



Determination 2009/75

The issue of a notice to fix for alterations to a house at 318 Victoria Avenue, Remuera, 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, T Turner (“the applicant”), acting through an engineering consultant (“the consultant”), and the other party is the Auckland City Council (“the authority”), carrying out its functions and 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 issue a notice to fix for 15-year-old and 6-year-old alterations and additions to a house because it was not satisfied that the building work complies with certain clauses of the Building Code² (First Schedule, Building Regulations 1992).

¹ The Building Act 2004 is available from the Department’s website at www.dbh.govt.nz.

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

- 1.3 In order to determine, under section 177(b)(iii) of the Act³, whether the decision to issue the notice to fix was correct, I must consider, in terms of sections 177(a) of the Act:

Matter 1: The external envelope

Whether the external envelope of the additions to the house complies with Clause B2 “Durability” and Clause E2 “External Moisture” of the Building Code. The “external envelope” includes the monolithic cladding, the windows, the deck and the roof cladding; their configuration, components and junctions with other building elements. By “the monolithic cladding” I mean the components of the system (such as the backing materials, the plaster, the flashings and the coatings), as well as the way the components have been installed and work together. (I consider this matter in paragraph 7.)

Matter 2: Other Building Code clauses

Whether certain building elements comply with Building Code Clauses B1 “Structure”, D1 “Access Routes”, E1 “Surface Water” and F4 “Safety from falling”. (I consider this matter in paragraph 8.)

1.4 Matters outside this determination

- 1.4.1 The notice to fix cites contraventions of Clauses B1, B2, D1, E1, E2, E3, F4 and H1 of the Building Code. I note that there are no specific items within the notice that relate directly to Clauses E3 and H1, and I have received no evidence relating to a dispute about them. I have therefore not considered these clauses within this determination.
- 1.4.2 The notice to fix also stated that the applicant may apply to the authority for a modification in respect of the durability provisions of Clause B2, and that process was subsequently clarified by the authority (refer paragraph 3.8). I therefore leave this matter to the parties to resolve once the cladding and all associated work has been made code compliant.
- 1.5 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute (“the expert”), and other evidence in this matter. I have evaluated this information using a framework that I describe in paragraph 6.1.

2. The building work

- 2.1 The building work considered in this determination consists of extensive alterations and extensions to a house. The site slopes to the northeast and is in a high wind zone for the purposes of NZS 3604⁴.
- 2.2 The building work was carried out during two different periods, the first in 1993 and the second in 2003, under the following building consents:

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

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- BLD 38930 3157 01 issued and constructed during 1993 (“Consent A”)
- BLD 38930 5621 01 issued and constructed during 1993 (“Consent B”)
- BLD 36020 8845 01 issued in 2002, constructed during 2003 (“Consent C”).

2.3 The original house

2.3.1 The original 1950’s house was a single-storey timber-framed house (“the original house”) with a timber-framed subfloor, clay tile roof, stucco wall cladding and timber windows.

2.3.2 The original 30° pitch hipped roof has eaves projections of about 800mm overall. A small 15° pitch roof extended from the south west corner, with eaves of 480mm and verges of about 400mm.

2.4 The 1993 building work

2.4.1 The building work completed in 1993 and considered in this determination was:

- Consent A. Extensive alterations and additions to the original house.
 - New concrete and concrete block foundations to the entire perimeter.
 - A new partial basement to the north of the house to provide a garage, storage area and an internal staircase to the ground floor.
 - Minor interior alterations to the ground floor.
 - A new partial upper floor to provide a master bedroom, ensuite and sewing room.
 - A new upper level deck from the master bedroom.
- Consent B. The new ground level deck, retaining wall and steps to the north.

2.5 The 2003 building work

2.5.1 The building work considered in this determination consisted of:

- Consent C: a minor addition and alterations to the ground floor.
 - A small extension to the west, to provide an additional bedroom
 - Associated alterations to the ground floor, including three new ensuites bathrooms and relocation of the kitchen and laundry.

2.6 The altered house

2.6.1 The altered house is two-storeys high to the north and east, and single-storey to the south and west elevations. Construction is conventional timber framing with specifically engineered steel posts and beams, concrete block retaining walls, concrete slab and foundations to the basement.

2.6.2 The south side of the house has a timber framed subfloor and is generally unchanged from the original, apart from minor joinery changes. The new window and door joinery is timber to match the original, with some joinery reused from the original house and the earlier 1993 building work.

- 2.6.3 Most of the original 30° pitch clay tile roof is retained, with the 1993 upper level accommodated within the south roof slope and new dormer gables extending to the north and west. The north end of the original low-pitched roof projection has been extended by about 4m to the north to form the 2003 bedroom addition, which has a timber-framed subfloor.
- 2.6.4 The 1993 upper level deck is set into the lower roof slope above the ground floor kitchen area. The deck has a tiled membrane floor and monolithic-clad balustrades, with a glass strip fixed to inside corner of the monolithic-clad flat top. A timber pergola is supported on posts fixed to the deck floor.

2.7 The new stucco cladding

- 2.7.1 The monolithic cladding to the 1993 and 2003 external additions matches the appearance of the stucco wall cladding to the original house. The cladding is a system described as solid plaster (“stucco”) over a solid backing of 4.5 mm fibre-cement sheets, which are covered by a slip layer of building wrap, 25mm thick metal-reinforced solid plaster and a flexible paint coating.
- 2.7.2 For the external walls erected in 1993, the backing sheets are fixed through the building wrap directly to the framing timbers. For the ground floor walls erected in 2003, the backing sheets are fixed through 20mm H3 treated battens that are fixed through the building wrap to the framing, to provide a cavity behind the cladding.

2.8 Timber treatment

- 2.8.1 The expert forwarded samples of timber from the 1993 upper deck balustrade and the 2003 cavity battens to a biodeterioration laboratory, which confirmed that both samples were CCA treated to a likely level of H3.
- 2.8.2 Given the date of construction of the 1993 building work, I also consider that the wall framing in the new external walls of the upper level is likely to be boric treated.

3. Background

- 3.1 The authority issued Consent A and Consent B in 1993 under the Building Act 1991 and carried out some inspections of the building work, including an undated pre-line and insulation inspection of the upper floor and a masonry inspection of the exterior retaining wall on 29 October 1993. No final inspections were carried out.
- 3.2 The applicant purchased the property in 2002 and, in a letter received by the authority on 22 November 2002, sought copies of the 1993 inspection records and requested clarification of ‘the extent of the final inspection required for the issue of the certificate’.
- 3.3 The authority responded in a letter to the applicant dated 29 November 2002, which attached the 1993 inspection records and advised that a final inspection was required to ‘ascertain the compliance of the works carried out’.

3.4 Final inspections of the 1993 consents

3.4.1 A final inspection of the 1993 building work under Consent A and Consent B was carried out on 9 December 2002. I note that the consent numbers in the records are incorrectly reversed, and I have adjusted these accordingly.

3.4.2 The 'final checklist' for Consent A indicates all items are passed except for the balustrade to the upper deck. The 'final checklist' for Consent B indicates all items are passed except for balustrades, which I presume applies to the exterior retaining wall. The record notes 'barrier to be 1 mtr high with no climb points'.

3.5 The 2003 building work

3.5.1 The authority issued Consent C on 4 December 2003 under the Building Act 1991 for a 'bedroom addition and minor alterations', and carried out inspections of the building work, including a pre-line and insulation inspection on 16 April 2003.

3.5.2 The authority carried out a final inspection on 20 June 2003, and the inspection record notes three minor items to be completed. These appear to have been completed, and I am not aware of further correspondence or inspections until 2008.

3.6 Re-inspections of all building work

3.6.1 On 12 March 2008, the authority carried out final re-inspections of building work carried out under all three building consents, with separate inspection records produced for each consent.

3.6.2 The inspection record for Consent A includes question marks against timber treatment and spacing/size, and ticks as failed for various aspects of the exterior cladding, with the record noting:

Issues relating to external cladding and water proofing, membrane and tiles laid over it. Peer review required, possible 'notice to fix'.

3.6.3 The inspection record for Consent B includes a tick as failed in regard to a handrail to the exterior steps, with the record noting:

Handrail required for stairs that are more than four or more risers.

3.6.4 The inspection record for Consent C includes ticks as failed for various aspects of the exterior cladding, with the record referring to the other outstanding 1993 consents and noting:

Issues relating to external cladding & subfloor ventilation & ground levels. Peer review required to determine council's response.

3.7 The notice to fix

3.7.1 The authority wrote to the applicant on 18 April 2008, stating that it was not satisfied that the building work complied with the Building Code in 'a number of respects'. The authority recommended that:

...you engage the services of a suitably qualified person to review the attached NTF and to develop a proposed scope of work, which in their view would address all the areas of contravention. Council will then review this proposal and if it

agrees with it, will then advise you as to whether a building consent needs to be applied for.

- 3.7.2 The notice to fix attached to the above letter stated that the authority was not satisfied that the building work complied with the consent, or with some clauses of the Building Code, or with the Building Act. The notice included a 'Photo file' of defects identified in the building.
- 3.7.3 The 'particulars of contravention or non-compliance' listed defects and requirements (refer paragraph 9.1) and required the applicant to prepare a proposed scope of work to address the areas of non-compliance.
- 3.7.4 With regard to durability requirements, the notice stated that the applicant could apply to the authority for a modification to allow the requirements of Clause B2 to 'commence from the date of substantial completion, as opposed to the date of the Code Compliance Certificate'.
- 3.8 In response to the notice the applicant engaged the consultant, who queried the notice in an email and phone call to the authority on 30 May 2008. In a letter to the consultant dated 12 June 2008, the authority described the process by which the applicant may apply to the authority for a modification of the durability provisions (see paragraph 1.4.2), which would allow the durability periods to commence from the dates of substantial completion of the various parts of the work, noting that this:
- ...should resolve the issue within paragraph 5.0 of the notice. The other items identified would still need to be addressed prior to the CCC being issued, and it is these items that Council require a scope of works to be submitted for acceptance per paragraph 6.0 of the notice.
- 3.9 I am not aware of any further correspondence with the authority, and the Department received an application for a determination on 28 April 2009.

4. The submissions

- 4.1 The consultant forwarded copies of:
- the drawings for each of the 3 building consents
 - the inspection records
 - the notice to fix dated 21 April 2008
 - the correspondence with the authority.
- 4.2 Copies of the submissions and other evidence were provided to each of the parties. The authority acknowledged the application but made no submission.
- 4.3 A draft determination was issued to the parties for comment on 13 August 2009. Both parties accepted the draft. I have noted the typographical errors pointed out by the applicant and have corrected those accordingly.

5. The expert's report

5.1 As mentioned in paragraph 1.5, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors. The expert inspected the house on 14 July 2009 and provided a report that was completed on 27 July 2009. The expert noted that the inspection had been delayed due to the absence of the owner.

5.2 The expert noted the following variations to the consent documents:

- a pergola has been added above the upper deck
- the ground floor bedroom extension is supported on timber piles, in lieu of the continuous concrete perimeter foundation shown in the drawings.

5.3 The expert described the stucco claddings of the alterations and additions as 'below standard' and noted the lack of window flashings and failures of some lead apron flashings to the roof. The expert also noted that the 1993 upper level walls had direct-fixed stucco, while the 2003 ground floor walls had stucco installed over a cavity.

5.4 The windows and doors

5.4.1 The expert noted that the timber window and door installation appears similar in both the 1993 and 2003 additions, with traditional timber sills to match the original house and the joinery recessed by about 25mm from the face of the stucco.

5.4.2 The recessing by the thickness of the stucco indicates that the joinery was installed prior to the plaster, which appears to have been applied to extend over the jamb junction and butts against a quarter-round timber bead. The bead extends from the timber sill around the jambs and heads of the joinery, with no evidence of flashings.

5.5 Moisture levels

5.5.1 The expert removed several roof tiles at the small internal gutter adjacent to the northwest corner of the upper deck, and observed signs of moisture penetration and possible decay in the roof timbers below the gutter. Water stains were also observed on the adjacent soffit lining.

5.5.2 The expert extracted samples of timber for testing from:

- the top of the balustrade framing at the corner of the upper deck, with the sample confirmed as H3 treated and containing 'prolific fungal growths' but no incipient or established decay
- the cavity battens below the west window to the 2003 addition, with the sample confirmed as H3 treated and containing no fungal growth.

5.5.3 The expert inspected the interior of the house and no evidence of moisture ingress was noted. The expert took seven invasive moisture readings through the stucco cladding of the 1993 upper level addition and all readings were elevated as follows:

The upper deck balustrade

- 30% at the top and 26% at the bottom of the framing at the north east corner
- 37% at the cut-out to the top of the north west corner of the framing

The upper windows and doors

- 23% beside the sills to the master bedroom deck door
- 20% at the sill of the master bedroom east window
- 22% at the sill of the master bedroom ensuite west window
- 21% at the head of the master bedroom ensuite west window

Moisture levels above 18% generally indicate that external moisture is entering the structure and further investigation is required.

5.5.4 The expert also took three invasive readings of the cavity battens in the 2003 ground floor addition, and noted that the highest reading was 17.6% (beside the bedroom north door sill).

5.6 Commenting specifically on the external envelope, the expert noted that (where relevant, the year of the work is shown in brackets):

The bottom of the stucco cladding

- the stucco butts against the paving of the north patio area (2003) and the roof flashings (1993)
- there are no capillary gaps or drip edges at the bottom of the stucco (1993 and 2003)
- there is a horizontal batten closing the cavity behind the ground floor cladding, preventing drainage of the cavity (2003).

Windows and doors (1993 and 2003)

- the recessed windows in the stucco lack head and jamb flashings, with moisture penetration apparent into associated framing in the upper level (2003)

The upper deck (1993)

- there are cracks in the outer face of the balustrade cladding
- the deck tiles turn up against the stucco on the balustrades and walls
- the top to the balustrade is plastered and almost flat, with the extrusion holding the glass strip fixed through the top, no saddle flashings at the junctions with the walls, and high moisture levels in the framing
- although the two 65mm diameter deck outlets are sufficient for a deck of this size, the effective diameters are restricted by the size of the holes in the tiles
- the step down to the deck is less than 100mm, with the deck door sill touching the deck tiles

the roof cladding (1993)

- the apron flashings to the upper level are stepped sections of lead dressed against the tiles, with no means of effectively deflecting water
- the lead flashing to the internal gutter beside the deck balustrade has been repaired with welded patches, indicating past leaks that are still occurring, with moisture apparent on the underlying timbers and soffit lining
- there are no spreaders to downpipes from the upper roofs, although there is no sign of associated moisture penetration

General

- there are cracks in the cladding to the ground floor addition (2003)
- pipe penetrations through the cladding are not adequately sealed (1993 and 2003).

5.7 The expert also made the following comments on the exterior envelope.

- Control joints are not required for the limited dimensions of stucco cladding on the additions to this house (1993 and 2003).
- Although the deck membrane beneath the tiles could not be inspected, there was no evidence of water penetration into areas below (1993).
- Although the subfloor area beneath the ground floor addition is less than 450mm, the ground is excavated on the west side which allows the small area of subfloor timbers to be readily inspected (2003).
- Although the particle board flooring of the ground floor addition is within 550mm of the ground, the ground is dry and the floor is protected by underlay (2003)
- While there are defects (as outlined above) in the short internal gutter, this gutter is a continuation of a valley gutter that discharges onto lower level tiles and an overflow is not necessary or possible to install (1993).

5.8 The remaining Building Code clauses

5.8.1 Commenting on the code compliance of the other items identified in the notice to fix, the expert noted that:

- although the two 65mm diameter deck outlets are sufficient for the upper deck size, the effective diameters are reduced by the size of the holes in the tiles and are not sufficient to comply with Clause E1.

5.8.2 The expert also made the following comments.

- Clause B1: the spacing of the studs and nogs to the upper level framing was observed to be at 600mm spacing.
- Clause D1: the exterior steps identified in the notice to fix have more than 3 risers, and are a 'private stairway' not an 'accessible stairway' as defined in the acceptable solution D1/AS1. The steps have recently had a handrail installed.

- Clause F4: the metal balustrade over the exterior retaining wall is about 930mm high, which is 70mm less than the 1m height in the acceptable solution F4/AS1.
- Clause F4: the glass to the top of the deck balustrade has one gap that is 110mm wide at the junction with the wall, which is just beyond the 100mm limit in the acceptable solution F4/AS1.

5.9 A copy of the expert's report was provided to the parties on 27 July 2009.

6. Evaluation framework for code compliance

6.1 I have evaluated the code compliance of this building by considering the following two broad categories of the building work:

- The weathertightness of the external building envelope (clause E2) and durability (clause B2 insofar as it relates to clause E2)
- The other code clauses

In the case of this house, weathertightness considerations are addressed first.

6.2 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions⁵, which will assist in determining whether the features of this house are code-compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add one or more other provisions to compensate for that in order to comply with the Building Code.

Matter 1: The external envelope

7. Weathertightness

7.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. Weathertightness risk factors have also been described in previous determinations⁶ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

⁵ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way (but not the only way) of complying with the Building Code. The Acceptable Solutions are available from The Department's Website at www.dbh.govt.nz.

⁶ Copies of all determinations issued by the Department can be obtained from the Department's website.

7.2 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

7.3 Weathertightness risk

7.3.1 The alterations to this house have been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from “low” to “very high”. The risk level is applied to determine what cladding systems can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require a particular type of cladding to be installed over a drained cavity.

7.3.2 The alterations to this house have the following environmental and design features which influence its weathertightness risk profile:

Increasing risk

- the house is in a high wind zone
- the altered house is two-storeys high in part
- the altered house is fairly complex in plan and form
- the altered roof has multiple levels and pitches, with complex roof junctions
- an upper deck, with clad balustrades, is situated above ground floor rooms
- the upper walls have monolithic cladding fixed directly to the framing

Decreasing risk

- the extended lower walls have monolithic cladding fixed over a cavity
- there are eaves and verge projections to the walls
- the external wall framing of the alterations is treated to a level that provides some resistance to decay if it absorbs and retains moisture.

7.3.3 When evaluated using the E2/AS1 risk matrix, these features show that the elevations relevant to the alterations demonstrate a high weathertightness risk rating for the upper level additions and a low weathertightness risk rating for the lower level additions. While it was not a requirement when this house was constructed, a drained cavity is now required by E2/AS1 for stucco cladding at all risk levels.

7.4 Weathertightness performance of the roof cladding and the subfloor

7.4.1 Generally the roof cladding appears to have been installed in accordance with good trade practice. However, taking account of the expert’s report, I conclude that remedial work is necessary in respect of:

- the apron flashings to the upper level addition

- the lack of weathertightness to the internal gutter beside the balustrade
- the lack of spreaders to the downpipes from the upper roofs.

7.4.2 I note the expert's comments in paragraph 5.7. In regard to an overflow to the internal gutter, I accept that an overflow is not necessary in the circumstances. In regard to the subfloor area, I accept that the subfloor space to the ground floor addition is adequate in the circumstances.

7.5 Weathertightness performance of the stucco cladding

7.5.1 It is clear from the expert's report that the stucco cladding is unsatisfactory in terms of its weathertightness performance, which has resulted in high levels of moisture penetration and possible decay in the upper wall framing.

7.5.2 Taking into account the expert's report, I conclude that the following areas require rectification.

- The cracks to the stucco wall and balustrade claddings
- The lack of clearances from the bottom of the stucco to the paving and the roof cladding
- The lack of capillary gaps and drip edges to the bottom of the stucco
- The lack of drainage at the bottom of the cavity to the ground floor addition
- The lack of head and jamb flashings to windows and doors
- The lack of cappings and saddle flashings to the flat plastered top of the upper deck balustrade, and the fixings through the top
- The lack of clearance from the upper wall and balustrade claddings to the deck tiles, together with the lack of step down from the interior floor to the deck
- The reduced drainage outlets to the deck
- The inadequately sealed penetrations through the cladding.

7.5.3 The lack of window flashings, and inadequate weatherproofing of the upper deck and other junctions have contributed to a systemic failure and considerable work is required to make the stucco code compliant, which is likely to include the removal of the upper wall cladding and the investigation and replacement of any decayed timber.

7.5.4 I have identified the presence of a range of known weathertightness risk factors for this house. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the faults identified in the stucco cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate for the lack of a drained and ventilated cavity within the stucco cladding system on the upper level.

7.6 Weathertightness conclusion

7.6.1 I consider the expert's report establishes that the current performance of the external envelope is not adequate because it is allowing water penetration into the house at present and there is evidence of possible decay. In particular, the stucco cladding

demonstrates the key defects listed in paragraph 7.5.2, which are likely to have contributed to the moisture penetration and the decay evident within the external walls of the upper level addition. Consequently, I am satisfied that the both the upper level and ground floor additions do not comply with Clause E2 of the Building Code.

- 7.6.2 The building work is also required to comply with the durability requirements of Clause B2. Clause B2 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 on the house are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 7.6.3 The faults to the upper level addition are sufficiently numerous to require further investigation to determine their full extent and the means of rectification. The full extent of decay in the timber framing will also need to be determined.
- 7.6.4 I note that the stucco cladding to the upper level is now beyond its required durability period of fifteen years, however the failure of the cladding to meet the requirements of Clause E2 in combination with the risk factors identified, provides significant risks to the durability of the framing and its ability to meet its required durability period of not less than 50 years.
- 7.6.5 For the stucco cladding to the upper level, I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding, or a combination of both, can only be made after a more thorough investigation. This will require a careful analysis by an appropriately qualified expert. The applicant may consider the option of re-cladding with a different system for the upper level. This choice could be based on what approach is most cost effective for the applicant. Once that decision is made, the chosen remedial option should be submitted to the authority for its approval.
- 7.6.6 I note that the Department has produced a guidance document on weathertightness remediation⁷. I consider that this guide will assist the owner in understanding the issues and processes involved in remediation work to the upper level stucco cladding in particular, and in exploring various options that may be available when considering the upcoming work required to the alterations.
- 7.6.7 In regard to the roof, because the faults identified occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 7.4.1 will result in the roof being brought into compliance with Clauses B2 and E2. I also note that the faults identified in the stucco cladding to the ground level addition are in discrete areas and may be satisfactorily rectified.

7.7 Maintenance

- 7.7.1 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

⁷ External moisture – A guide to weathertightness remediation. This guide is available on the Department's website, or in hard copy by phoning 0800 242 243

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).

Matter 2: Other Building Code clauses

8. Discussion

8.1 E1 Surface water

8.1.1 Taking account of the expert's comment in paragraph 5.8.1, I conclude that remedial work is necessary in respect of the reduced areas to the deck drainage outlets. I consider that satisfactory rectification of this will result in the building work being brought into compliance with Clause E1 of the Building Code.

8.2 B1 Structure

8.2.1 Taking account of the expert's comment in paragraph 5.8.2 regarding the spacing of the upper wall framing, I consider that the framing is adequate.

8.3 D1 Access routes

8.3.1 Taking account of the expert's comment in paragraph 5.8.2 regarding the exterior steps and the recently installed handrail, I consider that the steps are adequate in the circumstances.

8.4 F4 Safety from falling

8.4.1 Taking account of the expert's comments in paragraph 5.8.2 regarding the height of the balustrade adjacent to the retaining wall, I note that the Building Code came into effect in January 1993 and that the required barrier height was 1m. I therefore consider that the balustrade does not comply with Clause F4.

8.4.2 Taking account of the expert's comments in paragraph 5.8.2 regarding the gap in the glass barrier to the top of the deck balustrade, I note that Clause F4.3.4(g) was not introduced until 22 December 1994, and the barriers would have met the requirements of Clause F4.

9. The notice to fix

9.1 The following table summarises conclusions on the items listed within the notice to fix dated 10 March 2008 and refers to the relevant code clauses and related paragraphs within this determination:

Notice to fix		My conclusions	Code Clauses	Paragraph references
Item	Summarised requirement			
2.1	Not to manufacturer's specifications			
Consent C (2003 addition)				
a)	Lack of capillary gap to stucco base	Remedial work required.	E2, B2	5.6 and 7.5.2
b)	Lack of clearances above ground or paving	Remedial work required.	E2, B2	5.6 and 7.5.2
Consent A (1993 additions and alterations)				
c)	Spacing of timber studs and nogs	Adequate	B1	5.8.2 and 8.2.1
d)	Lack of drip edges to bottom of cladding	Remedial work required.	E2, B2	5.6 and 7.5.2
e)	Inadequate flashings to doors and windows	Remedial work required.	E2, B2	5.6 and 7.5.2
f)	Tiles to deck membrane, and penetrations	Remedial work required	E2, B2	5.6 and 7.5.2
2.2	Not in accordance with relevant acceptable solutions			
Consent C (2003 additions and alterations)				
a)	Lack of access to sub-floor	Adequate	B2	5.7 and 7.4.2
b)	Lack of clearance of floor to ground	Adequate	B2	5.6 and 7.5.2
c)	Lack of step down from internal floor level	Remedial work required	E2, B2	5.6 and 7.5.2
d)	Lack of drip edge to head flashings	Remedial work required.	E2, B2	5.6 and 7.5.2
Consent A (1993 additions and alterations)				
e)	Lack of spreaders to downpipes	Remedial work required.	E2, B2	5.6 and 7.5.2
f)	Inadequate sizes of deck outlets/overflows	Remedial work required.	E1 E2, B2	5.6 and 7.5.2
g)	Lack of overflows to internal gutters	Adequate	E2, B2	5.7 and 7.4.2
h)	Height/design of deck barrier	Adequate	F4	5.8.2 and 8.4.2
i)	Inadequate step-down to deck	Remedial work required.	E2, B2	5.6 and 7.5.2
j)	Lack of clearance from cladding to roof	Remedial work required.	E2, B2	5.6 and 7.5.2
k)	Lack of cappings to deck balustrades	Remedial work required.	E2, B2	5.6 and 7.5.2
l)	Lack of, or inadequate flashings	Remedial work required.	E2, B2	5.6 and 7.5.2
m)	Lack of drip edge to head flashings	Remedial work required.	E2, B2	5.6 and 7.5.2
Consent B (1993 exterior siteworks)				
n)	Lack of handrails to exterior steps	Adequate	D1	5.8.2 and 8.3.1
2.3	Not to accepted trade practice			
Consent C (2003 additions and alterations)				
a)	Lack of, or inadequate flashings	Remedial work required.	E2, B2	5.6 and 7.5.2
Consent A (1993 additions and alterations)				
b)	Penetrations to top of deck balustrade	Remedial work required.	E2, B2	5.6 and 7.5.2
c)	Lack of, or inadequate flashings	Remedial work required.	E2, B2	5.6 and 7.5.2
d)	Inadequately sealed penetrations	Remedial work required.	E2, B2	5.6 and 7.5.2
e)	Lack of falls to deck balustrade top	Remedial work required.	E2, B2	5.6 and 7.5.2
f)	Cracks to the cladding	Remedial work required.	E2, B2	5.6 and 7.5.2

	Drainage and ventilation		
a)	Inadequate drainage and ventilation of cladding	E2, B2	5.6 and 7.5.2
3.0	Changes to building consent		
a)	Tiles laid over deck membrane	Not considered – Parties to resolve	
b)	Pergola added above upper deck	Not considered – Parties to resolve	
4.0	Other building related issues		
a)	Ground floor as-built floor plan required	Not considered – Parties to resolve	
b)	Upper level as-built floor plan required	Not considered – Parties to resolve	
c)	Producer statement for plumbing required	Not considered – Parties to resolve	

9.2 I am satisfied that the building does not comply with the Building Code and that the authority made an appropriate decision to issue the notice to fix. However, I am of the view that some items identified in the notice are adequate and I have also identified some additional items, so the notice should be modified accordingly (refer to paragraph 10.3).

10. What is to be done now?

10.1 This determination has identified a number of areas where remedial work or further investigation is required. These areas are described in the following paragraphs:

- Paragraph 7.4 (weathertightness of the roofing)
- Paragraph 7.5 (weathertightness of the stucco wall cladding)
- Paragraph 8.1 (surface water drainage of stormwater).

10.2 I note that the authority has issued a notice to fix that required provision for a cavity to provide for ventilation, drainage and moisture dissipation. Under the Act, a notice to fix can require the owner to bring the house 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 of a notice to fix, cannot specify how that compliance can be achieved. I concur with that view.

10.3 The notice to fix should be modified and reissued to the owner to take account of the findings of this determination, identifying the items listed in paragraph 7.4.1, paragraph 7.5.2, 8.1.1 and 8.4.1, 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.

10.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 10.3. Initially, the authority should issue the modified notice to fix. The owner should then produce a response to this in the form of a detailed proposal, based on further investigation as necessary (including investigation of the original framing timbers), and produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified issues. Any

outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

11. The decision

11.1 In accordance with section 188 of the Act, I hereby determine that:

- the external envelope of the additions do not comply with Building Code Clauses B2 and E2
- the drainage to the upper deck does not comply with Building Code Clause E1.

11.2 I also determine that:

- in regard to Consent A, the spacing of the timber framing complies with Building Code Clause B1
- the exterior steps comply with Building Code Clause D1
- the balustrade adjacent to the retaining wall does not comply with Building Code Clause F4
- the authority is to modify the notice to fix, dated 24 April 2008, 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 4 September 2009.

John Gardiner
Manager Determinations