



Determination 2010/049

Refusal to issue a code compliance certificate for a 9-year old house at 810 Upper Queen Street, 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, Manager Determinations, Department of Building and Housing (“the Department”), for and on behalf of the Chief Executive of the Department.
- 1.2 The applicants are the owners of the house, I and V Cooper (“the applicants”). The other party is the Franklin District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.3 The determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 9-year-old house, because it was not satisfied that it complied with Clauses B2 and E2 of the Building Code (First Schedule, Building Regulations 1992)².

¹ The Building Act 2004, Building Code, compliance documents, past determinations and guidance documents issued by the Department are all available at www.dbh.govt.nz or by contacting the department on 0800 242 243.

² 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.

1.4 The matter to be determined³ is whether the decision of the authority to refuse to issue a code compliance certificate was correct. In making this decision, I must consider:

1.5 Matter 1: the external envelope

1.5.1 Whether the external envelope of the house complies with Clauses B2 Durability and E2 External Moisture of the Building Code. The 'external envelope' includes the cladding, its configuration and components, junctions with other building elements, formed openings and penetrations, and the proximity of these building elements to the ground.

1.6 Matter 2: The durability considerations

1.6.1 Whether the elements that make up the building work comply with Clause B2 Durability of the Building Code, taking into account the age of the house.

1.7 In making my decision, I have considered the submissions of the parties, the report of the independent expert ("the expert") commissioned by the Department to advise on this dispute, and other evidence in this matter.

2. The building work

2.1 The building is a two-level house built in 2001, with a commercial style, two-storey height glasshouse attached to the north-west elevation of the house, and a single-level garage attached to the south west elevation of the house. The house is situated on a near flat building site in a rural area a short distance from Pukekohe town centre. The overall site slopes gently down to the south east and is in a 'high' wind zone for the purposes of NZS 3604⁴.

2.2 The house is constructed of a light timber frame above poured concrete strip footings, with concrete block foundation walls and a concrete ground floor slab. The external walls are clad with direct-fixed exterior insulation finishing system (EIFS) on three elevations, and plastered concrete block veneer installed over a drained and ventilated cavity on one elevation adjoining the glasshouse.

2.3 The gable roofs are long-run corrugated steel with a 25° pitch, and no eaves or verge overhangs. However, the glasshouse provides protection for much of the cladding on the north east elevation. The house has powder-coated aluminium joinery and a timber-framed cantilevered balcony at the first floor level, on the north-west elevation, so is entirely within the glasshouse.

2.4 The glasshouse is of standard commercial construction, with steel frame on concrete pile and concrete strip foundations, and a proprietary aluminium glazing system.

³ Under section 177(b)(i) of the Building Act 2004

⁴ New Zealand Standard NZS 3604:1999 Timber Framed Buildings.

- 2.5 A pergola shown on the north-east elevation of the consented drawings was constructed with the house in 2001, but was subsequently removed as a precaution at the owners' request in 2004.
- 2.6 The timber framing is likely to be untreated kiln dried radiata pine. A small section of framing was replaced in the dining room when repairs were carried out in 2008. The framing used for these repairs was H3.2 treated framing.

3. Background

- 3.1 The authority issued a building consent for the house on 23 January 2001 (consent number 36015). The authority carried out eleven inspections of the building work during 2001. Construction was completed by mid-June 2001, with the exception of the balcony balustrade.
- 3.2 A notice to rectify was issued by the authority in June 2001, which detailed four items requiring rectification and completion, namely first floor coverings, balcony balustrade, clipping and securing of the glasshouse down pipes, and landscaping. An interim code compliance certificate was subsequently issued by the authority (number 7540) in June 2001 subject to the same four items listed in the notice to rectify.
- 3.3 A final inspection was requested by the applicants in March 2004. The authority inspected the property and in a letter dated 29 March 2004, refused to issue a code compliance certificate because it was concerned about whether the cladding applied to the house complied with the requirements of the Building Code Clauses B2 and E2.
- 3.4 Following the completion of remedial work, the applicants contacted the authority in October 2008 to request an inspection in December of that year. The authority requested that a determination regarding the cladding be completed prior to the inspection and issuing of a code compliance certificate.
- 3.5 The applicants made an application for a determination which was received by the Department on 20 January 2010.

4. The submissions

- 4.1 The applicants included a summary of key points from the application for building consent on 29 November 2000, through to the request by the authority that a determination be sought, with their application for determination dated 13 January 2010,. The applicants stated that the cladding issue given as a reason by the authority for its refusal to issue a code compliance certificate had not previously been raised by the authority as an area of concern. The applicants also stated that they had 'complied with the 2001 notice to rectify and resolved all issues identified by the [authority]'. The applicants listed several additional items that had, or would be rectified, including the pergola, dining room flashing (on two levels) and damaged frame replacement.

- 4.2 The applicants forwarded copies of:
- the building consent including the specification, interim notice to rectify, and interim code compliance certificate, and inspection and site records
 - photos of the house following removal of the pergola, flashing improvements, and rectification of the authority's compliance requests
 - correspondence from the authority
 - various other supporting documents.
- 4.3 The authority acknowledged the application for a determination and enclosed a copy of its inspection records and correspondence relating to the applicants' house.
- 4.4 The first draft determination was sent to the parties for comment on 19 April 2010. The draft was issued for comment and for the parties to agree a date when the building work, with the exception of the items requiring rectification, complied with Building Code Clause B2 Durability.
- 4.5 The parties agreed that the building work, with the exception of the with the exception of the items requiring rectification, complied with Clause B2 Durability on 1 June 2001.
- 4.6 The authority accepted the draft without comment.
- 4.7 The applicants did not accept the draft and in an email to the Department dated 30 April 2010 raised, in summary, the following points:
- The glasshouse and the house have separate gutters, the gutters where the glasshouse abuts the roof do not penetrate the external envelope, and the glasshouse does not adversely impact of the weathertightness of the house.
 - Clause E2.2 does not apply to the glasshouse as it is a semi outdoor space. The glasshouse provides shelter to the house.
 - The house is in a high wind zone.
 - The glasshouse provided shelter to the concrete block veneer walls meaning that the defects to these walls did not pose a weathertightness risk.
 - The sills to the EIFS cladding were currently performing adequately.
 - There are details mentioned in the expert's report that have not specifically been included in the draft determination as requiring remediation.
- 4.8 I have carefully considered the applicant's comments and amended the determination accordingly.
- 4.9 The applicants requested the opportunity to comment on a second draft determination. Consequently, the second draft determination was issued to the parties for comment on 20 May 2010.
- 4.10 The authority accepted the second draft determination without comment.

- 4.1.1 In a response dated 30 May 2010, the applicants accepted the second draft determination, subject to the clarification of the location of the second elevated moisture reading. I have considered the applicant's comments and amended the determination accordingly.

5. The expert's report

- 5.1 As mentioned in paragraph 1.7, I engaged an expert to provide an assessment of those building elements subject to the determination. The expert is an Associate of the New Zealand Institute of Architects. The report was filed on 9 March 2010 and a copy was sent to the parties on 12 March 2010.
- 5.2 The expert noted that the house appeared to have been built in accordance with the plans, other than the pergola on the north east elevation had been removed and it was not clear whether the EIFS cladding was the system that was specified.
- 5.3 The expert also noted that much of the house, including the visible part of the apron flashings was finished to a good standard.
- 5.4 The expert noted the ground clearances are generally adequate, and although the clearances inside the glasshouse were reduced because the tile and concrete floor is built up, the clearances appeared adequate in the circumstances.

5.5 Moisture levels

- 5.6 The expert took non-invasive moisture readings at numerous locations in the interior linings of the external walls, above and below the joinery. All readings were within the acceptable range. The expert also carried out invasive moisture testing of the framing at fourteen at-risk locations on the house's external walls. All external walls were tested. All testing locations were in the bottom plate of the house apart from one, which was situated on the sill plate of a lower level window. Two locations indicated retained moisture in the framing sufficient to sustain decay as follows:
- 19% at the bottom plate on the south east elevation of the garage
 - 20% at the bottom plate on the north west elevation of the garage.
- 5.7 The expert noted the low moisture readings represent the low end of seasonal variation and that readings in winter months may reach levels at which decay could occur in the framing.
- 5.8 The expert removed a small section of glass mesh reinforced plaster at the junction of the sill with the jamb of the garage window. The plastic sill and jamb extrusions were not extrusions from the EIFS cladding system specified in the building consent documentation. However, the expert found no evidence of moisture ingress around the windows, indicating that the window installation was adequate.

5.9 Weathertightness observations

5.9.1 Commenting on the weathertightness detailing, the expert noted:

Cladding

- there was a crack in the plaster outside the family room bi-fold door
- the plastered concrete block veneer cladding had cracks below the bathroom window, above the laundry door, and above the garage back door
- the skirting board at the garage was swollen at the left hand side (it is likely that this jamb details do not provide adequate protection during winter months)

Flashings, windows and doors

- joinery installed in the plastered concrete block veneer did not have head flashings installed, and rebated sill blocks and effective sill seals were not used in all cases
- the back door of the garage lacked a head flashing and the jamb sealant had failed or been removed on the right hand side
- the barge flashings do not adequately overlap the roof sheets
- the barge flashing and gutter fascia and does not adequately overlap the EIFS cladding

Penetrations

- the meter box is not sealed and the cabling holes in the base of the box allow water to enter behind the cladding.

5.10 Other observations

5.11 The glasshouse provides shelter to the north west wall of the house, and contributes to the weathertightness of the balcony, joinery and ground clearances. These details would not be adequate if the glasshouse did not provide this protection. The expert observed that it would be prudent for the authority to tag the file, such that if an owner wished to demolish the glasshouse, the weathertightness details of the north west wall be reviewed, appropriate conditions are attached to any consent granted for the removal or demolition of the glasshouse.

Matter 1: The external envelope

6. Discussion

- 6.1 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to examine 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. Weathertightness risk factors have also been described in previous determinations (for example, Determination 2004/1) relating to cladding and these factors are also used in the evaluation process.
- 6.2 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.
- 6.3 I have evaluated the house using the risk matrix in E2/AS1. The risk matrix allows the summing of a range of design and location factors applying to a specific building design. The resulting risk level can range from "low" to "very high" and is applied to determine what claddings can be used on a building in order to comply with E2/AS1. Higher risk levels will require more rigorous weatherproof detailing.

6.4 Weathertightness risk

- 6.4.1 The house has the following environmental and design features which influence its weathertightness risk profile:

Increasing risk

- The house is in a high wind zone (although the glasshouse provides protection to the north-east).
- The house is generally two storeys high.
- Some of the upper walls terminate within the boundary of lower level walls.
- There are no eaves or verge overhangs.

Decreasing risk

- The plan and form of the house is of medium complexity.
- There is a timber framed balcony at first floor level, which is located within the envelope of the glasshouse.

- 6.5 When evaluated using the E2/AS1 risk matrix, these features show that the house demonstrates a medium to high weathertightness risk rating.

6.6 Weathertightness performance

6.7 Generally, the cladding appears to have been well installed and is in good condition. However, it is clear from the expert's report that in certain discrete areas, particular aspects of the building work are allowing moisture to enter the cladding or could do so in the future. This is demonstrated by the elevated moisture readings returned at some locations around the house. It is important to note the moisture readings represent the low end of seasonal variation.

6.8 Taking into account the expert's report and comments outlined in paragraphs 5.6 and 5.9.1, I conclude that the following items require rectification with respect to weathertightness and durability:

- the cracks to the cladding and the swollen skirting board to the garage
- the inadequate flashing and jamb sealant to the back door of the garage
- the lack of sealing to the meter box
- the inadequate overlap of the barge flashing and gutter fascia over the EIFS cladding
- the barge flashings to the roof do not adequately overlap the roof cladding
- the weathertightness of the penetrations to the plastered concrete block veneer (refer also paragraph 6.10 below).

6.9 I consider the possible leaks below the down pipe to the upper level where it discharges into the gutter of the lower roof requires further investigation.

6.10 With respect to the weathertightness of the penetrations to the plastered concrete block veneer, while the glasshouse shelters this section of cladding from the weather, the glasshouse itself is a source of moisture subject to a different drying mechanism when compared with other external walls. I am of the view that the long-term exposure of the plastered concrete block veneer, to what is effectively internal moisture, is a matter that should be taken account of.

6.11 Further investigation is necessary to determine any other matters that may require rectification, specifically the condition of the framing below the barge ends, and below the former pergola fixings. I note however, that in general the cladding is working well to prevent moisture ingress and that, once these discrete matters have been fixed, it will comply with Building Code Clause E2.

6.12 Weathertightness conclusion

6.13 I consider that the expert's report establishes that the current performance of the external envelope is not adequate as there is evidence of moisture penetrating the external envelope. As such, the house does not comply with Clause E2 of the Building Code.

- 6.14 The house 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. The faults to the external envelope are likely to allow the ingress of moisture in the future, meaning that the house does not comply with the durability requirements of Clause B2.
- 6.15 Because the faults with the external envelope occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 6.8 will result in the house being brought into compliance with Clauses E2 and B2.
- 6.16 I also note that 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).

Matter 2: The durability considerations

7. Discussion

- 7.1 The authority has concerns about the durability, and hence the compliance with the Building Code, of the house, taking into account the age of the building work.
- 7.2 Clause B2.3.1 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. 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.
- 7.3 The nine year delay between when the building work was carried out in 2001, and the applicant’s request for a code compliance certificate has raised concerns with the authority that various elements of the house are now well through, or at the end of, their required durability periods, and would consequently no longer comply with Clause B2, if a code compliance certificate was issued that was effective from today’s date.

- 7.4 It is not disputed, and I am therefore satisfied, that all the building elements, with the exception of those items requiring rectification, complied with Clause B2 on 1 June 2001. This date has been agreed between the parties, refer paragraph 4.5.
- 7.5 In order to address these durability issues when they were raised in previous determinations, I sought and received clarification of general legal advice about waivers and modifications. That clarification, and the legal framework and procedures based on the clarification, is described in previous determinations (for example, Determination 2006/85). I have used that advice to evaluate the durability issues raised in this determination.
- 7.6 I continue to hold the views expressed in the previous determinations, and therefore conclude that:
- the authority has the power to grant an appropriate modification of Clause B2 in respect of all of the elements of the building
 - 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 2001.
- 7.7 I strongly suggest that, once the final determination has been issued, the authority should record the determination, and any modification resulting from it, on the property file and any LIM issued concerning this property.

8. What is to be done now?

- 8.1 The authority should issue a notice to fix requiring the owners to bring the building into compliance with the Building Code. The notice should identify the defects listed in paragraph 6.8 and 6.9, and referring to any further defects that might be discovered in the course of investigation and rectification. The notice should not specify how those defects are to be fixed and the building brought into compliance with the Building Code, as that is a matter for the owners to propose and the authority to accept or reject.
- 8.2 In response to the notice to fix, the owners should engage a suitably qualified person to undertake a thorough investigation of the external envelope to determine the extent of the defects and produce a detailed proposal describing how the defects are to be remedied. The proposal should be submitted to the authority for approval. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 8.3 Once the agreed matters have been rectified to both parties' satisfaction, the authority may issue a code compliance certificate in respect of the amended building consent.

9. The decision

9.1 In accordance with section 188 of the Building Act 2004, I determine that the house does not comply with Clauses B2 and E2 of the Building Code and accordingly I confirm the 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 house, apart from the items that are to be rectified, complied with Clause B2 on 1 June 2001.
- b) the building consent is hereby modified as follows:

The building consent is subject to a modification to the Building Code to the effect that, clause B2.3.1 applies from 1 June 2001 instead of from the time of issue of the code compliance certificate for all of the building elements, except for the items to be rectified as set out in Determination 2010/049.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 17 June 2010.

John Gardiner
Manager Determinations