Determination 2007/30

Determination regarding a notice to fix for a house at 45 Hull Street, Riversdale

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicants are the former owners Mr and Mrs Riddle ("the applicants") and the other parties are the Southland District Council ("the territorial authority") and the current owners, J L and G R Hargest ("the current owners"). I have assumed for the purposes of this determination that the applicants are acting on behalf of the current owners, although I have seen no statement to that effect.

1.2 The matter for determination is the territorial authority's decision to issue a notice to fix for a house because it was not satisfied that it complied with clauses E2 "External Moisture", G9 "Electricity", and G 13 "Foul Water" of the Building Code[2] (First Schedule, Building Regulations 1992).

[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 www.dbh.govt.nz.

1.3 The questions to be determined are whether:

1. the cladding as installed to the walls of the building ("the cladding") complies with clause E2 (see sections 177 and 188 of the Act). 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.

2. the building also complies with clauses G9 and G13.

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, in regard to 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 a single-storey detached house situated on a level site, which is in a high wind zone for the purposes of NZS 3604[3]. The house is relatively simple in plan and form but with some complicated roofing details. The construction is conventional light timber frame constructed on concrete slabs. The pitched roofs have valley junctions and 600mm wide eaves projections.

2.2 According to the expert, the external wall framing timber is untreated New Zealand Oregon.

2.3 The external walls of the house are clad with 60mm "Insulclad" polystyrene sheets fixed through the building wrap to the framing, and finished with a mesh-reinforced "Ezytex" sponge finish plaster coating system. The exterior joinery units have plastered glue-fixed polystyrene margins installed at their perimeters.

2.4 Plaster Systems Ltd issued a 15-year "Materials Components Guarantee" dated 14 December 2005, for the entire cladding system. The cladding applicator issued a 7-year warranty dated 18 May 2003, for the system and also guaranteed that no water damage would occur in the areas around the exterior joinery units.

2.5 Plaster Systems Ltd issued a producer statement, dated 14 February 2006, for the "Insulclad" cladding system. The statement noted that the cladding system was completed in March 2003.

[3] New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Sequence of events

3.1 The territorial authority issued a building consent on 25 October 2002.

3.2 It appears that the territorial authority carried out various inspections of the property during its construction. The territorial authority issued a notice to fix dated 19 December 2005. The notice listed the following building work defects:

- The cladding did not comply with E2.
- The un-sleeved electrical wiring passing through the cladding did not comply with G9.
- As the trap of the kitchen unit in the master bedroom lacked an air admittance valve, the plumbing system did not comply with G13.

3.3 In a letter to the applicants dated 24 January 2006, the territorial authority confirmed discussions held with the applicants and the supplier of the cladding system (Plaster Systems Ltd). The territorial authority set out the requirements under which it could accept the lack of flashings to the perimeters of the exterior joinery units. The territorial authority also listed what would be required if remedial work had to be carried out and the information required if an alternative flashing system was proposed.

3.4 Plaster Systems Ltd forwarded a data sheet to the territorial authority on 24 January 2006. In an attached note, the company stated that the presence of planted-on bands offset the lack of flashings. The house was low-risk and the integrity of the cladding should not be risked by the insertion of metal flashings, which in any case, would not work. The note concluded:

> Plaster Systems will stand behind the detail and will not void any current guarantee on the dwelling.

3.5 The territorial authority wrote to Plaster Systems Ltd on 25 January 2006, noting the receipt of the amended face-fixed joinery details. The territorial authority stated that the details were acceptable, subject to certain criteria.

3.6 Plaster Systems Ltd wrote to the territorial authority on 15 February 2006 stating that in relation to the forwarded data sheet, the sill tray had been deleted as it would not work with the planted-on sill and band systems. The company also noted that all the guarantees relating to the cladding were still current and had commenced in March 2003, the time when the house had been completed.

3.7 An application for a determination was received by the Department on 3 July 2006.

4. The submissions

4.1 The applicants stated that the matter for determination was "weathertightness around windows".

4.2 The applicants forwarded copies of:

- the plans
- some consent documentation
- the correspondence with the territorial authority
- the notice to fix
- the two guarantees and the producer statement
- the amended window surround data sheet
- some manufacturer's instructions.

4.3 The territorial authority did not make a submission.

4.4 Copies of all the evidence were provided to each of the parties.

4.5 A copy of the draft determination was sent to the parties for comment on 1 December 2006. The territorial authority accepted the draft.

4.6 In a letter to the Department dated 21 January 2007, the applicants accepted the draft but submitted an undated Plaster Systems Ltd "Insulclad" brochure that the applicants said "clearly showed moisture management channels in the [rear face of the polystyrene sheets]" and that this conflicted with paragraph 6.3.2.

This conflicts with the information submitted by Plaster Systems Ltd in the application which appears to show an earlier version of the product without the vertical channels. I do not have sufficient information about whether or not the channels were a feature of the cladding as installed. If the channels are a feature of the cladding, this does not change my view of the cladding's performance.

4.7 In an email to the Department dated 5 March 2007, a solicitor, acting for the current owners, confirmed that his clients accepted the draft determination. The solicitor advised that the settlement for the sale was conditional on the applicants fixing the outstanding building work so that a code compliance certificate could be issued. The solicitor requested that paragraph 9.3 refer to the applicants responding to the notice to fix and not the current owners. I have amended the determination accordingly.

5. The expert's report

5.1 The expert inspected the claddings of the house on 30 October 2006, and furnished a report that was completed on 10 November 2006. The expert noted that while the general standard of finish and construction is good, there is a risk of potential failure of some elements of the building. In addition, the expert was of the opinion that "the

finish and weathering to the aluminium joinery is not in accord with the producer statement or published manufacturer's detailing. The expert removed the cladding at one window jamb/sill junction and where there was a damaged section of cladding, to observe the construction. I am prepared to accept that these exposed details would apply to other similar situations.

5.2 The expert took both non-invasive and invasive exterior moisture readings throughout the building and no elevated readings were recorded.

5.3 The expert made the following specific comments on the cladding:

- There is inadequate weathering and a lack of a formed drip at the junctions between the cladding and the soffit linings or the barge fascias.
- The external joinery units lack head, jamb and sill flashings as well as air seals. There is no cavity discharge installed and the coating system impinges onto the unit frames.
- There is significant free water in the polystyrene sheets adjoining the sill of the window that the expert investigated.
- The meterbox lacks a head flashing and has inadequate perimeter sealing.
- Some penetrations through the cladding are not adequately finished.

5.4 Copies of the expert's report were provided to each of the parties on 22 November 2006.

Matter 1: The cladding

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[4], in this case E2/AS1, 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 some other provision to compensate for that in order to comply with the Building Code.

[4] 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.

6.1.2 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 determinations[5] (refer to Determination 2004/1 *et al*) 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.

6.2 Weathertightness risk

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

- is built in a high wind zone
- is single storey
- is relatively simple in plan and form, but with some complex roofing details
- has 600mm wide eaves projections
- has no decks or balconies
- has external wall framing that is unlikely to be treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, all elevations of the house demonstrate a low weathertightness risk. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed in accordance with good trade practice. However, taking account of the expert's report, I consider that remedial work is necessary in respect of the following:

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

- The inadequate weathering and a lack of a formed drip at the junctions between the cladding and the soffit linings or the barge fascias.
- The lack of head, jamb and sill flashings, air seals, and cavity discharge facilities to the external joinery units.
- The lack of a head flashing and inadequate perimeter sealing to the meterbox.
- Some inadequately finished penetrations through the cladding.
- Any other building elements associated with the above that are consequently discovered to be in need of rectification.

6.3.2 Notwithstanding the fact that the cladding is fixed directly to the timber framing, thus limiting drainage and ventilation behind the cladding, I have noted certain compensating factors that assist the performance of the cladding in this particular case. These factors are that:

- apart from the noted exceptions the cladding is installed to good trade practice
- the house is single storey
- the house has 600mm wide eaves projections that provide good protection to the cladding below them
- the house has no attached decks or balconies.

6.3.3 I consider that these factors help compensate for the lack of a drained cavity and can assist the building to comply with the weathertightness and durability provisions of the Building Code.

7 Conclusion

7.1 I consider the expert's report establishes that, even though the expert observed some free water in the polystyrene backing sheets, there is no evidence of external moisture entering the building, and accordingly, that its monolithic cladding does comply with clause E2 at this time.

7.2 However, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that building elements continue to satisfy all the performance requirements of the Building Code for specified periods, and that includes the requirement for a building to remain weathertight. Because the cladding faults on the building are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.

7.3 I conclude that, because the faults identified with the cladding system occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 will result in the building remaining weathertight and in compliance with clause B2.

7.4 It is emphasized that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular cladding system has been established as being code compliant in relation to a particular building does not necessarily mean that the same cladding system will be code compliant in another situation.

7.5 Effective maintenance of claddings (in particular monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 and is the responsibility of the building owner. Clause B2.3.1 requires that the cladding be subject to "normal maintenance", however that term is not defined in the Act.

7.6 I take the view that normal maintenance is that work generally recognised as necessary to achieve the expected durability for a given building element. With respect to the cladding, the extent and nature of the maintenance will depend on the material, or system, its geographical location and level of exposure. Following regular inspection, normal maintenance tasks should include but not be limited to:

- where applicable, following manufacturers' maintenance recommendations
- washing down surfaces, particularly those subject to wind-driven salt spray
- re-coating protective finishes
- replacing sealant, seals and gaskets in joints.

7.7 As 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, periodic checking of its moisture content should also be carried out as part of normal maintenance.

Matter 2: Compliance with code clauses G9 and G13

8 Discussion

8.1 The territorial authority has concerns about the sealing of cables through the cladding and the lack of an air admittance valve to the trap of the kitchen unit in the master bedroom. The expert has noted in his report that the cable entries into the building are not adequately sealed. In addition, the territorial authority has not expressed any other concerns apart from the clause E2, G9, and G13 elements listed in the notice to fix. Accordingly, I am of the opinion that once the cable entry has been sealed and the valve has been installed, all to the satisfaction of the territorial authority, then the house will also comply with the requirements of clauses G9 and G13.

9 The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the house does not comply with clauses B2, G9 and G13 of the Building Code at the present time, and accordingly confirm that a notice to fix should be issued for the building.

9.2 I note that the territorial authority has issued a notice to fix as required by section 435. However, a new notice to fix should be issued that requires the applicants to bring the building into compliance with the Building Code, identifying the defects

listed in paragraphs 6.3.1 and 8.1, but not specifying how 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

9.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.2. Initially, the territorial authority should issue the new notice to fix, listing all the items that the territorial authority considers to be non-compliant. The applicants 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 9 March 2007.

John Gardiner
Determinations Manager