

## Determination 2006/56

### Refusal of a code compliance certificate for a building with a monolithic cladding system at 64 Kate Sheppard Avenue, Torbay, North Shore City



#### 1. The dispute to be determined

1.1 This is a determination of a dispute under Part 3 Subpart 1 of the Building Act<sup>1</sup> 2004 (“the Act”) made under authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicant is the owner, Mr Tony Hardymont (“the owner”) and the other party is the North Shore City Council (“the territorial authority”)

1.2 The dispute for determination is whether I am satisfied on reasonable grounds that:

#### Issue 1: The cladding

The territorial authority’s decision to decline to issue a code compliance certificate on a 6-year-old house was correct. The territorial authority declined the application because it was not satisfied that the monolithic cladding as installed on the building complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code<sup>2</sup> (First Schedule, Building Regulations 1992). By “the monolithic cladding as

<sup>1</sup> The Building Act 2004 is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz)

<sup>2</sup> The Building Code is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz)

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.

## **Issue 2: The additional durability considerations**

All other elements incorporated in this building comply with clause B2 of the Building Code, considering the time the house was constructed.

- 1.3 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.
- 1.4 I have not considered any other aspects of the Act or the Building Code.

## **2 The building**

- 2.1 The building work consists of a detached house situated on a site which slopes approximately 2m downward to the north. The split-level house is a maximum of three storeys high. The external walls are conventional timber framing built on either pile foundations or concrete floor slabs. The house shape is of a complex design and features undulating roofs on several levels with 600mm eaves but with exposed roof framing to wall penetrations. The upper ends of these incorporate oblique wall-to-roof junctions which increase the exposure of the framing to wall junctions under those eaves. There are several sections of wall with parapets or very small eaves as well as balcony and deck areas. The external walls are clad with a painted textured monolithic system which consists of 40mm thick “Insulclad” polystyrene panels fixed directly to the framing over a non-absorbent synthetic building wrap. The walls and the parapet claddings are finished with a 3-6mm thick Plaster Systems Ltd textured coating system.
- 2.2 The applicant submitted a timber quotation showing the wall framing as No 1 Dry-frame kiln-dried untreated framing. The expert observed a timber marking of “Pinex.....H1  $\downarrow$  733” which tends to confirm that the timber is not treated to resist decay.
- 2.3 Plaster Systems Ltd issued a producer statement dated 24 December 1998 for the materials and installation of the “Insulclad” system applied to the house.
- 2.4 As described by the expert, there appear to be two minor variations to the plans and specifications provided by the applicant. These include:
- The small upper deck balustrade which was constructed as an Insulclad wall
  - The windows either side of the front door were constructed in the same plane as the door.

I have not received any information as to whether the original building consent has been amended to reflect some or all of these apparent variations from the consent drawings.

### **3 Sequence of events**

- 3.1 The territorial authority issued building consent E12772 on 5 February 1998 and the majority of the construction occurred during that year.
- 3.2 Council inspections were undertaken during this period except for a final inspection which was carried out on 28 February 2002. During a recheck on 5 March 2004 there were still outstanding issues. A Building Officer's Field Memorandum (a list of outstanding items) was left with the owner.
- 3.3 A specific weathertightness inspection was carried out on 31 March 2004. There were a number of risk factors and some defects identified and these were listed in a letter from the territorial authority to the owner on 2 April 2004 in which the territorial authority advised it was unable to issue a code compliance certificate.
- 3.4 The applicant's application for a determination was received by the Department on 12 January 2006.

### **4 The submissions**

- 4.1 In support of his application the owner supplied the following:
  - Copies of correspondence from the territorial Authority
  - Copies of the cladding specification and warranty and building plans
  - A copy of an invoice indicating timber treatment
  - A construction time line process and inspection records
  - Details of contractors involved
  - A copy of a building inspection by NS Inspections Limited.
- 4.2 The territorial authority made a submission dated 1 March 2006 which included:
  - Territorial authority correspondence, including a short summary of events
  - Matters of doubt being compliance with clauses E2 and B2 of the building code
  - Building consent documents

- Territorial authority inspection records.

4.3 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

4.4 A copy of the draft determination was forwarded to the parties for comment on 10 May 2006. The territorial authority accepted the draft.

4.5 In a letter to the Department dated 24 May 2006, the applicant commented on the draft determination, noting that:

- the slightly raised moisture level at the garage door was due to wind-blown rain during a storm 3 days prior to the inspection
- the ranch slider drainage holes had been blocked by dirt prior to the storm so could not drain the water away. They have since been cleaned out, and have not blocked since.

I have considered these comments and have amended the draft as I consider appropriate.

## 5 The expert's report

5.1 The expert inspected the claddings of the building on 29 March 2006 and furnished a report that was completed on 3 April 2006. The expert noted that the cladding generally had a uniform finish and appeared flat, with neat arises, smooth surface and a uniform finish.

5.2 The expert cut away small sections of the coating to expose a typical window jamb to sill junction which showed that appropriate sill and jamb flashings are installed. However the expert noted that there was no sealant at the junction of the jamb and sill flashings as shown in the manufacturer's drawings and that in some cases the window sills were sealed to the plaster with silicone although a gap is recommended. I accept that the details revealed by this inspection are typical of similar locations around the building.

5.3 The expert took non-invasive moisture readings around the interior of the external walls but no significantly elevated levels of moisture were indicated. The expert then took eight invasive moisture readings at sample risk locations and apart from one, all the readings were between 11% and 16%. The one marginally high reading (19.7%) was taken in the garage bottom plate on the left hand side of the garage door. However as there is a drainage channel adjacent to this wall it is not clear whether this is a result of moisture ingress from outside into the framing or wind blown rain getting in when the garage door is left open. This will need to be verified.

5.4 Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure. The expert also noted that the inspection was carried out after a dry summer period and that higher readings would be obtained during the winter months.

- 5.5 The expert commented that control joints in the cladding were not necessary as the maximum dimensions, above which the manufacturer recommends such joints, were not exceeded.
- 5.6 The expert made noted that the architectural feature of the undulating roof with exposed eaves was a high risk feature that would inevitably allow water ingress.
- 5.7 The expert made specific comments on aspects of the monolithic cladding:
- The parapets and balustrade walls have horizontal Insulclad cappings (contrary to the manufacturer's detail)
  - The top fixed deck handrail fixings penetrate the deck up-stand membrane and there is no gasket or sealing detail under the fixing
  - A short section of reverse slope eaves above the staircase lantern roof with only 50mm protection. Although a fillet of sealant had been applied the expert was of the view that this would not be durable and that cracks in the plaster here indicated possible leaking at some time
  - An unsealed joint between the Insulclad and the corrugated steel wall cladding beside the lower deck
  - The open gap between the angles at the end of the plaster and corrugate steel cladding
  - Unsealed and partially sealed rafter protections where exposed rafters penetrate the cladding as the soffits are unlined. These penetrations are very exposed and are not adequately water proof
  - The main deck outlet is vulnerable to blocking
  - Absence of an overflow to the first floor deck
  - There are inadequate clearances under the bottom edges of the cladding, particularly on the living room deck where clearances are only 10 millimetres
  - There is localised cracking of the plaster in two locations
  - Penetration sealing had failed at the ensuite soil pipe
  - The lower deck door top architrave requires sealing or flashing
  - The ranch slider drainage holes are inadequate for the drainage channel
  - Some roof edges had been cut with a grinding disc. These are showing signs of rust
  - The three glass blocks set into the cladding above the en-suite bathroom do not appear to be adequately sealed

- Sealant has not been inserted between jamb and sill flashings and the bottom edge and the sills have been sealed to the plaster when a gap is recommended.

5.8 A copy of the expert's report was provided to each of the parties on 4 April 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 Solution,<sup>3</sup> in this case E2/AS1, which will assist in determining whether the named 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; and
- Usually when there is non-compliance with one provision of an Acceptable Solution, it may be necessary to add some other provision to compensate for that in order to obtain compliance 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 overall design of the building, the surrounding environment, the detailed 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 (refer to Determination 2004/1 *et al*)<sup>4</sup> relating to cladding and these factors are also considered 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 will need to 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.

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<sup>3</sup> 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](http://www.dbh.govt.nz).

<sup>4</sup> 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 the weathertightness characteristics, I find that the building:

- Has eaves projections to protect the cladding around most of the roof, the balance having walls finishing in parapets
- Is of a relatively complex shape and has many complex roof wall junctions
- Has balcony and deck areas, one of which is cantilevered
- Has external framing timber, which is unlikely to be resistant to decay once it becomes wet.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that two elevations of the building demonstrate a moderate, and two demonstrate a high 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.

## 6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed according to good trade practice, but a number of junctions, edges and penetrations are not well constructed. These areas are all as described in paragraph 5.7 and the expert's report as being:

- Flat topped parapets, balustrades and top mounted handrails
- A section of very short eaves
- Unsealed joints and a gap between angles at plaster and steel wall cladding junctions
- Inadequately sealed penetrations of rafter penetrations of the cladding under the roof eaves
- Inadequate drainage details to main and first floor decks
- Inadequate clearance between cladding and deck surfaces
- Some localised cracking and an unsealed waste pipe penetration
- A vulnerable architrave to the lower deck door
- Rusting roof edges.

- Sealing to three glass blocks
  - A lack of sealant between jamb and sill flashing joins and no gap under the sill member.
- 6.3.2 I have considered the applicant's comments on the ranch slider drainage, and accept that this was a temporary blockage that may be avoided with regular cleaning.
- 6.3.3 The expert was not able to verify the presence of sill trays which, if properly fitted would compensate for the deficiencies in the jamb to sill flashing joints.
- 6.3.4 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing or on non-draining horizontal battens, thus limiting drainage and ventilation behind the cladding sheets, I have noted certain compensating factors that assist the performance of the cladding in this particular case:
- The cladding generally appears to have been installed to good trade practice and has generally performed to date
  - Good clearance to the ground floor bottom plate generally.
- 6.3.5 I consider that these factors help compensate for the lack of a fully drained and ventilated cavity and can assist the house to comply with the weathertightness and durability provisions of the Building Code.
- 6.3.6 I also draw the territorial authority's attention to any issues relating to minor amendments to the building work from that shown on the consented plans and as discussed in paragraph 2.4.

## **7 Conclusion**

- 7.1 I am satisfied that the current performance of the monolithic cladding may not be adequate because it may be allowing water penetration into the building adjacent to the garage door. Consequently, I am not satisfied that the cladding system as installed on the building complies with clause E2 of the Building Code.
- 7.2 In addition, the building 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 building have already allowed the ingress of water, or will allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.
- 7.3 Subject to further investigations that may identify other faults, I consider that, because the faults identified with the cladding system occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 is likely to result in the building being weathertight and in compliance with clauses B2 and E2.



- 7.4 Effective maintenance of claddings (in particular monolithic cladding) is important to ensure ongoing compliance with clauses B2 and E2 of the Building Code and is the responsibility of the building owner. Clause B2.3.1 of the Building Code requires that the cladding be subject to “normal maintenance”, however, that term is not defined in the Act.
- 7.5 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 shall 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.
- 7.6 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.

## **Issue 1: The cladding**

### **8 The decision**

- 8.1 In accordance with section 188 of the Act, I hereby determine that the cladding system as installed on the building may not comply with clause E2 of the Building Code. There are also a number of items to be remedied to ensure that it remains weathertight and thus meet the durability requirement of the code. Consequently, I find that the external walls of the building do not comply with clause B2. Accordingly, I confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 8.2 I also find that rectification of the items outlined in paragraphs 6.3.1 will consequently result in the house being weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a drained and ventilated cavity. Work to correct these items may expose additional associated defects not yet apparent. All rectification work is to be completed to the approval of the territorial authority.
- 8.3 I note that the territorial authority has not yet issued a notice to fix. Under the Act, a notice to fix can require the owner to bring the house 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 former Building Act 1991) cannot specify how that compliance can be achieved. I concur with that view. A notice to fix should be issued that requires the owners to bring the cladding and the other elements at issue into compliance with the Building Code, without specifying the features (in particular without specifying a cavity for

the cladding, although the parties may conclude that this is the best system) that are required to be incorporated. It is not for me to dictate how the defects are to be remedied. How that is done is a matter for the owner to propose and for the territorial authority to accept or reject.

- 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 notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a technically robust 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.

## **Issue 2: The additional durability considerations**

### **9 Discussion**

- 9.1 I note that 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 “from the time of issue of the applicable code compliance certificate”.
- 9.2 As set out in paragraph 1.2, the territorial authority has concerns about the durability, and hence the compliance with the Building Code, of certain elements of the house, considering the building work was completed well before a final inspection in February 2002. In the draft determination sent to the parties in May 2006 I made an interim decision on the matter of the durability by determining that there be a waiver or modification of the Building Code requirements relating to durability. Since then, I have since received some general legal advice on waivers and modifications. As this advice is not clear, I subsequently have sought clarification of some aspects of that advice.
- 9.3 Until I receive the clarification will I suspend making a decision about the additional durability considerations. This will enable me to now determine matters related to the compliance of the cladding so that the steps outlined in paragraph 8.4 can commence. I will issue a second determination limited to the durability considerations as soon as possible.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 20 June 2006.

John Gardiner  
**Determinations Manager**