



Determination 2010/103

Refusal to issue a code compliance certificate for a 9-year-old addition and alterations to a house at 11 Athlone Road, Glendowie, 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 applicants are the owners, L Fraser and L Plummer (“the applicants”) and the other party is the Auckland City Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decisions of the authority to refuse to issue a code compliance certificate and to issue a notice to fix for a 9-year-old addition and alterations to a house (“the addition”) because it was not satisfied that the building work complied with certain clauses² of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns about the compliance of the building work relate primarily to the weathertightness of the exterior building envelope.

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 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.

1.3 The matter to be determined³ is therefore whether the authority was correct in its decisions to refuse to issue a code compliance certificate and to issue a notice to fix for the addition. In deciding this matter, I must consider:

1.3.1 Matter 1: the external envelope

Whether the external claddings to the addition (“the claddings”) comply with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The claddings include the components of the systems (such as the wall claddings, the windows, the roof claddings and the flashings, as well as the way the components have been installed and work together. (I consider this matter in paragraph 6).

1.3.2 Matter 2: The gully traps

Whether the gully traps comply with Clause G13 Foul Water in regard to the ingress of surface water into the drains. (I consider this matter in paragraph 7).

1.4 Matters outside this determination

1.4.1 The notice to fix also cites contraventions of Clauses B1 Structure and E1 Surface Water, although there are no specific identified items relating to these clauses. I have assumed that the citing of Clause B1 relates to potential structural implications associated with weathertightness (covered in Matter 1) and Clause E1 relates to the potential surface water drainage into gully traps (covered in Matter 2).

1.4.2 The notice to fix also outlined requirements for durability of building elements and stated that the applicants may apply to the authority for a modification of the requirements to allow durability periods to commence from the date of substantial completion in 2001. I therefore leave this matter to the parties to resolve once the addition 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 the other evidence in this matter.

2. The building work

2.1 The building work considered in this determination consists of a simple single-storey addition, with associated alterations, to an existing two-storey house on a gently sloping site in a low wind to medium zone for the purposes of NZS 3604⁴. The addition is assessed as having a low weathertightness risk (see paragraph 6.2).

2.2 The original 1950’s house was a simple two-storey building, with concrete foundations, floor slab and exterior walls to the basement, timber-framed walls elsewhere, weatherboard cladding, timber windows and a masonry tile hipped roof.

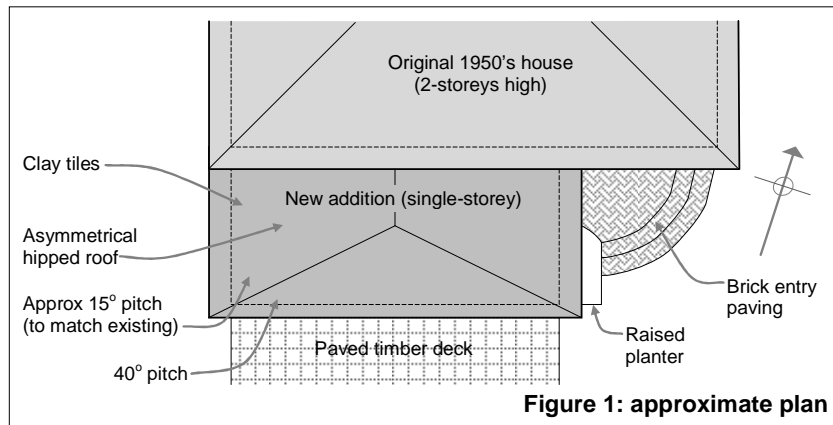
2.3 The addition is shown in Figure 1, and includes:

- a new entry foyer and bathroom
- an extension to the original basement lounge

³ Under sections 177(1)(b), 177(2)(d) and 177(2)(f) of the Act

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- a deck added to the south wall
- alterations to the existing kitchen.



- 2.4 Construction of the addition is generally conventional light timber frame, with concrete block foundations, a concrete floor slab, monolithic wall claddings, clay tile roof cladding, and aluminium windows. The hipped roof of the addition is asymmetrical, with a 40° pitch to the south and about 15° pitch to the east and west. The roof has eaves projections of about 550mm including gutters on the east and west elevations, which reduce to 300mm including the gutter on the south.
- 2.5 A timber-framed deck, with a paved floor and no balustrades, is attached to the south wall. At some stage, the original concrete entry steps were replaced by a landing and curved brick steps, with a raised concrete planter against the east wall.
- 2.6 The wall cladding is a monolithic cladding system described as stucco plaster over a solid backing. In this instance it consists of 4.5mm fibre-cement sheets fixed through the building wrap directly to the framing timbers, and covered by a slip layer of building wrap, metal-reinforced solid plaster and a flexible paint coating. The stucco texture matches the 'roughcast' plaster to the basement concrete walls.
- 2.7 The expert noted that some visible timber framing in the hot water had no treatment markings. Given the date of construction of the addition in 2001, I consider the wall framing of the addition to be untreated.

3. Background

- 3.1 The authority issued a building consent (No. B/2000/3602247) for the addition on 26 April 2000 under the Building Act 1991. Construction did not commence until about November 2000.
- 3.2 Based on the authority's handwritten inspection summary, it appears that inspections included a pre-line and pre-plaster inspection which passed on 14 December 2000. The last inspection recorded was a post-line inspection on 8 May 2001. It appears that no final inspection was carried out until the applicants sought a code compliance certificate and the authority inspected the addition on 6 July 2010.

3.3 The notice to fix

- 3.3.1 The authority wrote to the applicants on 27 July 2010, stating that it was not satisfied that the building work complied with the Building Code in ‘a number of respects’.
- 3.3.2 The authority attached a ‘photo file’ of defects and a notice to fix listing defects identified during its inspection. In summary, these included (with associated code clauses shown in brackets):
- the possible lack of adequate sealing to cladding penetrations (E2)
 - the lack of clearance below the cladding at garden areas (E2)
 - the lack of a raised surround to the gully trap (G12)
 - the junction of the existing weatherboards with the additions roof (E2)
 - the lack of control joints to the stucco cladding (E2).
- 3.3.3 The authority also noted some changes from the consent drawings, and stated that the applicants may apply to the authority for a modification of the requirements to allow durability periods to commence from the date of substantial completion in 2001.
- 3.4 The Department received an application for a determination on 19 August 2010.

4. The submissions

- 4.1 The applicants forwarded copies of:
- the drawings
 - the building consent
 - the inspection summary
 - the authority’s letter and the notice to fix dated 27 July 2010
 - various producer statements, certificates and other information.
- 4.2 Copies of the submissions and other evidence were provided to each of the parties.
- 4.3 A draft determination was issued to the parties for comment on 5 October 2010. Both parties accepted the draft without comment.

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 Architects. The expert inspected the addition on 15 September 2010 and provided a report dated 20 September 2010.

5.2 General

- 5.2.1 Apart from items outlined in paragraph 5.5, the expert considered that the addition was generally 'finished to a good standard', with the plaster 'sufficiently well applied that no cracks were visible' and adequate roof flashings. The expert also noted that the walls had been recently repainted, and there was no evidence of cracks, crack repairs or any 'overdue maintenance externally'.
- 5.2.2 The expert noted that changes from the consent drawings include:
- a west window to the lounge extension omitted
 - the wall cladding changed from a proprietary plaster system to generic stucco
 - a paved deck added to the south elevation
 - curved steps, landing and a garden planter replacing the original entry steps
 - re-used clay roof tiles in lieu of new concrete tiles.
- 5.2.3 The expert noted that the junction of the roof addition with the first floor wall appeared satisfactory' with adequate clearance below the existing weatherboards and a lead flashing that extended over two ridges of each roof tile.

5.3 The windows

- 5.3.1 The expert noted that windows and doors included metal head flashings, traditional solid timber sills and no sill flashings. The sills have a groove on the underside and a stepped sloping top, with the aluminium sill flanges overlapping the upper step.
- 5.3.2 The expert removed a small section of stucco above the bathroom window sill, noting that the plaster was '30mm thick, dense and sound, applied in two coats' and the galvanised wire mesh was in good condition. The plaster was applied up to the jamb flanges, with a small fillet of sealant at the junction and no jamb flashings.
- 5.3.3 However low moisture readings behind the window jamb after a period of rain indicate that the two windows have been weathertight for the nine years since installation and are meeting the performance requirements of the code.

5.4 Moisture levels

- 5.4.1 The expert inspected the interior of the addition, taking non-invasive moisture readings, and noted signs of moisture at the lounge door sill liner, which was confirmed by invasive testing. The expert was advised by the owner that the deterioration of lower parts of the reveals was from a past leak in an adjacent shower which had since been repaired.
- 5.4.2 The expert also took invasive moisture readings into external framing exposed within the hot water cupboard, through exterior claddings and through interior linings using long probes; recording the following elevated readings:
- 18% in the bottom plate beside the lounge doors
 - 34% in the sill reveal to the lounge doors.

5.4.3 The expert noted that the lounge door/window unit did not incorporate a timber sill, with the stucco extended beneath the joinery. The aluminium sill flange was set into and overlapped by the plaster, which the expert considered to be the primary cause of the high moisture levels. However, he accepted that condensation may have contributed to the moisture in the sill reveal.

5.4.4 The expert noted that the moisture readings were taken during wet winter weather so would likely represent peak seasonal variation. Moisture levels above 18% generally indicate that external moisture is entering the structure and further investigation is required. In this case the 18% moisture levels in the bottom plate are indicative of moisture wicking up where the plaster is in contact with ground.

5.5 Commenting specifically on the external envelope, the expert noted that:

General

- although the floor slab is generally from 400mm to 500mm above ground level, the plaster extends continuously from the stucco onto the foundation wall, with no anti-capillary gap and an unknown overlap of backing sheets
- the plaster extends down to or beneath the paving or ground, allowing the potential for moisture to wick into the fibre-cement backing sheets
- clearances to the interior floor slab level are insufficient at the south deck and the entry landing, and the garden soil in the east planter covers the bottom of the stucco
- the meter box lacks a head flashing or seals

The windows and doors

- plaster overlaps the lounge door sill flanges, allowing moisture to penetrate and be trapped; and elevated moisture levels in the sill bottom plate should be investigated for possible damage to the timber

The south deck

- the deck pavers butt against the stucco, allowing moisture to wick through plaster into the fibre-cement backing sheets
- the deck stringer is fixed tight against the plaster, which extends below the ground level under the deck.

5.6 The expert also made the following comments:

- Although the extract fan louvre lacks a head flashing, the louvre is sheltered under the eaves and is likely to remain weatherproof in the circumstances.
- Although a gate post is fixed directly to the stucco on the west wall, the sealant is in good condition and is likely to be adequate given regular maintenance.
- Although the 7.5m south wall should include one vertical control joint, there is no sign of any cracks or crack repairs to the stucco after nine years.

5.7 The gully traps

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

- the gully trap to the west wall has been removed and replaced with connectors and branches, providing protection against surface water ingress.
- The gully trap to the south wall is beneath the timber deck, with concrete haunching now applied and access via a removable paver. Given the protection afforded by the paver, there is little likelihood of any significant leakage of surface water into the foulwater drain.

5.8 A copy of the expert's report was provided to the parties on 21 September 2010.

Matter 1: The external envelope

6. Weathertightness

6.1 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 This addition has the following environmental and design features, which influence the weathertightness risk profile of the addition:

Increasing risk

- the stucco cladding is fixed directly to the framing
- the 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 in a low to medium wind zone
- the adjacent original basement walls are concrete
- the stucco cladding is sheltered by eaves
- the only deck is attached to the addition at ground level.

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

6.3 Weathertightness performance

- 6.3.1 Generally the claddings appear to have been installed in accordance with good trade practice at the time. Despite the lack of flashings to the two windows they have been weathertight since installation. However, taking into account the expert's report, I conclude that the areas outlined in paragraph 5.5 require rectification.
- 6.3.2 I also note the expert's comments in paragraph 5.6 and I accept that these areas are adequate in the particular circumstances.
- 6.3.3 With regard to the lack of a control joint to the south wall, I consider that the seriousness of the omission is offset to some extent by the fact that the stucco cladding appears to have been installed according to good trade practice, and has been in place for more than nine years with no signs of cracking or associated moisture entry. During the early part of the period since construction, all drying shrinkage in the plaster and supporting framing would have occurred, and the cladding's future performance will be governed solely by response to environmental factors such as imposed temperature and moisture effects, wind, earthquake forces and seasonal foundation movements.
- 6.3.4 Notwithstanding that fibre-cement backing sheets are fixed directly to timber framing, thus inhibiting drainage and ventilation behind the cladding, I note certain factors that assist the performance of the cladding in this case:
- The stucco cladding is generally installed according to good trade practice.
 - Elevated moisture appears limited to areas where defects have been identified.
 - After nine years, there is no evidence of moisture penetration associated with the lack of a drained cavity behind the cladding.

6.4 Weathertightness conclusion

- 6.4.1 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 into the framing at several areas. Consequently, I am satisfied that the addition does not comply with Clause E2 of the Building Code.
- 6.4.2 In addition, the building work is required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continue to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement to remain weathertight. Because cladding faults may allow the ingress of moisture in future, the addition does not comply with the durability requirements of Clause B2.
- 6.4.3 Because identified cladding faults occur in discrete areas, I conclude that satisfactory rectification of items outlined in paragraph 5.5 will result in the addition being brought into compliance with Clauses B2 and E2 of the Building Code.
- 6.4.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.

- 6.4.5 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. In this case particular care should be taken of the window jambs. The Department has previously described cladding 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: The gully traps

7. Discussion

- 7.1 Taking account of the expert's report, as outlined in paragraph 5.7.1, I consider that the gully traps are adequately constructed to prevent the ingress of significant surface water into the foul water drain. In that respect, I am therefore able to conclude that the addition complies with Clause G13 of the Building Code.

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 27 July 2010; referring also to the relevant code clauses and related paragraphs within this determination:

Notice to fix		My conclusions	Code Clauses	Paragraph references
Item	Summarised requirement			
2.0	Issues related to cladding			
	Whether direct-fixed solid plaster system, including the framing will continue to perform to meet durability requirements.	Remedial work required after further investigation of lounge door sill plate.	B1, E2, B2	5.5 and 6.3.1
2.1	Not to relevant code requirements at the time			
a)	Penetrations through stucco	Remedial work required to some areas Other areas adequate.	E2, B2	5.5 and 6.3.1 5.6 and 6.3.2
b)	Clearances to cladding	Remedial work required	E2, B2	5.5 and 6.3.1
c)	Surface water ingress into gully traps	Adequate in circumstances	G13	5.7 and 7.1
d)	Roof Junction with existing weatherboards	Adequate	E2, B2	5.2.3
2.2	Not to accepted trade practice			
	Lack of control joints	Adequate in circumstances	E2, B2	6.3.3
2.4	Drainage and ventilation			
	Lack of cladding drainage & ventilation	Adequate in circumstances	E2, B2	6.3.4 and 9.1
3.0	Changes to building consent			
	Window omitted	Agreed (Further changes made)		5.2.2 and 8.3

- 8.2 I am satisfied that the addition does not comply with the Building Code and that 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 9.2).

- 8.3 I note that the expert has identified a number of changes from the consent drawings and I leave these changes to the parties to resolve.

9. What is to be done now?

- 9.1 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.
- 9.2 The notice to fix should be modified to take account the findings of this determination, identifying items listed in paragraph 5.5 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 stipulate directly how defects are to be remedied and the addition 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.
- 9.3 I suggest that the parties adopt the following process to meet the requirements of paragraph 9.2. Initially, the authority should revise and reissue the notice to fix. The applicants should then produce a response to this in the form of a detailed proposal for the addition 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.

10. The decision

- 10.1 In accordance with section 188 of the Act, I hereby determine that:
- the gully traps to the addition comply with Building Code Clause G13
 - the external envelope of the addition does not comply with Building Code Clauses B2 and E2, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate
 - the authority is to modify the notice to fix, dated 27 July 2010, 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 26 October 2010.

John Gardiner
Manager Determinations