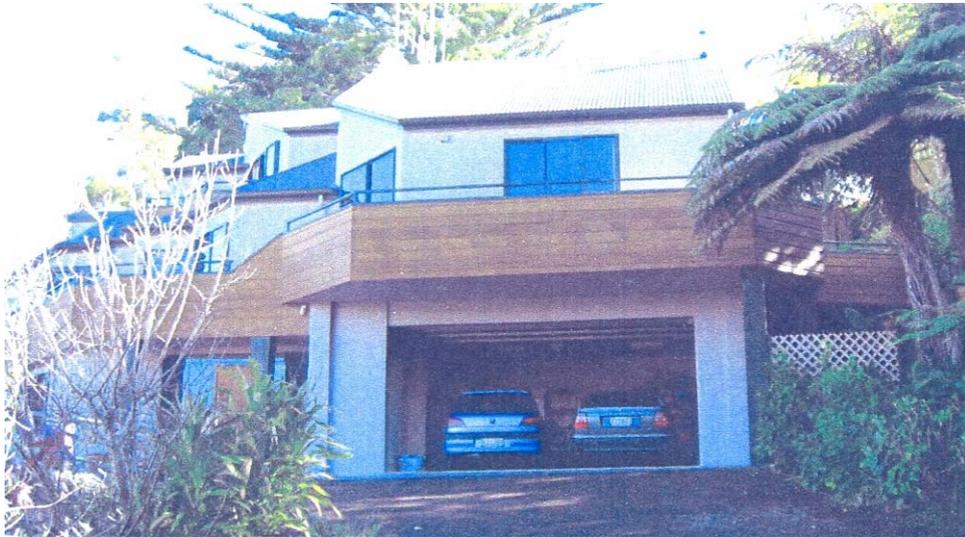


Determination 2006/126

Refusal of a code compliance certificate for a building with a monolithic cladding system at 11 Bay Street, Tauranga



1. The dispute 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 applicants are the owners, Mr and Mrs Payne (“the applicants”) and the other party is the Tauranga City Council (“the territorial authority”).
- 1.2 The dispute for determination is whether I am satisfied on reasonable grounds that the territorial authority’s decision to decline to issue a code compliance certificate for an 7-year-old house because it was not satisfied that the monolithic cladding to the walls of the house complied with clause E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is correct. By “the monolithic cladding as installed” I mean the components of the system (such as the backing

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.

materials, the flashings, the joints and the plaster and coatings) as well as the way the components have been installed and work together.

- 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.

2. The building

- 2.1 The building work consists of a detached house situated on an east-facing sloping site, which is in a medium wind zone for the purposes of NZS 3604³. The house is generally 2-storeys high, with a basement garage beneath the northern end and an upper bedroom forming a partial third storey. Construction of the house is conventional light timber frame, with concrete slabs and concrete block foundation, retaining and basement walls. The house shape is complex in plan and form, with profiled metal roof cladding, aluminium windows and doors, and monolithic wall cladding. The 30° pitch roof is made up of gables and monopitches at numerous different levels, with eaves and verge projections of about 200mm.
- 2.2 A cantilevered deck extends from the first floor to the north and part of the east elevation, and is situated partly above the basement area. A small deck extends from the third floor bedroom, and is recessed within the lower roof. The framed balustrades of both decks are clad in rusticated timber weatherboards on the outside and monolithic cladding on the deck side, with a timber capping to the top. A third attached timber deck extends along the west elevation, to form a walkway between the rear ground floor wall and a timber garden retaining wall.
- 2.3 The expert has noted that he found no evidence of treatment on timber he was able to inspect, and the drawings provide no indication of timber treatment. Given the lack of evidence and the date of construction of the house, I consider that the external wall framing is unlikely to be treated.
- 2.4 The cladding system is what is described as monolithic cladding, which the territorial authority’s inspection records describe as a “Harditex” system. Such a system uses 7.5 mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system.
- 2.5 I have received no evidence of producer statements or warranties for the cladding. However, I note that the territorial authority’s inspection records state:
- Received producer statement from John Stewart for texture cladding system. Have applied multiplast over harditex, resin joints, fibreglass mesh in harditex sealed prior.
- I also note that Mr Stewart was the builder and former owner of this house (refer paragraph 3.1), and the territorial authority’s inspection record notes that he was “not listed as a licensed applicator at the time”.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

3. Sequence of events

- 3.1 The territorial authority issued building consent number 98/2582 (which I have not seen) on 20 November 1998, with construction generally taking place during 1999. I note that the builder (Mr Stewart) was also the first owner of the house (“the first owner”). All inspections were undertaken by Bay Building Certifiers Ltd (“the building certifier”). I note that the building certifier now operates as Bay Inspections (“the territorial authority’s agent”), a contractor providing building regulatory services to the territorial authority.
- 3.2 The territorial authority’s summary record of inspections indicates that preline and insulations inspections were carried out during May and June 1999. It appears that no further inspections were undertaken until 2002.
- 3.3 The building certifier carried out final inspections on 6 August 2002, which identified some outstanding matters. A further inspection was undertaken on 6 March 2003, which noted that some items had been completed but also noted “other issues still outstanding”. It appears that the applicants agreed to purchase the house from the first owner in April 2003, unaware that a code compliance certificate had not been issued.
- 3.4 The territorial authority’s agent maintains that a “pro-forma” letter was sent to the applicants on 2 June 2005, which noted that final inspections had not been completed and warned of the possible repercussions of not obtaining a code compliance certificate. However, I have not seen a copy of the actual dated and addressed letter and the applicants have stated that they did not receive this letter.
- 3.5 In early 2006, on offering the house for sale, the applicants discovered the lack of a code compliance certificate and sought a final inspection of the house, which was apparently initially refused.
- 3.6 On instruction from the territorial authority, the territorial authority’s agent carried out a final inspection on 12 June 2006, and the inspection summary record notes the high weathertightness risks of the building, a number of risky details, the evidence of past leaks and a number of identified defects, concluding:
- Recommend that TCC do not issue a CCC on the grounds that it cannot be established that the building meets the performance provisions of NZBC E2. A determination is an option that the owner may wish to explore.
- 3.7 It appears that the applicants did not receive a record of the final inspection. In a letter to the territorial authority dated 26 June 2006, the applicants requested written confirmation that the house had passed the final inspection, as they noted that the territorial authority’s agent had observed that the house was weathertight and code-compliant.
- 3.8 In a letter to the applicants dated 27 June 2006, the territorial authority explained that a code compliance certificate could not be issued, as the territorial authority’s agent:
- ...has stated that he believed the dwelling did not meet the performance provisions of the NZ Building Code Clause E2 being Weathertightness.

- 3.9 The territorial authority subsequently issued a notice to fix dated 4 July 2006, which noted the lack of compliance with clause E2 and recommended that the applicants seek a determination.
- 3.10 On 20 July 2006 the Department received an application for a determination.

4. The submissions

- 4.1 In a letter to the Department accompanying the application, the applicants explained the background to the dispute and noted that when they had purchased the house:
- We were not informed that a Code of Compliance Certificate had not been obtained. We believed that as the house was reasonably new and we were buying it from the builder/owner that it must be compliant.
- 4.2 The applicants forwarded copies of:
- the consent drawings
 - the correspondence with the territorial authority and the building certifier
 - the notice to fix dated 4 July 2006
 - the inspection summary.
- 4.3 Copies of the applicants' submission were provided to the territorial authority, which made no submission in response.
- 4.4 A copy of the draft determination was forwarded to the parties on 10 October 2006. The territorial authority responded on 11 November 2006, saying that it accepted the draft determination.
- 4.5 In a response dated 17 November 2006, the applicants said they did not accept the draft. However, the decision not to accept the draft was made in order to give the builder an opportunity to respond to the draft determination. A copy of the draft determination was forwarded to the builder on 30 November 2006.
- 4.6 The builder had written to the territorial authority on 6 November 2006 stating that he believed all the issues raised by the building certifier at the final inspection stage had been settled to the building certifier's satisfaction. In response to the draft determination the builder wrote to the Department on 9 December 2006. The builder was of the opinion that product failures had contributed to the building problems and he was willing to rectify any workmanship issues. The builder said the building was built to a high standard and had been approved by the building certifier at each stage of its construction. The builder was of the opinion that some issues raised by the expert would have been acceptable in 1999. It was noted that there was only one area where moisture is penetrating and that was due to problems relating to the balcony access doors. The builder did not believe that the house "currently portray[ed] leaking house syndrome" and stated that the decking would be amended and remedial measures would be undertaken on the Cedar weatherboarding.

- 4.7 I have taken notice of the comments from the applicants and the builder, while noting that the builder is not a party to this determination. However, after such consideration, I have not been persuaded to amend the decisions set out in the first draft determination. I also emphasise that the determination can only consider questions relating to code-compliance and not issues that relate to contractual responsibilities.

5. The expert's report

- 5.1 The expert inspected the claddings of the building on 14 August 2006, and furnished a report that was completed on 18 August 2006. The expert noted that, although the finish of the textured coating to the harditex appeared to be of "an acceptable standard", the overall standard of the cladding showed a "general failure to carry out manufacturer's instructions".
- 5.2 The expert noted that there were significant changes from the consent drawings in the constructed house, including additional areas, and variations in room layouts, windows, doors and the roof design. I note that the consent drawings appeared very confusing, unclear and inaccurate, and, although some changes had been crudely marked, these did not reflect the house as constructed.
- 5.3 The expert noted that the windows were face-fixed with metal head flashings and no sill flashings. The expert removed a small section of cladding at the sill to jamb junction of a window and another at a door, and noted that there was no sealant or Inseal tape behind the window flange. (I note that this does not accord with the recommendations in the manufacturer's instructions dated July 1998.) I accept that the locations opened are typical of similar locations in the house.
- 5.4 The expert also removed a small section of cladding at a horizontal joint between the backing sheets of the cladding, and observed that the sheets were butted together with mesh over the joint and no flashing. The expert noted that the timber framing behind the joint was decayed. I accept that the location opened is typical of similar locations in the house.
- 5.5 The expert also removed a small section of cladding at the wall to deck junction of the cantilevered deck to the east elevation, and observed that the framing was wet. The deck membrane had been taken under the bottom plate, instead of turning up the face of the framing to underlap the bottom of the cladding. Another section of cladding was removed at the junction of the timber decking with the deck membrane on the north elevation; and wet particle board flooring with severe decay in the timber packing beneath the flooring was observed. I accept that the locations opened are typical of similar locations in the house.
- 5.6 The expert took non-invasive moisture readings through internal linings of exterior walls throughout the house, and noted some elevated readings and signs of moisture damage to the wall linings. Invasive moisture readings were taken through the wall cladding, at window sills, bottom plates and other risky areas, and more than 20 elevated readings were noted including the following:

- More than 40%, with decay, at the cut-out of the horizontal cladding joint.

Decks

- 19% to over 40% in the balustrade framing of the first and second floor decks.
- 23% to over 40%, with decay, at the deck to wall junctions of both upper decks.
- 19% to over 40% in the bottom plate adjacent to the timber walkway deck to the west elevation.
- More than 40% in the framing below the junction of the weatherboard balustrade cladding with the Harditex wall cladding.

Windows

- 23% to over 40% below various windows and doors

Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.

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

- There are no vertical control joints in numerous walls, where the length of Harditex exceeds the 5.4 m limit recommended by the manufacturer.
- There are no horizontal control joints (as recommended by the manufacturer), or flashings at backing sheet joints, with decay in the adjacent timber framing.
- There are a number of cracks in the cladding.
- There is no “Inseal” tape or sealant between the window and door jamb flanges and the Harditex cladding, as recommended by the manufacturer, and the coating has been applied after the window installation (with unsealed fibre cement under the window flanges).
- There are no drainage gaps at the window sill flanges.
- Some window head flashings have inadequate projections past the jambs.
- There are no flashings installed at the junction of the Harditex wall cladding with the weatherboard deck balustrades, and moisture is entering the framing.
- The timber capping to the deck balustrades is unflushed, with the mitres reliant on sealant only, and moisture is entering the balustrade framing.
- The membrane over the decks lacks upstands behind the cladding, and moisture is entering the bottom plates and the door sills.
- The junctions of the membrane deck with the timber decking are inadequately weatherproofed, and moisture is entering the bottom plate and the particle board flooring (with severe decay in the adjacent timber packing).

- The timber decking butts against the wall cladding, with no drainage gaps, and moisture is entering the bottom plates.
- The overlap of the wall cladding over the foundation walls is inadequate in some areas.
- Clearances from the bottom of the wall cladding to the roof are inadequate, with the cladding butting against roof flashings in some areas.
- Fascias and gutters butt against unsealed fibre-cement.
- The downpipes from upper roofs onto lower roofs lack spreaders.
- pipe penetrations through the cladding are unsealed or poorly sealed.

5.8 A copy of the expert's report was provided to each of the parties on 22 August 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 Solution⁴, 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 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 determinations⁵ (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

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.

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

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 medium wind zone
- is a maximum of three storeys high
- is complex in plan and form
- has three attached decks; one of which is cantilevered and partly situated over a garage area and one of which is recessed into the lower roof
- has eaves and verge projections that vary from none to about 200mm
- has monolithic cladding that is fixed directly to the framing
- has external wall framing that is not 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 high weathertightness risk rating. The matrix is an assessment tool that is intended to be used at the time of application for consent, before 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.

7. Discussion

7.1 Taking into account the expert's report, I am satisfied that the current performance of the cladding is inadequate because it has not been installed according to good trade practice and in accordance with the manufacturer's instructions. The cladding is at present allowing water penetration into the walls, through numerous defects in the cladding. In particular, the cladding demonstrates the key defects listed in paragraph 5.7. 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 identified in the cladding system. It is that combination of risk factors and 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 not satisfied that the cladding system as installed complies with clause E2 of the Building Code.

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. Because the cladding faults on the building are currently allowing or 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 view with concern the evidence of timber decay noted in the expert's report and draw this to the attention of the territorial authority for further investigation. Further opening up of the structure may reveal further decay of the untreated wall framing, which could compromise the structural integrity of the building and decks.

8. Conclusion

- 8.1 I find that, because of the extent and apparent complexity of the faults that have been identified with the cladding, I am unable to conclude, with the information available to me, that remediation of the identified faults, as opposed to partial or full re-cladding, could result in compliance with clause E2. I consider that final decisions on whether code compliance can be achieved by either remediation 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 decision is made, the chosen remedial option should be submitted to the territorial authority for its comment and approval. If the territorial authority chooses to reject the proposal, then the applicants are entitled to seek a further Determination on whether the proposed remedial work will led to compliance with the requirements of clauses E2 and B2.
- 8.2 Effective maintenance of claddings (in particular of monolithic claddings) 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.
- 8.3 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.
- 8.4 As the external wall framing of this house is apparently not 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.

9. The decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building does not comply with clauses B2 and E2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 9.2 I note that the territorial authority has issued a notice to fix that states that the compliance of the building with clause E2 could not be established, and this determination settles that issue. A new 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 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.
- 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 a 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 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 22 December 2006.

John Gardiner
Determinations Manager