



Determination 2012/005

The refusal to issue a code compliance certificate and the issue of a notice to fix for a relocated and altered house at 4B Corrella Road, Belmont, Auckland



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the owner, M Hyde (“the applicant”) and the other party is the Auckland Council² (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate and to issue a notice to fix for 8-year-old alterations to a relocated house because it was not satisfied that the building work complied with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns primarily relate to the weathertightness of the exterior building envelope of the altered house.

¹ The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the Department on 0800 242 243.

² Before the application was made North Shore City Council was transitioned into Auckland Council. The term authority is used for both.

³ In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

- 1.3 The matter to be determined⁴ is therefore whether the authority was correct in its decision to refuse to issue a code compliance certificate and to issue a notice to fix for the house. In deciding this matter, I must therefore consider whether the alterations comply with the relevant Building Code clauses (B2 Durability, C Fire safety, E2 External moisture, F4 Safety from falling, G9 Electricity, G12 Water supplies and G13 Foul water).
- 1.4 The notice to fix also cites contraventions of Clause H1 Energy efficiency, although there are no specific items relating to this clause. I have taken the citing of Clause B1 as relating to potential structural implications associated with weathertightness (considered insofar as it relates to Clauses E2 and B2) and Clause E1 Surface water as relating to the gully trap (considered under Clause G13).
- 1.5 The notice to fix also states that the applicant may apply to the authority for a modification of the durability requirements to allow durability periods to commence from the date of substantial completion in January 2003. I therefore leave this matter to the parties to resolve once the claddings have been made code-compliant. I also note that the notice to fix lists ‘documentation required to assist with confirmation of compliance’, and I leave these matters to the parties.
- 1.6 In making my decision, I have considered the submission of the applicant, the report of the expert commissioned by the Department to advise on this dispute (“the expert”) and the other evidence in this matter.

2. The building work

- 2.1 The two-storey, detached building is situated on a level site in a high wind zone for the purposes of NZS 3604⁵. The building is simple in plan and form, and is assessed as having moderate weathertightness risk (see paragraph 6.2.2).
- 2.2 The upper storey comprises a relocated house that appears to have been constructed during the 1960’s as a simple timber-framed single-storey L-shaped building with timber weatherboard and brick veneer cladding, timber joinery and a pressed metal tile hipped roof (see paragraph 3.2).

2.3 The 2002 alterations

- 2.3.1 The relocated house was moved to the site and lifted onto a new ground floor level, to provide two separate household units as follows:
- Unit 1: a dwelling on the upper level and half of the lower level, with the main entry at mid-level and exterior steps leading up from the ground to a landing. Interior stairs lead down to a study/bedroom and double garage on the ground floor and up to four bedrooms and living areas on the first floor.
 - Unit 2: a self-contained two-bedroom flat in the remaining ground floor level.

⁴ Under sections 177(1)(b), 177(2)(d) and 177(2)(f) of the Act

⁵ New Zealand Standard NZS 3604:1999 Timber Framed Buildings.

- 2.3.2 Construction of the altered house is generally conventional light timber frame, with a concrete slab and foundations, monolithic wall claddings and pressed metal tile roofing. Lower level joinery is aluminium, with most of the original timber windows retained in the upper level except for some new aluminium joinery above the garage.
- 2.3.3 The 15° pitch hipped roof has eaves of about 1 metre above the original walls of the upper level. At the northern end of the southwest elevation (“the entry wall”), eaves are reduced to 450mm. Above the walls of Unit 2, a lean-to eave forms a ‘fire skirt’, which extends along the full length of the northeast garage wall.
- 2.3.4 Given the age of the relocated upper level, I consider that retained original framing to upper walls is likely to be boron-treated, and the expert observed 100mm x 100mm tanalised posts under steel support beams to the new front deck. The expert took timber samples from a horizontal batten, column infill framing, and exterior wall and balustrade framing, and forwarded them to a testing laboratory for analysis, which confirmed that all four samples were untreated. Given this evidence, I consider that the wall and balustrade framing, and the battens and column infill framing of the 2002 alterations are untreated.

2.4 The decks

- 2.4.1 A large upper level deck, supported on framed monolithic-clad columns, extends along the northwest elevation above the garage door (“the front deck”). A smaller deck extends from a recess on the northeast elevation (“the side deck”). Both decks have tiled liquid-applied membrane floors and monolithic-clad balustrades. The side deck is partly situated above the ground floor laundry, with the 450mm projection set within the fire skirt to Unit 2.
- 2.4.2 The mid-level deck to the entry wall (“the entry deck”) is supported on timber posts that extend to a lean-to canopy above the landing. The entry deck has open timber balustrades and a timber slat floor, with timber steps leading down to ground level.

2.5 The wall claddings

- 2.5.1 The cladding system to upper walls is a form of monolithic cladding system known as EIFS⁶. The proprietary EIFS system consists of 40mm polystyrene backing sheets finished with a proprietary mesh reinforced plaster system and a flexible acrylic paint system. The cladding system includes purpose-made flashings to windows, edges and other junctions. The EIFS cladding is fixed over:
- a drained cavity along the northwest wall above the garage
 - horizontal battens along the southwest entry wall
 - the original weatherboards on the remaining upper walls.
- 2.5.2 The monolithic cladding to the lower walls and to the upper deck balustrades consists of 7.5mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system (“flush-finished fibre-cement”).

⁶ Exterior Insulation and Finish System

3. Background

- 3.1 The original house now forming the upper level was moved to a removal company's yard as one of its stock of houses offered for relocation to other sites. At the request of the removal company, the original house was inspected by the authority at the company's yard prior to the consent application for the alterations.
- 3.2 In a letter to the removal company dated 12 February 2002 the authority confirmed that the house was acceptable for relocation to the proposed site. The authority described the house as 35 years old with some timber weatherboard cladding, timber joinery and a pressed metal tile roof, noting that the original brick veneer walls had been reclad in fibre-cement weatherboards 'at the time of the house removal to [the removal company's] yard'⁷.
- 3.3 Consent drawings were completed for the alterations and the authority issued a building consent (No. BA/04956/02) on 11 April 2002 under the Building Act 1991. I note that the consent drawings call for:
- the remaining timber weatherboards to be replaced with fibre-cement weatherboards to match the other reclad walls (see paragraph 3.2)
 - 1 metre deep eaves above all upper walls (see paragraph 2.3.3)
 - a spaced timber slat floor and open timber balustrades to the front deck
 - no side deck, with original back doors to the relocated upper level removed and the fire skirt stopped at the original back porch recess
 - no awning above the entry deck.
- 3.4 The authority carried out various inspections during construction, with foundations and floor slabs on the new ground floor inspected in mid-2002. The original house appears to have been moved to the site and lifted onto the new ground floor level in about August 2002.
- 3.5 A pre-line inspection on 11 September 2002, noted 'deck barrier top to have slope or capping' and fire-rated walls and ceilings to Unit 2 were inspected on 23 September 2002. The work appears to have been substantially completed by the end of 2002.
- 3.6 Final inspections were carried out on 8 January 2003, which identified various outstanding items and noted 're-check inspections required for house and unit'. (I note that the checklist completed during final inspections records the upper level cladding as EIFS, implying that the authority was aware of the upper cladding).
- 3.7 I have seen no evidence of further inspections or correspondence until the applicant applied for a code compliance certificate in 2011. The authority carried out an inspection on 19 April 2011, subsequent to which a notice to fix was issued, dated 17 June 2011 with an attached 'photo file'. The notice to fix identified a number of Building Code clauses that the building work was 'in breach of' and listed 'details of the contravention'.

⁷ As the northwest face and southwest entry wall have no timber weatherboards, I assume that those walls were originally brick veneer.

3.8 The authority identified various areas of concern including (in summary):

Clauses C:

- extractor fan through exterior fire wall to Unit 2
- confirmation of fire protection for other penetrations to fire walls

Clause E2 and B2

- lack of control joints to flush-finished fibre-cement
- ground clearance under the bottom of the flush-finished fibre-cement
- adequacy of window flashings in flush-finished fibre-cement walls
- unsealed fibre-cement edges
- ‘numerous’ cracks to flush-finished fibre-cement
- inadequate spreaders to down pipes
- lack of underlying flashings, with reliance on sealants
- lack of drip edges to bottom of cladding, etc
- unsealed penetrations through cladding
- flat tops to flush-finished fibre-cement balustrades
- lack of fall to deck floors and no access to membranes under deck tiles
- insufficient drainage from tiled deck floors

Clause F4

- inadequate height of deck balustrades

Clause F7

- lack of smoke detectors

Clause G9

- unsafe wiring to hot water cylinder

Clause G12

- back flow protection to flexible shower hoses

Clause G13

- gully traps not providing overflow to internal drainage (gully to be 150mm below lowest fixture)
- surface water not to enter gully traps.

3.9 The notice to fix noted the lack of approval for changes to the upper cladding and the decks, and also listed required documentation to ‘confirm compliance with the building consent/code’.

3.10 The authority required the applicant to prepare a proposed scope of work to address the areas of non-compliance, and also stated that the applicant may apply to the authority for a modification of the requirements to allow durability periods to commence from the date of substantial completion.

3.11 The Department received an application for a determination on 25 July 2011.

4. The submissions

4.1 In a submission dated 14 July 2011, the applicant described the original relocated part of the house and the alteration work, stating that water problems had never been experienced in the house and noting

All throughout the process of building, [the authority's] inspectors checked and re-checked everything. No mention was ever made of the plaster system or anything else which now suddenly is on this report. We are stunned that we are now forced to follow this process through and the [notice to fix] seems severely excessive for an older building.

4.2 The applicant forwarded copies of:

- the notice to fix dated 17 June 2011 with the attached 'photo file'
- the certificate of title.

4.3 The authority forwarded a CD-Rom, entitled 'Property File', which contained some documents pertinent to this determination including:

- the consent drawings and specifications
- other consent documentation
- the building consent
- the letter to the removal company dated 12 February 2002
- the inspection records.

4.4 A draft determination was issued to the parties for comment on 19 October 2011. The applicant did not respond to the draft determination despite several requests to do so.

4.5 The authority accepted the draft and in an email to the Department, dated 4 November 2011, provided comment as summarised below:

- The authority agreed that the notice to fix could be clarified so that it did not include matters not related to the consented work.
- In this instance the authority believed the inclusion of such matters was appropriate as it related to unapproved changes from the consent, however, these matters could have been 'better clarified' in the notice.

5. The expert's report

5.1 As mentioned in paragraph 1.6, 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 15 September 2011, providing a report dated 25 September 2011.

5.2 General

5.2.1 The expert noted that variations from the consent drawings included:

- fibre-cement weatherboards changed to EIFS on upper level walls
- the front deck changed to a tiled floor with clad balustrades
- the side deck added to the northeast elevation, with the fire skirt extended the full length of the elevation
- the upper laundry changed to a bedroom and laundry facilities moved to the garage, with a gully trap added
- an awning added above the landing to the entry deck
- various changes to ground floor joinery along the northeast elevation
- internal layout changes to the original separate toilet and shower room.

5.2.2 The expert considered that the overall quality of construction was 'reasonable' and the plaster coating was 'quite good, possibly better than average', with appropriate coating thickness observed at cut-outs. Where visible, flashings appeared to be 'carefully installed' and the underlying membrane waterproofing over balustrade tops was generally a 'sign of responsible workmanship'.

5.3 Destructive investigations

5.3.1 To investigate underlying construction, the expert removed small sections of cladding ("the cut-outs") at various locations, taking four timber samples for analysis. Cut-outs were made at the following areas:

- Cut-out A (Sample 1): top plate to north corner of the front deck balustrade
- Cut-out B (Sample 2): top of front deck column at the west corner (see paragraph 2.3.4)
- Cut-out C (Sample 3): bottom plate under entry deck to wall junction
- Cut-out D (Sample 4): horizontal batten at bottom of EIFS near west corner
- Cut-out E: wall to balustrade junction of side deck
- Cut-out F: jamb to sill junction of an upper floor original timber window at north corner (see paragraph 5.6.3)
- Cut-out G: EIFS removed at northeast fire apron/wall junction.

5.3.2 At cut-outs A and E, to the sloping tops of deck balustrades, the expert was able to observe a waterproofing membrane wrapped over the fibre-cement backing sheets prior to applying the textured coating, with the membrane providing some protection to balustrade tops.

- 5.3.3 At cut-out C, to a wall/foundation junction, the expert observed that the bottom plate was about 200mm above ground level, with a fibre-cement overlap of about 90mm, in excess of the minimum 50mm recommended by the cladding manufacturer.
- 5.3.4 At cut-out D, to the inter-storey junction on the entry wall, the expert observed the solid horizontal batten supporting the bottom of the upper EIFS with degraded building wrap lapped over the top of the lower fibre-cement cladding.
- 5.3.5 At cut-out G, at the wall to the fire skirt junction, removal of EIFS allowed the expert to observe a satisfactory upstand to the flashing at the junction, with appropriate clearance of the EIFS above the pressed metal tile roof of the lean-to.

5.4 Decay analysis

- 5.4.1 The laboratory report dated 21 September 2011 stated that all four samples were ‘untreated perishable radiata pine’ and ‘contained prolific fungal growths but no structurally significant decay’ and were ‘typically found in moisture compromised wall cavities and other locations’.
- 5.4.2 However, the report also noted that the samples could be ‘on the periphery of more seriously affected framing’ and had ‘come very close to conditions conducive to serious decay’, in particular Sample 3. The report concluded that ‘it is important to establish the limits of fungal infection and/or decay and establish the causes, and apply appropriate remediation’.

5.5 Moisture levels

- 5.5.1 The expert inspected the interior and found no visible evidence of moisture damage. The expert established the equilibrium moisture content (EMC) at about 11% under a soffit and took further invasive moisture readings at areas considered at risk. The expert noted evidence of elevated moisture as follows:

- 22% and fungal growth in Sample 4 from the horizontal batten at bottom of EIFS near west corner (Cut-out D)

Windows and doors in flush-finished fibre-cement

- 20% and 24% in bottom plates at sill/jamb junctions of lower southeast doors
- 32% under jamb/sill junction of southwest garage window, with 23% in the bottom plate below

The front deck and columns

- 18% and fungal growth in Sample 1 from the top plate at north corner of balustrade (Cut-out A)
- 21% in the top of the north column framing, below a horizontal crack
- low moisture level but fungal growth to Sample 2 from west column infill framing (Cut-out B)

The entry deck

- 21% in the bottom plate under the stringer to the entry steps.

- low moisture level but fungal growth to Sample 3 from the bottom plate under the wall to balustrade junction of the side deck (Cut-out C)

Ground floor bottom plates

- 20% to the east corner of the lounge to Unit 2
- 18% to the west corner of Bedroom 2 to Unit 2
- 19% to the west corner of the garage

5.5.2 I note that remaining moisture levels were recorded from 12% to 15%. Moisture levels above 18% or that vary significantly from equilibrium levels indicate that external moisture is entering the structure and investigation is needed.

5.6 The original timber windows

5.6.1 I note that the southwest entry wall is likely to have been clad originally in brick veneer (as outlined in paragraph 3.2), which may explain why the EIFS cladding to that wall was installed over horizontal timber battens. The EIFS extends all around the original timber window above the entry canopy, with the plaster surface proud of head and jamb facings and the timber sill slightly proud of the plaster below.

5.6.2 Except for the front deck wall (refer paragraph 5.7.2), EIFS to remaining walls is installed over the original timber weatherboards. The cladding surrounds window jambs and sills, leaving the original facings exposed above the timber windows and the original head detail undisturbed beneath the 1 metre eaves.

5.6.3 At the northeast timber window to the lounge, the EIFS partly overlaps the edge of the jamb facing, with the plaster surface proud of the timber sill and sill projections past jambs buried within the polystyrene. At Cut-out F, the expert observed the underlying timber weatherboards and the buried sill, noting that, although expected, there was no evidence of any moisture penetration at the junction (likely due to the shelter provided by the deep 1 metre eaves above).

5.6.4 At remaining timber windows, timber facings extend past the ends of timber sills, with the face of the sill proud of the EIFS surface below. The expert considered that these windows are satisfactory, given the underlying weatherboards and the shelter provided by the 1 metre deep eaves above.

5.7 The aluminium windows and doors

5.7.1 The expert noted that joinery installed in lower walls is face-fixed with metal head flashings that project about 25mm past the jamb flanges. Probing jamb flanges revealed that no seals were installed between flanges and fibre-cement backing sheets, with textured coating applied after installation. The expert noted that most joinery had some shelter afforded by the fire skirt (which I accept would protect the heads but not the full height of the jamb junctions).

5.7.2 Aluminium ranchsliders in the upper northwest wall are recessed by the EIFS thickness, with visible uPVC head flashings and drainage from some form of cavity above. I note that this wall is likely to have been clad originally in brick veneer as outlined in paragraph 3.2. The doors are sheltered beneath the 1 metre deep eaves and appear to be satisfactorily installed.

- 5.7.3 An aluminium window to the southwest wall of the first floor lounge is installed to the northern end of the entry wall, where EIFS is installed over horizontal battens. This window therefore has no drainage from cladding above the head flashing; with limited shelter from the 450mm eaves above (refer Cut-out D).

5.8 Compliance with Clause E2 External Moisture

- 5.8.1 Commenting specifically on the external envelope, the expert noted that:

- the original roof is deteriorating and downpipes drain onto the fire skirt, without appropriate spreaders or diversion into the fire skirt gutters

The wall cladding

- there are some minor cracks in the flush-finished fibre-cement cladding
- deck overflows through clad balustrades lack drip edges
- the increased overlap at the bottom of the fibre-cement cladding has resulted in reduced clearances from the paving and, coupled with the lack of an anti-capillary gap, has resulted in elevated moisture levels in some exposed areas
- although most inter-storey junctions are protected by the fire skirt, the exposed junction on the entry wall is not weatherproof, with an undrained cavity behind the upper EIFS, no drip edge and elevated moisture levels in the lower batten

Windows and doors

- there are no seals installed behind the jamb flanges of the lower aluminium windows, with elevated moisture levels apparent at the garage window in the exposed entry wall and also in the bottom plates at the sill/jamb junctions of southeast lounge door unit
- although other window heads are sheltered, the garage window in the entry wall is exposed, and there is no drainage above the head flashing to the entry wall, with elevated moisture levels recorded in the inter-storey junction above
- although most original timber windows to upper walls are satisfactory in the circumstances, the EIFS under the northeast lounge window is proud of the sill, with the sill ends buried in polystyrene

The front deck

- despite underlying membrane and a sloping top, there is elevated moisture and fungal growth in the balustrade top plate that indicates some moisture ingress
- the large deck tiles are mortared at the floor perimeter with no sealant to allow tile movement and the liquid-applied membrane is wrinkling in some areas
- the deck floor tiles are extensively cracked, which allows moisture behind the tiles and the broken tiles may have damaged the underlying membrane – resulting in moisture penetration into the deck substrate

Penetrations

- although the ribbon plate to the entry deck is flashed at the landing, the stair stringer is bolted directly through the fibre-cement, and moisture levels are elevated in the bottom plate below

- some penetrations through the fibre-cement are unsealed, or poorly sealed.

5.8.2 The expert also made the following comments:

- Although there are no vertical control joints installed to the lower fibre-cement walls, there is no evidence of associated damage after 8 years.
- Given the deep overhang of the front deck and the falls away from walls, cladding clearances beside the garage door appear acceptable.
- Although there is no drainage gap above head flashings to lower aluminium windows, the window heads beneath the fire skirt are well protected and are satisfactory in these circumstances.
- The side deck is well sheltered beneath 1 metre deep eaves, with no evidence of moisture problems.
- Tops to clad balustrades have sufficient slope and falls to deck floors appear satisfactory, with no evidence of ponding.

5.9 Compliance with the remaining Code clauses

5.9.1 The expert noted that most items identified in the 2003 final inspections had been, or were in the process of being attended to. The expert commented on other items identified in the notice to fix, and I have taken those comments into account in paragraph 8.1.

5.9.2 In respect of the matters that had or were being resolved the expert noted that:

- the penetration through the fire wall by an extractor fan is now protected beneath the fire skirt (C)
- safety glass has been installed to the bathroom (F2).

5.9.3 The expert considered the three gully traps on the north east elevation were sheltered and unlikely to be subject to surface water ingress (G13).

5.9.4 In respect of the matter the owner advised had been corrected but required verification by the owner:

- electrical switches and penetrations to fire-rated walls are apparently now completed (C)
- the fourth gully trap in the garden has a raised concrete surround (G13).

5.9.5 In regard to the other code clauses, the expert noted:

- the unsealed bench/upstand junction to the lower kitchen (E3)
- the unknown waterproofing under tiles installed over the Unit 1 timber flooring and the possible lack of waterproofing to shower/tile junctions (E3)
- the front and side deck balustrades at heights less than 1.0m (F4)
- damaged electrical connection to Unit 2 hot water cylinder (G9)
- the lack of non-return (atmospheric breaker) valves to the flexible shower hoses to showers (x2) and bath (x1) (G12)

- inaccessible ‘lift tab’ to the hot water cylinder pressure relief valve (G12).

5.10 A copy of the expert’s report was provided to the parties on 26 September 2011.

6. Weathertightness

6.1 General

6.1.1 The evaluation of building work 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).

6.2 Weathertightness Risk

6.2.1 These alterations have the following environmental and design features, which influence the weathertightness risk profile of the house:

Increasing risk

- the house is two-storeys high in a high wind zone
- walls have monolithic cladding fixed directly to the framing
- there are two tiled decks, with monolithic-clad balustrades
- ground floor external wall framing is unlikely to be treated to a level that provides resistance to decay if it absorbs and retains moisture

Decreasing risk

- the house is simple in plan and form
- there is a drained cavity behind one EIFS-clad wall
- there are deep eaves to shelter most of the upper wall cladding and a fire skirt to shelter some of the lower wall cladding
- the original framing to upper external walls is treated to a level that provides resistance to decay if it absorbs and retains moisture.

6.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having a moderate weathertightness risk rating. If details shown in the current E2/AS1 were adopted to show code compliance, a drained cavity would be required for all elevations. However, this was not a requirement at the time of construction.

6.3 Weathertightness performance

6.3.1 I note that these alterations need to comply with the Building Code to the extent required by Section 112(b) of the Act. The original parts of the relocated upper level of the house must therefore continue to comply to ‘at least the same extent as before the alteration.’ That level of compliance is generally lower than would apply to the construction of a new building and I have taken this into account in my assessment of the performance of the altered building.

6.3.2 Taking account of the above, the expert's investigations into the underlying construction, the results of decay analysis of untreated timber samples and the expert's comments in paragraph 5.8.1, I conclude that remedial work is necessary in respect of the following areas:

- the deteriorating original roof and the drainage onto the fire skirt
- in regard to the flush-finished fibre-cement cladding:
 - the cracks in the cladding
 - inadequate cladding clearances resulting from excessive overlaps
 - lack of seals to jamb flanges of aluminium windows
 - lack of drainage above garage window head flashing in the entry wall
 - the entry deck stringer fixed through the cladding
 - the unsealed penetrations through the cladding
- in regard to the EIFS cladding:
 - the lack of weatherproofing to the entry wall inter-storey junction
 - the timber window in the northeast lounge wall
- in regard to the front deck:
 - inadequate weatherproofing to the balustrade top
 - the lack of allowance for movement of the large floor tiles, and the wrinkling of the membrane at the floor edge
 - the severely cracked tiles, likely damage to the underlying membrane and possible moisture penetration into the deck substrate and framing.

6.3.3 I also note the expert's comments as outlined in paragraph 5.8.2 and I accept that the areas described are adequate in these particular circumstances.

6.3.4 I consider the expert's report establishes that the current performance of the building envelope is not adequate because there is evidence of moisture penetration to some of the timber framing. Consequently, I am satisfied that the alterations do not comply with Clause E2 of the Building Code.

6.3.5 The building envelope is also required to comply with the durability requirements of Clause B2, which requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life; and that includes the requirement for the house to remain weathertight. Because the cladding faults will allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.

6.3.6 Because the identified cladding faults occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.2 will result in the external envelope being brought into compliance with Clauses B2 and E2 of the Building Code.

6.3.7 I note the expert's comments on the need for maintenance to the original roof, timber windows and various other areas of the house. Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements, including examples where the external

wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

7. The remaining Building Code clauses

- 7.1 I have considered the matters noted in the notice to fix, and the findings and comments of the expert.
- 7.2 With respect to the prevention of contamination of potable water, under Clause G12.3.2, I do not consider the low risk associated with use of a flexible shower hose over a shower cubicle warrants the need for measures to protect the water supply. However, I note that is not the case where a flexible shower hose is located over a bath given the depth of the water in a bath, the increased likelihood of the bath outlet being blocked, and the possibility that the shower will be used when the bath is full.
- 7.3 With respect to the performance of the gully traps and Clause G13, I consider that despite the sheltered location of the gully traps, protection is still required from the ingress of surface water that may impact this area. The gully traps are located below the bottom edge of the cladding and, as found by the expert, the cladding itself terminates approximately 90mm below the concrete foundation. One or more of the gully traps are therefore located well below the lowest fixture: this is considered adequate.
- 7.4 Given the discussion above I consider that the following items require further investigation and remedial work:
- Clause E3**
- the Unit 2 kitchen bench/upstand junction
 - investigation of waterproofing to the tiled bathroom areas
- Clause F4**
- inadequate balustrade heights in the front deck and side deck
- Clause G9**
- unsafe electrical connection to Unit 2 hot water cylinder
- Clause G12**
- the inaccessible 'lift tab' to the hot water pressure cylinder relief valve
 - the lack of a non-return device to the flexible shower hose to the bath
- Clause G13**
- lack of concrete surrounds to gully traps to prevent the ingress of surface water.
- 7.5 I also note the expert's comments in paragraph 5.9.2 and I accept that these matters are adequate in these particular circumstances. I leave matters noted in paragraph 5.9.4 for the owner to verify to the satisfaction of the authority.

7.6 I note that the provision of domestic smoke detectors in the Acceptable Solution for Building Code Clause F7 “Warning Systems”, F7/AS1, did not come into effect until April 2003. The consent was issued in April 2002 and subsequent changes to the Building Code (and any associated changes to the relevant Acceptable Solutions) cannot be enforced retrospectively. However I note that smoke detectors have now been installed and I consider this to be prudent.

8. The notice to fix

8.1 Taking into account the expert’s comments, the following table summarises my conclusions on items listed in the notice to fix dated 17 June 2011; referring also to relevant code clauses and related paragraphs within this determination:

Notice to fix		My conclusions	Code Clauses	Paragraph references
	Summarised requirements			
2.0	Issues relating to the cladding			
2.1	Not to manufacturer’s specifications			
a)	No vertical control joints	Adequate in circumstances	E2, B2	5.8.2 and 6.3.2
b)	Lack of capillary gap to cladding base	Some remedial work required	E2, B2	5.8.1 and 5.8.2
c)	Lack of drainage above head flashings	Adequate in circumstances but remedial work required to garage window	E2, B2	5.8.1 and 5.8.2
d)	Insufficient head flashing projections	Adequate	E2, B2	5.7.1
e)	Lack of clearances to bottom of cladding	Remedial work required	E2, B2	5.8.1 and 5.8.2
f)	Unsealed edges of fibre-cement	Maintenance required	E2, B2	
g)	Inadequate window jamb junctions	Some remedial work required	E2, B2	5.8.1 and 6.3.2
2.2	Not to relevant acceptable solutions			
a)	Inadequate spreaders to downpipes	Remedial work required	E2, B2	5.8.1 and 6.3.2
b)	Numerous cracks to cladding	Some remedial work required	E2, B2	5.8.1 and 6.3.2
c)	Lack of/inadequate flashings	Some remedial work required for front deck balustrades	E2, B2	5.8.1 and 6.3.2
d)	Inadequate window and door junctions	Some remedial work required	E2, B2	5.8.1 and 6.3.2
e)	Lack of drip edges	Remedial work required to entry wall inter-storey junction	E2, B2	5.8.1 and 6.3.2
f)	Flat tops to balustrades	Adequate	E2, B2	5.8.2
g)	Condition of deck membrane under tiles	Remedial work required to front deck	E2, B2	5.8.1 and 6.3.2
h)	Insufficient fall to tiled decks	Adequate	E2, B2	5.8.2
i)	Insufficient height of clad deck balustrades	Remedial work required	F4	5.9.1
j)	Extractor fan through fire wall	Now adequate	C	Error! Reference source not found.
k)	Fire rated wiring penetrations	Verification required	C	5.9.4
l)	Lack of clearances to bottom of plaster	Some remedial work required	E2, B2	5.8.1 and 5.8.2
m)	Cladding overhang at bottom plates	Some remedial work required	E2, B2	5.8.1 and 5.8.2
n)	Prevention to gully traps to prevent surface water ingress, grating to gully traps, gully traps to be 150mm below lowest fixture	Remedial work required in respect of prevention of surface water ingress to drainage system. Remaining item adequate	G13	7.3
2.3	Not to accepted trade practice			
a)	Unflushed and/or unsealed penetrations	-	-	-
2.4	Drainage and ventilation			
a)	General policy on lack of cladding drainage & ventilation	-	-	-

Notice to fix		My conclusions	Code Clauses	Paragraph references
	Summarised requirements			
3.0	Changes to Building Consent			
a)	EIFS in lieu of fibre-cement weatherboards to upper level	-	-	3.3, 5.2.1 and 9.3
b)	Changes to decks	-	-	3.3, 5.2.1 and 9.3
4.0	Other building related issues			
a)	Smoke detectors	Not required at time consent was issued	F7	7.6
b)	No back flow protection to flexible shower hoses	Remedial work required with respect to flexible hose over bath. No work required with respect to showers.	G12	7.2
c)	Electrical wiring to Unit 2 HW cylinder	Remedial work required	G9	7.4
d)	Condition of paintwork	Maintenance item	E2, B2	6.3.7

8.2 I am satisfied that the house does not comply with the Building Code and the authority made an appropriate decision to issue the notice to fix. However, I am also of the view that some items identified in the notice are likely to be adequate and I have also identified additional items that need to be addressed, so the notice should be modified accordingly (refer to paragraph 9.1).

8.3 I note that the notice to fix required provision for adequate ventilation and drainage. Under the Act, a notice to fix can require the owner to bring the additions into compliance with the Building Code. The Building Industry Authority has found in a previous Determination (2000/1) that a notice to rectify (the equivalent to a notice to fix under the Building Act 2004) cannot specify how that compliance can be achieved. I concur with that view.

8.4 I also note the comments previously made on the form and content of items contained in notices to fix issued by the authority in previous determinations, in particular paragraph 9 of Determination 2010/070. I believe the observations made in that determination are equally valid in this instance.

9. What happens next?

9.1 The notice to fix should be modified to take account the findings of this determination, identifying the items listed in paragraph 6.3.2 and paragraph 7.4 and referring to any further defects that might be discovered in the course of investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to stipulate directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the owner to propose and for the authority to accept or reject. It is important to note that the Building Code allows for more than one means of achieving code compliance.

9.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 9.1. Initially, the authority should revise and re-issue the notice to fix. The applicant should then produce a response to this in the form of a detailed proposal for the house as a whole, produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

9.3 I also note that there are numerous changes from the consent drawings, and I leave the resolution of this to the parties to resolve once the appropriate remedial work is satisfactorily completed.

10. The decision

10.1 In accordance with section 188 of the Act, I hereby determine that the building does not comply with Clauses E2, E3, B2, F4, G9, G12 and G13 of the Building Code. Accordingly I confirm the authority's decision to refuse to issue a code compliance certificate.

10.2 I also determine that the authority is to modify the notice to fix, dated 17 June 2011, to take account of the findings of this determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 30 January 2012.

John Gardiner
Manager Determinations