# Determination 2006/31

# Refusal of a code compliance certificate for a house with a monolithic cladding system at 46 Manor Park Drive, Tauranga

## 1 The dispute to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act[1] 2004 ("the Act") made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing, for and on behalf of the Chief Executive of that Department. The applicants are the owners Mr and Mrs Bathe-Taylor ("the applicants"), and the other party is the Tauranga City Council ("the territorial authority").

1.2 The dispute for determination is whether the territorial authority's decision to decline to issue a code compliance certificate for a 6-year-old alteration to an existing house because it was not satisfied that the monolithic cladding complied with clauses B2 "Durability" and E2 "External Moisture" of the Building Code[2] (First Schedule, Building Regulations 1992) is correct.

1.3 The question to be determined is whether I am satisfied on reasonable grounds that the monolithic wall cladding as installed to the timber-framed external walls of the house ("the cladding"), complies with the Building Code (see sections 177 and 188

[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

of the Act). By "the monolithic wall cladding as installed" I mean the components of the system (such as the backing sheets, the flashings, the joints and the plaster and/or the coatings) as well as the way the components have been installed and work together.

1.4 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. In this instance the expert is the same individual as that referred to in paragraph 3.4 as the "building surveying firm" engaged by the applicant. However, I am satisfied that in this instance there was no issue of conflict of interest in my using the expert's report as part of the evidence I needed to consider. I have evaluated this information using a framework that I describe more fully in paragraph 6.1. I have not considered any other aspects of the Act or the Building Code.

## 2 The building

2.1 The building is a two-storey detached house, situated on a level site that is in a low wind zone in terms of NZS 3604[3]. The building is of a relatively simple shape on plan and the pitched roofs are at two levels with hip and valley junctions. The lower-level roof also has wall-to-roof junctions. Apart from the bay window locations that have no projections, the eaves projections are 600mm wide. The exterior walls are of conventional light-timber frame construction built on concrete block work foundation walls or intermediate timber-framed floors and are sheathed with monolithic cladding.

2.2 I have not received any evidence as to the treatment, if any, of the external wall framing.

2.3 The timber-framed external walls of the house that are the subject of this determination are clad with a system that is described as monolithic cladding. In this instance it incorporates "Fosroc" EIFS polystyrene backing sheets fixed through the building wrap directly to the framing timbers. The sheets are finished with a "Fosroc Polyclad" plaster system, followed by a final paint system.

## 3 Sequence of events

3.1 The territorial authority issued a building consent in 7 December 1999. I have not received any evidence as to whether this was based on a building certifier's certificate or was issued directly by the territorial authority.

3.2 I have not received any details relating to inspections that might have been carried out by the territorial authority or a building certifier on this property.

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

3.3 An inspection firm carried out a final plumbing and building inspection of the house and in a letter to the applicants dated 2 May 2005, noted that the inspecting assessor, based on certain criteria, was satisfied that the building was "properly completed in accordance with the Building Code requirements that existed at the time of construction".

3.4 The applicants engaged a building surveying firm to carry out an inspection of the property and, following a site visit on 10 August 2005, this firm produced an "Independent Pre Sale Assessment Report". The report concluded that the dwelling is constructed of good quality materials and to a good standard of workmanship. It was structurally sound and in good condition for its age. The moisture content readings taken throughout the interior of the house showed no evidence of exterior moisture ingress.

3.5 The applicants made an application for a determination that was received by the Department on 12 October 2005.

## 4 The submissions

4.1 In a covering letter to the Department, the applicants stated that they were unaware that the house did not have a code compliance certificate until they put the house up for sale. The territorial authority declined to issue a code compliance certificate because of the type of cladding installed on it. The inspection firm that was employed to inspect the house noted that only the territorial authority could issue a code compliance certificate.

4.2 The applicants also forwarded copies of:

- the pre-sale assessment report
- the letter from the inspection firm of 2 May 2005
- the building consent
- a schedule of exterior materials and finishes

4.3 In a letter to the Department dated 7 November 2005, the territorial authority noted that it declined to issue a code compliance certificate for the house as the cladding, which is face-fixed without a cavity may not comply with clauses B2 and E2 of the Building Code.

4.4 Copies of the submissions and other evidence were provided to each of the parties. Neither the applicants nor the territorial authority made any further submissions in response to the submissions of the other party.

## 5 The expert's report

5.1 The expert inspected the cladding of the building on 25 November 2005 and furnished a report that was completed on 2 December 2005. The expert noted that the cladding is visually in excellent condition, appears well installed and aligned, and there is no evidence of cracking or premature deterioration  The plaster has a smooth even finish and the paintwork appears sound and evenly applied, with no evidence of chalking, flaking, or staining. The general standard of workmanship is very good. The expert was of the opinion that control joints were not required due to the dimensions of the house. The expert removed a small section of the cladding at the jamb/sill junction of the garage window to check on the perimeter finish. I am prepared to accept that the details as exposed apply to similar details throughout the house.

5.2 The expert made the following comments regarding the cladding:

- the cladding is not appropriately finished above the lower roof apron flashing and the end of the flashing is embedded in the cladding
- the base of the cladding located to the right-hand side of the entrance and the south wall of the lounge lacks sufficient clearance above the paving
- the pvc sill flashings to the exterior joinery units are not shaped so as to extend fully over the outer face of the polystyrene cladding backing.
- there is no 5mm minimum gap provided between the window flange and the cladding sill at the exterior joinery units
- some penetrations through the cladding are inadequately sealed
- the downpipes from the upper roofs discharging onto the lower roof areas lack spreaders.

5.3 The expert took non- invasive readings through the interior linings of the exterior walls and no elevated moisture levels were found. The expert took 15 further invasive readings and the highest reading obtained was 13%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

5.4 The expert noted that despite these minor defects the house could be considered to be compliant with both clauses E2 and B2 of the Building Code.

5.5 Copies of the expert's report were provided to each of the parties.

# 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], which in this case is 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; 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 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 the previous Authority have also described weathertightness risk factors in previous determinations (refer to Determination 2004/0 *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 will need to be less robust. In any event, there is a need for both the design of the cladding system and the quality of its installation to be carefully carried out.

## 6.2 Weathertightness risk

6.2.1 In relation to the weathertightness characteristics, I find that the house:

- has generally 600mm wide eaves which provide good protection to the cladding areas below them
- is in a low wind zone
- is two storeys high
- is of a relatively simple shape on plan
- has no decks or balconies

[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.

- has external wall framing that is unlikely to be treated to a level that is effective in helping resist decay if it absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, these weathertight features show that all elevations of the building demonstrate a moderate 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 reasonable trade practice, but some junctions and edges are not well constructed. These areas are described in paragraph 5.2, and in the expert's report, as being:

- the inappropriately finished cladding above the lower roof apron flashing and the flashing being embedded in the cladding
- the lack of clearance to the base of the cladding located to the right-hand side of the entrance and the south wall of the lounge
- the lack of a 5mm minimum gap between the window flange and the cladding sill at the exterior joinery units
- the inadequately sealed penetrations through the cladding
- the lack of spreaders to the downpipes from the upper roofs that discharge onto the lower roof.

6.3.2 I note the expert's observation that the window sill flashings do not extend fully to the front of the polystyrene sheeting. I also note that the detail as built is similar to those accepted in other proprietary cladding systems, albeit that it does not comply completely with the manufacturer's recommendation. Nonetheless, in combination with the head and jamb flashings, the sill flashings as installed have demonstrably resulted in a weathertight building, possibly in part because of the protection afforded by the wide eaves on the building. I am therefore of the view that in this case the sill flashings are adequate.

6.3.3 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus inhibiting 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 according to good trade practice
- the house is of a relatively simple shape and is situated in a low wind zone

- the house has no balconies or decks
- the house has generally 600mm wide eaves that provide good protection to the cladding areas below them.

These factors can assist the house to comply with the weathertightness and durability provisions of the Building Code.

# 7 Conclusion

7.1 I consider that the expert's report establishes there is no evidence of external moisture entering the house, and accordingly, that the 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 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 house 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 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 I note that effective maintenance of monolithic claddings is important to ensure ongoing compliance with clause B2 of the Building Code. That maintenance is the responsibility of the building owner. The Building Code assumes that the normal maintenance necessary to ensure the durability of the cladding is carried out. For that reason clause B2.3.1 of the Building Code requires that the cladding be subject to "normal maintenance". That term is not defined and I take the view that it must be given its ordinary and natural meaning in context. In other words, normal maintenance of the cladding means inspections and activities such as regular cleaning, re-painting, replacing sealants, and so on. This is particularly important as the cladding has now been in place for some 6 years or so.

7.5 As the external wall framing is unlikely to be treated to a level that will not delay the onset of decay if it becomes wet, I would recommend that periodic testing of moisture content be carried out to all areas of the external cladding.

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.

7.7 I decline to incorporate any waiver or modification of the Building Code in this determination.

# 8 The decision

8.1 In accordance with section 188 of the Act, I determine that the house is weathertight now and therefore the cladding complies with clause E2. However, as there are a number of items to be remedied to ensure it remains weathertight and thus meets the durability requirements of the Building Code, I find that the house does not comply with clause B2. Accordingly, I confirm the territorial authority's decision to decline to issue the code compliance certificate.

8.2 I also find that rectification of the items outlined in paragraph 6.3.1 to the approval of the territorial authority, along with any other faults that may become apparent in the course of that work, will consequently result in the house remaining weathertight and in compliance with clauses B2 and E2, notwithstanding the lack of a cavity.

8.3 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the applicants to bring the cladding into compliance with the Building Code, without specifying the features that are required to be incorporated. It is not for me to decide directly how the defects are to be remedied and the cladding brought to compliance with the Building Code. That is a matter for the applicants 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 applicants 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.

8.5 Finally, I consider that the cladding will require on-going maintenance to ensure its continuing code compliance, and that this maintenance programme should be undertaken after consultation with the territorial authority.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 27 April 2006.

John Gardiner
**Determinations Manager**