

Determination 2007/20

Refusal of a code compliance certificate for building alterations with a monolithic cladding system at 58 Eggleton Road, Pukekohe



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 applicants are the owners Mr and Mrs Abernethy (“the applicants”) and the other party is the Franklin District Council (“the territorial authority”).
- 1.2 The matter for determination is whether the territorial authority’s decision to decline to issue a code compliance certificate for 5-year-old alterations to, and recladding of, a house because it was not satisfied that the monolithic cladding to the walls of the house complied with clauses B2 “Durability” and E2 “External Moisture” of the Building Code² (First Schedule, Building Regulations 1992) is correct.

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.

- 1.3 The matters to be determined are whether:

Matter 1: the cladding

The cladding as installed on the building (“the cladding”) complies with clauses B2 and E2. By “the 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.

Matter 2: The durability considerations

The elements that make up the building work comply with clause B2, taking into account the age of the building work.

- 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. As regards the cladding, 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.
- 1.5 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

- 2.1 The building work consists of extensive alterations and additions to a detached house situated on a large flat rural site, which is in a high wind zone for the purposes of NZS 3604³. The building work considered in this determination consists of extensions to all elevations of the original house and includes recladding of all exterior walls. The resulting house is two storeys high, with conventional light timber frame construction, concrete slab and foundations, monolithic cladding and aluminium windows.
- 2.2 The house shape is complex in plan and form, with 18° pitched and flat roofs at varying levels. The original roof to the two-storey area is a profiled metal gable, while roofs to the extensions are a combination of profiled metal monopitch and lean-to roofs and membrane flat areas. Eaves projections to the original roof are 600mm and verges are 450mm (excluding gutters and fascias). Eaves and verge projections to the new pitched roofs vary from less than 100mm (at the “sawtooth” of the monopitched roof) to more than 1000mm, while the flat roof of the two-storey stairwell “atrium” has roof projections of about 500mm. A small lower level flat roof to the west elevation has a metal capped parapet.
- 2.3 A tiled deck, with monolithic-clad balustrades, extends along the north elevation from the upper floor, and is recessed behind and into the upper part of the monopitched roof over the living room at the western end. Pergolas, constructed from large-section rough-sawn timber posts and beams, extend to the north and the

^{3 3} New Zealand Standard NZS 3604:1999 Timber Framed Buildings

east. Similar pergola-style construction and timbers are used to support the eastern part of the deck and the two-storey high entrance canopy, which has monolithic-clad perimeter cladding with exposed pergola beams set into the central portion. There are two areas of decorative stone veneer; one around a projecting “box” structure on the west elevation and the other below sill height on the single storey gable extension to the east. A monolithic-clad “chimney” extends from the centre of the lower floor living area through the upper deck and the eaves of the original roof.

- 2.4 The expert noted that the framing he was able to inspect was stamped “KD”, indicating that it was untreated kiln-dried timber. I note that the original house was constructed during the 1980’s, and the wall framing to the original exterior walls is therefore likely to be boron treated. I have received no other evidence as to the treatment, if any, of the new framing timber and I therefore consider that the external wall framing of the new additions is unlikely to be treated.
- 2.5 The cladding system is what is described as monolithic cladding, and is a 60mm “Insulclad” polystyrene system fixed directly to the framing over the building wrap, to which a “Ezytex” sponge finish plaster system has been applied. The system includes purpose-made flashings to windows, edges and other junctions.
- 2.6 Plaster Systems Ltd provided a 15-year “Materials Components Guarantee” and “Workmanship Guarantee” (both dated 15 February 2005 and noting the completion of the cladding as April 2001) relating to the “Insulclad” and “Ezytex” systems, which carried exclusion clauses, whereby Plaster Systems Ltd did not accept responsibility for consequential damage of any kind to any building component that has occurred as a result of the use of untreated timber.

3. Sequence of events

- 3.1 I have not seen a copy of the building consent. However, based on the stamp on the consent drawings, it appears that the territorial authority issued a building consent (no. 30677) on 1 October 1999. I have received no evidence of what inspections were undertaken by the territorial authority during construction, but it appears that the work was substantially completed during 2001.
- 3.2 I have received no copies of correspondence between the applicants and the territorial authority, but it appears that when the applicants requested a code compliance certificate, the territorial authority refused to accept that the cladding complied with the building code.
- 3.3 An application for a determination was received by the Department on 11 April 2006.
- 3.4 In an email to the applicants dated 18 April 2006, the Department requested drawings of the building and further information to support the application. Drawings were subsequently received by the Department on 11 May 2006.

4. The submissions

4.1 Within the application, the applicants noted that the “Matter of doubt or dispute” was:

Council require the monolithic cladding to be individually assessed by BIA.

4.2 The applicant forwarded copies of:

- the drawings
- the guarantees and producer statement for the cladding.

4.3 The territorial authority made no submission.

4.4 A copy of the applicant’s submission was provided to the territorial authority, which made no submission in response.

4.5 A draft copy of the determination was forwarded to the parties on 14 November 2006. The applicants accepted the draft on 18 November 2006.

4.6 In a letter to the Department dated 1 December 2006, the territorial authority accepted the draft subject to one amendment. This amendment sought the inclusion of a waiver, or modification, of Building Code Clause B2 Durability, taking into account the age of the building work.

4.7 I am concerned that the territorial authority’s request for a durability waiver or modification was made at this late date, especially when the territorial authority had made no submission in response to the application for determination made more than seven months earlier. However, in order to finalise the matters pertaining to the issue of a code compliance certificate, I included the matter of durability of the building elements in a second draft determination.

4.8 In its letter the territorial authority has proposed that compliance with B2 Durability was achieved on or about 12 April 2001. I therefore adopted this date in the second draft determination which was issued to the parties on 9 January 2007.

4.9 The applicant confirmed his agreement of the date proposed by the territorial authority. In a letter to the Department dated 30 January 2007, the territorial authority said:

. . . Clause 9.2 (b) [gives] the applicant the option of determining whether a waiver from clause B2 of the building code is to be given by a modification of the building consent. We . . . ask that the words “should the applicant so request,” be removed from clause 9.2 (b). We think it is the determination itself that should make that decision.

I have amended the determination accordingly.

Matter 1: The Cladding

5. The expert's report

5.1 The expert inspected the claddings of the building on 31 May 2006 and 20 June 2006, and furnished a report that was completed on 21 June 2006. The expert noted that the cladding was “generally installed to a high standard of workmanship”, with adequate flashings, penetrations and clearances. I note that the wall areas are of dimensions that do not require control joints to comply with the manufacturer's instructions. The expert also noted that several areas were unfinished and there were a number of variations from the consent drawings. In particular he noted that:

- the cladding was changed from fibre-cement weatherboards to Insulclad
- the two-storey garage wing (with bedrooms above), has not been built
- a number of windows have been omitted or changed
- there were extensive areas of decorative stone shown in the drawings, which have been reduced to two small areas.

5.2 The expert noted that the windows were recessed with metal head flashings. The expert removed a small section of coating at the sill to jamb junction of the kitchen window and observed jamb and sill flashings installed with sealant at the junction in accordance with manufacturer's instructions at the time of construction. The expert noted that the manufacturer changed those instructions, by adding a requirement for corner soakers, soon after the dwelling was completed.

5.3 The expert took non-invasive moisture readings through linings of exterior walls throughout the house, and no elevated readings were noted or signs of moisture damage observed. The expert took four invasive moisture readings in the interior, where framing was exposed or linings were unfinished, and no elevated readings were noted. A further four invasive readings were taken through the wall cladding, at deck and parapet to wall junctions, and two elevated readings of 19% and 23% were recorded in the wall and the deck balustrade framing at the balustrade to wall junction at the western end of the deck.

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

5.4 Commenting specifically on the cladding, the expert noted that:

- the clearance from the bottom of the cladding to the entry paving is inadequate, with the bottom of the fibre-cement below the tile surface
- there are cracks to the flat tops of the deck balustrade and damage to the front edge of the coating
- the weatherproofing of the balustrade to wall junctions is inadequate as moisture is penetrating into one area

- the deck drain pipe through the balustrade is not connected to a downpipe, and there is no provision for overflow drainage
- the drain pipe from the flat roof to the west is not connected to a downpipe
- the pergola beams penetrate the cladding at various locations, and rely on sealant that has shrunk and left gaps at the junction
- the tops of the stone veneer to the west “box” and the east gable end do not appear to be adequately weatherproofed.

5.5 The expert also noted that the window opened up for inspection had a gap in the polystyrene, which he observed when he removed the sealant at the jamb to sill junction. However, there was no indication of moisture penetration and the expert noted that the cladding elsewhere had been completed to a high standard.

5.6 Copies of the expert’s report were provided to each of the parties on 27 June 2006. Neither party responded to the report.

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.

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.

6.1.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.2 Weathertightness risk

6.2.1 In relation to these characteristics I find that this house:

- is built in a high wind zone
- is a maximum of two storeys high
- is complex in plan and form
- has eaves projections of 600mm, and verge projections of 450mm or more above upper walls, with deeper overhangs above most lower level walls
- has an upper level deck, with a solid floor and monolithic clad balustrades, which is situated partly over a living area below
- has monolithic cladding which is fixed directly to the framing
- has external wall framing to the walls of the original house that is likely to be treated, so providing resistance to the onset of decay if the framing absorbs and retains moisture.
- has external wall framing to the new additions that is unlikely to 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, 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 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 with a high standard of workmanship in accordance with good trade practice. However, some junctions, penetrations and edges are not well constructed as described in paragraph 5.4 and in the expert's report. I accept the expert's opinion that remedial work is necessary in respect of the following:

- the inadequate cladding clearance from the entrance paving
- the cracks in the top of the deck balustrade
- the inadequate weatherproofing of the deck balustrade to wall junctions
- the lack of downpipe connections to deck and roof drains in two locations and lack of provision for overflow drainage
- the inadequate weatherproofing of the tops of the stone veneers
- the inadequate weatherproofing of the pergola beam penetrations through the cladding
- 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 comment in paragraph 5.5 on the window junction exposed during the inspection and accept that the gap observed in the polystyrene is not a point of entry for water.

6.3.3 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 the performance of the cladding in this particular case:

- The cladding generally appears to have been installed to good trade practice.
- The house has roof projections, verandahs and deck overhangs that provide good protection to most of the wall cladding areas below them.
- The house has treated external wall framing to the walls of the original house.
- Apart from one balustrade to wall junction, there is no evidence of moisture penetration into the walls after 5 years.

6.3.4 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. Conclusion

7.1 I am satisfied that the current performance of the cladding is not adequate because it is allowing water penetration into the building in at least one location at present. Consequently, I am satisfied that the building does not comply 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 system occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.3.1 should be expected to result in the alterations to the building becoming and remaining weathertight and in compliance with clauses B2 and E2.
- 7.4 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.
- 7.5 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 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 sealants, seals and gaskets in joints.
- 7.6 As the external wall framing of the additions to this building is likely to be untreated, 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 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 of the building by April 2001.
- 8.2 The relevant provision of clause B2 of the Building Code recognises 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 B.3.1).

8.3 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.

8.4 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 as described in paragraph 6.3.1, complied with clause B2 on 12 April 2001. This date has been confirmed by the applicant and the territorial authority, refer paragraphs 4.8 and 4.9.

8.5 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.

8.6 I continue to hold that view, and therefore conclude that:

- (a) the territorial authority has the power to grant an appropriate modification of clause B2 in respect of the building elements.
- (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.

8.7 I strongly recommend that the territorial authority record this determination and any modifications resulting there from, 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 cladding on 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 also determine that:

(a) all the building elements installed in the alterations and re-cladding, apart from the items that are to be rectified, complied with clause B2 on 12 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 12 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 2007/20.

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

9.3 I note that the territorial authority has not issued a notice to fix as required by section 435. A notice to fix should be issued that requires the applicants to bring the building into compliance with the Building Code, identifying the defects listed in paragraph 6.3.1, but not specifying how those defects are to be fixed. That is a matter for the applicants to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance

9.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.3. Initially, the territorial authority should issue the new notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owners 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 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 21 February 2006.

John Gardiner
Determinations Manager