

Determination 2009/97

The refusal to issue a code compliance certificate for a six-year-old house with monolithic cladding at 57 Stonebridge Way, Prebbleton



1. The matter 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, Mr P and Mrs A Severinsen (“the applicants”), and the other party is the Selwyn District 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 6-year-old house because it is not satisfied that the building work complies with the requirements of certain clauses of the Building Code (First Schedule, Building Regulations 1992)
- 1.3 In order to determine whether the decision to refuse to issue the code compliance certificate was correct, I consider the matters for determination² are:

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 Under sections 177(a) and 177(b)(i) of the Act. 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.

Matter 1: The external envelope

Whether the external envelope of the house complies with Clauses B2 Durability and E2 External Moisture of the Building Code. The “external envelope” includes the claddings, their configuration and components, junctions with other building elements, formed openings for windows etc, penetrations, decks, parapets, and the proximity of building elements to the ground.

Matter 2: The structure

Whether the house complies with Clause B1 of the Building Code with respect to the foundations, trusses, framing and bracing.

Matter 3: The durability considerations

Whether the building elements in the house which are code compliant now, will comply with Clause B2 “Durability” of the Building Code, taking into account the age of the building work.

- 1.4 I note the building work was undertaken under the supervision of Nationwide Building Certifiers Limited (“the building certifier”) which was duly registered as a building certifier under the former Building Act 1991, but ceased to operate as a building certifier before it had issued a code compliance certificate for the building work.
- 1.5 In making my decision, I have considered the submissions of the parties, the report of the independent expert commissioned by the Department to advise on this dispute (“the expert”), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

2. The building work

- 2.1 The building is a single storey detached house with an attached garage, which is in a high wind zone for the purposes of NZS 3604³. The construction consists of a timber frame with a combination of monolithic and brick cladding with aluminium joinery and the house is founded on reinforced concrete. The house has a 10° pitched corrugated steel roof to the lower southern section of the house, and a liquid applied membrane (“the roof membrane”) over a plywood substrate to the remainder of the flat and pitched roof area with no eaves. The north elevation of the house has a large timber deck.
- 2.2 The north elevation exterior cladding is monolithic EIFS⁴ described as a plaster rendering system over 60mm expanded polystyrene face fixed on building paper. The plaster coating is a proprietary acrylic modified plaster and is finished with a high build membrane. The remainder of the exterior is clad in brick veneer.
- 2.3 The expert was unable to identify whether the external wall framing was treated, however, given the date of construction, I consider that the framing of this house is unlikely to be treated to a level that will provide resistance to fungal decay.
- 2.4 The building has a high weathertightness risk when evaluated using the E2/AS1 risk matrix (refer to paragraph 6.4).

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁴ External Insulation and Finish System

3. Background

3.1 A building consent was issued by the authority (No. BC021124) under the 1991 Building Act, based on a building certificate issued by a building certifier (No C/2002-0597) dated 14 October 2002.

3.2 The building certifier carried out the following inspections during construction:

Inspection	Date and status
Site and foundation	26 November 2002 – passed
Foundations	29 November 2002 – passed
Floor slabs	4 December 2002 – passed
Drainage	7 February 2003 – passed
Brickwork	14 February 2003 – passed
Pre-line	19 February 2003 – passed
Sheet brace	27 February 2003 – failed
Final	10 March 2003 – failed

3.3 The applicants purchased the property in July 2003.

3.4 The building certifier went into receivership in November 2004 before the code compliance certificate was issued. I note the inspection notes of the 10 October 2003 inspection state ‘dwelling is nearing completion’.

3.5 The authority wrote to the applicants on 8 February 2005, explaining that the building certifier had requested the authority take over and complete the project.

3.6 The authority carried out inspections on the 20 October 2006 and the 20 September 2007. The inspection notes and correspondence about each inspection note a number of items that required remedial work.

3.7 Correspondence continued between the authority and the applicants from 2006 to 2008. The authority requested information about the building consent and building work, and identified a number of items that required rectification. The applicant applied for a code compliance certificate and supplied a number of producer statements and other supporting documentation and information. The authority wrote to the applicants on 7 November 2008 explaining that it would not issue a code compliance certificate for the building work.

3.8 The Department received an application for determination on 3 June 2009.

4. The submissions

4.1 In a letter to the Department accompanying the application, the applicants explained that ‘since purchasing the property [three quarters] finished in July 2003 we have been caught with [the certifier] going out of business, changes of staff, government law changes... and the contractors who worked on the property [went] out of business...’

- 4.2 The applicant made a submission that included copies of:
- the building certifier's inspection notes
 - correspondence from the authority and the authority's inspection notes
 - an Electrical Certificate of Compliance and an energy work certificate for gas heating appliances
 - a Producer Statement from the roof truss suppliers
 - a producer statement PS1 Design from the design engineers for 'roof support beams, foundation, and lateral stability'
 - a Producer Statement PS4 Construction Review from the design engineers for 'inspection of foundations and pre-lining'
 - a completion certificate for the membrane, stating that the membrane surface would require reglazing by 2008
 - the code compliance certificate application and accompanying documentation
 - photos of the house
 - some drawings.
- 4.3 The authority submitted a letter dated 5 June 2009 to the Department explaining their position in response to the application and the reasons for the refusal to issue the code compliance certificate. The authority also submitted copies of two inspections notices, an inspection report by the building certifier, and a copy of the building certificate.
- 4.4 The applicants provided me with a copy of the notification to the authority of their application to the Department under section 124(1) of the Weathertight Homes Resolution Services Act 2006 regarding a claim relating to this property. The notification stated that an application for an assessor's report was received by the Department on 20 July 2009.
- 4.5 The authority made a submission dated 27 July 2009, in response to the expert's report (refer to paragraph 5). The authority attached the building consent and supporting documentation, and commented that it was concerned that the expert investigation was carried out without all the supporting documents. In response, I note the authority only supplied limited information in its initial submission to the Department.
- 4.6 A draft determination was issued to the parties for comment on 25 August 2009.
- 4.7 The applicant accepted the draft determination in a response dated 4 September 2009.
- 4.8 The authority did not accept the draft determination. In a response dated 3 September 2009, the authority noted the following points:
- The building work does not comply with the building consent.
 - The wind zone is high with respect to NZS 3604.
 - The building work does not comply with Clause B1 because the producer statement provided for the truss layout does not verify the trusses were

constructed in accordance with the design, the standards cited were not published when the trusses were installed, the truss spans do not correspond to the design in the building consent, and the basic roof snow load is 0.9kPa, which would be unusual for a building in this location built in 2003.

- The BR9 brace that did not pass the inspection is the only brace in that external wall. The inspection note states the BR9 brace was not fixed correctly and re-inspection was required. The engineer's producer statement is for a pre-line inspection not a post line inspection; therefore it does not cover the fixing of the plasterboard.

4.9 I have taken into account the points raised in the authorities submission.

4.10 In response to the authority's point that the building work does not comply with the building consent, I note that the building consent was granted under the Building Act 1991, and therefore, under section 436 of the Act, in order for a code compliance certificate to be issued the building work is required to comply with the provisions of the Building Code that applied at the time the building consent was granted. I therefore do not accept the authority's argument that one of the reasons the authority cannot issue a code compliance certificate is because the work does not comply with the building consent.

5. The expert's report

5.1 As discussed 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 16 July 2009 and furnished a report that was completed on 20 July 2009.

5.2 The expert noted there is a producer statement from a structural engineering firm with respect to the structural integrity of the roof bracing, steel and timber beam connections, and wall bracing. The expert also verified that the roof trusses were installed at 900 mm centres.

5.3 The expert took invasive moisture readings internally and externally at risk locations on the north elevation of the house, and noted elevated readings over 18% in eight locations. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The elevated readings were:

Location	Details	Reading
Internal	Centre of arc window above skirting	58.4%
Internal	Centre of arc window above skirting (in cut out)	100%
Internal	East side of family room window in sill	26.6%
Internal	West side of study window above skirting	67.9%
Internal	West side of study window above skirting (in cut out)	68.8%
Internal	East side of master bedroom window in sill	19.5%
Internal	West side of master bedroom window in sill	19.5%
External	North wall/west wall junction	37.7%

With respect to the moisture readings over 40%, I note that the readings show areas that are highly saturated where decay will be inevitable over time.

5.4 The expert carried out destructive investigations in three risk locations and found:

- at the internal centre panel of the arc window, the external framing was visibly wet
- at the internal left side of the study window, the bottom plate and stud of the external framing was wet and showed signs of timber decay, and the building paper had deteriorated
- at the external north wall to west wall junction, the EPS was very wet under the cap flashing, there was no saddle flashing and no cavity to the external framing.

5.5 Commenting specifically on the wall cladding, the expert noted:

Flashings at windows and doors

- there are no sill flashings
- there are no head flashings to the garage door
- the 6mm gap between the jamb facing and outer leg of the joinery has not been provided and the required fillet of sealant is not in place
- the joinery is buried into the texture coating
- there is no drainage gap to the bottom of the two high light windows

Cladding system construction and control joints

- there are no control joints to the large radial section of wall above the lower northern roof
- there is considerable cracking to a number of areas of the EIFS
- the decking timber is finished tight against the EIFS.

5.6 Commenting specifically on the roof cladding, the expert noted:

- the parapet penetrations are inadequately sealed
- the gutter overflow pipe penetrating the north wall flows on an angle downwards from the exterior back to the gutter
- the diverters on the apron flashings are inadequate, incorrectly fitted, and failing on all but one apron flashing
- the ends of all parapet apron flashings are poorly fitted
- the joints, laps, sealings and fixings of the parapet cap flashings are inadequate and poorly constructed
- the mitre and lap joints have poor joint construction and are insufficiently sealed and fixed
- the wall to wall junctions do not have saddle flashings
- the cap flashings are buried in the EPS substrate

- the fascia at the front entrance is imbedded into the EPS substrate
- the internal gutter above the north wall is formed within the roof structure and roof membrane.
- the roof membrane is deteriorating (maintenance was required to be undertaken in 2008).

5.7 A copy of the expert's report was provided to each of the parties on 21 July 2009.

Matter 1: The external envelope

6. Weathertightness

6.1 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.

6.2 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. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

6.3 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.

6.4 Weathertightness risk

6.4.1 This house has the following environmental and design features which influence its weathertightness risk profile:

Features tending to increase risk

- the house has a complex envelope shape with curved walls and multiple cladding types
- the house has roof elements finishing within the boundaries formed by exterior walls

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.

- there are no eaves
- there is a large timber deck
- the house is in a high wind zone

Features tending to decrease risk

- the house is one storey
- there are no decks or balconies

6.4.2 The house has 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 claddings 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.

6.4.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.4.1 show the house demonstrate a high weathertightness risk rating. The current edition of E2/AS1 would require the provision of a drained and ventilated cavity for the EIFS cladding, although I note this was not a requirement at the time that construction began.

6.5 Weathertightness performance

6.5.1 It is clear from the expert's report that the external envelope is unsatisfactory in terms of its weathertightness because elevated moisture levels were recorded and wet and decayed timber framing identified.

6.5.2 Taking into account the expert's report and comments as outlined in 5.5 and 5.6, I am of the view that the following items require rectification with respect to weathertightness:

- the defects to the window and door flashings of the EIFS, including the lack of sill flashings, the lack of head flashings to the garage door, the lack of gap and sealant (or a flashing) to the outer edge of the joinery and the jamb, the joinery that is buried into the EIFS, and the lack of drainage gap to the two high light windows
- the defects to the EIFS construction, including the lack of control joints to the large radial section of wall above the lower northern roof, the considerable cracking to the EIFS, and the decking timber that is finished tight against the EIFS
- the defects to the roof cladding and construction, including the inadequate sealing of the parapet penetrations, the inadequate overflow pipe, the inadequate apron flashing diverters, the poor fitting of the ends of the parapet apron flashings, the inadequate parapet cap flashings, the inadequate construction, sealing, and fixing of the mitre and lap joints, the lack of saddle flashings at the wall to wall junctions, the cap flashings that are buried into the EPS substrate, the fascia that is buried into the EPS substrate, the internal gutter that is formed within the roof structure and membrane, and the lack of maintenance to the roof membrane.

6.5.3 Further investigation is necessary to determine the extent of decay and the full extent of the repairs required.

6.6 Weathertightness conclusion

6.6.1 I consider the expert's report establishes that the current performance of the external envelope is not adequate because there is evidence of moisture penetration and decay. In particular, the EIFS and the roof cladding demonstrate the key defects listed in paragraphs 5.5 and 5.6, which are likely to have contributed to the moisture penetration evident within the external walls of this building.

6.6.2 I have also identified the presence of a range of known weathertightness risk factors in 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 cladding systems. 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. Consequently, I am not satisfied that the systems installed to the external envelope comply with clause E2 of the Building Code.

6.6.3 In addition, 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 faults to the external envelope of the house may allow further ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.

6.6.4 I consider that final decisions on whether code compliance can be achieved by either remediation or re-cladding can only be made after a more thorough investigation of the external envelope and framing to verify the extent of the damage. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen remedial option should be submitted to the authority for its comment and approval.

Matter 2: The structure

7. Discussion

7.1 The house has, in part, been subject to specific engineering design. A producer statement for design and a producer statement for construction review have been supplied by the design engineers. The PS4 is in respect of inspections of foundations and pre-lining.

7.2 The truss supplier also submitted a Producer Statement, which I accept as applying to this house. The expert has also been able to access the roof space and observe the truss spacing. While I acknowledge the comments of the authority with respect to the truss supplier's design producer statement, I consider there are reasonable grounds to conclude the trusses comply with the Building Code.

7.3 Foundation and pre-line inspections have all been recorded as passed. However, the postline inspection undertaken by the authority failed. I have taken into account the view of the authority that the producer statement for construction review, supplied by the design engineers, does not include the sheet bracing in the external wall (the BR9 brace), as the engineer's inspections were undertaken at pre-lining stage, and I

note a re-inspection of the failed items was not done. Although I have not sought this confirmation as part of the determination, the design engineers may be able to verify that their producer statement does in fact include the adequacy of the sheet bracing.

- 7.4 In conclusion, I consider there are reasonable grounds to come to the view that the trusses and framing complies with Clause B1 of the Building Code, although, I do not consider it unreasonable for the authority to request a drawing showing the truss layout to be included in the property file. However, due to the lack of records (or other evidence) confirming the nailing of the plasterboard, I consider that there are not reasonable grounds to form the view that the bracing complies with Clause B1.

Matter 3: The durability considerations

8. Discussion

- 8.1 There are concerns about the durability, and hence the compliance with the Building Code, of certain elements of the building, taking into consideration the substantial completion of the building work in 2003.
- 8.2 The relevant provisions of Clause B2 of the Building Code requires that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods (“durability periods”) ‘from the time of issue of the applicable code compliance certificate’ (Clause B2.3.1).
- 8.3 In previous determinations (for example Determination 2006/85) I have taken the view that a modification of this requirement can be granted if I can be satisfied that the building complied with the durability requirements at a date earlier than the date of issue of the code compliance certificate, that is agreed by the parties and that, if there are matters that are to be fixed, they are discrete in nature.
- 8.4 Because of the defects in the cladding, and the possible consequential impact on the building’s timber framing, I am not satisfied that a modification of the durability provision is appropriate at this stage. However, the matter may be reconsidered by the authority once the external envelope and all associated work has been made code compliant.

9. What is to be done now?

- 9.1 A notice to fix should be issued that requires the owners to bring the building into compliance with the Building Code, identifying the defects listed in paragraph 6.5.2 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 specify how the defects are to be remedied and the building brought into compliance with the Building Code. That is a matter for the owners to propose and the authority to accept or reject.
- 9.2 The owners in response to the notice to fix, and as discussed in paragraph 6.6.4, should engage a suitably qualified person to undertake a thorough investigation of the cladding to determine the extent of the defects and produce a detailed proposal describing how the defects are to be remedied. The proposal should be submitted to the authority for approval. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

9.3 With respect to the date on the notice to fix, I suggest the authority, in consultation with the owners, issue a notice to fix with a date that provides the owners with sufficient flexibility to make necessary decisions, given that an application has been made for an assessor's report under the Weathertight Homes Resolution Services Act 2006.

10. The decision

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

- the structure with respect to the foundations, trusses and framing complies with Clause B1 of the Building Code
- there are not reasonable grounds to conclude the bracing complies with Clause B1 of the Building Code
- the external envelope does not comply with Clauses B2 and E2 of the Building Code

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

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 30 October 2009.

John Gardiner
Manager Determinations