Determination 2006/29

Refusal of a code compliance certificate for a building with a "monolithic" cladding system: at 102 Kidd Road, Te Hihi, Karaka

1 The dispute to be determined

1.1 This is a determination of a dispute referred to the Chief Executive of the Department of Building and Housing ("the Chief Executive") under section 17 of the Building Act 1991 ("the Act") as amended by section 424 of the Building Act[1] 2004. The applicant is one of the previous joint-owners Mr W Kidd (referred to throughout this determination as "the applicant"), and the other party is the Franklin District Council ("the territorial authority"). During the course of the determination the property was sold and the new owner the Welsby Family Trust was added as a party on 6 March 2006. The previous joint-owner requested "that [the new owner] should now replace me on all matters relating to the determination". The application arises from the refusal by the territorial authority to issue a code compliance certificate for a 4-year old house unless changes are made to its monolithic cladding system.

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

1.2 This determination is made under the Building Act 1991, subject to section 424 of the Building Act2 2004. That section came into force ("commenced") on 30 November 2004, and its relevant provisions are:

> ". . .on and after the commencement of this section,—
>
> > "(a) a reference to the Authority in the Building Act 1991 must be read as a reference to the chief executive; and
> >
> > "(b) the Building Act 1991 must be read with all necessary modifications to enable the chief executive to perform the functions and duties, and exercise the powers, of the Authority . . "

It should be noted that the new legislation does not amend the determination process set out under the 1991 Act, other than to transfer the power to make a determination from the Building Industry Authority ("the Authority") to the Chief Executive.

1.3 The initial dispute for determination was whether I am satisfied on reasonable grounds that the territorial authority's decision to decline to issue a code compliance certificate on a 6-year-old house because it was not satisfied that the monolithic wall cladding, complied with clauses B2 "Durability" and E2 "External Moisture" is correct. 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 As set out in paragraph 4.5, the territorial authority requested that an additional issue be determined by me. This related to the durability of all the building elements of the house, taking into account the age of the building.

1.5 This determination refers to the former Authority:

a) When quoting from documents received in the course of the determination, and

b) When referring to determinations made by the Authority before section 424 came into force.

1.6 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 other evidence in this matter. 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 large detached house situated on a flat site in a high wind zone in terms of NZS 3604[3]. The house is on two levels, with the main ground floor level containing living and bedroom areas, and a partial upper floor with master bedroom,

[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

ensuite and studio areas. A covered walkway connects the house to a separate structure housing a triple garage. Construction of the house is conventional light timber frame, with concrete slab and foundations, aluminium windows and doors, monolithic wall cladding and a 40^{o} profiled steel roof. The house shape is fairly complex in plan and form, with the roof broken into a series of gables incorporating complex roof to wall intersections. Eaves and verge projections are 175 mm overall except for three recessed walls on the north elevation, which have roof overhangs of 300 mm, 600 mm and 1500 mm. There are two pergolas, supported on monolithic clad columns, which project from the two larger roof overhangs.

2.2 The specification calls for untreated timber to be used for exterior wall framing, and the expert commissioned by the Department is of the opinion that the framing is untreated. No other evidence has been provided as to what timber treatment, if any, was applied to the exterior wall framing.

2.3 The cladding system is what is described as monolithic cladding. Apart from a small amount of "Hardiflex" monolithic cladding at the sides of the garage doors, the cladding is EIFS "Insulclad", which incorporates 40 mm thick polystyrene backing sheets fixed through the building wrap directly to the wall framing and finished with a proprietary mesh reinforced plaster system. The system includes purpose-made flashings to windows, edges and other junctions.

2.4 There is no evidence of warranties or "Producer Statements" for the cladding system.

3 Sequence of events

3.1 The territorial authority issued a building consent on 30 March 2000, based on a certificate provided by A1 Building Certifiers Ltd ("the building certifier"), dated 22 March 2000.

3.2 The building certifier made various inspections during the course of construction, including prior to lining installation and following lining installation. The last inspection by the building certifier appears to have taken place on 9 October 2000, and the certifier's inspection report of 31 October 2000 does not note the final building inspection as completed.

3.3 It appears that the certifier submitted a report regarding outstanding issues to the territorial authority on 26 August 2002, and returned all documents to the territorial authority on 16 September 2002 for completion of inspections.

3.4 Following an inspection of the building on 17 September 2002, the territorial authority issued a Notice to Rectify dated 7 October 2002. The "Particulars of Contravention" attached to the notice noted that:

> The building has been constructed without adequate resistance to penetration by, and the accumulation of moisture from outside as required by Clause E2 of the Building Regulations 1992.
> Details of specific defects are included in the attached report dated 3rd October 2002.

3.5 The territorial authority carried out various further inspections of remedial work, with the last inspection of 13 December 2002 resulting in an "Interim Notice to Rectify" on the same date, which noted that clearances from paving to cladding on the south side of the building did not comply with the building code.

3.6 The territorial authority wrote to the applicant on 23 February 2004 in regard to the issue of ground levels, as covered in the interim notice, and noted that:

> …to date Council has not been notified of any remedial work having been carried out, therefore, no Code Compliance Certificate has been issued.
>
> You are advised as from December 2003, [the territorial authority] will not issue a Code Compliance Certificate for any monolithic clad building constructed without a drainage cavity.

The letter attached a second letter, also dated 23 February 2004, which noted that clearances from paving to cladding on the south side of the building did not comply with the building code, and also described the territorial authority's concerns in regard to monolithic claddings, noting that:

> As the monolithic cladding fixed to your building has been individually assessed as being such a cladding, Council needs to be assured that it meets the requirements of the N Z Building Code before a final building code compliance certificate can be issued. If you made an application to the Building Industry Authority for a determination on this issue under Section 17 of the Building Act 1991, it would decide the matter…

3.7 The applicant applied for this determination on 24 December 2004. Due to the absence of the applicant overseas, the determination of the issues was delayed at the request of the applicant's legal advisers.

4 The submissions

4.1 The applicant, in respect of supporting documents, noted:

> All supporting documents enclosed from [the territorial authority].

4.2 The territorial authority forwarded copies of;

- the plans and specifications
- the building consent documentation
- some of the building inspection records
- the Notice to Rectify
- the Interim Notice to Rectify
- the correspondence with the applicant
- various producer statements and other statements.

4.3 Copies of the submissions and other evidence were provided to each of the parties.

4.4 Copies of the draft determination were sent to the parties on 22 March 2006. The applicant accepted all aspects of the draft.

4.5 In a letter to the Department dated 22 March 2006, the territorial authority stated that it was satisfied with the Determination as it stood, but did not believe that it went far enough when considering compliance with clause B2–Durability of the Building Code. In this respect, the territorial authority sought:

> [T]he inclusion of a suitably worded clause in the decision to alter the original building consent to include a waiver or modification that provided for the commencement of the period of durability of all building components, including the cladding, from the date on which the building was materially completed, that date being on or about 9th October 2000.

4.6 The new owner was informed of this request and had no objection to this new determinable issue being considered by me.

5 The expert's report

5.1 The Department's expert inspected the building on 12 May 2005 and furnished a report that was completed on 20 May 2005. The expert noted that the finish to the cladding appeared to be a good standard with a general impression of "reasonably good trade practice". The expert noted that control joints are not needed for the wall areas present in this house. Apron flashings appeared weathertight and generally in accordance with the manufacturer's instructions.

5.2 The expert removed small sections of the plaster at the jamb to sill and jamb to head junctions of a window to examine the flashings and noted that aluminium head flashings and purpose made uPVC jamb and sill flashings have been used. The expert also removed sections of the plaster at the junction of a pergola beam with the wall cladding and at the base of the wall below this junction. A small section of internal lining was removed to expose the bottom plate to door stud junction at the door from the walkway to the garage.

5.3 The expert took non-invasive moisture readings at interior linings and exterior wall cladding throughout the house. Readings over 20% were recorded beside the garage doors and in the wall between the garage and the walkway. A further 12 invasive moisture readings were taken through external wall claddings, which included 2 levels of 23% beside the garage doors, one at 18% below the w.c. window, and 5 at 18% at corners, doors and windows of the living room. While moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure, the expert noted that the weather had generally been very dry for the 5 months preceding the inspection.

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

- Clearance from the bottom of cladding to adjacent ground or paving levels was

inadequate in a number of areas;

- Penetrations and fixings through wall cladding are generally not well sealed, although there is no evidence of associated moisture penetration;
- The overlap of fascia and barge boards over the wall cladding is minimal and there are signs of past leaks, which are likely to be due to water being driven between the barge and the cladding and into the wall cavity;
- There are minor cracks to wall cladding and cracking to window sills;
- Downpipes discharging onto lower roofs lack spreaders;
- Pergola beams penetrate the cladding and the building wrap outside bedroom 3, with the timber surface plastered. There is evidence of moisture staining of the timber, although no evidence of moisture at bottom plate level;
- Signs of corrosion were evident in carpet edge fixings in bedroom 2. However moisture levels were recorded at only 15%, and the presence of sealant repairs of cracks in the window sill may indicate a past leak that is now repaired;
- Signs of corrosion were evident in carpet edge fixings in the living room. Moisture levels of 18% were recorded in bottom plates near external corners, beside the north glazing and the south window. Ground clearances were inadequate in this area;
- The fibre cement cladding at the garage doors extends behind the timber jamb liners, which have unpainted bottom edges and inadequate clearance below. Signs of water damage to skirtings and linings beside the openings were evident, and moisture levels of 21% to 23% were recorded in this framing and also in the wall to the walkway, which is below an apron flashing on the roof above; and
- The bottom plate on the left of the window to the ground floor W.C. had a moisture reading of 18%, and there were signs of water damage in the skirting. This area is below the lower end of an apron flashing on the roof above, although the flashing appeared to be adequate. Ground clearances are inadequate in this area.

5.5 Copies of the expert's report were provided to each of the parties and both accepted the report. The current owner accepted the expert's report in a letter to the Department dated 2 March 2006.

6 Evaluation for code compliance

6.1 Evaluation framework

6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution[4], in this case E2/AS1, which will assist in determining whether the named features of this house are code compliant. However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code; and
- Usually when there is non-compliance with one provision of an Acceptable Solution, it may be necessary to add some other provision to compensate for that in order to obtain compliance with the Building Code.

6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the overall design of the building, the surrounding environment, the detailed design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations (refer to Determination 2004/1 *et al*)[5] 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:

- is built in a high wind zone
- is a maximum of two storeys high
- is fairly complex in plan and form, with complex roof to wall junctions
- has verge and eave projections of 175 mm overall above most walls

[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.

- has two pergolas attached to the building
- has external windows and doors that have aluminium head flashings and purpose made uPVC jamb and sill flashings
- has monolithic cladding which is fixed directly to the framing with no drainage cavity
- has untreated external wall framing that will offer 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 the elevations of the 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 constructed is assessed for the purposes of issuing a code compliance certificate.

6.3 Weathertightness performance

6.3.1 Generally the cladding appears to have been installed according to good trade practice, but some junctions, edges, and penetrations are not well constructed. These areas are all as described in paragraph 5.4 and in the expert's report as being:

- the inadequate cladding clearances in a number of areas around the house
- the lack of adequate sealing of penetrations and fixings
- the inadequate overlap of fascias and barges onto wall cladding
- the superficial cracking to walls and the cracking of a number of window sills
- the lack of spreaders from upper roofs onto lower roofs
- the penetration of pergola beams through the wall cladding
- the base of the garage door reveals and the reveal to cladding junction
- the questionable weathertightness of apron flashings above the walkway to garage wall, and above the W.C. wall.

6.3.2 I note the expert's advice that the untreated wall framing may have suffered structural damage from water penetration, and consider that any areas showing signs of past or present leaks should be exposed, investigated and repaired if necessary.

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 sheets, I do not accept that the lack of a drainage cavity in itself prevents the house from complying 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 wall framing at several locations at present. Consequently, I am not satisfied that the cladding system as installed 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 in this 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 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 the untreated wall framing may have suffered structural damage from water penetration, and consider that any areas showing signs of past or present leaks should be exposed, investigated and repaired if necessary.

7.5 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 applicant. The 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. As the external wall framing is untreated, I would recommend that periodic moisture content testing be carried out to all areas of the external cladding.

7.6 It is emphasised 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 In the circumstances, I decline to incorporate any waiver or modification of the building code in this determination.

8 The decision

The cladding issue

8.1 In accordance with section 20 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 refuse 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 drainage cavity.

8.3 I note that the territorial authority has issued a Notice to Rectify that also required provision for a drainage cavity. Under the Act, a Notice to Rectify (the equivalent to a notice to fix under the Building Act 2004) can require the owner to bring the house into compliance with the Building Code. The Building Industry Authority has found in a previous Determination 2000/1 that a Notice to Rectify cannot specify how that compliance can be achieved. I concur with that view. 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.

8.4 I would suggest that the parties adopt the following process to meet the requirements of clause 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 applicant 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.

The durability issue

8.5 I note that the relevant provision of clause B2 of the Building Code is that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods "from the time of issue of the applicable code compliance certificate".

8.6 As set out in paragraph 4.5, the territorial authority has questioned whether all the building elements used in the house will be durable for the required number of years in accordance with clause B2 of the Building Code (see sections 18 and 20 of the

Act), considering the age of the construction. I am of the opinion that the territorial authority should amend the original building consent by making it subject to a modification of the Building Code in accordance with section 34(4) of the Act. This is to be to the effect that the durability of the building elements that the territorial authority does not require to be replaced with new components is to be measured from the date of the substantial completion of the building instead of from the time of the issue of the code compliance certificate. For any element for which a durability requirement may have expired under the above criteria, consideration should be given to waiving the B2 requirement for these items. The land information memorandum relating to this house should also be amended in line with the above. For the purposes of this determination I am of the opinion that "substantial completion" of the building is achieved when the building is ready for occupation.

8.7 I therefore determine that the territorial authority is to amend the original consent to incorporate a modification of clause B2 of the Building Code to the effect that the required durability periods for all the building elements that are not to be rectified are to be measured from the date of the substantial completion of the building and not from the date of the issue of a code compliance certificate. I am prepared to accept that the substantial completion of the building occurred on 9 October 2000, as set out in the territorial authority's letter to the Department of 22 March 2006.

8.8 Following this amendment, any code compliance certificate subsequently issued by the territorial authority should be issued in line with the amended building consent.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 26 April 2006.

John Gardiner

Determinations Manager