Determination 2008/21

Refusal of a code compliance certificate for a house with a monolithic cladding system at 9 La Colina Place, Tauranga

1. The matters to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, John Gardiner, Manager Determinations, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicants are M and D Rich (the applicants") acting through their legal adviser. The other party is the Tauranga City Council ("the territorial authority"). The applicants have identified CGAF Limited, a company providing building regulatory services to the territorial authority ("the territorial authority's contractor") and Miden Construction Co Ltd ("the builder") as persons with an interest in this matter.

1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for a 5-year-old house because it was not satisfied

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

that it complied with Clauses B2 "Durability" and E2 "External Moisture" of the Building Code[2] (First Schedule, Building Regulations 1992).

1.3 The matter for determination is whether the cladding as installed to the walls of the house ("the cladding") complies with Clauses B2 and E2 (see sections 177 and 188 of the Act). By "the cladding as installed" I mean the components of the systems (such as the backing materials, the flashings, the joints and the coatings) as well as the way the components have been installed and work together.

1.4 In making my decision, I have considered the submissions of the parties, the report of the expert commissioned by the Department to advise on this dispute ("the expert"), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.

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 a two-storey detached house situated on a level building platform on a south-sloping site, which is in a high wind zone for the purposes of NZS 3604[3]. Construction is conventional light timber frame, with a concrete slab and foundations, monolithic wall cladding, and aluminium windows. The house is "boomerang" shaped in plan and complex in form, with roofs at five varying levels.

2.2 The 3^{o} pitch profiled metal roofs have internal membrane-lined gutters, with parapets to the perimeters of each roof level. The parapets are capped with fibreglass cloth, which is extended above the membrane gutter upstands on the inside and over decorative polystyrene cornices on the outside. The outer walls have another decorative band about 600mm below the cornice bands, with planted square blocks between.

2.3 A large deck, with spaced timber decking and monolithic-clad balustrades, extends along the upper level of the west elevation. Exterior stairs provide access to ground level at the southwest corner.

2.4 The expert noted that he was unable to inspect any of the timber wall framing, and I note that the drawings describe the framing timber as "kiln dried". I also note that the framing to the clad balustrades is noted as "H3" and the deck posts as "H5". Given the date of construction in 2002 and the lack of other evidence, I consider the external wall framing to be untreated.

2.5 The walls of the house are clad with 7.5mm thick fibre-cement sheets fixed through the building wrap to the framing, and finished with a textured coating and a paint system. The decorative polystyrene bands and blocks are similarly finished.

[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

2.6 The cladding applicator and the applicator of the fibreglass cappings have provided producer statements (refer paragraphs 3.3 and 3.13 respectively).

3. Background

3.1 The territorial authority issued a building consent (No. 6918) on 11 December 2001, which I have not seen. It appears the building consent was accompanied by a building certificate issued by Bay Building Certifiers ("the building certifier").

3.2 The building certifier carried out various inspections during construction, including a preline inspection on 22 March 2002 (which passed). There was a final inspection on 24 May 2002 (which did not pass), and the building certifier's "Job report" notes:

> Producer statement required for exterior texture. Seal Hardies around parapet. Fit handrail to balcony in external staircase.

3.3 The cladding applicator provided a producer statement dated 28 May 2002, noting that he was an approved applicator of "Plaster Systems", and stating that the "Multiplast jointing" system was applied on 10 May 2002 in accordance with the manufacturer's installation/application requirements. The statement also expressed satisfaction with the substrate preparation and the installation of required flashings, with a note added stating "Hardies – Head flashing only".

3.4 On 2 August 2004, according to the territorial authority's contractor (refer to paragraph 3.9), the owners advised the building certifier that leaking was occurring through the parapet tops. However, that is disputed by the owners (refer paragraph 4.7). Final "recheck" inspections were carried out on 4 August 2004 and 25 August 2004. The job report for the second inspection noted:

> Recheck now okay. Need confirmation of maintenance program, need confirmation that sill flashings etc are in place and that parapet flashings are in place. Need owners statement that they have not experienced any leaks.

3.5 I am not aware of any further communication regarding the project or why the building certifier did not issue a code compliance certificate before it ceased operating as a building certifier on 30 June 2005.

3.6 According to the installer of the parapet cappings, these were not installed until December 2006 (refer paragraph 3.13). The expert has also noted that the fibreglassing of the top of the parapets "was only done recently".

3.7 In a letter to the territorial authority's contractor dated 16 November 2007, the builder confirmed that "all sill flashings etc., plus parapet flashings are in place."

3.8 In a letter to the territorial authority's contractor dated 26 November 2007, the owners confirmed that there were no leaks and described the maintenance programme in place for the house.

3.9 In a letter to the applicants, dated 28 November 2007, the territorial authority's contractor noted that a final inspection of the house had been carried out 25 August 2004 and suggested that a determination should be sought as:

> The notes on the job report show that on 2/08/2004 you advised us that the dwelling was leaking via the parapets. You were advised that a site investigation by a suitably qualified person was required and that the investigator was to provide a detailed account of the reasons for this leak and measures taken to overcome it.
>
> The building was built in 2001/2002, is a high risk category and is clad with direct fixed fibre cement sheeting finished with light plaster.
>
> We do not believe that we can safely advise the Council that the building complies and will continue to comply with NZBC E2 (External moisture).

I note that this letter is headed "Bay Inspections Ltd" and says that:

> Bay Inspections Ltd has been contracted by the [territorial authority] to carry out inspections of buildings that are under construction pursuant to a current building consent.

3.10 I have seen no records that confirm the communication in relation to leaking through the parapets, although the expert has commented on a "history of leaks" related to the parapet detail prior to installation of the fibreglass cappings in December 2006 (refer paragraph 3.6).

3.11 In a letter to the territorial authority dated 29 November 2007, the applicants attached a copy of the letter quoted above and noted that, although prepared to seek a determination, the owners:

> sought some assurance from the Council that upon providing the determination that either a Code Compliance Certificate will be available or alternatively, a Certificate of Acceptance. Can you please advise in writing if the satisfactory determination as to the compliance with NZBC E2 from the Department of Building and Housing will be sufficient to satisfy outstanding requirements and will enable Council to issue a Code Compliance Certificate.

3.12 I note that the job report recorded a phone call from the applicants to the territorial authority's contractor as follows:

> 3/12/2007 [applicants] rang. Informed him [member of staff] has said that the contents of the letter are "the bottom line". No further meeting necessary.

3.13 The installer of the fibreglass parapet cappings provided a producer statement, dated 3 December 2007, stating that the cappings had been installed in accordance with the Building Code and with good trade practice during December 2006 (refer paragraph 3.6).

3.14 In a letter to the applicants dated 3 December 2007, the territorial authority stated that the next step was for the owners to apply for a determination and, as part of this process, a notice to fix stating the non-compliance issues would be issued. The territorial authority noted that at the conclusion of the determination process the Department would recommend a way forward but stated that:

> Council is unable to guarantee that a Code Compliance Certificate or Certificate of Acceptance will be issued at the conclusion of the determination process.

3.15 On 6 December 2007, the territorial authority issued a notice to fix under section 164 of the Building Act 2004, which stated that the Particulars of Contravention or Non-compliance were:

> That the dwelling construction at the above address does not comply with NZ Building Code clause E2 (external moisture).

3.16 In a letter to the owners dated 6 December 2007, the territorial authority confirmed that it had refused to issue a code compliance certificate for the house noting:

> The reason for this is that Council has not carried out any inspections and accordingly is not prepared to accept the liability that would be generated by issuing a Code Compliance Certificate.

3.17 The Department received an application for a determination on 22 January 2008.

4. The submissions

4.1 Within the application, the applicants stated that the matter for determination is:

> Whether the dwelling complies with and will continue to comply with NZBC E2 (External Moisture).

4.2 The applicants forwarded copies of:

- the consent drawings
- a producer statement provided by the installer of the fibreglass parapet capping
- correspondence with the contractor and the territorial authority
- the notice to fix dated 6 December 2007
- various other statements.

4.3 The territorial authority made no submission.

4.4 A copy of the applicants' submission was forwarded to the territorial authority.

4.5 The draft determination was sent to the parties for comment on 22 February 2008. The territorial authority accepted the draft without comment.

4.6 I received a submission, dated 28 February 2008, from lawyers acting on behalf of the territorial authority's contractor. While the territorial authority's contractor is not a party to this determination, I consider that the comments that are made in the submission are pertinent. The submission noted that:

- The building certifier went into voluntary liquidation and does not now operate as Bay Inspections Ltd.
- Bay Inspections is the trading name of CGAF Limited which is a separate and independent company which was incorporated on 28 September 2004.
- CGAF Limited provides building regulatory services to the territorial authority.

4.7 The applicants' legal advisers forwarded a submission dated 7 March 2008 which noted the following:

- The applicants did not know that the building was leaking and had not informed the building certifier of this.

- The applicants had not received a copy of the final inspection report completed on 25 August 2004 (refer paragraph 3.4).

- The applicants first became aware that the building did not have a code compliance certificate when a LIM report was obtained by a potential purchaser.

- The applicants' legal advisers were "perplexed to discover" that the territorial authority's contractors were not trading as Bay Inspections Limited, despite the information set out in the title and the body of the letter to the applicants dated 28 November 2007 (refer paragraph 3.9).

4.8 I acknowledge the submissions and have amended the determination as appropriate.

5. The expert's report

5.1 As mentioned in paragraph 1.4, 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 house on 24 December 2007 and 15 January 2008 and furnished a report that was completed on 7 February 2008, noting that the house appeared to be generally in accordance with the consent drawings.

5.3 The expert described the building as a "quality home which has been well finished except for the cladding work", which had not been installed to the manufacturer's instructions and was finished to "an average standard". The expert noted that the windows are face-fixed, with metal head flashings and no sill or jamb flashings.

5.4 The expert noted that moisture penetration was "obvious from a simple visual inspection", and confirmed this initial impression with thermal imaging and limited invasive moisture testing at typical high risk areas. Thermal images indicated moisture:

- below parapets and accumulating above window heads
- below parapet to wall junctions.

The three invasive moisture tests revealed elevated moisture levels as follows:

- 29% in the top plate at the corner of the clad balustrade.
- 20% below a relatively sheltered garage side window.
- 35% at the junction of the entrance canopy parapet with the wall.

Moisture levels that are elevated significantly after cladding is in place generally indicate that external moisture is entering the structure and, in the light of the results, the expert considered that further testing was unnecessary.

5.5 Commenting specifically on the wall claddings, the expert noted that:

- there are numerous cracks visible at vertical cladding joints

- no control joints have been provided as required by the manufacturer's instructions
- some of the cladding joints line up with the window jambs
- the windows have been fixed over uncoated fibre-cement, with no seals provided between jamb flanges and the cladding and the coating applied after window installation
- no drainage gaps are provided above the head flashings, and moisture is accumulating above the heads
- no drainage gaps are provided at the window sill flanges, and moisture can enter the unsealed jambs with no way of escaping at the sill
- the parapets are not weathertight, with moisture accumulating in some areas of the upper wall framing, cappings have inadequate overlaps over parapets, there are no saddle flashings at junctions with walls, and some parapets lack cappings
- some areas of cladding to the parapets situated above internal walls are uncoated and, in some cases, unpainted
- there is no clearance from the bottom of the upper wall cladding to roof apron flashings
- the junction of the entrance canopy with the wall lacks a saddle flashing, and the parapet is not weathertight, with evidence of moisture penetration
- the handrails are fixed to the flat tops of the clad balustrades, with moisture penetrating into the balustrade framing, and there are no saddle flashings at the junctions of the balustrade with the walls.

5.6 A copy of the expert's report was provided to the parties on 11 February 2008.

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 Solutions[4], which will assist in determining whether the features of these houses 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.

[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.

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 determinations[5] (for example, Determination 2004/1) 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.

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 monolithic cladding fixed directly to the framing
- has no eaves or verge projections, with parapets above all exterior walls
- has parapets between roof levels, situated above inside spaces
- has an open deck, with a clad balustrade, attached to the upper level
- has external wall framing that is not treated to a level that provides resistance to the onset of decay if the framing absorbs and retains moisture.

6.2.2 The house has been evaluated using the E2/AS1 risk matrix. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting level of risk can range from 'low' to 'very high'. The risk level is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher levels of risk will require more rigorous weatherproof detailing; for example, a high risk level is likely to require a particular type of cladding to be installed over a drained cavity.

6.2.3 When evaluated using the E2/AS1 risk matrix, the weathertightness features outlined in paragraph 6.2.1 show that all elevations of the house demonstrate a high weathertightness risk rating. I note that, if the details shown in E2/AS1 were adopted as the means of demonstrating code compliance, the monolithic cladding would require a ventilated and drained cavity.

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

7. Discussion

7.1 Taking into account the expert's report, I am satisfied that the current performance of the cladding installed on this house is inadequate because it has not been installed according to good trade practice or to manufacturer's recommendations at the time of construction. In particular, the monolithic cladding demonstrates the key defects listed in paragraph 5.5 and is allowing significant moisture penetration into the walls through these defects, which in turn may have led to decay in the untreated framing timber at some locations.

7.2 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 either Clause B2 or Clause E2 of the Building Code.

7.3 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 fixing the identified faults, as opposed to partial or full re-cladding, could result in compliance with Clauses B2 or E2. I consider that final decisions on whether code compliance can be achieved by either particular repairs 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 repair option should be submitted to the territorial authority for its consideration and approval.

7.4 I note that the Department has produced a guidance document[6] on weathertightness remediation. I consider that this guide will assist the owners in understanding the issues and processes involved in remediation work and in exploring various options that may be available to them when considering the upcoming work required to the house.

7.5 Effective maintenance of claddings is important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner. The Department has previously described these maintenance requirements, including examples where the external wall framing of the building may not be treated to a level that will resist the onset of decay if it gets wet (for example, Determination 2007/60).

7.6 I also share the concerns expressed by the applicants' legal advisers regarding the letter that the territorial authority's contractor sent to the applicants on 28 November 2007 which makes reference to "Bay Inspections Ltd". From 28 September 2004 the correct title of the company was "CGAF Limited (trading as Bay Inspections)", and the letter is produced in the name of a company that did not exist on the date the letter was written.

[6] External moisture – A guide to weathertightness remediation

7.7 In my opinion, an owner should be fully informed as to who is acting on behalf of a territorial authority. The territorial authority should therefore ensure that the identity of any contractor acting on its behalf is correctly described in any correspondence.

8. The notice to fix

8.1 I note that the territorial authority has issued a notice to fix that requires the owners to bring the house into compliance with the Building Code. While the notice is appropriate in not specifying the features that are required to be incorporated, it should, but does not, identify the weathertightness defects in the cladding.

8.2 The territorial authority should now issue a further notice to fix that identifies the defects listed in paragraph 5.5 and refers to any further defects that might be discovered in the course of rectification, but does not specify how those defects are to be fixed. It is not for me to decide directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the owner 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.

8.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 8.2. The owner should produce a response to the notice to fix 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.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the cladding does not comply with Clauses E2 and B2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 11 April 2008.

John Gardiner
Manager Determinations