

## Determination 2007/82

### Refusal of a code compliance certificate for a building with a corrugated cellulose fibre cladding system at 42 Kon Tiki Road, Whiritoa



#### 1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“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 the owners, Mr McDuff and Ms Gamble (“the applicants”), and the other party is the Hauraki District Council (“the territorial authority”). The applicants have identified the builder of the house, Mr O’Reilly (“the builder”) as a related party to the dispute.

1.2 This determination arises from the decision of the territorial authority to refuse to issue a code compliance certificate for an 8-year old house with an attached 4-year old garage because it is not satisfied that the building work in “Stage 1” (refer paragraph 3.1) complies with clauses B2 “Durability” and E2 “External Moisture” of the Building Code<sup>2</sup> (First Schedule, Building Regulations 1992).

<sup>1</sup> The Building Act 2004 is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz).

<sup>2</sup> The Building Code is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz).

1.3 The matters for determination are whether:

**1.3.1 Matter 1: The cladding**

The cladding as installed on the building (“the cladding”) complies with clause E2 “External Moisture” of the Building Code. By “the cladding as installed” I mean the components of the system (such as the cladding material, the flashings, and the joints) as well as the way the components have been installed and work together.

**1.3.2 Matter 2: The durability considerations for Stage 1**

The elements that make up the building work in Stage 1 comply with clause B2 “Durability” of the Building Code, 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. I have evaluated this information using a framework that I describe more fully in paragraph 7.1.

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 detached house situated on a slightly elevated site, which is in a high wind zone for the purposes of NZS 3604. The house is mainly one storey high with an upper floor over the central third. Construction is conventional light timber frame, with concrete block footings, a concrete slab to the garage, timber-framed floors, aluminium windows, and a synthetic corrugated cladding system to all walls and roofs. The house shape is reasonably complex, with curved roofs at varying levels, and no eaves or verge projections over most walls.

2.2 An upper deck, with clad balustrades and metal capping, extends to the north from a first floor bedroom above the living areas below.

2.3 The expert has noted no evidence as to timber treatment. I have received no information as to the treatment if any of the house framing, and the date of construction would permit the use of untreated timber. The specification for the attached garage calls for wall framing to be “H1 Radiata No 1 P.G.”. However, given the date of construction of the building, I am unable to determine the particular level and type of treatment described as “H1”. I therefore consider that the wall framing of this house and garage is unlikely to be treated to a level that will provide resistance to fungal decay if it becomes wet and cannot dry out.

2.4 The cladding system to all walls and roofs is “Onduline”, which is a prefinished bitumen-impregnated cellulose fibre corrugated sheet. Except for the walls of the eastern stairwell (where corrugations are vertical), the corrugations are horizontal, with the sheets overlapped and fixed through the building wrap to the framing.

2.5 In a letter to the territorial authority dated 16 March 2005 (refer paragraph 3.7), the supplier of the cladding, C.V. Marketing Ltd, noted that the manufacturer has

provided a 15-year “waterproof warranty” and confirmed that the cladding meets the durability and weathertightness requirements of the building code.

### 3. Background

- 3.1 The territorial authority issued a building consent (No. 8802) on 9 October 1997, based on a building certificate dated 24 September 1997 issued by Bay Building Certifiers Ltd (“the building certifier”). This building consent was for the house with an attached carport (referred to herein as “Stage 1”).
- 3.2 The territorial authority carried out all inspections during construction, including a preline inspection on 15 December 1997, and it appears that Stage 1 was substantially completed during 1998 although I have received no records of any inspections undertaken in 1998 or 1999.
- 3.3 The territorial authority carried out an inspection of Stage 1 on 25 August 2000 and, in a letter to the applicant dated 25 August 2000, noted that the work was completed to an interim stage except for gutters, downpipes and soakpits. The territorial authority attached an interim code compliance certificate (No. 3583).
- 3.4 It appears that a final inspection of Stage 1 was undertaken on 5 October 2001 and in a letter to the applicants, dated 18 October 2001, the territorial authority made no mention of the interim code compliance certificate instead providing a list of 11 items requiring attention (including the drainage work referred to in paragraph 3.3).

The territorial authority subsequently issued a second building consent (No. 16343) on 22 November 2001 for an attached garage and storage area (referred to herein as “Stage 2”) to replace the carport. The territorial authority carried out various inspections during construction, and it appears that Stage 2 was substantially completed during 2002. I do not know whether a code compliance certificate has been issued in respect of Stage 2. I consider this determination to be concerned only with Stage 1.

- 3.5 In a letter to the territorial authority dated 22 May 2002, the applicants noted that the two outstanding items identified for the interim code compliance certificate for Stage 1 (refer paragraph 3.3) had been completed, and requested the territorial authority to issue a final code compliance certificate for Stage 1. The applicants expressed concern about the subsequent expanded requirements (refer paragraph 3.4), noting:

...council now, over 12 months later and with no reference back to its own CCC No 3583 which required attention to only 2 items, can require that not 2 items , but a further 9 items of work be completed before a Code of Compliance can be issued. How can this make any sense?

- 3.6 A final inspection of Stage 1 and Stage 2 was undertaken on 17 March 2003 and, in a letter to the applicants dated 19 March 2003, the territorial authority listed 30 items requiring attention (most of which related to Stage 1). It appears that that there was no further correspondence during the following year.
- 3.7 A further final inspection of Stage 1 and Stage 2 was undertaken on 16 April 2004 and, in a letter to the applicants dated 22 April 2004, the territorial authority listed 28

items requiring attention (most of which related to weathertightness). The list included a requirement for “a letter of confirmation” from the cladding manufacturer, which was subsequently provided on 16 March 2005 (refer paragraph 2.5).

- 3.8 It appears that there was no further correspondence between the parties until the following year. A further final inspection was undertaken on 7 April 2005 and, in a letter to the applicants dated 19 May 2005 (which I have not seen), the territorial authority noted that the time lapse since completion of Stage 1 was now a problem and advised that a final code compliance certificate would not be issued.
- 3.9 It appears that there was no further correspondence until the applicants met with the local mayor to discuss their concerns on 7 June 2006. In a letter to the mayor dated 21 June 2006, the applicants set out the history of the project and outlined their objections to the territorial authority’s actions, maintaining that the approach had contravened both the spirit and the intention of the Act and noting:
- ...we were misled into working through a burgeoning maze of so called compliance requirements, the majority of which would be considered trivial and generally irrelevant to the CCC process.
- 3.10 In a letter to the applicants dated 6 July 2006, the territorial authority attached a summary of the records held on both stages of the building work, outlined the history of the project, explained that the most significant issues related to the weathertightness of the building and noted:
- The purpose of the Building Act is not only to protect current owners from substandard work and non-compliance with the Building Code but also to protect future owners from the consequences of such non-compliance. If we issued a Code Compliance Certificate to you on the basis of the 28 remedial actions we listed in our letter to you on 22 April 2004 being uncompleted, we would be failing in our duty not only to you but to potential future owners of the property.
- 3.11 In a letter to the territorial authority dated 15 July 2006, the applicants advised that they intended to apply for a determination, noting:
- We did our damndest to meet with the building inspectors’ demands, the goal posts kept shifting. In spite of remedying all the points the building inspector wanted remedied, during his final inspection, he did not even look at the work made good, but said it couldn’t be given a code of compliance because of the manner in which the nails had been applied and that was that, go for a Determination was what we were told!
- 3.12 On 16 November 2006, the Department received an application for a determination from the owners.

## **4. The submissions**

- 4.1 In a letter dated 2 November 2006 that accompanied the application, the applicant set out the history of the project, noted that the consents for both stages were issued well before the Building Act 2004, described the frustrations resulting from the territorial authority’s changing requirements and explained that the exterior of the building had

always been accessible for inspections, while interior inspections could have been easily arranged. The applicant also included the following points:

- The territorial authority's property file presents the house as an unjustified serious liability, which adversely affects the property value.
- Building surveyors have confirmed that the house is sound and dry (confirmed by non-invasive moisture testing), and should meet the requirements of the building code.
- The house is competently designed, built and presented, with the cladding correctly fixed as per the manufacturer's onsite advice.

The applicants concluded:

In our experience, other local bodies will go out of their way to assist with the compliance process in every way possible. We have always treated the inspector with courtesy and done our utmost to comply. This is extremely difficult when the goalposts keep moving.

4.2 The applicants forwarded copies of:

- some of the drawings and consent documentation for both stages
- the correspondence with the territorial authority
- the correspondence with the mayor
- various producer statements, technical information and other statements.

4.3 The territorial authority made no submission.

4.4 Copies of the applicant's submission were provided to the parties, which made no submission in response.

4.5 A copy of the draft determination was sent to the parties for comment on 31 January 2007. The territorial authority accepted the draft.

4.6 The draft was also issued for the parties to agree a date when all the building elements installed in the house, apart from the items that have to be rectified, complied with the durability provisions of the building code. The territorial authority proposed that the date should be 30 December 1998 (refer paragraph 6.6).

4.7 The applicants requested a hearing, which was held on 28 June 2007 (refer paragraphs 6.1 to 6.6).

4.8 Following the hearing a second draft determination was sent to the parties on 5 July 2007. Both parties accepted the draft without comment.

## **5. The expert's report**

5.1 As discussed 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 cladding of the building on 3 January 2007, and furnished a report that was completed on 8 January 2007. The expert noted the building was generally in accordance with the consent drawings. Cladding clearances and base overlaps generally appeared adequate, but little maintenance appeared to have been carried out. The expert also noted the “overall poor standard of workmanship and inappropriate reliance on surface sealant”.
- 5.3 The expert noted that the cladding sheets were 2000mm x 940mm with 37mm corrugations, and the sheets appeared to be satisfactorily fixed through the crests with 75mm stainless steel nails and washers.
- 5.4 The expert noted that the windows were face-fixed with metal head flashings, and no jamb or sill flashings – with unpainted corrugated compressible foam strips inserted under the jamb flanges.
- 5.5 The expert took non-invasive moisture readings through internal linings of exterior walls throughout the house, and noted no elevated readings. 10 invasive moisture readings were taken at sample locations, and the highest reading was recorded at 16%. Moisture levels above 18% recorded after cladding is in place generally indicate that external moisture is entering the structure.
- 5.6 Commenting specifically on the wall and roof cladding the expert noted that:
- the window head flashings slope back towards the wall, lack stopends (resulting in gaps and reliance on heavy sealant for weatherproofing), and some flashings are unfixed (apparently inserted following the cladding installation)
  - the windows lack jamb flashings – and the only protection is provided by the small overlap of the window flange over the cladding, unpainted compressible jamb foam (which was easily removed) and heavy sealant use (indicating past attempts to improve weathertightness). There are no sill flashings, with bare timber visible under the sill in some areas
  - the vertical profiled cladding lacks a base vermin stop
  - the unpainted timber fascias are poorly fixed – and are splitting and buckling
  - the roof cladding is folded over the wall cladding in some areas (in lieu of a properly formed separate barge flashing)
  - in the roof areas, apron, barge and ridge flashings are generally crudely formed, joined and weatherproofed (risking future water entry) and the roof cladding is inconsistently fixed with inadequate laps in some areas
  - in wall and roof areas, the sheet layout is generally poor – with the positioning of overlaps showing a lack of consideration of weathertightness
  - there are some areas of damage to the roof and wall claddings
  - weatherproofing of the deck balustrade to wall junctions is inadequate, with no evidence of backflashings, heavy use of sealants and gaps showing in some areas
  - penetrations through the cladding rely on sealant alone for weatherproofing.

- 5.7 The expert also noted that cedar louvres are used in lieu of aluminium windows in several areas, and water staining on the timber of the staircase louvres indicated a possible lack of weathertightness. During the hearing, the applicants explained the circumstances leading to this staining (refer to the first bullet point in paragraph 6.2). Based on observations during the site visit (refer paragraph 6.5), I accept the applicants' explanation and consider that the cedar louvres in the staircase are adequately weathertight.
- 5.8 A copy of the expert's report was provided to each of the parties on 8 January 2006.

## **6. The hearing**

- 6.1 The applicant requested a hearing, which was held on 28 June 2007 before me. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Building Act 2004. The applicants appeared on their own behalf, and the territorial authority was represented by two of its officers. Three staff members and two consultants of the Department also attended.
- 6.2 The applicants' verbal submission was predominantly based on issues raised in their original submission. The applicants discussed the background to the dispute and described aspects of the construction, which I summarise as follows:
- The staining of the cedar louvres did not indicate a lack of weathertightness as reported by the expert, but had resulted from a one-off occasion when the louvres were accidentally left open during the rain (I address this issue in paragraph 5.7).
  - The remaining areas identified as defects in the expert's report were all present and visible during the territorial authority's final inspection on 25 August 2000, and should have been identified as defects at that stage (instead of which the cladding 'passed' inspection).
  - Since that initial final inspection on 25 August 2000, a series of further final inspections have identified increasing numbers of items requiring attention, despite some remedial work being carried out to the cladding.
  - Because of concerns that this past lack of certainty will continue, the primary outcome of the hearing should be to resolve exactly what work to the house is required in order to gain a code compliance certificate.
- 6.3 The applicants also pointed out several minor errors in the first draft determination, which have been amended as appropriate.
- 6.4 The territorial authority declined to make a verbal submission, noting that it had no further matters to raise on the matter.
- 6.5 The applicant invited those present at the hearing to visit the house to observe the relevant building elements. That invitation was accepted.
- 6.6 Following the visit to the house, the durability considerations relating to the age of the building work were explained, and the applicants agreed that the date of 30

December 1998 proposed by the territorial authority (refer paragraph 4.6) is an appropriate date when all the building elements installed in the house, apart from the items that have to be rectified, complied with the durability provisions of the Building Code.

- 6.7 I acknowledge the applicants' concerns as outlined in the fourth bullet point in paragraph 6.2, and accept that the history of the project has resulted in their lack of certainty with regard to the work required to gain a code compliance certificate. However, as explained during the hearing, the comments outlined in paragraph 5.6 summarise defects identified by the expert, and the territorial authority may choose to base the notice to fix (refer paragraph 10.3) on those comments. In turn, the notice to fix should form an appropriate basis for a detailed proposal for repairs to be prepared on behalf of the applicants.

## **7. Evaluation for code compliance**

### **7.1 Evaluation framework**

- 7.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solutions<sup>3</sup>, 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.

- 7.1.2 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<sup>4</sup> (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.

- 7.1.3 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.

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<sup>3</sup> 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](http://www.dbh.govt.nz).

<sup>4</sup> Copies of all determinations issued by the Department can be obtained from the Department's website.



## 7.2 Weathertightness risk

7.2.1 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, with many complex roof junctions
- has an upper deck, with clad balustrades, which is over a living area
- has no eaves and verge projections over most walls
- has horizontal corrugated cladding to most walls, which is fixed over an undrained cavity
- has external wall framing that is not treated to a level that will provide resistance to the onset of decay if the timber absorbs and retains moisture.

7.2.2 When evaluated using the E2/AS1 risk matrix, all elevations of this house demonstrate a high weathertightness risk rating. The matrix is an assessment tool that is intended to be used at the time of application for consent, before building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate.

## Matter 1: The cladding

### 8. Discussion

- 8.1 Taking into account the expert's report, I am satisfied that there is no evidence of external moisture entering the building at present, and accordingly, that its cladding currently complies with clause E2.
- 8.2 However, 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 building to remain weathertight. Because the cladding faults are likely to allow the ingress of moisture in the future, the house does not comply with the durability requirements of clause B2.
- 8.3 Notwithstanding the apparent current weathertightness indicated by the expert's report, I am satisfied that the roof and wall cladding is inadequate because it has not been installed according to good trade practice. In particular, the cladding demonstrates the key defects listed in paragraph 5.6 and in the expert's report.
- 8.4 I have also identified the presence of a range of known weathertightness risk factors in this house. The presence of the risk factors on their own is not necessarily a concern, but they have to be considered in combination with the significant faults identified in the cladding system. It is that combination of risk factors and faults that indicate that the structure does not have sufficient provisions that would compensate

for the lack of a drained and ventilated cavity. Consequently, I am not satisfied that the cladding system as installed complies with clause B2 of the Building Code. I have given further consideration to the question of B2 compliance under Matter 2 of this determination.

- 8.5 I find that, because of the extent and complexity of the faults that have been identified in the cladding, I am unable to make a decision about how compliance might be achieved. I consider this can only be made after a more thorough investigation of the cladding, which will require careful analysis by an appropriately qualified expert. Once that analysis is completed, the chosen repair option (whether targeted repairs, re-cladding, or a combination of both) should be submitted to the territorial authority for its consideration and approval.

## **Matter 2: The durability considerations for Stage 1**

### **9. Discussion**

- 9.1 The territorial authority has concerns about the durability, and hence the compliance with the building code, of certain elements of Stage 1 of the building, taking into consideration the completion of the building work, during 1998.
- 9.2 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).
- 9.3 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.
- 9.4 It is not disputed, and I am therefore satisfied that all the building elements installed in the house in respect of the Stage 1 work, apart from those items that are required to be rectified, complied with clause B2 on 31 December 1998. This date has been agreed between the parties, refer paragraph 6.6.
- 9.5 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.

- 9.6 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 listed elements if the owners apply for such a modification.
  - (b) it is reasonable to grant such a modification, with appropriate notification, because in practical terms the house is no different from what it would have been if a code compliance certificate for Stage 1 had been issued in 1998.

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

## 10. The decision

10.1 In accordance with section 188 of the Act, I hereby determine that the building work in Stage 1 does not comply with clause B2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.

10.2 I also determine that:

- (a) all the building elements installed in Stage 1 of the building, apart from the items that are to be rectified, complied with clause B2 on 31 December 1998.
- (b) The building consent for Stage 1 of the building (No. 8802) 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 31 December 1998 instead of from the time of issue of the code compliance certificate for all building elements provided that the modification does not apply to those elements requiring to be rectified as set out in paragraph 5.6 of Determination 2007/82.
- (c) once the roof and wall claddings are brought into compliance with the Building Code to its satisfaction, and following the modification set out in (b) above, the territorial authority is to issue a code compliance certificate in respect of building consent No. 8802 as amended.

10.3 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the owners to bring the cladding into compliance with the Building Code, including any associated defects discovered during the course of that work, but without specifying the features that are required to be incorporated. 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 owner to propose and for the territorial authority to accept or reject.

10.4 I would suggest that the parties adopt the following process to meet the requirements of paragraph 10.3. 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 owner should then produce a response to this in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person, as to the

rectification or otherwise of the specified issues. The proposal, and any associated amendments to the existing consent, or any new consent, should be carefully recorded in detail on the territorial authority's property file. 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 27 July 2007.

John Gardiner  
**Manager Determinations**