



## Determination 2010/82

### Refusal to issue a code compliance certificate for a 12-year-old house with monolithic cladding because of concerns about weathertightness, structure and surface water at 123 Ridge Road, Greenpark, Christchurch



#### 1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004<sup>1</sup> (“the current 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 C Robertson and T Hollis (“the applicants”) and the other party is the Selwyn District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for a 12-year-old house because it was not satisfied that it complied with certain clauses<sup>2</sup> of the Building Code (First Schedule, Building Regulations 1992).

---

<sup>1</sup> The Building Act, Building Code, Compliance documents, past determinations and guidance documents issued by the Department are all available at [www.dbh.govt.nz](http://www.dbh.govt.nz) or by contacting the Department on 0800 242 243.

<sup>2</sup> 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.

- 1.3 The matter to be determined<sup>3</sup> is therefore whether the authority was correct to refuse to issue a code compliance certificate. In deciding this, I must consider:

**Matter 1: The external envelope**

Whether the building envelope complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The claddings include the components of the systems (such as the monolithic wall cladding, the windows, the roof cladding and the flashings), as well as the way the components have been installed and work together (I consider this matter in paragraph 7).

**Matter 2: Compliance with Clause B1 Structure**

Whether the building work complies with Clause B1 Structure (I consider this matter in paragraph 8).

**Matter 3: Compliance with Clause E1 Surface water and the inundation hazard and the section 73 notice**

Whether the building work complies with Clause E1 External Moisture, and whether a section 73 notice should be issued in respect of the property (I consider this matter in paragraph 9).

**Matter 4: The durability considerations**

Whether the elements that make up the building work comply with Building Code Clause B2 Durability, taking into account the age of the house (I consider this matter in paragraph 10).

- 1.4 Following the issuing of a draft determination dated 25 February 2010, the authority requested that the scope of the determination be extended so that the Department considers whether the building consent needs to be modified or if the Registrar-General of Land need to be notified in respect of the natural hazard of inundation onto the property. Accordingly, I have also taken this matter into account in this determination in Matter 3 above.
- 1.5 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. The decision was based on evidence received prior to the 7.1 magnitude earthquake of 4 September 2010, and as such it may contain items that have subsequently altered.

## **2. The building work**

- 2.1 The building work consists of a detached house, which is two-storeys in part and is situated on a flat site in a high wind zone for the purposes of NZS 3604<sup>4</sup>. Construction is generally conventional light timber frame, with a concrete slab, monolithic wall cladding, aluminium windows and profiled metal roofing. The house has a low to high weathertightness risk (refer paragraph 7.2).

---

<sup>3</sup> Under sections 177(b)(i) of the Act

<sup>4</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

- 2.2 The house is fairly complex in plan and form; with 30° pitch hipped and gabled roofs that have eaves and verges varying from about 450mm to 600mm overall. The upper level roof is extended as a monopitch over the lower level garage to the east, while the roof over the single-storey western section intersects with the upper walls.
- 2.3 An enclosed deck at the northwest corner of the upper level is set down below the roof level. The deck has monolithic-clad balustrades with a metal capping and a membrane floor over a plywood substrate.
- 2.4 The cladding system to the upper walls is a form of monolithic cladding system known as EIFS<sup>5</sup>. In this instance, the cladding system consists of 40mm 'H' polystyrene backing sheets fixed directly to the framing over the building wrap and finished with a proprietary modified plaster coating system.
- 2.5 The expert noted that the exposed timber in the roof space appeared to be Douglas Fir, and the wall framing exposed when cladding was removed from a window jamb to sill junction had 'a pink hue consistent with H1 Boric treatment'. Given the date of construction of the house in 1997, I am unable to determine the particular level of treatment and therefore consider that the wall framing of this house may not be treated to a level that will provide resistance to fungal decay.

### 3. Background

- 3.1 The authority issued a building consent (No. R414593) on 4 September 1996 under the Building Act 1991 ("the former Act").
- 3.2 The conditions attached to the consent included the requirement that, as the property was located within a flood zone, 'it may be subject to periodic inundation'. The conditions also said:
- This project has been evaluated in accordance with Section 36 of the [former Act]. It is considered that the appropriate criteria in that section can be met without invoking the requirement to notify the District Land Registrar of the potential for inundation of the site.
- The minimum floor height for this project is that recommended by the Canterbury Regional Council for building in this location.
- 3.3 The consent conditions also included a list of inspections required, which included an inspection of 'fixings and reinforcing for plaster'. I note that the applicants formally advised the authority of the proposed EIFS cladding, for which a producer statement would also be provided, in a letter to the authority dated 28 August 1996. The letter also noted that "The concrete slab will be at a minimum of 225mm above natural ground level."
- 3.4 The authority carried out other inspections during construction, including preline/bracing inspections during February 1997. A 'post lining/bracing' inspection on 27 March 1997 noted that re-inspection was required as various bracing elements were incomplete. It appears that this re-inspection was not carried out, although no comment was made in subsequent inspection records.

---

<sup>5</sup> Exterior Insulation and Finish System

- 3.5 The authority carried out a review of the building consent files in September 2000. The authority issued an interim code compliance certificate dated 15 September 2000<sup>6</sup> 'in respect of all work satisfactorily inspected to date' and stating that:
- Further building work is required to be completed and inspected as per the original Building Consent conditions. Please also refer to the most recent inspection notice, which will detail any required rectification work. Outstanding work may also be summarised below. When all works are completed the building owner is required to notify the [authority], so a further inspection (if required) can be arranged to ensure compliance.
- When all building works approved under the Building Consent comply, a full Code Compliance Certificate will be issued.
- 3.6 According to the authority, it reminded the applicants of the need for re-inspection in a letter dated 15 September 2000, although no request was received until 2004. The authority re-inspected the house on 22 November 2004 and the inspection record provided a list of outstanding items and documentation to be completed.
- 3.7 No request for a further re-inspection was received until 2007 and the authority inspected the house on 1 May 2007, with the record noting:
- Reinspection: All items of work required by inspection notice either sighted or confirmed complete. Gas certification provided. Plaster system PS/3 provided.  
OK to issue CCC.
- 3.8 There appears to have been no further correspondence until a letter from the authority to the applicants in 2007 (which I have not seen). In its submission, the authority states that:
- The owner was advised by the BCA by letter dated 8 June 2007 that a Code Compliance Certificate will not be issued for this project due to the time which has elapsed since the building consent was granted and the final inspection requested (over 10 years).
- 3.9 In July 2009, the applicants met with the authority to discuss the above letter. According to the authority's inspection summary, it was agreed that the applicants would contact the authority 'with a view to backdate Durability for a Code Compliance Certificate'. The applicants also requested the authority to:
- ...view the current state of the property and its maintenance so that this can be put on record at the Council.
- 3.10 On 7 August 2009 the authority visited the site and carried out non-invasive moisture testing that identified three areas where moisture levels appeared elevated. At the applicants' request the authority re-visited the house to take invasive moisture readings in these areas, which were found to be within acceptable levels.
- 3.11 In a letter to the authority dated 11 September 2009, the applicants listed reasons why a code compliance certificate should be issued, including inspections completed, documentation provided, and various alterations carried out to downpipes and gutters suggested by authority inspectors. The applicants also asked for the certificate to be 'backdated' to when the house was substantially completed in 1997.

---

<sup>6</sup> under Section 43(3) of the Building Act 1991

- 3.12 Despite further correspondence and another meeting between the parties, the authority appears to have continued to refuse to issue a code compliance certificate. In a letter to the authority dated 26 October 2009, the applicants again requested a 'backdated' code compliance certificate and stated that the house was substantially completed on 15 July 1997.
- 3.13 The Department received an application for a determination on 26 November 2009.

#### **4. The submissions**

- 4.1 In a letter to the Department dated 20 November 2009, the applicants outlined the recent background to the situation.
- 4.2 The applicants forwarded copies of:
- some of the drawings and specification
  - the inspection records
  - the recent letters to the authority
  - various producer statements, certificates, photographs and other information.
- 4.3 The authority made a submission in the form of a letter to the Department dated 4 December 2009, which listed the following concerns about the building work (in summary):
- Durability concerns in regard to the 13 years elapsed since the building consent was issued.
  - No inspection carried out of 'fixings and reinforcing for plaster'; re-inspection of post-line bracing not was completed.
  - No evidence that the ground floor level meets the requirements for the flood zone.
  - Lack of weathertightness of the roofing and membrane deck shown by:
    - particle board used beneath the deck membrane, in lieu of plywood
    - lack of cross fall to the balustrade capping
    - lack of dropper and spreader to the downpipe from upper roof.
  - Lack of evidence of ongoing maintenance such as washing of roof areas, window frames, and plastered surfaces. Photographs taken in August and September 2009 show a crack to the cladding at northeast garage corner, demonstrating a lack of maintenance

The authority concluded that it:

...can not be satisfied on reasonable grounds that the building work complies with the following Building Code Clauses B1, B2, E1 and E2.

- 4.4 The authority forwarded copies of:
- the building consent
  - photographs taken during inspections
  - the consent specification.
- 4.5 In a letter to the Department dated 19 February 2010, the applicants responded to the authority's submission of 4 December 2009. In summary, the applicants noted:
- The hole in the apron flashing has been sealed and the flashing at the base of the cladding had now been repaired.
  - The authority had requested that the downpipe from the upper roof be installed. A spreader would not have assisted the water flow from the downpipe. The applicants have since advised that a downpipe has now been installed and its installation has been accepted by the authority.
  - It was believed at the time the cladding was installed that there was not a requirement for the fixing and reinforcing of plaster systems to be inspected. The cladding was installed by approved applicators.
  - The nailing of the bracing was carried out by the applicants before an engineer was engaged.
  - The photos of a 1973 flood showed that flood water did not 'come near' the property.
  - The house has been regularly maintained.
  - The original building consent contained only two pages, not the three page copy supplied by the authority.
  - The authority had accepted the producer statement for the remedial work requested to the garden at the west end of the house.
- 4.6 The applicants also commented on the expert's report which I have summarised in paragraph 5.11.
- 4.7 The applicant forwarded copies of:
- the interim code compliance certificate
  - the specification
  - various items of correspondence and photographs.

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

5.1 As mentioned in paragraph 1.5, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Building Surveyors. The expert inspected the house on 25 January 2010 and provided a report dated 3 February 2010. In order to clarify certain matters, the expert re-visited the house on 9 February 2010 and provided an addendum report dated 11 February 2010.

### **5.2 General**

5.2.1 The expert noted that the overall quality of the cladding was generally good, with the cladding installed to an 'acceptable standard' and roof flashings to a 'good standard', except for items noted in paragraph 5.6. The house also appeared to be generally well maintained, with no significant cracking to the cladding. The house generally appeared to accord with the consent drawings apart from the textured coating system.

5.2.2 The expert also noted that the backing sheet layout appeared satisfactory and there would be no need for horizontal control joints and 'little need' for vertical control joints. I note that there is one wall at about 22m in length, which is beyond the 20m limit expected for this type of cladding and I address this in paragraph 7.3.3.

### **5.3 Windows and doors**

5.3.1 The aluminium joinery is recessed by the cladding thickness and most window heads are directly below soffits, with a timber moulding over the junction. Texture-coated polystyrene bands cover the edges of the window jamb flanges, with projecting sloping 'sills' under the windows.

5.3.2 At ground floor windows to the south elevation, the jamb bands extend over the heads. The expert noted that these exposed windows, along with the doors to the upper deck, have no head flashings. However, the cladding overlaps and protects the head junctions, although there are no drip edges to prevent water tracking across the cladding reveal to the head junction.

5.3.3 The expert removed a small section of cladding and band at the sill to jamb intersection of a bathroom window, noting that building wrap extended around the framing. While lacking uPVC jamb and sill flashings, concealed sealants had been applied around the flanges prior to the coating application. The expert noted that this was common practice at the time for some proprietary EIFS systems.

### **5.4 The upper deck**

5.4.1 The expert inspected the upper deck, noting that the membrane was in good condition, with satisfactory upstands of 60mm to 70mm. The expert noted that the parapet capping appeared satisfactory, with a fall of about 6° on the north side and sloping in line with the roof on the west. All junctions appeared to be well-sealed, although underlying saddle flashings could not be verified.

- 5.4.2 The expert inspected the roof space below the deck, and noted no signs of moisture entry. The expert removed a kitchen downlight and was able to verify that plywood substrate had been installed beneath the deck membrane.
- 5.5 The expert inspected the interior of the house and took about 60 invasive ‘probe’ moisture readings internally around the house, with moisture readings varying from 8% to 12%. The expert also took 13 invasive moisture readings through the cladding into the framing at areas considered at risk; and no elevated moisture levels were recorded.
- 5.6 Commenting specifically on the external envelope, the expert noted that:
- there is insufficient clearance from the cladding to the small garden below the kitchen corner box window
  - the cladding base on the west elevation is partly recessed into the foundation, which has the potential to trap water behind the cladding
  - while windows, deck doors and garage door heads not directly under soffits are protected by the upper cladding, no drip edges are provided
  - the sill of the projecting corner box window to the kitchen is exposed and lacks a sill flashing, although there is no sign of moisture entry to date
  - although diverters have been installed at the bottom of apron flashings, these need modification to prevent water from being trapped
  - a downpipe discharging from the upper level roof has no diverter and spreader to direct water away from an adjacent apron flashing
  - the end of the valley gutter above the front entry needs modification.
- 5.7 The expert also noted some minor hairline cracks around some window areas, which he considered could be attended to as part of regular ongoing maintenance.
- 5.8 A copy of the expert’s report was provided to the parties on 8 February 2010, with a copy of the addendum report provided on 11 February 2010.
- 5.9 In a letter to the Department, dated 24 February 2010, the authority responded to the expert’s reports. The matters raised by the authority are summarised as follows:
- The house is in a high wind zone.
  - There was no evidence as to the treatment, if any, of the timber framing.
  - The interim code compliance certificate only covered the work that was satisfactorily inspected to date and the fact that the floor level is 300 to 400mm above the ground is no guarantee that it is above the flood level.
  - As the pre-line inspection notice does not refer to the step to the decking, the notice cannot be read as an acceptance of the “as-built” detail.
  - While it is unclear what cladding system was actually installed, it would appear that the required air seals have not been fitted.
  - Distortion in the cladding was more likely caused by timber frame movement or moisture ingress.

- 5.10 The authority also referred to a perceived contradiction between the expert's opinion, that while the building at present complied with Clause E2, work was required to ensure continuing compliance. The authority noted that it raised the issue of future compliance with Clause E2 when it referred to the cracks in the plaster.
- 5.11 The applicants also responded as part of their submission to the Department of 19 February 2010 (refer paragraph 4.5). The matters raised by the applicants are summarised as follows:
- The west end elevation did not contain the living room, and the 18% reading on the page 9 chart was not indicated on the west elevation drawing. (I note that in any event, this reading has not affected the conclusions reached in this determination.)
  - The cladding is a BRANZ approved system over 'H' grade polystyrene that should be identified as being '40mm H grade EPS'.
  - The specification called for all timber to be treated Pinus Radiata.
  - The garden at the right-hand side of the garage door has been attended to.
  - The authority requested that the gutters be cut back off the face of the walls and this was carried out by the contractor and subsequently accepted by the authority.
- 5.12 In the letter in response to the second draft determination, dated 1 August 2010 (refer paragraph 6.2.3), the applicants noted that the 22m length referred to (see paragraph 5.2.2) is broken up by the almost full height backdoor and two full-height windows.

## **6. The draft determinations**

### **6.1 The first draft determination**

- 6.1.1 The first draft determination was forwarded to the parties on 1 March 2010. Both parties commented on the draft and both agreed that 15 July 1997 was to be the date when the building elements complied with Clause B2. However, apart from this agreement, neither party accepted the determination in its draft form.
- 6.1.2 In a letter to the Department dated 21 March 2010, the authority set out its comments, including a request to extend the determination to cover the issue of inundation. The matters raised by the authority are summarised as follows:
- The authority did not carry out any inspections in 2000 but carried out a partial desktop review of the building consent.
  - An inspection is relevant regarding the reinforcing to the plaster finish as this was a change from the original textured finish.
  - The authority took issue with comments relating to the bracing to the house as set out in the [first] draft determination.
  - The authority was of the opinion that the builder was not fully familiar with bracing construction, it could not be satisfied that the house complies with Clause B1.

- No site levels, floor levels or information on flood levels were supplied at the time of the consent application. The authority said this was:
    - ...typical at the time because [at the time of the consent] unlike now, the consent drawings did not have to show compliance with the Building Code. However compliance had to be demonstrated prior to the issue of the Code Compliance Certificate.
    - The fact that the inspection records are silent on the issue of flood levels can not be read as that the floor level is correct.
  - The authority did not accept what appeared to be the Department’s view that:
    - ...if an inspector states, or in this case fails to state something, it must be code compliant.
  - It was noted that photographs of flooding may not have been taken at the peak of such floods. The authority was aware that Environment Canterbury (“the regional council”) was recommending a minimum floor level of 3.2 metres and that the floor level be at least 200mm above the level of the highest point on the property.
- 6.1.3 The authority supplied an aerial photograph, with the ‘ponding/flooding area superimposed’ that it said it had taken into account when considering the potential for inundation on the site.
- 6.1.4 The applicants commented on the first draft determination in a letter to the Department dated 16 April 2010. The applicants supplied information provided by the regional council of the local area that showed ground levels and past flood information. This included topographical (“LiDAR<sup>7</sup>”) information that indicated that the floor level of the house was in the range of 3.9 to 4.0 metres above average mean sea level (“m.a.m.s.l”). (I note that the accuracy of the data provided was + or - 150mm.)
- 6.1.5 Included with the submission was a letter from the regional authority to applicant, dated 8 April 2010, that noted:
- Based on the LiDAR information, the dwelling was ‘not in a hollow’ and that surface water run-off would flow away from the house.
  - The regional authority was of the opinion that the aerial photograph supplied by the authority, (refer paragraph 6.1.3) did not ‘accurately [reflect] the ponding pattern in this area’.
  - A floor level in excess of 3.5 m.a.m.s.l would meet the requirements of the district plan and ‘the floor level would be 300mm above a flood with an AEP<sup>8</sup> of 2%’.
- 6.1.6 The applicant also submitted that:
- The applicants commented on the development of proprietary cladding systems and noted that there ‘was no requirement for inspections by the [authority] at this time’.

---

<sup>7</sup> LiDAR – Light Detection and Ranging

<sup>8</sup> Annual Exceedance Probability

- Levels taken by the builder indicated that the floor level of the house is 500mm above the crown of the road adjacent the house (confirmed in a letter from the builder dated 12 April 2010).

6.1.7 In addition to the above the applicant also supplied:

- Various correspondences from material and service suppliers.
- Various maps, plans, reports and photographs illustrating the inundation occurring in the vicinity of the property.

## **6.2 The second draft determination**

6.2.1 The second draft determination was forwarded to the parties for comment on 14 June 2010, which neither of the parties accepted.

6.2.2 In a letter to the Department, dated 11 July 2010, the authority commented on the draft determination. I summarise the authority's comments as follows:

- The bracing re-inspection was carried out before the bracing was completed. The PS1 was for the design of the bracing not its construction. The post-lining inspection listed the incomplete bracing. The interim code compliance certificate was issued only in respect of that satisfactorily inspected work. The wording on the certificate also reminded the applicant that further work was required.
- Hourly wind speed records obtained (and included with the submission) indicate that the building is yet to experience the design wind loading.
- The authority did not accept comments in the draft relating to the bracing to the house.
- It was common practice under the former Act for building consents to be issued without the provision of certain design documents. The current Act requires building consent applications to contain more information than was necessary under the former Act.
- Verification of the ground floor level was a condition of the consent and was the responsibility of the builder or the owner, and not the authority's inspector.
- The authority disputed that any inspections of the foundations by its inspectors could be taken to mean that level of the ground floor slab was acceptable. The authority noted it was unfortunate the information from the regional authority had not been obtained earlier.

6.2.3 The applicants responded to the second draft determination in a letter to the Department dated 1 August 2010. The submission requested minor amendments and included further comment summarised as follows:

- The cladding installer had advised that the authority commenced inspecting fixing and reinforcing of EIFS claddings in mid-2003. (The house was completed in 1997.)

- The authority emailed the cladding installer on 21 April 2010, advising that the authority introduced a schedule of inspections for polystyrene cladding systems in 2003, including fixings and flashings before the systems were commenced. The applicants noted that this advice did not appear on the inspection notices employed by the authority up to and including the inspection completed on 22 November 2004.
- The applicants letter to the authority dated 28 August 1996 noted the proposed height of the floor slab and external cladding to be installed. The authority had not sought any information in response to the letter. The authority did not make any reference to the foundation height during its inspections.
- The nailing-off of the wall bracing was carried out by the applicants prior to the engagement of structural engineers.

6.2.4 I taken account of the party's submissions and amended the determination as appropriate.

### **6.3 My response to the authority**

6.3.1 With respect to the wind speed records submitted by the authority, it is noted that these are mean hourly wind speeds whereas the design wind speeds used in NZS 3604 (and NZS 4203) are based on 3-second gust speeds. The mean hourly wind speed will always be lower than a 3-second gust because of the longer period over which it is averaged. Consequently, the building may well have experienced its designed wind loading.

6.3.2 I do not accept either of the authority's contentions with regard to the comparative standard of documentation required under the respective Acts. Section 34(3) of the former Act clearly states that a territorial authority shall grant a building consent if it is satisfied, on reasonable grounds, that the provisions of the Building Code would be met if the building work was properly completed in accordance with the plans and specifications submitted with the application.

6.3.3 However, I accept that under the current Act the test for the issue of a code compliance certificate is compliance with the requirements of the building consent. This has lead to authorities placing greater emphasis on the need for better documentation at consent stage than was the case under the former Act.

## **Matter 1: The external envelope**

### **7. Discussion**

7.1 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.

## 7.2 Weathertightness risk

7.2.1 This house has the following environmental and design features which influence its weathertightness risk profile:

### Increasing risk

- the house two-storeys over about a third of the plan
- the house is fairly complex in plan and form, with some complex junctions
- there is an enclosed upper deck, located above living areas
- the walls have monolithic cladding fixed directly to the framing
- the house is in a high wind zone.

### Decreasing risk

- most walls have eaves and verges to shelter the cladding.

7.2.2 When evaluated using the E2/AS1 risk matrix, these features show that one elevation of the house demonstrates a high weathertightness risk rating, one a moderate rating and the remaining a low a risk rating. I note that, if the details shown in the current E2/AS1 were adopted to show code compliance, the monolithic cladding on the moderate and high risk elevations would require a drained cavity.

## 7.3 Weathertightness performance

7.3.1 Generally the claddings appear to have been installed in accordance with good trade practice and to the recommendations of manufacturers of other proprietary EIFS systems at the time. However, taking account of the expert's comments in paragraph 5.6, I conclude that remedial work is necessary in respect of the following:

- the inadequate cladding clearance at the garden below the kitchen window
- the inadequate detail at the bottom of the cladding to the west elevation
- the lack of drip edges to the exposed heads of the balcony doors, the garage doors and to some ground floor windows in the south elevation
- the lack of a sill flashing to the projecting box window to the kitchen
- the inadequate kickouts to the bottom of the apron flashings
- the lack of diverters and spreaders to some downpipes from the upper roof
- the inadequate weatherproofing at the end of the valley gutter above the entry.

7.3.2 In its submission, the authority also identified the lack of an inspection of 'fixings and reinforcing for plaster' as required in the building consent conditions (refer paragraph 3.3). However, I note that such an inspection would not be relevant for the type of textured coating system applied to the wall cladding. The authority is also of the opinion that air seals, which it considers to be required, were not installed between the cladding and the external joinery.

- 7.3.3 With regard to the lack of a vertical control joint in the south wall, I note that the cladding has been in place for almost 13 years with no signs of cracking or moisture entry. Taking account of the period since construction, the stability provided by the concrete floor slab, the orientation of the wall towards the south and the high reflectivity of the cladding, I consider that the 22m long south wall, as constructed in this case, is adequate as compared with the manufacturer's nominated maximum spacing of 20m.
- 7.3.4 Notwithstanding the fact that the EIFS is directly fixed to the framing thus inhibiting drainage and ventilation I note that certain factors have contributed to and or demonstrated compliance with the Building Code:
- The cladding is generally installed in accord with good trade practice at the time of construction.
  - There is no evidence of moisture penetration after almost 13 years.

## **7.4 Weathertightness conclusion**

- 7.4.1 I consider the expert's report establishes that the current performance of the building envelope is adequate because it is preventing water penetration through the claddings at present. Consequently, I am satisfied that the house complies with Clause E2 of the Building Code.
- 7.4.2 However, the building envelope is also required to comply with the durability requirements of Clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the house to remain weathertight. Because the cladding faults on the house are likely to allow the ingress of moisture in the future, the building work does not comply with the durability requirements of Clause B2.
- 7.4.3 Because the faults identified with the claddings occur in discrete areas, I am able to conclude that satisfactory rectification of the items outlined in paragraph 7.3.1 will result in the building envelope being brought into compliance with Clause B2 of the Building Code (insofar as it relates to Clause E2).
- 7.4.4 I note that the authority has raised the matter of ongoing maintenance to the house. 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: Compliance with Clause B1 Structure**

### **8. Discussion**

- 8.1 In its submission, the authority has also raised concerns in regard several issues related to Clauses B1 Structure (refer paragraph 4.3).
- 8.2 As there is no record of a re-inspection of outstanding items identified in the record of the ‘post-line/bracing’ inspection on 27 March 1997 (refer paragraph 3.4), the authority maintains that it cannot be satisfied that the bracing as installed to the house complies with Clause B1.
- 8.3 However, I make the following observations about the circumstances of this house:
- The authority’s inspection record dated 27 March 1997 noted the bracing elements to be completed and the required bracing was marked on the floor by the authority’s inspector. The applicants have advised the bracing was completed by them. I have no reason to doubt the applicants’ advice and I accept the bracing has been completed.
  - The authority carried out a number of subsequent re-inspections and visits over the following 10 years, with no observations made concerning inadequate structural performance. The authority has noted that the house has not yet experienced its designed wind speed.
  - The house is now over 13 years old, and no evidence has arisen indicative of inadequate bracing.
- 8.4 Taking into account all of the above, I am satisfied that the bracing to the house complies with Building Code Clause B1 Structure.

## **Matter 3: Compliance with Clause E1 Surface Water, the inundation hazard, and the section 73 notice**

### **9. Discussion**

#### **9.1 Compliance with Clause E1 Surface water**

- 9.1.1 The authority has advised that the building consent included a condition stating that, as the property was located within a flood zone and may be subject to periodic inundation, the minimum floor height must meet the requirements recommended by the regional authority. The authority contended that, as it has not been provided with any evidence that the floor levels comply, it could not be satisfied that the building complies with Clause E1 Surface Water, which I take to mean Clause E1.3.2 of the Building Code.
- 9.1.2 Building Code Clause E1.3.2 requires that surface water ‘resulting from an event having a 2 percent probability of occurring annually, shall not enter buildings’.

- 9.1.3 Following the issuing of the draft determination, the applicants provided me with additional documentation relating to the potential inundation of the property and the adjoining areas, which is described in paragraph 6.1.4.
- 9.1.4 Taking into account the observations that the m.a.m.s.l levels are accurate to + or – 150mm, the worst case floor level based on the regional authority’s observations would be a minimum of 3.750 m.a.m.s.l. This is in excess of 3.5 m.a.m.s.l that the regional authority considers would meet the current provisions of the district plan that the floor level be 300mm above a flood with a AEP of 2%<sup>9</sup>.
- 9.1.5 Based in this information I take the 50-year flood event to be 3.2 m.a.m.s.l. I consider this provides reasonable grounds for me to conclude that the house complies with Building Code Clause E1 Surface Water.

## 9.2 The inundation hazard

- 9.2.1 I have received information about the 50-year flood event. However, in paragraph 6.2.9 of Determination 2008/82, I said:

Although section 71 [of the current Act] does not state what [magnitude of] event should be applied to situations subject to inundation, I consider that at least the 100-year event would be appropriate...”

As the application of section 36 of the former Act would be subject to the same criteria as for section 71 of the current Act, I believe it is appropriate to apply the same thinking to greater events, being at least the 100-year event.

- 9.2.2 I have seen no information about the 100-year event. However, I consider the difference in height between the 50-year event and the 100-year event would not be significant, given large size and flatness of the flood plain, i.e. a 100-year event would be able to cover a much greater area.
- 9.2.3 The topographical information provided by the applicant shows that the 50-year event would only reach the margins of the property. Even taking into account the worse case scenario of a plus 150mm accuracy adjustment as noted by the regional authority and the effects of a 100-year event, I consider that the inundation onto the site would be minor.
- 9.2.4 In this respect I refer to the Court of Appeal judgement in *Logan v Auckland CC*<sup>10</sup> which held:

Whether the risk [in regard to section 36 of the former Act] is at the level and frequency to justify the expense and other implications of making adequate provision to protect the land and, if not, to require a warning notice, which is a blot on the title and may have significant implications, will always require a sensible assessment involving considerations of fact and degree.

<sup>9</sup> The term ‘AEP of 2%’ means an event having a 2 percent probability of occurring annually. This can also referred to as a ‘50-year event’.

<sup>10</sup> 9/3/99, (2000) 4 NZ ConvC 193, 184.

When [the former Act] refers, as it does, to “the land on which the building work is to take place”, is it referring to the area contiguous to the building or to the land in general? Plainly, the circumstances may vary greatly. The “land” may be a 1000 acre property, on which a new house is to be built. The house may be far away from any potential inundation. Or, as here, the site may be a smallish suburban one, which is earmarked for higher density use, and it is very difficult to dissociate the building from the entire parcel of land.

[Protection of the land refers to protection of] the site itself where (at least as in this case) the building and the site are intimately connected.

9.2.5 The application of a section 73 notice is not so easy as it requires consideration of the levels of inundation on the site and whether “the land on which the building work is to be carried out” is “intimately connected” with the building. In paragraph 6.5.3 of Determination 2007/110 I said:

I take the view that . . . “the land on which the building work is to be carried out” is to be interpreted as meaning the land “intimately connected” with the building.

9.2.6 In the present case, the house occupies a small area of a relatively large property, which according to the authority’s resource consent approval letter of 19 June 1995, comprises 3.157 hectares. As set out in paragraph 9.2.3, the topographical information indicates that the 50-year event would only reach the margins of the property. Even taking into account the accuracy adjustment as noted by the regional authority and the effects of a 100-year event, the extent of this inundation would only increase marginally.

9.2.7 I note the size of the overall property compared with the small area occupied by the house and the position of the house on the property. Based on these observations, I am of the opinion that the areas of the overall property that would be subject to minor inundation would not extend onto those parts considered as being land “intimately connected” to the building in terms of the *Logan* decision as discussed in paragraph 9.2.4 and my comments in Determination 2007/110.

9.2.8 Finally, I also consider that the comments made in *Logan*, regarding “a sensible assessment involving considerations and degree” would also apply to the property in question. Accordingly, I am of the opinion that the expense and other implications of making adequate provisions to protect the land from a relatively infrequent risk, or the alternative “blot on the title”, would in this case be disproportional.

### **9.3 The section 73 notice**

9.3.1 Based on the above reasoning, I do not accept that there would be a requirement for a section 73 notice to be entered upon the certificate of title on the property in question.

9.3.2 I have made my decision in terms of the discussions detailed in paragraphs 9.2.1 to 9.2.8. However, I consider that it would be useful to provide some advice regarding the situation where an authority wishes to notify a section 73 notice retrospectively on a building consent.

- 9.3.3 In the current situation, the building consent was issued some 13 years ago under the former Act. In issuing it, the authority considered whether a section 36 notice should be applied, and based on a specified floor height above the adjacent ground, the authority decided against applying such a notice (refer paragraph 3.2). However, as the authority now has concerns as to whether the floor slab level as constructed met the specified height condition, it wishes to apply section 73 of the current Act to the consent. I note that, notwithstanding the builder's letter referred to in paragraph 6.1.6, the applicants have not provided evidence regarding the as-built floor level in a form I can relate to the building consent conditions imposed by the authority.
- 9.3.4 This application, in terms of the current Act, would be in the form of an amendment to a building consent for which a code compliance certificate has not been granted. Despite the 13-year delay since the building consent was issued, I am of the opinion that this delay of itself would not prevent the authority from applying a section 73 notice. This would be on the grounds that the authority is not satisfied that the slab height condition imposed by the building consent has been met, and that a code compliance certificate has not been issued for the completed building work.
- 9.3.5 However, as I am satisfied for other reasons that there would not be a requirement for a section 73 notice to be entered upon the certificate of title on the property, the factors set out in paragraph 9.3.3 do not apply.

## **Matter 4: The durability considerations**

### **10. Discussion**

- 10.1 The authority also has concerns regarding the durability, and hence the compliance with the building code, of certain elements of the house taking into consideration the age of the building work completed in 1997.
- 10.2 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).
- 10.3 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.

- 10.4 In this case the delay between the completion of the building work in 1997 and the applicant's request for a code compliance certificate in May 2010 has raised concerns that various elements of the building are now well through or beyond their required durability periods, and would consequently no longer comply with Clause B2 if a code compliance certificate were to be issued effective from today's date. I have not been provided with any evidence that the authority did not accept that those elements complied with Clause B2 at a date in 1997.
- 10.5 The delay raises the matter of when all the elements of the building complied with Clause B2. The sequence of events outlined in paragraph 3.5 does not give me a clear indication when the durability periods for the building work should commence. However, both parties have now agreed that compliance with Clause B2 was achieved on 15 July 1997.
- 10.6 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.
- 10.7 I continue to hold that view, and therefore conclude that:
- (a) In the general case an authority has the power to grant an appropriate modification, or waiver, of the building code if this is requested by an owner.
  - (b) In this instance the authority has the power to grant an appropriate modification of Clause B2 in respect of all the building elements, if this is requested by the applicant.
  - (c) It is reasonable to grant such a modification, with appropriate notification, as in practical terms the building is no different from what it would have been if a code compliance certificate for the building work had been issued in 1997.
- 10.8 I strongly suggest that the authority record this determination and any modifications resulting from it, on the property file and also on any LIM issued concerning this property.

## **11. What is to be done now?**

- 11.1 The authority should issue a notice to fix that requires the owners to bring the house into compliance with the Building Code, identifying the defects listed in paragraph 7.3.1 and referring to any further defects that might be discovered in the course of rectification, but not specifying how those defects are to be fixed. It is not for the notice to fix to specify how the defects are to be remedied and the building brought to compliance with the Building Code. That is a matter for the owners to propose and for the authority to accept or reject.

- 11.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 11.1. Initially, the authority should issue a notice to fix. The applicants 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 matters. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.
- 11.3 Once the matters set out in in paragraph 7.3.1 have been rectified to its satisfaction, the authority may issue a code compliance certificate in respect of the building consent amended as outlined in paragraph 10.7.

## 12. The decision

- 12.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:
- (a) the building does not comply with Building Code Clause B2 Durability and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate
  - (b) the building complies with Building Code Clause B1 Structure
  - (c) the building complies with Building Code Clause E1 Surface water.
- 12.2 I determine that the building consent need not be modified and the Registrar-General of Land need not be notified in respect of the natural hazard of inundation onto the property.
- 12.3 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 15 July 1997
  - (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 15 July 1997 instead of from the time of issue of the code compliance certificate for all the building elements, except the items to be rectified as set out in paragraph 7.3.1 of Determination 2010/82.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 6 September 2010.

John Gardiner  
**Manager Determinations**