

Determination 2007/61

Determination in regard to a notice to fix for a house at 125 Norman Road, Winton, Southland



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. Mr and Mrs Warner (“the applicants”) have conditionally agreed in writing to purchase the property and are deemed to be a party to the determination as they are defined as owners under section 7 of the Act. The other parties are the Southland District Council (“the territorial authority”) and the current owner and vendor, South Dairy Limited, (“the owner”). Reference is made in the determination to the “previous owner,” being the owner before South Dairy Limited.
- 1.2 This determination arises from the decision of the territorial authority to issue a notice to fix and to refuse to issue a code compliance certificate for 10-year-old

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

additions and alterations to a house (“the alterations”) because it was not satisfied that the work complied with clauses B1 “Structure”, B2 “Durability”, C1 “Outbreak of Fire”, and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992).

1.3 The matters to be determined are whether:

- the roof trusses and pergola comply with clause B1
- the cladding as installed to the walls of the building (“the cladding”), complies with clauses B2 and E2. By “the cladding as installed” I mean the components of the system (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together
- the timber in proximity to the chimney complies with clause C1.

1.4 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 the information about the cladding using a framework that I describe more fully in paragraph 6.1.

1.5 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.

2. The building

2.1 The building work consists of extensive alterations and additions to a single-storey detached house situated on a level site that is in a medium wind zone for the purposes of NZS 3604³. The completed house is relatively simple in plan and form and the new construction is conventional light timber frame constructed on concrete floors. The corrugated steel pitched roofs have hip and valley junctions and minimal eaves and verge projections. A timber-framed slatted deck is situated at ground level adjoining the living room and a timber-framed pergola is constructed over this. An external pumice block chimney is constructed against the west elevation wall and this passes through the projecting roof.

2.2 The expert has established that the new external wall framing is constructed from Douglas Fir.

2.3 Both the new and existing walls of the house are clad with 40mm thick polystyrene sheets fixed through the building wrap to the framing, and this is finished with a modified plaster coating.

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

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Sequence of events

- 3.1 The territorial authority issued building consent No. 97/003 for the alterations on 22 January 1997. I consider the documentation submitted in support of the consent was rudimentary.
- 3.2 In a facsimile dated 27 May 1997, the territorial authority wrote to Plaster Systems Ltd raising concerns about cladding, in particular the detail at the timber windows, the pergola rafter fixing, and the junctions of the cladding with the external joinery fittings. The territorial authority attached sketches to illustrate its concerns.
- 3.3 In response, Plaster Systems Ltd faxed some upgraded construction details to the territorial authority. In its covering document, the company noted that the details provided by the territorial authority:
- fall short of our standard requirements and would require regular inspection and maintenance to meet any requirements of long term weather proofness.
- 3.4 In a letter dated 5 June 1997, the territorial authority wrote to the designer/builder referring to its correspondence with Plaster Systems Ltd and recommended that the wall cladding installer should contact that company for advice on how to upgrade the detailing around the windows. The territorial authority also noted that it could not accept the as-built details if Plaster Systems Ltd was “not happy with [them]”.
- 3.5 I have not seen any correspondence that confirms how that matter was resolved.
- 3.6 The territorial authority wrote to the previous owner on 20 October 1998, noting a code compliance certificate had not been requested. The territorial authority stated that a final inspection would not be undertaken until it was advised that the building work was complete. The letter also stated that the property file for the project and LIM would also record that a code compliance certificate had not been issued for the work.
- 3.7 I have not seen any correspondence arising from that advice.
- 3.8 The previous owner’s legal advisers (“the legal advisers”) wrote to the territorial authority on 2 June 2006, requiring the property to be inspected and a code compliance certificate issued. The two outstanding items (ceiling cavity insulation and window flashing) had been completed.
- 3.9 The territorial authority issued a notice to fix, dated 29 June 2006, to the previous owner, as required under section 164(2) of the Act. The copy of the notice supplied to me has a hand-written annotation saying “Re-issued [to the owner] 3 January 2007”.

The notice stated:

The building work described in the [Notice] does not satisfy the provisions of the NZ Building Code.

- B1 “Structure” in that Trusses have not been provided with sufficient resistance against uplift.
- B2 “Durability” in that inadequate protection against water penetration through the wall cladding has potential to compromise the durability of the structure.
- C1 “Outbreak of Fire” in that timber is too close to the pumice chimney.
- E2 “External Moisture” in that it would appear that adequate protection against water penetration through the wall cladding has not been provided.

The notice to fix refers to an attached fax listing four items which clarify the above which also states:

- Council has not been satisfied on reasonable grounds that the penetrations to the plastering system comply with the requirements of NZBC E2/AS1
- The construction of the pergola is indirectly placing strain on the plastering system and needs rectifying

- 3.10 In a facsimile to the legal advisers dated 29 June 2006, the territorial authority listed the matters set out in the notice to fix, and noted that rectification of these concerns was necessary before the territorial authority could issue a code compliance certificate.
- 3.11 The legal advisers wrote to the territorial authority on 11 August 2006, querying why additional matters were now raised to those set out in the legal advisers’ letter of 2 June 2006. Specific information as to the non-compliance of the plastering systems was also requested.
- 3.12 In a letter to the previous owners and their legal advisers dated 22 August 2006, the territorial authority noted that:
- the territorial authority had not issued any notification that it had carried out a final inspection
 - as some of the building work was not code-compliant, the territorial authority could not issue a code compliance certificate
 - some of the plastering and the flashing treatment was sub-standard and the territorial authority was not aware that its request to the installer to obtain advice from Plaster Systems Ltd had been complied with
 - the sub-standard construction of the pergola and the adverse effect of this on the cladding
 - as it was uncertain that “adequate moisture management systems had been put in place to protect the dwelling” a code compliance certificate could not be issued.
- 3.13 The territorial authority issued a second notice to fix dated 3 January 2007 to the owner, which repeated the details set out in the first notice to fix.

3.14 An application for a determination was received by the Department on 17 January 2007.

4. The submissions

4.1 The applicants stated that the territorial authority has incorrectly issued a notice to fix and that they believed the building work met the requirements of the Building Code.

4.2 The applicants forwarded copies of:

- the plans and specification
- the building consent and other consent documentation
- the correspondence relating to the matter in question
- the current agreement for the sale and purchase of the property.

4.3 The territorial authority did not make a submission.

4.4 A copy of the draft determination was sent to the parties for comment on 10 April 2007. All the parties accepted the draft. However the owner, acting through a firm of barristers and solicitors, said the determination was accepted under protest.

5. The expert's report

5.1 As mentioned in paragraph 1.4, 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.

5.2 The expert inspected the house on 13 March 2007 and furnished a report that was completed on 21 March 2007. The expert noted that the general standard of finish and construction of the dwelling is of a good standard but some aspects of the building are not code-compliant. I summarise below the expert's findings on the various matters raised in this determination.

5.3 Compliance with clause B1 Structure

5.3.1 There is severe distortion in all the pergola framing and there is significant movement and sway within the structure. The sets of rafters, that make up the central part of the pergola, lack collar ties and the beams that the rafters sit upon are being pushed apart by the resulting sideways pressure.

5.3.2 In addition, I note the pergola beams penetrate the cladding. Therefore any movement in the beams will compromise the weathertightness of the junction with the cladding. (The weatherproofing of the junction of the pergola to the cladding is referred to in paragraph 5.4.3.)

5.3.3 The junctions between the roof trusses and the adjoining top plate from the living room to the lounge north/south junction lack connection fittings.

5.4 Compliance with clauses B2 Durability and E2 External Moisture

5.4.1 The expert noted that, apart from two locations, all of the plaster coating appears to be sound and free from any significant cracking or separation failure. The expert removed a section of the cladding at one timber and at one metal window sill. I am prepared to accept that the details exposed at those situations apply to other similar locations throughout the building.

5.4.2 The expert took non-invasive moisture readings internally around the house and no elevated readings were recorded. Subsequently, a number of invasive moisture readings were taken and slightly elevated readings of more than 18 %, 19% (at 2 locations), and 21% (at 2 locations) were recorded. The expert also noted that where the cladding had been removed for invasive testing and inspection, evidence of staining and timber decay could be seen. In addition, decay is evident at the southeast corner of the original building.

5.4.3 Commenting specifically on the cladding, the expert noted that:

- the base of the cladding is taken down below the paving at some locations
- the ground level is up over the base of the cladding at some locations
- there is significant staining of the cladding, especially to the south and west elevations
- there is separation between the cladding and the pvc and timber frame at the main living room entry doors
- no sill or jamb flashings are installed to either the timber or the metal external joinery units and the sealant between the units and the cladding is inadequate
- some of the head flashings to the external joinery fittings have inadequate corner-edge weathering
- the head flashings to the two timber external doors are not adequately constructed
- the ends of the two main pergola beams penetrating the cladding are ineffectively sealed and no saddle flashings are installed at these locations
- the metal cap flashing over the pergola wall plate is poorly detailed and fitted
- the ends of the east corner spouting and the return south wall fascia are embedded in the plaster
- the downpipe at the east bedroom location has come away from the cladding
- the end flashing and fascia to the office addition have exposed butt joints

- the junction of the head of the meter-board with the cladding is inadequately formed.

5.5 Compliance with Clause C1 “Outbreak of fire”

- 5.5.1 The timber framing adjoining the chimney is spaced at least 50mm away from the chimney, with the exception of the high-level fascia junction which is slightly less than 50mm.

5.6 Other compliance matters

- 5.6.1 The fibreglass insulation to the roof space addition is incomplete.
- 5.7 Copies of the expert’s report were provided to each of the parties on 22 March 2007.

6. Evaluation for code compliance

6.1 Evaluation framework

- 6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution, in this case E2/AS1 External Moisture, which will assist in determining whether the features of the cladding on the alteration 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 some other provision to compensate for that in order to comply with the Building Code.

- 6.1.2 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 determinations⁴ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

- 6.1.3 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.

⁴ Copies of all determinations issued by the Department can be obtained from the Department’s website.

6.2 Weathertightness risk

6.2.1 In relation to these characteristics I find that the house:

- is built in a medium wind zone
- is single storey
- is relatively simple in plan and form
- has minimum eaves and verge projections
- has no external balconies
- has new external wall framing that is not treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 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 to provide a risk rating that can range from 'low' to 'very high'. The risk rating is applied to determine how claddings can be used on a building in order to comply with E2/AS1. A higher risk rating will require more rigorous weatherproof detailing; for example, a higher risk rating is likely to require a particular type of cladding to be installed over a drained cavity.

6.2.3 When evaluated using the E2/AS1 risk matrix, two elevations of the house demonstrate a low weathertightness risk and two elevations demonstrate a medium risk. The low risk elevations do not require a ventilated cavity to comply with E2/AS1, the medium risk elevations do require a cavity.

6.3 Compliance with Clause B1 "Structure"

6.3.1 The pergola structure and its connection to the house is inadequate, and movement in the structure is compromising the weathertightness of the junction of the pergola with the cladding.

6.3.2 The junctions between the roof trusses and the adjoining top plate from the living room to the lounge north/south junction lack connection fittings against uplift.

6.4 Compliance with Clause C1 "Outbreak of fire"

6.4.1 Clause C1.3.2 of the Building Code says:

C1.3.2 Fixed appliances shall be installed in a manner that does not raise the temperature of any building element by heat transfer or concentration to a level that would adversely affect its physical or mechanical properties or function.

6.4.2 Figure 9.3 of the Acceptable Solution for C/AS1 shows a 50mm air gap between the chimney and combustible material.

6.4.3 The expert noted that the timber framing adjoining the chimney is spaced at least 50mm away from the chimney, with the exception of the high-level fascia junction which is slightly less than 50mm.

6.5 Other compliance matters

- 6.5.1 The fibreglass insulation to the roof space over the addition is incomplete.

7 Discussion

- 7.1 Neither the pergola structure, nor the junctions between the roof trusses and the adjoining wall plate from the living room to the lounge north/south junction, comply with clause B1 of the Building Code.
- 7.2 The current performance of the cladding installed on this house is inadequate because it has not been installed according to good trade practice. In particular, the cladding is at present allowing water penetration into the walls through defects in the cladding, which in turn may have led to the framing timber rotting in at least one location. In particular, the cladding demonstrates the significant defects listed in paragraph 5.4.3.
- 7.3 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 significant faults identified in the 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. Consequently, I am not satisfied that the cladding system as installed complies with either clause B2 or clause E2 of the Building Code.
- 7.4 While at one location the timber fascia is slightly less than 50mm from the chimney, this is just inside the minimum 50mm requirement set out in the Acceptable Solution for C/AS1. I note that the chimney is constructed from pumice concrete units and has been in place some 10 years without any signs of scorching of adjoining timbers. Accordingly, I am prepared to accept that the clearances of timber from the chimney are code-compliant.
- 7.5 The absence of ceiling batts in some ceiling areas of the new additions means that the requirements of clause H1 have not been met.
- 7.6 I also find that, because of the extent and apparent complexity of the faults that have been identified with the cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clauses B2 or E2.
- 7.7 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 of the cladding. This will require a careful analysis by an appropriately qualified expert. Once that decision is made, the chosen repair option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the applicants are entitled to seek a further determination on whether the proposed remedial work will lead to compliance with the requirements of clauses B2 and E2.

8 The Decision

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building work does not comply with clauses B1, B2, E2, and H1 of the Building Code, and accordingly confirm the territorial authority's decision to issue a notice to fix and to refuse to issue a code compliance certificate.
- 8.2 With respect to the notice to fix, I observe that, 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 1991) cannot specify how that compliance can be achieved. I concur with that view.
- 8.3 The territorial authority should now issue a new notice to fix that requires the owners to bring the building up to compliance with the Building Code, identifying the defects listed in paragraphs 5.3, 5.4, and 5.6, and referring to any further associated defects that might be discovered in the course of rectification, but not specifying how any of those defects are to be fixed. That is a matter for the applicants to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.
- 8.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.3. Initially, the territorial authority should issue the new notice to fix. The owner should then produce a response to this in the form of a detailed proposal, 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.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 8 June 2007.

John Gardiner
Manager Determinations