

Determination 2007/26

Refusal of a code compliance certificate for a building with a monolithic cladding system at 71 Princess Road, Tauranga



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, Mr Cass (“the applicant”) and the other party is the Tauranga City Council (“the territorial authority”).

1.2 The matters for determination are whether I am satisfied on reasonable grounds that:

1.2.1 Matter 1: The cladding

The territorial authority’s decision to decline to issue a code compliance certificate for a 6-year-old house because it was not satisfied that the monolithic cladding to the walls of the house complied with clauses B2 “Durability” and E2 “External

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

Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is 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 (First Schedule, Building Regulations 1992). By “the monolithic cladding as 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.

1.2.2 Matter 2: The durability considerations

Whether the elements comply with clause B2 of the Building Code considering the time that has elapsed since the elements were 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.

2. The building

- 2.1 The building work consists of a large detached house situated on a steeply sloping site, which is in a medium wind zone for the purposes of NZS 3604³. The house is two-storeys high, with a long narrow plan form that steps down the north-facing slope. The southern section houses bedrooms in the lower level and garage space in the upper; and is specifically designed, with concrete slabs to both levels and concrete block lower level walls (some of which are retaining walls). Construction of the rest of the house is generally conventional light timber frame, with a concrete block foundation wall along the southeast and timber pile foundations elsewhere.
- 2.2 The house shape is complex in plan and form, with aluminium windows and doors, monolithic wall cladding and a 25° pitch clay tile roof that has a series of stepped gables, hips and lean-tos. There are no verge projections and eaves projections are limited to the gutter width, except for a number of recessed areas. A decorative stepped double band forms a continuous “cornice” at verges and beneath gutters. A large curved-top window sits under the gable in the northeast wall of the upper level master bedroom.
- 2.3 The house has three attached decks: two on the northwest and one on the northeast. The lower northwest deck is partly recessed back from the upper walls, and has a timber slat floor, with metal and timber balustrades. The upper level northwest deck is set partly over a living area and extends from the master bedroom, with a membrane covered floor, metal and glass balustrades to the northwest and a monolithic clad balustrade to the northeast end. The third deck extends to the northeast from the lower level family room, and is a simple timber slat deck with no balustrades.

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.4 The expert has noted that he found no evidence of treatment on timber he was able to inspect. The specification calls for wall framing to comply with NZS 3602, which at the time of construction permitted untreated timber subject to certain specific limitations. The applicant has stated that the wall framing timber is “typically 94mm x 47mm wet frame H1” (refer paragraphs 4.6 and 4.7). The applicant provided invoices to the Department on 19 December 2006 that showed 100x50mm framing timber as being “H1” treated. Given that the method of timber treatment is not stated, I consider that the external wall framing may not be treated to a level that will provide resistance to fungal decay.
- 2.5 The cladding system is what is described as monolithic cladding, and there are two types used in this house. The main cladding is “Insulclad” EIFS (External Insulating Foam System) with 40mm polystyrene backing sheets fixed directly to the framing over the building wrap, and finished with a textured plaster system. The north east wall and the north west wall to the master bedroom are clad in a “Harditex” system with 7.5 mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with an applied textured coating system. Both systems include purpose-made flashings to windows, edges and other junctions.
- 2.6 I have seen no evidence of producer statements or warranties for the cladding.

3. Sequence of events

- 3.1 The territorial authority issued building consent number 2824 in December 1998. Construction took place over the following two years. All inspections were undertaken by Bay Building Certifiers (“the building certifier”) on behalf of the applicant. I note that Bay Inspections (formerly the building certifier, referred to below as the “territorial authority’s agent”) is a contractor providing building regulatory services to the territorial authority.
- 3.2 I have received a record of all inspections that took place from 22 December 1998 to 9 April 2001, however, I have not received the inspection reports themselves.
- 3.3 In a letter to the applicant dated 28 March 2005, the territorial authority’s agent noted that it had been instructed to carry out final inspections of the house on 18 January 2005 and reported that:
- As a result of information that you have supplied me since the inspection, of my inspection of visible building elements only and on the assumption that all the required earlier inspections had been carried out, I was satisfied that the building was properly completed in accordance with the Building Code requirements that existed at the time of construction.
- 3.4 In a letter to the territorial authority dated 17 January 2006, the applicant noted that the building had been constructed over several years, during which all required inspections were carried out. The applicant confirmed that the territorial authority’s agent had carried out a final inspection as it had contracted to do when it was originally engaged as the building certifier by the applicant, and that:
- Bay Inspections advise that it is their policy not to issue a Code of Compliance Certificate on a construction that has taken longer than nominally two or three years.

The reason cited is that part of the building would already be a few years old at the time of CCC issue thus the building may arguably be subject to maintenance sooner than implied by the CCC.

This policy of Bay Inspections (previously Bay Building Certifiers) conflicts with the Department of Building and Housing intention to have CCC's issued for all complying buildings.

- 3.5 It appears that the territorial authority did not consider the territorial authority's agent's letter to be sufficient evidence of compliance, as the applicant was verbally advised on 8 March 2006 that the territorial authority refused to issue a code compliance certificate.
- 3.6 The territorial authority did not issue a notice to fix as required under section 164(2) of the Building Act 2004.
- 3.7 On 15 March 2006 the Department received an application for determination from the owner.

4. The submissions

- 4.1 In the application the applicant noted that the matter for determination was the decision of the territorial authority to refuse to issue a code compliance certificate for the house.
- 4.2 The applicant forwarded copies of:
- the plans and specifications
 - the letter from the agent dated 28 March 2005
 - the letter to the territorial authority dated 17 January 2006.
- 4.3 Copies of the applicant's submission were provided to the territorial authority, which made no submission in response.
- 4.4 In making no submission, the territorial authority has provided no evidence as to why it believes the house is not code compliant. I do not consider this is acceptable. It is important that should an owner be declined a code compliance certificate, a notice to fix should be issued to provide clear reasons for the territorial authority's decision. The owner can either then act on that notice to fix or apply for a determination if those reasons are disputed.
- 4.5 The draft determination was forwarded to the parties for comment on 27 July 2006. The territorial authority accepted the draft determination without comment.
- 4.6 In an email to the Department dated 13 September 2006, the applicant commented on the draft determination and included the following points:
- The wall framing timber is "wet frame" H1 treated.

- The moisture reading at the master bedroom was taken in an area where the cladding is over a soundproof packing layer, and so may not have reflected the moisture content in the wall framing.
- The moisture content recorded under the sill of the curved top window has resulted from a shrinkage crack, which could be remedied with the installation of a control joint in that position.
- The deck slats of the lower decks butt against the wall, but are protected against the weather by a 2m overhang.
- Although the EIFS cladding extends below the paving on the southeast side, this is well drained against capillary action with granular drainage metal and moisture readings should be taken to establish the adequacy of the detail before requiring remedial work.

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

- 4.7 A copy of the second draft determination was issued to the parties on 12 October 2006. The second draft was issued for the parties to agree a date when all the building elements installed in the house, apart from items that are to be fixed, complied with the Clause B2 Durability.
- 4.8 In an email to the Department dated 12 December 2006, the territorial authority proposed a date of April 2001. The applicant confirmed his agreement to this date in an email to the Department dated 22 January 2007.

Matter 1: The cladding

5. The expert's report

- 5.1 As discussed in paragraph 1.3, I engaged an independent expert to provide an assessment of the condition of those building elements subject to the determination. The expert is a member of the New Zealand Institute of Building Surveyors.
- 5.2 The expert inspected the claddings of the building on 10 May 2006 and 17 May 2006, and furnished a report that was completed on 30 May 2006. The expert noted that the wall cladding appeared to be “well fixed and aligned”, with the coating showing “no evidence of flaking or staining”, but the “general weathertightness detailing and installation is unsatisfactory”. The expert noted that a crack in the Harditex may indicate inadequate control joints, but I note that none of the upper walls clad in Harditex appear to exceed the 5.4m limit recommended by the manufacturer. I also note that control joints are not specified by the manufacturer as necessary for the dimensions of EIFS used on the other walls of this building.
- 5.3 The expert scraped away a small section of coating at the sill to jamb junction of a window in the EIFS, and noted that the flashings appeared to be in accordance with

the manufacturer's instructions. I accept that the location opened is typical of similar locations in the EIFS cladding around the building.

5.4 The expert took non-invasive moisture readings through internal linings of exterior walls throughout the house, and no elevated readings were noted. 6 invasive moisture readings were taken through the wall cladding, at window sills, bottom plates and other risky areas, and elevated readings were recorded in the following locations:

- 26% in the living room bottom plate at the deck to wall junction
- 24% in the bottom plate behind the doors from the master bedroom to the deck
- 28% and 18% under the jamb to sill junctions of the curved top window.

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

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

- There is no "Inseal" tape or sealant between the window and door jamb flanges and the Harditex cladding, contrary to the manufactures recommendations, and the coating has been applied after the window installation (with unsealed fibre cement under the window flanges).
- There are cracks showing at the jambs of the door and window in the Harditex walls of the master bedroom.
- There is a joint crack in the Harditex under the window in the northeast wall of the master bedroom.
- The curved head flashing to the window in the northeast wall of the master bedroom is inadequately sealed at its lower edges, allowing water to enter.
- The upper deck floor membrane has no clearance to the bottom of the Harditex.
- The upper deck floor membrane extends around an upstand at the deck edge, and no drip edges have been provided. The junction of the upstand with the wall is poorly weatherproofed with gaps and uncoated cladding showing.
- The Harditex clad balustrade to the upper deck has a flat Harditex top with a "scooped" shape, and the handrail penetrates the upper part of the curve.
- Timber fascias are mounted over uncoated cornice bands, and the timber has warped allowing gaps to open at the junction. There are also holes apparent where gutter fascias abut the projecting ends of verge fascias at the gable ends.
- The bottoms of apron roof flashings are poorly constructed and sealed, with gaps and uncoated cladding showing in some locations. The apron flashing

above the laundry has no solid backing at the upstand, and a bird's nest was observed in the wall space.

- The timber slats of the lower decks butt against the wall cladding with no drainage gap provided in some locations.
- The clearances from the bottom of the EIFS cladding to the ground or paving are inadequate on the southeast elevation.

5.6 The expert also noted that where the heads of windows in the EIFS cladding extend up to the polystyrene cornice bands, the band overlaps the head flange of the window and head flashings are omitted.

5.7 A copy of the expert's report was provided to each of the parties on 1 June 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 robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

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.

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 two storeys high
- is complex in plan and form
- has three attached decks, one of which is partly over a living area
- has no verge projections and gutters provide the only eaves projections
- has two types of monolithic cladding that are fixed directly to the framing
- has external wall framing that may not be treated, so providing no resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 When evaluated using the E2/AS1 risk matrix, two elevations of this house demonstrate a moderate weathertightness risk rating, one a high risk rating and one a very high 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 in accordance with good trade practice. However, some junctions, edges and penetrations are not well constructed, and these areas are described in paragraph 5.5. I accept that remedial work is necessary in respect of:

- the lack of sealing between the window and door flanges and the Harditex cladding
- the crack in the Harditex cladding under the curved top window
- inadequate weatherproofing of the head flashing to the curved top window
- the clearance of the deck membrane to the bottom of the Harditex cladding
- the lack of a drip edge to the membrane deck upstand
- inadequate weatherproofing of the membrane deck upstand to the Harditex wall

- the lack of slope and inadequate weatherproofing of the top of the balustrade to the upper deck
- gaps and holes at the timber fascia boards
- inadequate weatherproofing of the bottom of the apron roof flashings
- the lack of solid backing to the apron flashing upstand above the laundry
- the lack of drainage gaps to the timber slats of the lower decks
- inadequate EIFS cladding clearances to the southeast elevation
- any other building elements associated with the above that are consequently discovered to be in need of rectification.

6.3.2 I note the expert's comments in paragraph 5.6, and I consider that the heads of windows in the EIFS cladding are adequately protected by the protruding polystyrene cornice bands.

6.3.3 I note the applicant's comments in paragraph 4.6, and draw the following matters to the attention of the territorial authority for further investigation and reconsideration:

- The moisture reading at the master bedroom was taken in an area where the cladding is over a soundproof packing layer, and so may not have reflected the moisture content in the wall framing.
- For those areas of the lower timber deck that are well sheltered by a deep roof overhang, the junction with the wall is likely to be adequate, notwithstanding the lack of a drainage gap between the timber decking and the cladding.
- The applicant states that the wall on the southeast elevation where the EIFS cladding extends below the paving is "well drained against capillary action with granular drainage material". This may be further investigated as to the adequacy of the cladding base in this particular position.

6.3.4 I note that the majority of defects identified in the cladding of this house appear to be in the Harditex cladding of the upper level master bedroom, and I therefore consider that the weathertightness of these walls requires particular attention.

6.3.5 Notwithstanding the fact that the backing sheets are fixed directly to the timber framing, thus limiting drainage and ventilation behind the cladding, I have noted certain compensating factors that assist, or confirm, the performance of the cladding in this particular case:

- Apart from the noted exceptions, the cladding has been installed to good trade practice.
- Apart from an isolated area, the main EIFS cladding has been effective in preventing moisture penetration in this 6-year-old house.

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

7. Discussion

7.1 I am satisfied that the current performance of the monolithic cladding is not adequate because it is allowing water penetration into the building at several locations at present. 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 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 consider that, because the faults that have been identified with the cladding systems occur in discrete areas, I can conclude that satisfactory rectification of the items outlined in paragraphs 6.3.1 will result in the building becoming and remaining weathertight and in compliance with clauses B2 and E2.

7.4 I also note that some further investigation and consideration by the territorial authority is required with regard to the items outlined in paragraph 6.3.3.

7.5 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.

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 this 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: The durability considerations

8. Discussion

- 8.1 As set out in paragraph 3.4, the territorial authority has concerns about the durability, and hence the compliance with the building code, of certain elements of the building, taking into consideration the completion date of the building in 2001.
- 8.2 The building work was subject to inspections carried out from December 1998 to April 2001.
- 8.3 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 (“durability periods”) “from the time of issue of the applicable code compliance certificate” (clause B2.3.1).
- 8.4 These durability periods are:
- 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
 - 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
 - the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.
- 8.5 It is not disputed, and I am therefore satisfied that all the building elements installed in the house, apart from items that have to be rectified, complied with clause B2 on 1 April 2001. This date has been agreed between the parties, refer paragraph 4.8.
- 8.6 In order to address these durability issues, I sought some clarification of general legal advice about waivers and modifications. I have now received that clarification and the legal framework and procedures based on this clarification are described in previous determinations (for example, Determination 2006/85) and are used to evaluate the durability issues raised in this determination.
- 8.7 I continue to hold the views expressed in the previous related determinations, and therefore conclude that:
- (a) the territorial authority has the power to grant an appropriate modification of clause B2 in respect of all of the elements of the building, excepting those elements that are to be rectified, if the applicant applies for such a modification

- (b) it is reasonable to grant such a modification, with appropriate notification, because in practical terms the building is no different from what it would have been if a code compliance certificate had been issued in April 2001.

8.8 I strongly recommend that the territorial authority record this determination and any modification resulting from it, on the property file and also on any LIM issued concerning this property.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the monolithic cladding 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 also find that rectification of the items outlined in paragraph 6.3.1 will consequently result in the house being weathertight and in compliance with clauses B2 and E2. Work to correct these items may expose additional associated defects that are not yet apparent. All rectification work is to be completed to the approval of the territorial authority.

9.3 I also determine that:

- (a) all the building elements installed in the house, apart from items that are to be fixed as described in this determination, complied with clause B2 at 1 April 2001.

- (b) the building consent is hereby modified as follows

The building consent is subject to a modification to the Building Code to the effect that, clause B2.3.1 applies from 1 April 2001 instead of from the time of issue of the code compliance certificate for all building elements provided that this modification does not apply to the elements that have been altered or modified as set out in paragraph 6.3.1 of Determination 2007/26.

- (c) the territorial authority, once the matters set out in paragraph 6.3.1 have been rectified to its satisfaction, is to issue a code compliance certificate in respect of the building consent as amended.

9.4 I note that the territorial authority has not issued a Notice to Rectify or a notice to fix. The territorial authority should now issue a notice to fix, and the applicant is then obliged to bring the building up to compliance with the Building Code. 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 applicant to propose and for the territorial authority to accept or reject.

9.5 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.4. 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 matters. 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 28 February 2007.

John Gardiner
Determinations Manager