	9	11	45%
Tie down of timber roof beams	5	9	36%
Timber roof batten general area sheet roofs	5	1	83%
Timber roof battens in 1200 mm edge zone for sheet roofs	6	1	86%
Timber roof beams other	2	8	20%
Timber truss correctly tied down	2	2	50%
Underpurlins	18	0	100%
Timber wall framing - Total	13	29	31%
Bottom plate connection to supporting surface for walls	1	8	11%
Bracing of walls	4	3	57%
Connection tie down through the frame	0	9	0%
Floor connections	2	2	50%
Floor joists	5	1	83%
Floors other	0	2	0%
Insulation of walls	0	0	N/A
Posts and columns to floor	1	2	33%
Roofs other	0	0	N/A
Walls other	0	2	0%
Ventilation - Total	1	0	100%
Exhaust fans	1	0	100%
Ventilation other	0	0	N/A
Wall and floor finishes - Total	5	1	83%
Floor tiling falls to waste	2	0	100%
Tiling other	1	0	100%
Tiling workmanship	2	1	67%
Wet areas and external waterproofing - Total	3	3	50%
Waterproofed areas including balconies	0	1	0%
Waterproofing of bath to wall	0	0	N/A
Waterproofing of floor and wall junctions	2	0	100%
Waterproofing of floor wastes	0	2	0%
Waterproofing of showers	1	0	100%
Waterproofing other	0	0	N/A

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