

Determination 2009/57

The issue of a notice to fix for a house at 26 Nacton Lane, Avondale, Auckland



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 M and Mrs C De Silva ("the applicants"), acting through an agent, and the other party is the Auckland City Council ("the authority"), carrying out its duties and functions 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 an eight year old house because it is not satisfied that the building work complies with the requirements of certain clauses of the Building Code² (First Schedule, Building Regulations 1992). Specifically, the notice to fix cites contraventions of Clauses B1 "Structure", B2

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

² The Building Code is available from the Department's website at <u>www.dbh.govt.nz</u>.

"Durability", E1 "Surface Water", E2 "External Moisture", E3 "Internal Moisture", G9 "Electricity", G13 "Foul Water", and H1 "Energy Efficiency".

1.3 In order to determine whether the decision to issue the notice to fix was correct, I consider the matters for determination under section 177(a) and 177(b)(iii) of the Act³ are:

1.3.1 Matter 1: The claddings

Whether the claddings as installed on the building ("the claddings") comply with Clauses B2 Durability and E2 External Moisture of the Building Code. By "the claddings as installed" I mean the components of the system (such as the backing materials, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

1.3.2 Matter 2: The remaining Building Code matters

Whether certain building elements in the house, other than the claddings, comply with the relevant clauses of the Building Code.

1.3.3 Matter 3: The durability considerations

Whether the building elements in the house comply with Clause B2 of the Building Code, taking into account the age of the building work.

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 this information using a framework that I describe more fully in paragraph 6.1.

2. The building work

- 2.1 The building is a two storey detached house with an attached garage. The house is on a flat site and is in a medium wind zone for the purposes of NZS 3604⁴. The house is constructed on a concrete slab and is built of a light timber frame with a combination of monolithic and brick veneer cladding, pressed metal tile roofing, and aluminium joinery. The house has 600mm eaves to the lower storey and 450mm eaves to the upper storey.
- 2.2 The upper storey of the house is entirely fibre-cement clad, and the lower storey has a combination of brick veneer and fibre-cement cladding on all elevations. The fibre-cement cladding is 8mm thick fibre-cement board sheets that have been covered in polystyrene and a textured coating.
- 2.3 The expert noted the wall framing was marked only as kiln-dried. Given this evidence and the date of construction, I consider that the timber framing of the house has not been treated to resist decay.

3. Background

3.1 A building consent was issued for the construction of the house on 24 November 2000 (No. AC/00/07233). An amendment was issued to the consent for changes to the lower storey cladding on 31 January 2001 (No. AC/01/09095).

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

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3.2 I have seen no records of inspections, however based on correspondence dated 15 May 2001 between the applicants' solicitor and the building company responsible for construction of the house ("the builder"); it appears the house was substantially completed in approximately May 2001.

I understand from you that whiteware will be delivered... and that thereafter the code compliance certificate will be available. I would be grateful if you could given [sic] an indication of when the balance of the work will be completed and in particular, the building exterior work.

3.3 On 26 August 2008, the applicants wrote to the authority requesting a copy of the code compliance certificate.

[The builder] was closed down soon after completion of our house and couple of others in this development scheme and their owners were never been able to trace after that. This situation created a problem to us and thereby we did not get the copy of our compliance certificate.

- 3.4 The authority, in response, wrote to the applicants on 4 September 2008, requesting the applicants arrange a final inspection with the authority.
- 3.5 The authority completed a final inspection on 20 October 2008. The inspection records note:

Failed – numerous items identified, issues mainly relating to the exterior cladding (monolithic), ground clearances – a peer review is required – a notice to fix will be issued outlining/identifying areas of non compliance with the New Zealand Building Code

- 3.6 The authority issued a notice to fix to the applicants, dated 12 November 2008, which cited non-compliance with Building Code Clauses B1, B2, E1, E2, E3, G9, G13, and H1 and included a list of specific contraventions and non-compliances.
- 3.7 The applicants commissioned an agent, from a company which I understand to specialise in engineering and construction, to inspect the house and address the issues raised in the notice to fix. The agent wrote to the authority on 23 February 2009, including a 'Scope of remedial works' which addressed each item of the notice to fix and proposed action where appropriate.
- 3.8 The proposed scope of works stated that in the agent's opinion the house was built in accordance with the consent, it had no signs of leaks or cracking, there had been no problems with flooding, and noted that some 'issues in the notice to fix' required clarification and some were incorrect. With respect to the issue that the authority raised that the building work 'has not been undertaken in accordance with the requirements of the Building Act 2004', the proposed scope of works stated:

'This house is more than 7 years old. [The builder has] constructed many houses in this particular subdivision. CCCs have been issued for many houses. This house appears to have been constructed to approved building consent. It should be noted that this building consent was approved in year 2000 under Building Act 1991. The standard applied are different.'

3.9 The authority responded in an email dated 26 February 2009, addressing each item in the proposed scope of works. In response to the agent's comments the authority stated:

The New Zealand Building Code has not changed since its introduction under the 1991/92 Building Act what has changed are the "acceptable solutions". [The authority] cannot be satisfied that the items identified in the Notice to Fix have been

installed/constructed in accordance with the approved building consent documents or the manufacturers specifications of the time.'

- 3.10 The authority accepted the proposal with respect to:
 - the sealing of the sink bench and hand basins (which the authority noted would be inspected at a final inspection)
 - the installation of a concrete apron around the gully trap
 - the installation of smoke detectors
 - the installation of a non return valve
- 3.11 The authority requested that further details be provided for assessment that would show how the following would be addressed, or evidence be provided of the claim made in the proposed scope of works (also refer to paragraph 10.1).
 - The sealing between the cladding and window head flashing junction.
 - The 6mm gap required between the back of the cladding and the wall.
 - The clearance between the bottom edge of cladding and ground.
 - The silicone applied as a filler to the window edge.
 - The vent pipes termination points.
 - The clearances of the finished floor level to the finished ground level.
 - The surface water run-off from behind the concrete strip footing.
 - The lack of vertical control joints and confirmation that the horizontal control joint has been installed correctly.
 - The lack of sill flashing.
 - The adequacy of the penetrations through the cladding.
- 3.12 For many items, the proposed scope of works had requested the authority to clarify the issue on site and identify what was to be done. In response, the authority commented that the authority's role is to enforce the New Zealand Building Code, it is not an advisory role, which is why the authority suggested in the notice to fix that the owners engage the services of a Building Expert to help them address the issues raised by the authority.
- 3.13 The authority did not accept the proposed scope of works with respect to:
 - the exposed edges of cladding that were left unpainted
 - the insufficient configuration of downpipes
 - the cracking to the cladding
 - the adequacy of flashings
 - the lack of maintenance to the cladding.
- 3.14 The Department received an application for determination on 23 March 2009.

4. The submissions

4.1 The applicants explained, in a letter to the Department, that:

We were under the impression that [the builder] did the construction with regular inspections by the [authority's] inspectors, but to our surprise, the [authority] now says that no records are available of the inspections done at various stages of construction.

We have submitted our explanations and line of actions that could be taken through our [agent], but the [authority] is not prepared to accept the proposals and they wanted us to stick to their Notice to fix letter to rectify. ...During this time several houses were built in this subdivision with the same standards and all of them were issued with Code Compliance Certificates.

- 4.2 The applicants' submission included copies of:
 - the contract for the construction of the house and correspondence between the applicants and the builder
 - correspondence between the applicants and the authority
 - building consent documentation and the electrical certificate of compliance
 - the final inspection record and the notice to fix
 - the proposed scope of remedial works and the response from the authority.
- 4.3 The authority submitted a CD-Rom, entitled 'Property File', which contained documents pertinent to this determination, including:
 - subdivision plans, records, and correspondence with the developer of the subdivision
 - historical correspondence and property information
 - the consent documents
 - the final inspection record
 - the notice to fix.
- 4.4 Copies of the submissions and other evidence were provided to the parties.
- 4.5 A draft determination was issued to the parties for comment on 8 June 2009.
- 4.6 In response to the draft determination, the authority made a submission dated 11 June 2009, and made comments of its view of the remedial work required for the horizontal control joint, the open vent pipe, and the extractor fan.
- 4.7 In response to the draft determination, the applicants made a submission dated 20 July 2009. The applicants stated:
 - We are in very difficult situation to fix the issues identified in the house.

We are happy to undertake certain works but not entirely. We have already paid for house construction and even paid [the authority] at that time.

The applicants also raised two questions to the Department in their submission. I have inferred the applicants wanted to raise the following points:

• Where is the information related to our building consent including the inspection records?

- Why were we not informed earlier that there was no code compliance certificate for our house?
- 4.8 In response to these questions, these are not matters within the Chief Executive's remit in terms of section 177 of the Act. I note that:
 - In the normal course of events, the authority would be the office of record, and would hold this information. In its response to the application for a determination the authority provided a CD Rom containing; records of the consent documentation, the final inspection record and notice to fix. However, there were no records of any other inspections that may have been conducted. It is unclear whether this lack of inspection records is because no inspections were undertaken or if the records have been mislaid.
 - Under the provisions of the former Act under which the consent was issued, the owner is required to apply for a code compliance certificate. While the current Act includes specific provisions for an authority to alert owners that a code compliance certificate is outstanding, it is still the owner's responsibility to apply for a code compliance certificate.

5. The expert's report

- 5.1 As discussed 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. The expert inspected the house on 9 April 2009 and 30 April 2000 and furnished a report that was completed on 1 May 2009.
- 5.2 The expert noted that there was an inter-storey horizontal control joint but the sheets were butted together without the specified 6mm gap.
- 5.3 The expert took invasive moisture readings at 10 locations around the house, and noted elevated readings were recorded in three locations. Elevated moisture readings generally indicate that external moisture is entering the structure. The elevated readings were:
 - 20% at the centre of the north elevation at the right hand side of the apron
 - 23% at the right hand side end of the south elevation at the stud to level one
 - 22% at the right hand side end of the south elevation at the lower wall stud.
- 5.4 The expert noted that after removing a section of plasterboard lining, water staining is evident to the bottom edge of the ply bracing sheet as well as early timber decay to the studs and bottom plate. The moisture reading for this area was low.
- 5.5 The expert noted that there had been low rainfall prior to the inspection, and as there has been little rainfall recently, moisture readings should not be considered conclusive. I also note here that the moisture readings were taken at the end of summer and that moisture levels are likely to be higher at other times of the year.
- 5.6 Commenting specifically on the wall cladding, the expert noted that:

Cladding system construction

• the bottom edge is holding moisture because there are areas with no gap between the cladding sheet and the concrete foundation

- there are no vertical control joints
- ground clearances are inadequate at the front entrance
- the meter box requires sealing

Flashings at windows

- there is no gap between the plaster and flashing at the head flashing
- there are no sill flashings below the eastern lounge window (internal)
- there are no air seals fitted under the ranch-sliders, and lack of cladding overlap at the lounge ranch-slider
- the window jambs are inadequate because there is no overlap between the frame and cladding and no sealant in some places

The roof and roof junction

- the apron flashing is formed without a kick out and is finished short
- there is an open joint in the cladding which is not sealed or filled
- the gutter fascia near the front entrance is embedded into the cladding
- there is no spreader to disperse water evenly onto lower roofs and away from apron flashings.
- 5.7 Commenting on compliance with other Building Code Clauses, the expert noted the following:
 - smoke detectors have not been installed
 - there is no backflow prevention device installed to the shower
 - there is no surround to the gully trap on the eastern side
 - the lower roof vent would be better positioned on the upper roof.
- 5.8 Three items listed on the notice to fix have been remedied or are adequate:
 - the sealing of the sinks to wall linings
 - the storm water system was operating adequately
- 5.9 A copy of the expert's report was provided to each of the parties on 11 May 2009.

6. Evaluation for code compliance

6.1 **Evaluation framework**

- 6.1.1 I have evaluated the code compliance of this building by considering the following two broad categories of the building work:
 - The weathertightness of the external building envelope (Clause E2) and durability (Clause B2 insofar as it relates to Clause E2).
 - The remaining relevant code requirements.

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

- 6.1.2 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions⁵, which will assist in determining whether the features of this house are code compliant. However, in making this comparison, the following general observations are valid:
 - Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
 - Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add one or more other provisions to compensate for that in order to comply with the Building Code.

Matter 1: The cladding

7. Weathertightness

- 7.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations⁶ (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.
- 7.2 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

7.3 Weathertightness risk

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

Features tending to increase risk

- the house is two storeys high
- the house has a moderately simple envelope shape with two cladding types
- lower level aprons finish within the boundaries formed by exterior walls

Features tending to decrease risk

- the house is in a low wind zone
- the eaves width are 450mm to the upper storey and 600mm to the lower storey
- the house has no decks.

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

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

- 7.3.2 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.
- 7.3.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 7.3.1 show this house demonstrates a medium weathertightness risk rating. The house would now require the incorporation of a drained cavity; however, this was not a requirement at the time the house was constructed.

7.4 Weathertightness performance

- 7.4.1 It is clear from the expert's report that the monolithic cladding installed on the house is unsatisfactory in terms of its weathertightness because the cladding is at present allowing water penetration through the walls through defects in the cladding.
- 7.4.2 I consider the retention of moisture at the bottom cladding sheet is a result of lack of gap from the bottom cladding sheet to the concrete foundations. The inter-storey horizontal control joint is not installed in accordance with the manufacturer's requirements. The expert noted that to date there is no pointing or other signs of stress at the horizontal control joint, but I consider that the joint should be as per the manufacturer's specifications to meet the durability requirements of the Building Code.
- 7.4.3 I also note that the manufacturer did not mandate the use of sill flashings at the time.
- 7.4.4 Taking into account the expert's report and comments I conclude that the following items require rectification:
 - the bottom edge of the cladding is holding moisture because there are areas with no gap between the cladding sheet and the concrete foundation
 - the lack of vertical control joints, particularly on the long walls
 - the inadequate inter-storey horizontal control joint
 - the inadequate ground clearances at the front entrance
 - the lack of sealing to the penetrations
 - the lack of gap between the plaster and flashing at the head flashing
 - the lack of air seals fitted under the ranch-sliders and the lack of cladding overlap at the lounge ranch-slider
 - the lack of sealant between the jambs and cladding as per the manufacturer's instructions and the cladding does not run between under the jambs in some locations
 - the lack of kick out at the apron flashing, which is finished short
 - the open joint in the cladding which is not sealed or filled
 - the embedment of the gutter fascia into the cladding near the front entrance
 - the lack of spreaders to down pipes.

- 7.4.5 I note the high moisture readings in paragraph 5.3 and consider that further investigation is necessary to determine the condition of the timber framing to these areas.
- 7.4.6 Further investigation is necessary, including the systematic survey of all risk locations, to determine the full extent of the repairs required.

7.5 Weathertightness conclusion

- 7.5.1 I consider the expert's report establishes that the current performance of the cladding is not adequate because there is evidence of some past and present moisture penetration into the house. Furthermore, the cladding has not been installed in accordance with the manufacturer's requirements.
- 7.5.2 In particular, the cladding demonstrates the key defects listed in paragraph 5.6. 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 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 satisfied that the cladding system as installed does not comply with Clause E2 of the Building Code.
- 7.5.3 I find that, because of the extent and complexity of the faults that have been identified in the cladding, I am unable to make a decision about how compliance might be achieved. I consider that the final decisions on whether code compliance can be achieved by either targeted repair 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 analysis is completed, the chosen repair option should be submitted to the authority for its consideration and approval.
- 7.5.4 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 cladding faults on the addition may allow further ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 7.5.5 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. The Department has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

Matter 2: The remaining Building Code matters

8. Discussion

- 8.1 It is clear from the expert's report that, notwithstanding compliance with Clauses E2 and B2, there are a several contraventions of the Building Code including:
 - the lack of backflow prevention device installed to the shower to comply with G12

- the lack of surround to the gully trap on the eastern side to comply with Clause G13
- the lower roof vent would be better positioned on the upper roof, as it does not meet the performance requirement of G13.3.1.
- 8.2 I also note the extractor fan is required to discharge to the open air in accordance with Clause G4.
- 8.3 I note the lack of smoke alarms and, although smoke alarms were not a requirement at the time of construction and therefore can not be included in any new notice to fix, I recommend that they be installed in accordance with the current requirements of the Building Code.

Matter 3: The durability considerations

9. Discussion

- 9.1 As set out in the notice to fix, the authority has 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 2001.
- 9.2 The relevant provision 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).
- 9.3 In previous determinations (for example Determination 2006/85) I have taken the view that a waiver 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 to by the parties, and that, if there are matters that are required to be fixed, they are discrete in nature.
- 9.4 Because of the extent of the defects in the cladding, and the possible consequential impact on the building's timber framing, and therefore its structure, I am not satisfied that I have sufficient information on which to make a decision about this matter. However, the matter may be referred to the Department for a further determination once the cladding and all its associated work has been made code compliant.

10. Conclusion

10.1 The following table summarises conclusions on the items listed within the notice to fix dated 12 November 2008 and refers to related paragraphs within this determination:

Notice to fix		My conclusion about the	Paragraph
ltem	Summarised requirement	remedial work required	reference
2.0	Issues relating to cladding		
2.1	Not installed as per manufacturers specification		
а	Lack of vertical control joints at 5.4 centres maximum	Remedial work required	7.4.4
а	Lack of horizontal control joint	Remedial work required	5.2, 7.4.2

b	Lack of 6mm gap at back of cladding	Remedial work required	7.4.4
с	Adequacy of head flashing and bottom edge cladding junctions	Remedial work required	7.4.4
d	Adequacy of sill flashings	Remedial work required	7.4.4
е	Adequacy of ground clearances	Remedial work required	7.4.4
f	Lack of paint on edges of exposed sheet	Remedial work required	7.4.4
g	Adequacy of silicone applied as fillet to window edges	Remedial work required	7.4.4
2.2	Not installed as per approved acceptable or alternative solutions for consent		
a-c	Adequacy of down-pipes, discharges and spreader	Remedial work required	7.4.4
d	Adequacy of open vent pipes	Remedial work required	8.1
е	Adequacy of cover to joinery and cladding junctions	Remedial work required	7.4.4
f	Adequacy of flashings	Remedial work required	7.4.4
g	Adequacy of floor level clearances	Remedial work required	7.4.4
h	Adequacy of seal to sink bench and hand basin	Rectified	5.8
i	Adequacy of discharging of extractor fan	Remedial work required	8.2
j	Adequacy of storm water system	Rectified	5.8
k	Adequacy of ground clearances to prevent surface water from events with 2% annual probability	Remedial work required	7.4.4
I	Adequacy of gully traps	Remedial work required	8.1
2.3	Not installed as per accepted trade practice		
а	Adequacy of penetrations through cladding	Remedial work required	7.4.4
2.4	Drainage and ventilation of timber framing	Not required at time work consented	7.3.3
3.0	Other building related issued		
а	Lack of smoke detectors	Not required at time work consented but should be rectified	5.7, 8.3
b	Lack of non-return valve	Remedial work required	8.1
С	Requirement for maintenance	Remedial work required	7.5.5

10.2 I am satisfied that the building does not comply with the Building Code and I conclude that the authority's decision to issue the notice to fix was appropriate.

11. What is to be done now?

11.1 The notice to fix should be modified and reissued to the owner to take account of the findings of this determination, identifying the items listed in paragraph 7.4.4 and 8 and referring to any further defects that might be discovered in the course of

investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to stipulate directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the owner to propose and for the authority to accept or reject.

- 11.2 I would suggest that the parties adopt the following process to meet the requirements of paragraph 11.1. Initially, the authority should issue the notice to fix. The owner should then produce a response to this in the form of a technically robust and detailed proposal, based on further investigation as necessary and produced in conjunction with a competent and suitably qualified person, as to the rectification of otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 11.3 It is important to note that the Building Code allows for more than one means of achieving compliance.

12. The decision

- 12.1 In accordance with section 188 of the Act, I hereby determine that:
 - the claddings do not comply with Building Code Clauses B2 and E2
 - the building work does not comply with Building Code Clauses G4, G12 and G13
 - the authority is to modify the notice to fix, dated 10 March 2008, to take account of the findings of this determination.

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

John Gardiner Manager Determinations