



Determination 2015/030

Regarding the refusal to issue a code compliance certificate for 17-year-old alterations and additions to a house at 42 Barrier View Road, Leigh



1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the current Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are:
- the owner, D Cooper (“the applicant”), acting through an agent
 - Auckland Council (“the authority”)², carrying out its duties as a territorial authority or building consent authority.
- 1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for the 17-year-old alterations and additions to the 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 expressed its concerns regarding compliance of a number of building elements (refer paragraph 3.4.2) and in relation to the weathertightness of its claddings.
- 1.4 The matter to be determined⁴ is therefore whether the authority was correct to refuse to issue the code compliance certificate. In deciding this, I must consider whether the additions and alterations comply with the Building Code to the extent required under section 112 of the Act.

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

² Rodney District Council issued the building consent and undertook inspections during construction. Before the application for this determination was made, Rodney District Council was transitioned into Auckland Council; the term “the authority” is used for both.

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

- 1.5 The authority's letter to the applicant set out its reasons for the refusal to issue the code compliance certificate (see paragraph 3.4.2). In that letter, the authority noted building elements it considered did not comply with the Building Code under the heading 'some of the items identified (but not limited to)'. This determination does not address all relevant clauses of the Building Code; however, in addition to the matters set out in the authority's letter, I have addressed some additional items observed by the expert during his inspection.
- 1.6 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter.

2. The building work

- 2.1 The original house was constructed some time in 1980. The house is constructed over 3 levels on agricultural land approximately 140m in land from the cliff edge at the northern fringe of the Hauraki Gulf, in a high or very high wind zone and a high exposure corrosion zone as described in NZS 3604⁵.
- 2.2 The building work that is the subject of this determination consists of additions and alterations undertaken in 1998. The house is considered to have a low to moderate weathertightness risk.
- 2.3 Construction is generally conventional light timber frame, with basement foundations and floor slab, with reinforced concrete and concrete masonry sub-basement water tank. The basement level monolithic cladding is texture coated flush finished fibre-cement sheet direct-fixed to the framing. The cladding to the ground and upper floor levels is rusticated cedar weatherboards, which is also direct-fixed to the framing. The roofs are coated long run profile steel at a nominal pit of 45°, with a shallow pitch to the former veranda and kitchen roof. Joinery is aluminium throughout.
- 2.4 The southern deck above the garage is enclosed, with a butyl rubber membrane with timber deck panels on plastic supports above it.
- 2.5 Eaves and verges are minimal. There is a verandah protecting the western entry and verandahs, all at ground floor level, to the northeast corner of the house and the south.
- 2.6 The timber framing to the extension appears to be Boron-treated to H1.

2.7 The alterations and additions

- 2.7.1 The alterations and additions include the following:

Extension to the south

- A new garage at basement level with integral sub-basement reinforced concrete water tank.
- New living areas and deck at ground level.
- A new master bedroom under a skillion roof extension at the upper level.

Extension to the north

- Partial closing in of the original deck on the ground level.

⁵ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

2.7.2 The resulting house is shown in the elevations below:



3. Background

3.1 The authority issued building consent No. 980259 under the Building Act 1991 (“the former Act”), for the alterations and additions on 10 February 1998, and carried out various inspections during construction with the last recorded inspection on 9 September 1998.

3.2 The authority’s records note a ‘final’ inspection carried out on 19 April 2004; the inspection record notes nine items requiring attention. Further inspections were carried out on 20 December 2004 and 10 January 2005, with the record noting that items from the April list had been addressed and that an ‘Electrical code compliance’ certificate was required. It appears that no further action was taken and the code compliance certificate was not issued.

3.3 The applicant applied for a code compliance certificate again in 2014, and the authority carried out another final inspection on 6 October 2014.

3.4 The notice of refusal

3.4.1 In a letter to the applicant dated 6 August 2014, the authority gave written notice under section 95A that it was refusing to issue the code compliance certificate as it could not be satisfied that the building work complied with the Building Code.

3.4.2 The authority went on to list those areas of non-compliance it had observed under the title ‘some of the items identified (but not limited to)’ as follows:

1. Finished floor level to finished ground level is non-compliant in areas.
2. Finished cladding level to finished ground level is non-compliant in areas.

3. Cracking evident to the direct fix sheet cladding. Fixings coming away in areas. Some areas of cladding have not yet been sealed, plastered, completed. East, South and West elevations, garage location.
4. Sheet cladding to block construction weather details are incomplete. East (beneath timber deck) and South West elevation (single entry door), garage location.
5. Weather boards cupping in areas, concern regarding weather tight abilities. Particularly evident at the East elevation, timber deck location.
6. Shrinkage evident to the weather seals, ie aluminium jamb flange to weather board junctions.
7. Unable to ascertain how the 'weather board to timber beam' details have been flashed. No weather seal, scribe, or flashing was evident at the time of inspection.
8. Unable to ascertain current condition of butynol membrane due to overlay decking. PS3 for this work has yet to be received. Outlets through cladding due for resealing. Note: performance yet to be ascertained ie as stated in above paragraphs, further investigation to be completed.
9. Roof not inspected ...
10. Subfloor damp proof membrane or silver foil not evident. Joists in close proximity to [finished ground level] ie approx 100mm, North elevation. Review photos taken onsite at this location appear to identify moisture ingress to the particle board at the external junction. Additionally it doesn't appear claddings (bottom boards X2) or flashing (saddle's) has been applied.
11. Elevated moisture readings were identified internally against the plaster board surfaces, various locations (stairwell & garage). Some areas were not tested due to access ie raked head flashings at height, behind kitchen cabinetry and large items of furniture.
12. Silicon resealing evident to the apron flashings of the dormer window. Left hand side internally re location to view. Appears some ingress may have occurred given there are signs of cracking, bulging to raked square stop junction (wall to ceiling) and movement surrounding rafter to wall detail ie plaster board finish at this location.
13. Minimum cladding clearance of apron flashing to weather board cladding has not been achieved in areas.

(I note here that the Building Code is performance based; the 'non-compliance' referred to in items 1, 2 and 13 is in respect of the Acceptable Solution E2/AS1)

3.5 I have seen no records of further correspondence between the parties. The Ministry received an application for a determination on 4 December 2014.

4. The submissions

4.1 The applicant's agent set out the background history in a covering letter to the application, and provided copies of the following:

- The consent documentation for the alterations.
- A completed 'pre-CCC' checklist.
- The letter of refusal dated 19 November 2014, along with the final inspection record of 18 November 2014.
- Various correspondence in 1998 from a consulting firm of structural, civil & geotechnical engineers, including records of inspections.

- A letter from the authority dated 20 April 2004 referring to nine items to be addressed.
- 4.2 The authority acknowledged the application in a response received on 15 December 2014, but made no submission and provided no further information.
- 4.3 By email on 19 December 2014 I requested the authority provide further information regarding moisture readings taken during the final inspection in October 2014. The authority responded by email on 12 February 2015, noting that the inspection was an assessment of only the works covered by the 1998 consent, and that moisture readings of 37-39 were recorded as follows
- ... on the 'seaward facing elevations' which coincided with high risk details such as raking window heads, split and cupped shiplap weather boards, poorly installed inter cladding flashings and a variety of poorly maintained seals at windows, to list a few.
- 4.4 The authority acknowledged that the cladding is 'nearing the end of its durability period' but noted its concern was also for the durability of the structure which may have been adversely affected.
- 4.5 A draft determination was issued to the parties for comment on 19 May 2015.
- 4.6 The authority and the applicant accepted the draft determination in responses received on 25 and 28 May 2015 respectively.

5. The expert's report

- 5.1 As mentioned in paragraph 1.6, I engaged an independent expert who is a registered architect to assist me. The expert inspected the house on 27 March 2015, providing a report dated 11 May 2015 which was forwarded to the parties on 19 May 2015.

5.2 General

- 5.2.1 The expert noted that his inspection was in order to provide an opinion on the compliance of the building work with the relevant clauses of the Building Code that was in effect at the time the building consent was granted. The expert's assessment considered compliance during the period since construction and in terms of the durability periods set out in Clause B2.3.1.
- 5.2.2 The expert observed that construction differed from the consent drawings in respect of the small deck adjacent to the stairs to the garage being extended and a wood burning stove indicated on the plans had been either omitted or removed; otherwise the additions were generally as indicated in the consent drawings.
- 5.2.3 In regards to the general condition of the cladding, the expert noted that the cedar weatherboards on parts of the east elevation were in poor condition with some severe cupping.

5.3 Moisture testing

- 5.3.1 The expert noted no obvious signs of moisture in the interior of the house. The expert did however observe some areas on the exterior considered at risk of moisture penetration into timber framing and took invasive moisture readings through linings at sample locations, recording:
- Readings ranging from 14% to 17% at five locations on the west elevation to the garage.

- 15% and 16% in two readings on the south elevation of the garage.
- 15 % at the bottom plate below a window (east elevation – ground floor).
- 17% to a beam at the junction with the cladding (east elevation – ground floor).
- 16% to the stud below the deck (east elevation).
- 27% at the bottom plate (east elevation – garage).

5.3.2 The expert noted that the readings were taken in March and the moisture content of the framing is ‘very probably higher in winter months and lower in summer months’. (I note that moisture levels above 18% generally indicate that external moisture is entering the structure and further investigation is needed, and I agree with the expert that readings over the winter months are likely to be higher than those obtained during the expert’s assessment.)

5.3.3 The expert also took a number of cut-outs and forwarded six samples to a testing laboratory for analysis. The laboratory report dated 11 April 2015 was included in the expert’s report. I summarise the relevant observations of the expert and findings in the laboratory report as follows (with the expert’s moisture readings included):

- Sample 1 (Bottom plate garage – south elevation): 15%. Essentially the same as sample 3, but incipient brown rot cannot be ruled out.
- Sample 2 (Bottom plate garage – south elevation corner): 17%. Pockets of incipient to early brown rot.
- Sample 3 (Stud under stairs rise 12): No established decay or incipient brown rot. Moderately dense fungal growths with morphology suggestive of growth over a prolonged period including recent activity.
- Sample 4 (Bottom plate under stairs riser 8): Gib fixings rusty. Essentially the same as sample 3. Some secondary mould species variation and large numbers of spores of *Stachybotrys*.
- Sample 5 (Bottom plate under garage window - east elevation) 15%. Pockets of mixed advanced soft rot, white rot and brown rot throughout. Low numbers of spores of *Stachybotrys*.
- Sample 6 (Ceiling batten adjacent deck outlet): Pockets of advanced soft rot across the depth. Low numbers of spores of *Stachybotrys*.

5.4 The external envelope

The fibre-cement cladding (garage)

5.4.1 The expert commented on the fibre-cement cladding to the garage as follows:

- The clearance between the finished floor level and the external paving was less than 150mm, with only 10mm between the cladding and the paving at the left hand side of the garage door. The cause of moisture reaching the bottom plate and providing conditions for decay (sample 2) was undoubtedly the lack of ground clearance. A failure in the deck junction above could also have contributed to the leaks (see paragraph 5.4.5)

- The cause of moisture reaching the bottom plate under the garage window (sample 5) was probably a combination of:
 - inadequate sealing of the junction between the window jamb and the cladding
 - a crack in the cladding above the window head, and
 - defects in the junction between the membrane deck, and the weatherboard cladding above the window
- A gap is present between the window head flashing and the bottom edges of the fibre-cement cladding above the staircase window; though filled with plaster some had broken off. Leaks from the window head may have contributed to the decay in the bottom plate.
- Cracks are present at some of the sheet joints, with some inexpertly repaired. There is evidence of moisture ingress reaching the timber framing, though no damage has occurred to the framing (samples 1 and 2).
- Deck outlet pipe penetrations on the south elevation are roughly sealed; weathertightness is reliant on silicone and this would be difficult to carry out as normal maintenance given the location. Further information is required to establish the cause of leaks affecting the ceiling batten (sample 6).

5.4.2 The expert also noted two issues that he considered were not good practice but where the defects appeared to be performing adequately:

- The fibre-cement above the garage window on the west elevation had been ground with an angle grinder and is left unfinished; it is well sheltered though.
- The joint between the fibre-cement to the left of the garage door and the concrete masonry is unsealed; the wall and floor in this area are concrete and there was no deterioration apparent.

The weatherboard cladding

5.4.3 The expert commented on the cedar weatherboard cladding, noting that his observations suggested there has not been significant moisture leakage past the cladding to the framing. Any leaks were most likely caused in the main by the excessive cupping and gaps at the laps, which should have been repaired as part of normal maintenance. The weatherboards are at the end of their service life required under Clause B2.3.1, and should either be repaired or replaced to provide adequate weather protection to the framing.

The decks

5.4.4 The expert noted that the butyl rubber membrane was in good condition, laps formed with lap tape were sound and there was no sign of significant ponding. Beneath the deck there was damage to the ceiling, reported by the applicant to have been arrested by resealing the deck outlet penetration.

5.4.5 The expert noted the following details that he considered are vulnerable to water ingress:

- The top of the deck cap flashing was only 40mm above the membrane.
- The deck fascia was finished to the metal balustrades with a simple butt joint.
- The lack of separation between the cladding and the deck edge flashing or evidence of a saddle flashing at the deck to wall junction.

- 5.4.6 Decay was found in timber samples cut from framing below these junctions (samples 2 and 5) and any defects in the membrane saddle details would have contributed to leaks at these locations. Further investigation is required to ensure that all details which have contributed to moisture ingress are identified.
- 5.4.7 The detail of the junction of the small open slat deck on the east (which the expert believes may have been rebuilt and extended in 1998) is unsatisfactory because the slats and stringer sitting close to the cladding prevents draining of water from the deck. It is likely that leaks from poorly sealed stringer fixings or diffusion from the stringers contributed to the results of the sample (3) from the stud under the stairs. Further investigation at this junction should be carried out before any repair work is undertaken.
- 5.5 The expert also commented on the items identified in the section 95A notice form the authority. I have included the expert's comments in the table at paragraph 0.
- 5.6 The expert concluded that external building envelope to the additions and alterations has failed to comply with Building Code Clauses E2 and B2, and that further investigation is necessary to establish all causes of leaks and the extent of decayed framing associated with:
- Inadequate clearance between the exterior ground/paving and the fibre-cement sheet cladding.
 - The unsealed junction between the fibre-cement cladding and the concrete masonry wall.
 - Inadequate weatherproofing of the junctions between the windows and the fibre-cement sheet cladding.
 - Inadequate separation between the open slat deck on the east side and the wall cladding and possibly inadequate sealing of stringer bolts.

6. Discussion

- 6.1 I note that the owner will be able to apply to the authority for a modification of the durability provisions to allow the durability periods specified in Clause B2.3.1 to commence from the date of substantial completion in 2004. I leave this matter to the parties to resolve in due course.
- 6.2 Although that matter is not part of this determination, I have taken the anticipated modification into account when considering the weathertightness performance of the building envelope to the additions and alterations have already which have been in service for more than the 15 years set out in clause B2.3.1.

6.3 The external envelope

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

6.3.2 Taking account of the expert's findings and the authority's records I summarise my findings on the elements identified by the expert and the authority in the table below:

Issues raised by authority (refer paragraph 3.4.2)	Expert's opinion	My conclusion
Finished floor level to finished ground level is non-compliant in areas.	Agreed (5.4.1)	Does not comply (E2 & B2)
Finished cladding level to finished ground level is non-compliant in areas.	Agreed (5.4.1)	Does not comply (E2 & B2)
Cracking evident to the direct fix sheet cladding. Fixings coming away in areas. Some areas of cladding have not yet been sealed, plastered, completed. East, South and West elevations, garage location.	Agreed (5.4.1)	Does not comply (E2 & B2)
Sheet cladding to block construction weather details are incomplete. East (beneath timber deck) and South West elevation (single entry door), garage location.	Performing adequately (5.4.2)	Complies (E2 & B2)
Weather boards cupping in areas, concern regarding weather tight abilities. Particularly evident at the East elevation, timber deck location.	Maintenance required (5.4.3)	Does not comply (E2 & B2)
Shrinkage evident to the weather seals, ie aluminium jamb flange to weather board junctions. Unable to ascertain how the 'weather board to timber beam' details have been flashed. No weather seal, scribe, or flashing was evident at the time of inspection.	Maintenance required	Does not comply (E2 & B2)
Unable to ascertain current condition of butynol membrane due to overlay decking. PS3 for this work has yet to be received. Outlets through cladding due for resealing. Note: performance yet to be ascertained ie as stated in above paragraphs, further investigation to be completed.	Moisture reading indicates adequate performance (5.4.4)	Complies (E2 & B2)
Roof not inspected ...	Roof sheets sound, no significant defects observed	Complies (E2 & B2)
Subfloor damp proof membrane or silver foil not evident. Joists in close proximity to [finished ground level] ie approx 100mm, North elevation. Review photos taken onsite at this location appear to identify moisture ingress to the particle board at the external junction. Additionally it doesn't appear claddings (bottom boards X2) or flashing (saddle's) has been applied.	Not assessed	Insufficient information to determine
Elevated moisture readings were identified internally against the plaster board surfaces, various locations (stairwell & garage). Some areas were not tested due to access ie raked head flashings at height, behind kitchen cabinetry and large items of furniture.	Agreed (5.4.1)	Does not comply (E2 & B2)
Silicon resealing evident to the apron flashings of the dormer window. Left hand side internally re location to view. Appears some ingress may have occurred given there are signs of cracking, bulging to raked square stop junction (wall to ceiling) and movement surrounding rafter to wall detail ie plaster board finish at this location.	Dormer part of original construction 1980	Outside the scope of this determination
Minimum cladding clearance of apron flashing to weather board cladding has not been achieved in areas.	Area referred to not found	Insufficient information to determine

- 6.3.3 I note here that the items in the table above should not be considered to be an exhaustive or complete list of non-compliances. In order for a determination to be made I only require sufficient information that would corroborate or contradict the authority's view on compliance.
- 6.3.4 I have considered whether the external building envelope of the addition and alterations complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code that was current at the time the building consents were issued. The building envelope includes the components of the systems (such as the monolithic and plywood claddings, the windows, the roof cladding and the flashings), as well as the way the components have been installed and work together.
- 6.3.5 The expert's report establishes that the performance of the building envelope has not been adequate because there is evidence of moisture penetration that has resulted in undue dampness and damage in some areas. Consequently, I am satisfied that the additions and alterations have not and do not comply with Clause E2 of the Building Code.
- 6.3.6 Further investigation is necessary to determine the extent of repairs required. Such a survey is likely to include further invasive moisture and sample testing, and the exposure of framing where necessary in order to determine the extent of past and present moisture penetration, timber damage, and the repairs now required.
- 6.3.7 In addition to Clause E2, the alterations are 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. In particular the building envelope is required to satisfy Clause E2 for a minimum of 15 years although the expected life of the underlying framing is a minimum of 50 years; meaning that effective maintenance of the external envelope is required to ensure it protects the underlying structure for its minimum required life of 50 years. The faults in the building envelope have failed to meet the performance requirements of Clause E2 for the period set out in Clause B2 from the time the building work was substantially completed; accordingly I consider the additions and alterations have not complied with Clause B2.
- 6.3.8 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 Ministry 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 2007/60⁶).

7. What happens next?

- 7.1 It is now for the applicant to decide whether they wish to obtain a code compliance certificate. In order to do so the applicant would need to undertake further investigation and remedial work in order to establish compliance of the building work. There is no requirement that the owner obtain a code compliance certificate and I note that the section 95A notice would remain on the property file.
- 7.2 Any proposal in regards the investigation and remedial work undertaken should be put forward to the authority for its consideration in the form of a detailed proposal produced in conjunction with a competent and suitably experienced person.

⁶ Determination 2007/60 Determination regarding a code compliance certificate for a house with monolithic and weatherboard wall cladding systems (*Department of Building and Housing*) 11 June 2007

- 7.3 If no code compliance certificate is issued, the authority retains the option of issuing a notice to fix in the future requiring the applicant bring the building work into compliance with the Building Code.

8. The decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the exterior building envelope of the additions and alterations do not comply with Clauses B2 and E2 of the Building Code that was current at the time the building consent was issued, and accordingly I confirm the authority's refusal to issue code compliance certificates for building consent No. 980259.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 5 June 2015.

John Gardiner
Manager Determinations and Assurance