



## Determination 2018/038

# Regarding the refusal to issue a code compliance certificate for a 10-year-old house with mixed claddings at 27 Terrace Avenue, Mount Maunganui, Tauranga



### Summary

This determination is concerned with the compliance of a 10-year-old house. The determination considers the authority's reasons for refusing to issue the code compliance certificate and whether the building work complies with the requirements of the Building Code.

### 1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> ("the Act") made under due authorisation by me, Katie Gordon, Manager Determinations, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are:
  - the owners of the building, L and M Southall ("the applicants")
  - the Tauranga City Council ("the authority"), carrying out its duties as a territorial authority or building consent authority.
- 1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 10-year-old house. The refusal arose because the authority is not satisfied that building work complies with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992). The authority's concerns primarily relate to the weathertightness and durability of the claddings.

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<sup>1</sup> The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Ministry are all available at [www.building.govt.nz](http://www.building.govt.nz) or by contacting the Ministry on 0800 242 243.

<sup>2</sup> In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

- 1.4 The matter to be determined<sup>3</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate for the reasons given in its letter dated 12 December 2017 (see paragraph 3.4 for further details). In deciding this matter, I must consider:
- (a) Whether the external building envelope of the house complies with Clause B2 Durability and Clause E2 External moisture of the Building Code that was in force at the time the original consent was issued. The building envelope includes the components of the systems (such as the plastered masonry, the fibre cement weatherboards, the decks, the windows and the roof cladding) as well as the way the components have been installed and work together. (I address this matter in paragraph 7.)
  - (b) Whether the other items identified by the authority comply with certain parts of the Building Code that was in force at the time the original consent was issued: namely Clauses B1 Structure, C Fire safety, D1 Access routes, E3 Internal moisture, F4 Safety from falling, and G13 Foul water.

## 1.5 Matters outside this determination

- 1.5.1 The building work referred to in this determination includes work covered under the following two building consents:
- Consent No. BC 17050 (“the original consent”) issued on 25 January 2005
  - Consent No. BC 21581 (“the amended consent”) issued on 16 May 2006 for amendments to the original consent. A code compliance certificate was issued for the amended consent on 30 April 2009.
- 1.5.2 In its refusal to issue a code compliance certificate, the authority limited its concerns to items associated with the clauses outlined above (see paragraph 3.4 for further details) and this determination does not address other clauses of the Building Code.
- 1.5.3 I note that the applicants can apply to the authority for a modification of durability provisions to allow the durability periods specified in Clause B2.3.1 to commence from the date of substantial completion in May 2008. Although I leave this matter to the parties to resolve in due course, I have taken the anticipated modification into account when considering the performance of the claddings.
- 1.6 I also note that a building certifier approved the consent documentation in 2004 on the authority’s behalf. The company ceased operating as a building certifier in 2005, but continued operating under a different name as the authority’s agent to provide inspection services for the authority. In this determination, both entities are therefore referred to as “the authority’s contractor”.
- 1.7 In making my decisions, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”) and the other evidence in this matter.

## 2. The building work

- 2.1 The building work consists of a detached house that is four storeys in part and is situated on an excavated coastal site in a high wind zone for the purposes of NZS 3604<sup>4</sup>. The expert takes the garage doors as south-facing, and this determination

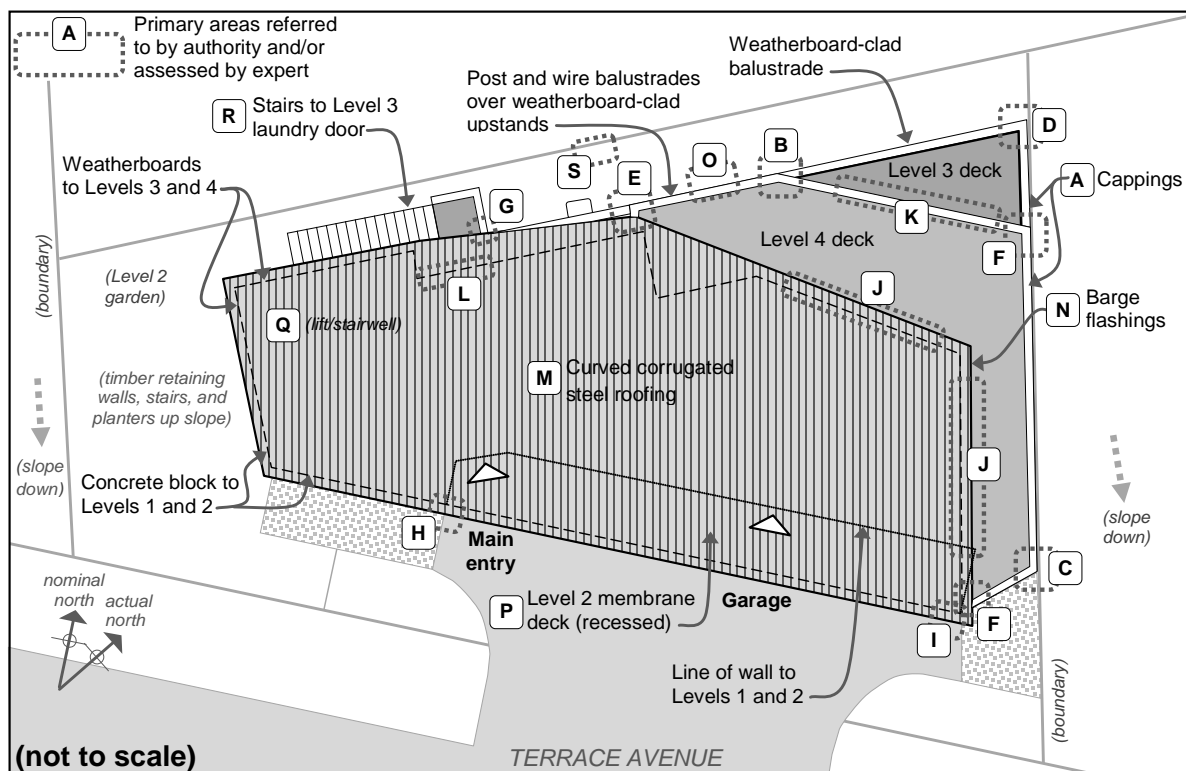
<sup>3</sup> Under sections 177(1)(b) and 177(2)(d) of the Act

<sup>4</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

follows that convention. The house is fairly complex in form and is assessed as having a high to very high weathertightness risk.

- 2.2 Levels 1 and 2 of the house are specifically engineered, with a reinforced concrete slab and foundations, concrete masonry retaining walls and exterior walls, steel posts and beams, and 75mm thick proprietary concrete floors to Levels 2 and 3. The floors consist of a series of precast, prestressed concrete units with a 90mm thick reinforced concrete topping. The concrete floors step down by 100mm to form the deck areas.
- 2.3 Levels 3 and 4 are generally conventional light timber frame with a timber framed floor and roof to Level 4, curved profiled metal roofing, aluminium windows and fibre cement weatherboard cladding. The low pitched curved roof has eaves limited to about 200mm overall, except above some recessed walls to the north.

**Figure 1: Approximate site plan**



- 2.4 The house accommodates the following:
- Lift shaft and stairwell to the west serving all four levels of the house.
  - Level 1 (the basement): recessed entry and foyer to the west, with a large open area to the east providing a double garage space, boat garage and storage.
  - Level 2 (the 'flat'): self-contained 'flat', with hallway from the stair/lift lobby, two bedrooms to the north and south, bathroom to the north, open-plan kitchen/living to the east and a recessed deck to the south.
  - Level 3 (the bedroom floor): two bedrooms (each with ensuite bathroom) to the south, master bedroom and deck to the north east, with a dressing room and ensuite bathroom to the north, and a laundry with exterior stairs to the north.
  - Level 4 (the living floor): study and toilet to the north, large open plan kitchen/living area along the south, which opens onto a large deck that wraps around the north east corner.

- 2.5 The exterior walls to Level 3 and Level 4 are clad in horizontal fibre cement weatherboards fixed through 20mm timber battens and the building wrap to the framing timbers. The 20mm timber battens form a cavity between the weather boards and the building wrap. The exterior walls to Levels 1 and 2 are plastered concrete masonry.
- 2.6 The specification called for wall framing timber to be 'Radiata Pine No.1 Framing, H1 treated'. However, the drawings note kiln-dried wall framing and 'H3' deck joists. I also note that the amended requirements for timber treatment in B2/AS1 did not apply until 1 April 2005 (after the original consent was issued). Given the lack of supporting evidence, I am unable to determine whether the external wall framing is treated to a level that will provide resistance to fungal decay.

### **3. Background**

#### **3.1 The original consent**

- 3.1.1 The authority's contractor issued a building certificate dated 19 January 2005 for the consent documentation under Section 58 of the Building Act 1991 ("the former Act"). The authority issued the original building consent (No. 17050) to the applicants on 25 January 2005 under the former Act.
- 3.1.2 The authority's contractor carried out various inspections during 2005 and the 'job report' dated 6 April 2009 noted the following inspections:
- Footings, floor slab and retaining walls from April to July 2005.
  - Concrete block walls and upper floor slabs in November and December 2005.
  - Lower floor framing in March 2006.

#### **3.2 The amended consent**

- 3.2.1 Amended drawings dated 8 March 2006 were prepared and on 7 April 2006, the applicants applied for an amendment to the original consent. The authority issued the amended consent (No. 21581) on 16 May 2006 under the Building Act 2004 for:
- Amendment to BC 17050 – firewall, alter bathroom, parapet floor 3, add ensuite, alter cladding of dwelling.
- 3.2.2 Construction appeared to stall for most of 2006, with almost 9 months between the March inspection and the next recorded inspection. The authority's contractor continued to record inspections under the original consent number and the 'job report' dated 6 April 2009 recorded the following inspections:
- Framing in December 2006.
  - Preline plumbing and building in August and September 2007.
  - Pre-stopping in October 2007, which passed.
- 3.2.3 The last inspection on 29 October 2007 noted 'INSPECTION RESULTS TO GO ON BC 21581'. Another 6 months followed before the first final inspection in 2008.

#### **3.3 The 2008/2009 final inspections**

- 3.3.1 The authority's contractor carried out the first final inspection on 14 May 2008, which 'failed' a number of items, with the job report dated 6 April 2008 noting:
- Failed: Height/gaps/toeholes

Failed: Stair pitch/rise/going & handrails

Final building [inspection] for amendment only [my emphasis]. Building work still not complete i.e. handrails, balustrades. Owner to re-book final for complete building.

3.3.2 The authority's contractor carried out a building and plumbing inspection on 18 August 2008, which covered work carried out under both building consents; listing outstanding producer statements and noting the following items to complete:

Weatherproof cowlings required to vents through external walls.

Deck balustrade, top floor (wire and post to stainless steel cap, note cap now with monopitch only.)

Stairs and handrails. All gaps to be 100mm or less.

Backflow prevention to shower hose.

Seal shower linings to wall.

Fit intumescent strips to fire rated switchboxes in firewalls.

Insulation to rumpus room block walls. (20mm poly).

Complete tiling and waterproofing to service rooms.

3.3.3 The authority's contractor re-inspected the house on 19 February 2009; with the entry for 'final building' recorded as a 'pass' and noting 'all now completed on site to all plans, including amendments.' The entry for 'final plumbing' also recorded a 'pass' and noted 'plumbing now complete'. Various producer statements and certificates were still listed as outstanding.

3.3.4 Following correspondence clarifying the producer statement provided by the applicant for the waterproof membrane under the tiles, the authority's contractor provided a 'Statement of Compliance with the NZ Building Code' dated 15 April 2009, which quoted the amended consent number only.

3.3.5 Based on the above statement, the authority issued a code compliance certificate dated 30 April 2009 for the amended consent (No. 21581) – and the applicants assumed that this covered all of the building work in the house (see paragraph 7.6.1). However, when arranging to sell the house in 2017, they discovered that the code compliance certificate did not include the original building consent.

### **3.4 The 2017 refusal to issue a code compliance certificate**

3.4.1 The applicants approached the authority, which inspected the house on 7 December 2017 (I have not seen a copy of the inspection record). In a letter to the applicants dated 12 December 2017, the authority advised that 'under Section 95A of the Building Act 2004 [it refused] to issue a code compliance certificate at this time':

3.4.2 In regard to weathertightness (Clauses B2 and E2), the authority listed items requiring attention (in summary using the authority's references and with typical areas shown in Figure 1 provided in brackets):

1. Lack of kick out to balustrade cappings (Area A)
2. Deck outlets and overflow provisions (Area B, C and D)
3. Lack of rainwater heads (Areas B, C and D)
4. Balustrade/wall junctions (Areas B, E, F, G, H and I)
5. Head flashing/weatherboard junctions (Areas J, K, L)
6. Roofing durability (Area M)
7. Overflow to rainwater head (Area E)

8. Minor cracking to concrete block plaster (Area O)
9. Change to Level 2 deck (Area P)
10. Producer statements for deck membranes.

3.4.3 In regard to internal issues (Clauses C, D1, E3, and F4), the authority listed items requiring attention (in summary):

1. Stair hand rail (Area Q)
2. Toilet/floor sealing
3. Fittings/wall sealing
4. Level 4 shower enclosure
5. Window restrictors to Level 3 north windows
6. Smoke alarms to be inter-connected.

3.4.4 In regard to other external issues (Clauses B1, B2, D1, and G13), the authority listed items requiring attention (in summary):

1. Exterior stair hand rail (Area R)
2. Exterior stair treads (Area R)
3. Exterior stair structure corroding (Area R)
4. Gully trap overflow relief (Area S).

3.4.5 In regard to documentation, the authority listed items (in summary):

1. Internal layout change
2. Change to balustrade detail
3. Change to Level 2 deck (Area P)
4. Inspection regime for lift (Area Q).

3.4.6 The applicants apparently discussed the above with a building surveyor and a subsequent letter dated 1 March 2017 from the authority noted that it understood that most items were not disputed – and a determination would be sought on the remaining items, which were:

The points under contention are;

1. Cap flashings to balustrades does not have the required kick out/birds beak.
2. Deck outlets are not sized in accordance with E2/AS1 and there is insufficient secondary overflow.
3. Saddle flashing construction to deck balustrades requires further investigation.
4. [Fibre cement] weather board is hard on head flashings, minimum 6mm required to prevent capillary action.
5. Roof cladding requires assessment to ascertain durability performance.

3.5 The Ministry received an application for a determination from the applicants on 7 March 2018.

## 4. The submissions

4.1 In a submission dated 1 March 2018, the applicants set out the background to the situation, noting that a sale of their house had been lost due to what they believed was a ‘paper error’ resulting from the final inspections of the house being recorded only under the amended building consent. The applicants added that many items identified in the authority’s letter had already been attended to ‘even though they were all passed originally’ and concluded:

We have had NO LEAKS what so ever anywhere in or outside the house in nine years it has been built, and intend to do any maintenance required to keep our home in good condition.

4.2 The applicant provided copies of:

- the original consent drawings
- the inspection summaries for the original and amended consents
- some correspondence with the authority's contractor
- the code compliance certificate dated 30 April 2009 for the amended consent 21581
- the authority's refusal to issue a code compliance certificate for the original consent 17050
- some other correspondence with the authority
- various other invoices, producer statements, certificates and drawings.

4.3 The authority made no submission, but forwarded copies of the property file for the house, which contained additional documents pertinent to this determination, including:

- the original consent documentation
- the amended consent drawings
- the building consents for the original consent and the amended consent
- the application dated 23 June 2008 for amended deck balustrades.

4.4 A draft determination was issued to the parties for comment on 13 June 2018. The owner accepted the draft without comment on 22 June 2018. The authority accepted the draft on 6 July 2018 but noted that it should be called to inspect any remedial work involving the closing in of wall claddings.

## **5. The expert's report**

### **5.1 General**

5.1.1 As mentioned in paragraph 1.7, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors and inspected the house on 4 and 15 May 2018, providing a report completed on 29 May 2018. The parties were provided with a copy of the report on 5 June 2018.

5.1.2 The expert noted that the scope of his inspection was to assess the code compliance of areas identified by the authority against the associated requirements of the Building Code.

5.1.3 The expert noted that the building has 'generally been finished to an acceptable trade standard and is well maintained', with the construction quality 'good' and exterior claddings and internal linings 'generally straight and fair of finish'.

5.1.4 The expert noted that 'the overall architectural shape and form of the building appears to be largely in accordance with the consented/as-built drawings', with observed discrepancies including:

- birds beak shown on balustrade capping detail not installed

- metal wire and posts installed above clad upstands to Level 4 deck in lieu of glazed balustrades
- full height framed and clad balustrades to Level 2 and Level 3 decks in lieu of glazed balustrades
- membrane installed to Level 2 deck floor in lieu of timber slats
- no drainage gap provided above head flashings
- (I note that Level 2 has been developed as a self-contained 'flat' in lieu of a rumpus room and bar).

5.1.5 The expert noted that the Building Code is performance based, with the acceptable solutions providing one means of compliance and 'a measure of deficiency against an acceptable solution is not necessarily a confirmation of a lack of compliance with the Building Code.' Areas identified by the authority were generally compared with acceptable solutions applicable at the time and their performance assessed. The following paragraphs summarise the expert's comments on relevant features of the house, with localities of areas as identified in Figure 1.

## 5.2 The decks (Items 1 to 4)

5.2.1 Item 1: In regard to balustrade cappings (Area A) – the expert noted:

- balustrades capped with sloping heavy stainless steel flashings with fully welded joints and 70mm turndown with no kickout or birds beak
- exposed outer face is horizontal bevel back weatherboard, which will slope away from the edge of the capping to provide an anti-capillary gap further up
- the inner face of the balustrade cladding is flat sheet, but is sheltered
- claddings are installed over cavities that can drain any moisture to the outside before it reaches the framing
- the lack of a bird's beak is not considered significant in the circumstances.

5.2.2 Item 2: In regard to deck outlets and overflow provisions (Areas B, C, D) – the expert noted that:

- for enclosed decks with parapet balustrades, E2/AS1 calls for:
  - a scupper opening through a balustrade is to be a minimum 200 x 75mm (refer paragraph 8.5.6d of E2/AS1) with the overflow to the to be 1.5 times the area of the discharge downpipe
- the Level 4 membrane deck has a floor area below 30m<sup>2</sup>:
  - a 90 x 40mm deck outlet discharges through the base of the north balustrade into a rainwater head (Area B)
  - a second 90 x 45mm outlet is located in the southeast corner of the balustrade (Area C)
  - the combination of two outlets and one overflow is considered acceptable.
- the Level 3 membrane deck has floor area below 7m<sup>2</sup>:
  - a 110 x 50mm deck outlet discharges through the base of the northeast corner balustrade (Area D), with this size considered adequate for the small deck



- overflow provision is needed in case of blockage of the single outlet.

5.2.3 Item 3: In regard to lack of rainwater heads (Areas B, C, D) – the expert noted:

- paragraph 8.5.6 of E2/AS1 calls for water to discharge via a scupper into a rainwater head
- the deck outlets are connected directly to downpipes which risks water backing up onto the decks if downpipes are blocked
- however, the bottoms of downpipes are open, which prevents water backing up from blocked discharge.

5.2.4 Item 4: In regard to balustrade/wall junctions (Areas B, E, F, G, H) – the expert noted that:

- junctions are formed by extending the top and sides of cappings to lap over the cladding and sealing them at the junctions
- junctions generally appear to be reasonably well sealed and are expected to remain durable for the required 15 years
- however at the west junction of the Level 3 balustrade (Area B):
  - there is a crack at the junction, which risks water penetration behind the capping upstand
  - although there is no visible evidence of water penetration to date, the junction needs attention to ensure ongoing durability.

### 5.3 Head flashing clearances (Item 5)

5.3.1 In regard to head flashing/weatherboard junctions – the expert noted:

- at Level 4 (Area J and similar):
  - the head flashing is fully sealed against the upper weatherboard, which prevents drainage from the upper cavity
  - there are only four boards between the flashing and the small eaves overhang, which reduces the risk of any significant build-up of moisture.
- at Level 3 (Area K and L):
  - the head flashing is in contact with the back of the upper weatherboard, which limits drainage from the upper cavity
  - the manufacturer's detail in 2004 showed the edge almost in contact with the head flashing
  - the detail was changed in 2005 to show a 5mm gap in line with E2/AS1.
- no evidence of moisture penetration to the interior was found
- the junctions are expected to meet the required 15-year durability.

### 5.4 The roofing (Item 6)

5.4.1 In regard to roofing durability (Area M) – the expert noted:

- the roofing is in very good condition and its performance over more than 10 years indicates that the roofing material will meet the 15-year durability requirement
- however, about half of the screw fixings are corroded and require attention

- there are also two small areas of corrosion to the east barge flashing (Area N)
- lack of access prevented close inspection of the west barge flashing.

## 5.5 Rainwater head overflow (Item 7)

5.5.1 In regard to the north rainwater head (Area E) – the expert noted:

- an integral rainhead with no overflow is installed to the north gutter
- an overflow is needed to prevent downpipe blockages from causing water entry into the eaves
- the owner was in the process of cutting out an overflow.

## 5.6 Other weathertightness items (Items 8 to 10)

5.6.1 In regard to other weathertightness items, the expert noted that:

- Item 8: plaster to the north masonry wall has been satisfactorily repaired (Area O)
- Item 9: the Level 2 deck has a membrane floor that drains freely off the deck edge via a gap beneath the clad balustrade. The membrane is ‘well detailed’ and appears satisfactory, with junctions ‘smoothly rebated’ (Area P)
- Item 10: the deck membranes appear ‘well installed’ with no apparent performance problems – and a producer statement dated 20 February 2009 has been provided by the applicator.

## 5.7 Internal items

5.7.1 Item 1: In regard to stair handrails (Area Q), the expert noted that:

- D1/AS1 (the acceptable solution to Clause D1) called for handrails to ‘be positioned between 900mm and 1m above the pitchline’ (refer paragraph 6.0.6 of D1/AS1)
- stainless steel graspable handrails are installed to the lift/stair walls and landings
- the flat sections of handrail vary from 877 to 890mm above the stair pitch line, which is 10 to 23mm below the acceptable solution
- the sloping sections of handrail vary from 745 to 815mm above the stair nosings, which is 85 to 155mm below the acceptable solution

5.7.2 In regard to other internal items – the expert noted:

- Item 2: the sanitary fittings are now sealed to the floor tiles
- Item 3: other vanities, bench tops and fittings are now sealed
- Item 4: the owner has now disconnected and capped off the second shower to the Level 4 bathroom
- Item 5: window restrictors are now installed to Level 2 north windows
- Item 6: an invoice dated 17 January 2018 covered smoke detector testing and confirmed that all detectors set off the alarm system.

## 5.8 Other external items

5.8.1 Item 1: In regard to exterior stairs (Area R), the expert noted that:

- New laundry stair treads have been recently installed, which are ‘reasonably well fixed’.
- The Acceptable Solution for Clause D1, D1/AS1, that was in effect at the time the building consent was issued called for handrails to ‘be positioned between 900mm and 1m above the pitchline’ (refer paragraph 6.0.6 of D1/AS1). The handrail to the open steel balustrade is 860mm above the pitch-line, 40mm short of 900mm. The as-built height is considered adequate as a service stair.
- D1/AS1 also called for the space between open treads to ‘not permit the passage of a 100mm sphere in areas frequented by children under 4, or a 130mm sphere where frequented by children of 4 and 5 years of age’ (refer paragraph 4.1.8 of D1/AS1). The 110mm gap was considered acceptable.

5.8.2 Item 3: In regard to stair corrosion (Area R), the expert noted that:

- the exterior staircase has a steel structure
- the steel work has been repainted and is now in good condition, with no signs of corrosion.

5.8.3 Item 4: In regard to gully traps, the expert noted that:

- a pop-up overflow relief drain has now been installed below the lowest plumbing fitting (the Level 2 shower) (Area T), a plumber’s invoice confirmed that work was carried out
- a gully trap was installed beneath the Level 4 deck downpipe (Area B), but construction photographs confirm that this was correctly connected to a soak hole and not to the sewer pipe.

## 5.9 Documentation items

5.9.1 In regard to outstanding documentation, the expert noted that:

- Item 1: Level 2 layout revisions, the owner intends to submit a revised floor plan to show the self-contained ‘flat’ with the additional bedrooms.
- Item 2: Deck balustrade revisions, the owner intends to submit a revised drawing to show the as-built balustrades.
- Item 3: Level 2 deck revisions (Area P), the owner intends to submit a revised drawing to show the as-built Level 2 deck.
- Item 4: In regard to lift maintenance (Area Q), the owner has undertaken to provide documentation when received from the installer.

## 5.10 The expert's conclusions

5.10.1 The expert considered that the following required remedial work (in summary):

- lack of overflow to Level 3 deck (Area D)
- lack of rainwater heads to Level 3 and Level 4 decks (Areas B, C, D)
- cracked capping junction to Level 3 deck (Area B)
- corroding roof fixings and barge flashings (Areas M,N)
- lack of overflow to rainwater head (Area E)
- insufficient height of handrails to interior stairs (Area Q).

## 6. The compliance of the house

6.1 The original building consent considered in this determination was issued under the former Act, and accordingly the transitional provisions of the Act apply when considering the issue of a code compliance certificate for work completed under this consent. Section 436(3)(b)(i) of the transitional provisions of the current Act requires the authority to issue a code compliance certificate only if it 'is satisfied that the building work concerned complies with the building code that applied at the time the building consent was granted'.

6.2 The amended consent was issued under the current Act in May 2006, with the main structural elements carried out prior to that date. However, the records are not clear as inspections continued to be recorded under the original building consent until November 2007, with only final inspections recorded under the amended consent.

6.3 The matter in dispute is whether the authority correctly exercised its power in its decision to refuse to issue the code compliance certificate for the original building consent. In deciding this matter and taking account of the lack of clarity in the inspection records, I have therefore considered:

- whether the house as completed complies with the amended 2006 consent and the relevant provisions of the Building Code at the time the original 2005 consent was issued
- whether there are reasonable grounds for the authority to issue a code compliance certificate for the original 2005 consent.

6.4 In assessing the above, I have taken into account the age(s) of various elements in the house. An application can be made to the authority for a modification of durability requirements to allow durability periods for the house to commence from the date of the first final inspection in May 2008 (see paragraph 3.3.1). Although that matter is not part of this determination (see paragraph 1.5.3), I have taken the anticipated modification into account when considering the compliance of the claddings.

## **7. Compliance with Clause E2 External moisture**

7.1 The evaluation of the external building envelope for compliance with the Building Code and the risk factors considered in regards to weathertightness have been described in numerous previous determinations (for example, Determination 2004/1).

### **7.2 Weathertightness risk**

7.2.1 This house has the following environmental and design features, that influence its weathertightness risk profile:

#### **Increasing risk**

- the house is four-storeys high and is in a very high wind zone
- there are some complex inter-cladding junctions
- the house has minimal roof overhangs to shelter wall claddings
- there are enclosed decks above lower rooms, with clad balustrades
- the treatment level of the framing timber is not known.

#### **Decreasing risk**

- the exterior walls to the lower two levels are concrete masonry
- the floors to Levels 2 and 3 are concrete
- the deck framing is likely to be treated to provide resistance to decay.

7.2.2 Using the E2/AS1 risk matrix to evaluate these features, the north and west elevations are assessed as having a very high weathertightness risk rating and would require specific weathertightness design if details shown in the current E2/AS1 were adopted to show code compliance. However, this was not a requirement at the time the original building consent was issued in January 2005.

### **7.3 Weathertightness performance**

7.3.1 The inspection records indicate that the building envelope was complete by the preline inspections in August 2007 and I have taken that into account when considering the weathertightness performance as wall and roof claddings are now more than 10 years old.

7.3.2 The expert has investigated roof and wall claddings and found their installation and performance generally satisfactory; with evidence indicating that the claddings have performed adequately to date and are generally likely to continue to do so for at least the next five years if normal maintenance is continued (see paragraph 7.7). However, the expert has also identified some areas where remedial work will reduce the risks of moisture penetration in the future (see paragraph 5.10.1).

### **7.4 Conclusion with respect to Clause E2 External moisture**

7.4.1 The expert's report establishes that the current performance of the house envelope is adequate because there is no evidence of moisture penetration into the underlying structure. I am therefore satisfied that the house complies with Clause E2 of the Building Code. The roof and wall claddings are now 10 years old and the expert's investigations have found no evidence of past moisture ingress, which satisfies me that claddings have also complied with Clause B2 over the past 10 years.

- 7.4.2 However, Clause B2 requires a building to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement to remain weathertight and structurally sound. Wall and roof claddings are required to remain weathertight for a minimum of 15 years and the underlying construction is required to remain structurally adequate for a minimum of 50 years.
- 7.4.3 A modification of durability provisions to allow these to commence from the date of substantial completion in 2008 would mean that most areas of cladding will have already met more than 10 years of the minimum life required by the Building Code.
- 7.4.4 Because the identified cladding faults occur in discrete areas, I am able to conclude that satisfactory rectification of areas included in paragraph 5.10.1 will result in the external building envelope of the house being brought into compliance with Clause B2 of the Building Code insofar as it applies to Clause E2.
- 7.4.5 However, I note the expected life of the building as a whole is considerably longer than 15 years. Careful maintenance is needed and must continue to ensure that claddings continue to protect the underlying framing for its minimum required life of 50 years for the structure.

## **7.5 Conclusion in respect of the remaining code clauses**

- 7.5.1 Taking account of the above and the expert's report, I conclude that remedial work is necessary in respect of Clause B2 insofar as it applies to Clause E2:
- lack of overflow to Level 3 deck (Area D)
  - lack of rainwater heads to Level 3 and Level 4 decks (Areas B, C, D)
  - cracked capping junction to Level 3 deck balustrade/wall junction (Area B)
  - corroding roof fixings and barge flashings (Areas M, N)
  - lack of overflow to rainwater head (Area E).
- 7.5.2 In regard to Clause D1 Access, I consider remedial work is necessary in respect of the height of the handrails to the interior stairs (Area Q).
- 7.5.3 The exterior stair is included in the definition of a 'main private stairway' as it is defined in D1/AS1. I do not consider it to be a 'service stair' as suggested by the expert, as a service stair is used "infrequently by service personnel to gain access to spaces for the purposes of maintenance and the movement of goods."
- 7.5.4 The stair is adjacent the laundry and is accessible from the inside and outside the dwelling; there is a reasonable expectation it will be accessed by all the members of the household including young children. The balustrade to the stair also has sloping intermediate rails that will enable the balustrade to be climbed. I consider remedial work is required to prevent the balustrade from being climbed, closing the gaps between the stair treads, and raising the height of the barrier and handrail.
- 7.5.5 Because the identified faults occur in discrete areas, I am able to conclude that satisfactory rectification of the above areas will result in the house being brought into compliance with Clauses B2 and D1 of the Building Code.
- 7.5.6 I consider that the expert's report provides me with reasonable grounds to conclude that the remaining items identified by the authority are adequate in the circumstances and that the house complies with the associated clauses of the Building Code; namely Clauses B1 Structure, C Fire safety, E2 External moisture, E3 Internal moisture, F4 Safety from falling, and G13 Foul water.

7.5.7 Table 1 summarises my conclusions on the authority's Section 95A letter dated 12 December 2017 (see paragraph 3.4).

**Table 1: The authority's concerns**

Areas of concern (in summary)	Area	Expert's comments	Compliance	Para.
<b>Weathertightness (Clauses B2 and E2)</b>				
1	Balustrade cap flashings	A <ul style="list-style-type: none"> <li>stainless steel installed capping with 70mm turndown</li> <li>top weatherboard provides anti-capillary gap behind turndown on exposed side</li> <li>cladding installed over drained cavity</li> </ul>	Adequate in circumstances	5.2.1
2	Deck outlets and overflow provisions	B C <p><u>Level 4 deck</u></p> <ul style="list-style-type: none"> <li>90 x 40mm deck outlet with 90 x 30mm overflow</li> <li>second 90 x 45mm outlet provided to the southeast corner</li> </ul>	Adequate in circumstances	5.2.2
		D <p><u>Level 3 deck</u></p> <ul style="list-style-type: none"> <li>single outlet size adequate for small 7m<sup>2</sup> area</li> <li>overflow required</li> </ul>	Remedial Work required	
3	Lack of rainwater heads	B C D <ul style="list-style-type: none"> <li>deck outlets directly connected to downpipes</li> <li>risk of water back up if downpipe is blocked</li> </ul>	Remedial Work required	5.2.3
4	Balustrade/wall junctions	E-H <ul style="list-style-type: none"> <li>sides and tops of cap flashings lap over wall cladding</li> <li>laps well sealed at junctions</li> <li>no evidence of moisture ingress after 10 years</li> </ul>	Adequate in circumstances	5.2.4
		B <ul style="list-style-type: none"> <li>crack at junction risks water penetration behind capping upstand</li> </ul>	Remedial Work required	
5	Head flashing/weatherboard junctions	J <ul style="list-style-type: none"> <li>sealed junction prevents drainage from the upper cavity</li> <li>limited upper cladding reduces risk of significant build-up of moisture</li> </ul>	Adequate in circumstances	5.3
		K-L <ul style="list-style-type: none"> <li>contact with back of upper weatherboard, limits drainage from the upper cavity</li> <li>similar to manufacturer's 2004 detail</li> <li>no evidence of moisture ingress after 10 years</li> </ul>		
6	Roofing durability	M <ul style="list-style-type: none"> <li>roof material in very good condition</li> <li>half of screw fixings are corroded</li> <li>some corrosion to barge flashing(s)</li> </ul>	Remedial Work required	5.4
7	Lack of overflow to rainwater head	E <ul style="list-style-type: none"> <li>integral rainwater head installed to the north gutter</li> <li>risks water entry at eaves if downpipe blocks</li> <li>owner in process of cutting out overflow</li> </ul>	Remedial work required	5.5
8	Minor cracking to concrete block plaster	O <ul style="list-style-type: none"> <li>plaster cracking now repaired</li> </ul>	Adequate	5.6

Areas of concern (in summary)		Area	Expert's comments	Compliance	Para.
9	Change to Level 2 deck	P	<ul style="list-style-type: none"> <li>membrane floor drains freely through gap beneath the clad balustrade</li> <li>membrane is 'well detailed' and appears satisfactory, with junctions 'smoothly rebated'</li> </ul>	Adequate	5.9
10	Producer statements for deck membranes		<ul style="list-style-type: none"> <li>producer statement dated 20 February 2009 was provided by the applicator</li> </ul>	-	-
<b>Internal issues (Clauses C, D1, E3 and F4)</b>					
1	Interior stair hand rail	Q	<ul style="list-style-type: none"> <li>handrail varies from 745 to 815mm above the stair nosings</li> <li>85 to 155mm below minimum 900mm stated in D1/AS1</li> </ul>	Remedial Work required	5.7.1
2	Toilet/floor sealing		<ul style="list-style-type: none"> <li>sanitary fittings now sealed to floor tiles</li> </ul>	Adequate	5.7.2
3	Fittings/wall sealing		<ul style="list-style-type: none"> <li>now sealed</li> </ul>	Adequate	
4	Shower enclosures		<ul style="list-style-type: none"> <li>disconnected and capped off the second shower to the Level 4 bathroom</li> </ul>	Adequate	
5	Window restrictors		<ul style="list-style-type: none"> <li>window restrictors are now installed to Level 2 windows, north elevation</li> </ul>	Adequate	
6	Smoke alarms to be inter-connected		<ul style="list-style-type: none"> <li>invoice dated 17 January 2018 confirmed that all detectors set off the alarm system</li> </ul>	Adequate	
<b>Other external items (Clauses B1, B2, D1, and G13)</b>					
1	Exterior stair hand rail	R	<ul style="list-style-type: none"> <li>handrail to the open steel balustrade is 860mm above the pitch-line</li> </ul> <p>I note the balustrade is able to be climbed and there are 110mm gaps between the open treads.</p>	Remedial work required	7.5.4
2	Exterior stair treads		<ul style="list-style-type: none"> <li>new stair treads 'reasonably well fixed'</li> </ul>	Adequate in circumstances	5.7.1
3	Exterior stair structure		<ul style="list-style-type: none"> <li>steel work repainted and in good condition, with no signs of corrosion</li> </ul>	Adequate	5.8.2
4	Gully trap	S	<ul style="list-style-type: none"> <li>a pop-up overflow relief drain now installed below the lowest fitting</li> <li>gully beneath deck downpipes connected to soak hole and not to sewer</li> </ul>	Adequate	5.8.3
<b>Documentation</b>					
1	Level 2 layout		<ul style="list-style-type: none"> <li>owner to submit revised floor plan</li> </ul>		5.9.1
2	Deck balustrades		<ul style="list-style-type: none"> <li>owner to submit revised drawing to show as-built balustrades</li> </ul>		
3	Level 2 deck	P	<ul style="list-style-type: none"> <li>owner to submit revised drawing to show as-built deck</li> </ul>		
4	Lift maintenance	Q	<ul style="list-style-type: none"> <li>owner to provide documentation</li> </ul>		



## **7.6 The 2009 code compliance certificate**

- 7.6.1 I acknowledge the applicants' concerns that the authority's inspection records appear to have covered the building work carried out for the building as a whole. I consider it reasonable that this lack of clarity when the code compliance certificate for the amended consent was issued in 2009 resulted in the applicants' subsequent impression that all matters had been satisfactorily resolved.
- 7.6.2 This confusion in the inspection records was not acceptable. At the time the 2009 code compliance certificate was issued, I take the view that the authority needed to clarify the status of the original building consent and to identify any remaining outstanding matters in order to allow the applicants to address these and apply for a code compliance certificate for the original consent.
- 7.6.3 Notwithstanding the above, the current situation must now be resolved. In order to achieve that resolution, I have considered the expert's report on items identified by the authority in 2017 and paragraph 7.5.1 outlines my conclusions on those areas that require attention in order to comply with the Building Code that was in force at the time the original consent was issued in 2005.

## **7.7 Maintenance**

- 7.7.1 In the case of this particular house, I note the following:
- This house includes a number of very high-risk features as outlined in paragraph 7.2.1, which would currently result in the requirement for specific weathertightness design. Although this was not required when the original consent was issued, careful consideration of maintenance requirements of roof and wall claddings (including junctions) is needed in order to ensure their ongoing performance.
  - Although the external building envelope is likely to have been weathertight for more than 10 of the required 15-year period, the expected life of the building as a whole is considerably longer; and careful maintenance will be needed in order to minimise future risks and to ensure ongoing compliance.
  - Although the expert describes the house as currently well maintained, any future owner must also continue careful maintenance of the exterior building envelope in order to ensure the underlying structural framing remains undamaged by moisture entry for its minimum required life of 50 years.
- 7.7.2 Effective maintenance of the house is important to ensure ongoing compliance with the Building Code and is the responsibility of the building owner. The Ministry has previously described maintenance requirements associated with the external building envelope (for example, Determination 2007/60).

## **8. What happens next?**

- 8.1 The applicants should address the items identified in paragraphs 7.5.1 and 7.5.4 and the authority should re-inspect those items, taking into account the findings of this determination. If necessary, any outstanding items of disagreement can be referred to the Chief Executive for a further binding determination.
- 8.2 A code compliance certificate will be able to be issued for the original consent (No. 17050) once the above matters have been satisfactorily addressed and the matter

of amending the original building consent to modify Clause B2.3.1 has been resolved.

## **9. The decision**

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that, in regard to the Building Code that was in force at the time the original building consent was issued in 2005:

- some areas of the external building envelope do not comply with Building Code Clause B2 Durability insofar as it applies to Clause E2
- the interior staircase handrails and the exterior stairs do not comply with Building Code Clause D1 Access routes.

and accordingly, I confirm the authority's decision to refuse to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 21 August 2018.

Katie Gordon  
**Manager Determinations**