

Determination 2007/1

A dispute over a notice to fix for a building with a monolithic cladding system at 4 Paraoa Crescent, Omaha



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, Determinations Manager, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of that Department. The applicant is the owner and builder, Mr Van Berkel of Galaxy Homes Ltd (“the applicant”), acting through an agent, Mr Holyoake of Hitex Building Systems Ltd (“the agent”) and the other party is the Rodney District Council (“the territorial authority”).
- 1.2 The matter for determination is whether I am satisfied that the territorial authority’s decision to issue a notice to fix for a substantially completed house is correct. The territorial authority issued the notice to fix because it was not satisfied that certain areas of the monolithic cladding as installed on the building complied with clause E2 “External Moisture” of the Building Code (First Schedule, Building Regulations 1992). By “certain areas of the monolithic cladding as installed” I mean the

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

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 at the junctions between two types of cladding and around the windows and doors, as described in the notice to fix.

1.3 Other issues

- 1.3.1 The agent has provided general information with regard to the use of this cladding in situations that do not apply to this particular building, or to the specific items outlined in the notice to fix. I consider that such supplementary information is not relevant to this dispute.
- 1.3.2 I therefore take the view that the additional general information will not be considered further within this determination, which will be restricted to the specific issues covered by the notice to fix (refer paragraph 3.5).
- 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.

2. The building

- 2.1 The building work consists of a single storey detached house situated on a flat site, which is in a high wind zone for the purposes of NZS 3604². Construction of the house is conventional light timber frame, with a concrete slab and foundations, aluminium windows, infill panels of timber weatherboards above windows and doors, and monolithic cladding to all other walls. Except for three small windows, all windows extend to floor level. The house shape is reasonably simple, with a 6° pitch “butterfly” roof, a 1m wide membrane-lined internal gutter, and oblique eaves to the north and south elevations. Eaves and verge projections generally exceed 600mm overall on the east, south and west elevations, with a deeper overhang forming a canopy above the east entry. The northern end of the roof projects at an angle from the northeast corner to the northwest corner, to provide a 3-4m deep canopy above an outdoor patio.
- 2.2 The expert has noted that the territorial authority’s inspection records described the framing as “H1 plus”. Although I have not received evidence that the building consent was issued prior to the implementation date of the current building code requirements, I am prepared to accept that the external wall framing is likely to be equivalent to H1.2 treated.
- 2.3 The panels above the windows and doors are formed from painted timber bevel-backed weatherboards fixed over plywood battens. The cladding system to the remaining external walls is what is described as monolithic cladding, and is known as the “Hitex Diamond Cavity System” (“Hitex”). The system consists of 50 mm polystyrene backing sheets fixed through building wrap directly to framing timbers and finished with a proprietary mesh-reinforced plaster system supplied by the

² New Zealand Standard NZS 3604:1999 Timber Framed Buildings

manufacturer. The inside face of the polystyrene sheets has a diamond pattern of grooves at 50mm centres. Each groove is approximately 10mm deep by 14mm wide. The edges of the polystyrene backing sheets adjoining the windows, doors and some of the inter-cladding junctions of this building are rebated to provide a grooved “leg”, which allows overlapping at the junctions.

2.4 I have seen no producer statements or warranties for the cladding system.

3. Sequence of events

3.1 It appears that the territorial authority issued a building consent (which I have not seen) early in 2004. The territorial authority has stated that the applicant applied for a change to the cladding system on 22 April 2004 and was advised on 7 May 2004 that the change to Hitex was not approved (refer paragraph 4.7).

3.2 It appears that the territorial authority carried out some inspections during construction, although I have received no records of these inspections, and the agent has stated that no cladding inspections were undertaken (refer paragraph 4.6). According to the territorial authority, a final inspection was called for and undertaken on 24 February 2006. I have received no record of this inspection, and am therefore unaware of outstanding items that may have been identified during the inspection.

3.3 In a letter to the owner dated 14 August 2006, the territorial authority noted that a cladding inspection was required before a code compliance certificate could be issued and explained that additional costs would apply, noting:

Due to the fact that your cladding system does not have a 20mm cavity, Council has decided that expert inspectors need to make these inspections.

3.4 In a pro-forma letter to the agent dated 18 September 2006 (not directly related to this building), the territorial authority noted that Hitex was currently approved to be direct-fixed on low-risk buildings but it did not approve direct-fixing for higher risk buildings. The territorial authority provided reasons for its decision.

3.5 On 22 September 2006, the territorial authority issued a notice to fix which stated that the interface between the cladding and the window joinery did not comply with clauses E2 and B2 of the building code and required the applicant to:

- Provide a flashing system around openings in the external frame at windows and doors etc that comply with clauses E2 and B2 of the Building Code.
- As part of this process, you are required to apply to the Rodney District Council, Building consent Authority (BCA) for an alternative solution approval for the flashing system unless it complies with an acceptable solution in the Building Code.
- In any event you are required to submit a Building Consent amendment application for approval by the BCA before the remedial work is actioned.

3.6 An application for determination was received by the Department on 14 September 2006, with all requirements received by 9 October 2006.

4. The submissions

4.1 The agent made a lengthy submission in the form of a letter to the Department dated 11 September 2006. Most of the letter responded to the general issues raised in the territorial authority's pro-forma letter dated 18 September 2006 (refer paragraph 3.4). As outlined in paragraph 1.3, I shall not comment on these general matters within this determination. With regard to this specific building, the agent noted the building is low risk so the territorial authority could have considered the particular situation; and the determination is required:

...because RDC policy was that it would not approve Hitex Diamond and therefore refused to inspect the cladding as it would normally for any other cladding being fixed. RDC has told the owner he will now have to pay for this inspection...

4.2 The applicant forwarded copies of:

- the drawings (not stamped as consent drawings)
- some general Hitex details and information
- some correspondence from the territorial authority.

4.3 The territorial authority made a submission in the form of a letter to the Department dated 26 September 2006, which noted that it was within its rights to ask for a specialist inspection to determine compliance with the building code. The applicant had provided no weathertightness risk assessment of the building, but the territorial authority had recently considered the risk of the house and now assessed it as low risk – so would accept the direct-fixed cladding for this situation. However, the territorial authority noted its concerns about the head flashings shown in the general Hitex details and the robustness of the thin polystyrene “legs” behind the aluminium window jamb and sill flanges.

4.4 The territorial authority forwarded copies of:

- the pro-forma letter to the agent dated 18 September 2006
- some general Hitex specifications and details
- the Notice to Rectify dated 22 September 2006.

4.5 Copies of the submissions and other evidence were provided to each of the parties.

4.6 In a letter to the Department dated 25 October 2006, the agent responded to the territorial authority's submission and included the following points:

- During construction, the territorial authority made it clear that the cladding would not be accepted so would not be inspected.
- The territorial authority failed in its duty to inspect, and then required the applicant to seek another party to undertake a cladding inspection.
- The territorial authority had accepted Hitex in the past, but rejected it in 2004 without providing reasons at that time.

- The applicant objects to paying for inspections (that were not carried out) as part of the consent fees, and then being expected to pay extra for specialist cladding inspections.
- The Hitex sill detail has been in use for some 8 years with no evidence of the type of damage suggested.
- BRANZ testing has shown that the Hitex head flashing performs well. The collection of water by the head flashing from the upper walls is not the only function of a head flashing, as upper walls should not leak.

4.7 In a letter to the Department dated 3 November 2006, the territorial authority responded to the agent's letter of 25 October 2006, outlining the background to the dispute and including the following points:

- To date, the agent has refused to formally apply for approval to use Hitex as an alternative solution.
- The wrong flashing details were submitted with the cladding amendment application in 2004. Flashing details specifically designed for this particular house are required.

4.8 A copy of the draft determination was sent to the parties for comment on 14 December 2006. Both parties accepted the draft.

5. The expert's report

5.1 The expert inspected the claddings around the windows and doors of the building on 31 October 2006, and furnished a report that was completed on 1 November 2006. The expert noted that his inspection was restricted to collecting information on the window flashings and the inter-cladding junctions. The expert noted that some coating to other areas was incomplete, but (based on his limited observations) the general standard of workmanship appeared to be good.

5.2 The windows and doors

5.2.1 The expert noted that the standard Hitex head flashing had not been used above any windows, as weatherboards formed the upper infill panels. Conventional metal head flashings were installed above all windows and doors, and these appeared to be satisfactory (although no as-built details were available).

5.2.2 The expert noted that only three windows had Hitex cladding below the sills, with all other joinery extending to floor level. The applicant had advised him that "Protecto" flexible flashing tape had been installed at all openings. (I note that the general Hitex details show a full depth sill tray under the window, which turns down over the polystyrene leg at the sill).

5.2.3 The expert examined the bottom of the floor level window sills, and observed that the metal window jamb flange overlapped the coated polystyrene leg in accordance with the general Hitex details.

- 5.2.4 The expert took invasive moisture readings in the framing beneath the sills of the 3 windows with Hitex cladding below. Low moisture readings of 9% to 11% were recorded.
- 5.2.5 The expert noted that, while no drainage gaps had been provided at the sills of the three windows, the latter were sheltered beneath roof overhangs with no indication of water penetration into the framing below. The expert considered that remedial work was unnecessary in this situation.

5.3 The inter-cladding junctions

- 5.3.1 The expert removed the top weatherboards above the garage door and a window on the west wall of the garage to observe the junction between the Hitex and the weatherboards. The expert noted that the weatherboards were fixed over plywood battens.
- 5.3.2 Above the garage a standard uPVC back-flashing was installed behind the junction, while the boards above the garage window overlapped the grooved polystyrene leg of the cladding. In both cases, the expert considered that the details appeared adequate, as any moisture should flow down the flashing or the groove and drain out over the head flashing.
- 5.4 The expert noted that no as-built details were provided of the inter-cladding junctions or of the head flashings.
- 5.5 A copy of the expert's report was provided to each of the parties on 10 November 2006.

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 Solution³, 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.
- 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

³ 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.

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 (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 this house:

- is built in a high wind zone
- is a maximum of one storey high
- is reasonably simple in plan and form
- has low-pitched oblique eaves projections and verge projections of more than 600mm overall above all walls
- has monolithic cladding that is fixed directly to the framing
- has external wall framing that is treated to a level that will provide 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 this house demonstrate a low weathertightness risk rating. 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.

- 6.2.3 I note that E2/AS1 indicates that generic EIFS claddings applied to the walls of buildings with low risk ratings do not require fixing over a 20mm drained cavity.

6.3 Weathertightness performance

- 6.3.1 Generally the window flashings and junctions between the claddings appear to have been installed with good workmanship and in accordance with good trade practice.

- 6.3.2 I note the expert's comment in paragraph 5.2.5, and accept that these three windows will be adequate in the circumstances.

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

7. Discussion

- 7.1 I consider that the expert's report establishes there is no evidence of external moisture entering the building, and accordingly, that the cladding around the windows and doors of the building does comply with clause E2 at this time.
- 7.2 In addition, the house 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. I consider that the specialist's report establishes there is no evidence of faults in the cladding around the windows and doors that are likely to allow the ingress of moisture in the future, and accordingly, that these areas comply with the durability requirements of clause B2.
- 7.3 It is emphasized that each determination is conducted on a case-by-case basis. Accordingly, the fact that particular details have been established as being code compliant in relation to a particular building does not necessarily mean that the same details will be code compliant in another situation.

8. Conclusion

- 8.1 I determine that the cladding around the windows and doors of the house complies with clauses E2 and B2.
- 8.2 I also note that as built details have not been provided showing the junctions around the windows and doors as installed. As-built details must be provided, and I leave this matter to the territorial authority to resolve with the applicant.

9. The decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding around the windows and doors of the house complies with clauses B2 and E2 of the Building Code, and accordingly instruct the territorial authority to withdraw the notice to fix.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 12 January 2007.

John Gardiner
Determinations Manager