



Determination 2014/027

Regarding the refusal to issue a code compliance certificate and the issue of a notice to fix for a 14-year-old house with monolithic cladding at 84A Konini Road, Titirangi, Auckland



1. The matters to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ (“the current Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are
- the owner of the house, J M Batley (“the applicant”)
 - Auckland Council² (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate and to issue a notice to fix for a 14-year-old house because it was not satisfied that the building work complied with certain clauses³ of the Building Code (First Schedule, Building Regulations 1992). The authority’s concerns regarding compliance relate to the weathertightness of the claddings.
- 1.4 The matter to be determined⁴ is therefore the authority’s exercise of its powers of decision in refusing to issue a code compliance certificate and in issuing the notice to fix. In deciding this, I must consider:

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

² Before the application was made, Waitakere City Council was transitioned into Auckland Council. The term authority is used for both.

³ 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 that was current at the time the consent was issued.

⁴ Under sections 177(1)(b), 177(2)(d) and 177(2)(f) of the Act

1.4.1 Matter 1: The external envelope

Whether the external building envelope of the house complies with Clause B2 Durability and Clause E2 External Moisture of the Building Code. The building envelope includes the components of the systems (such as the monolithic cladding, the windows, the roofing, the parapets and the flashings), as well as the way the components have been installed and work together. I consider this in paragraph 6.

1.4.2 Matter 2: The remaining code requirements

Whether other items identified in the notice to fix comply with relevant Building Code clauses: namely Clauses B1 Structure, D1 Access and F4 Safety from falling. I consider these in paragraph 7.

1.5 Matters outside this determination

1.5.1 The notice to fix required the applicant to provide certification of the fireplace installation but it appears that the original installer cannot now be identified. I consider that this matter can be resolved between the parties in due course (see paragraph 7.2) and I therefore make no determination on this matter.

1.5.2 I note that the applicant may apply to the authority for a modification of the requirements to allow durability periods to commence from the date of substantial completion in 2000. I leave this matter to the parties to resolve once the house has been made code-compliant.

1.6 In making my decision, I have considered:

- the submissions of the applicant
- the report of the property inspection company (“the inspection company”) engaged by the applicant
- the report of the expert commissioned by the Ministry to advise on this dispute (“the expert”)
- the other evidence in this matter.

2. The building work

2.1 The building work consists of a detached house that is two-storeys-high in part and is situated on a level site in a medium wind zone for the purposes of NZS 3604⁵. The house is fairly complex in plan and form and is assessed as having a high weathertightness risk.

2.2 Construction is generally conventional light timber frame, with concrete foundations and floor slab, monolithic wall cladding, and aluminium joinery. The exterior walls rise to form roof parapets, with low-pitched pressed metal roofing that falls to membrane-lined internal gutters at the perimeter.

2.3 The wall cladding is a form of monolithic cladding system known as EIFS⁶. In this instance, the proprietary cladding system consists of 40mm polystyrene backing sheets fixed directly to the framing over the building wrap, to which a mesh reinforced plaster coating has been applied. The system includes purpose-made flashings to windows, edges and other junctions.

⁵ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁶ Exterior Insulation and Finish System

- 2.4 The expert forwarded a timber sample taken from a bottom plate beside the garage door to a testing laboratory, which reported that the sample timber was boric treated to a level equivalent to H1.2. However, the expert also observed stamps on studs stating 'keep dry' and 'laser frame', which indicated untreated timber. Based on this evidence I accept that the bottom plates are likely to be treated to a level that provides some resistance to decay, and other external wall framing is untreated.

3. Background

- 3.1 On 12 January 1999, the authority issued building consent No. ABA 98005553 under the Building Act 1991. I have seen no inspection records, but it is likely that the house was substantially completed by early 2000.

- 3.2 The authority wrote to the applicant on 21 March 2000, noting that:

...a recent inspection of the above property has revealed the following points require attention before the file can be finalised.

1. Windows [where] height of fall exceeds 1 mt, shall have the lower edge of the opening located no less than 760mm above floor level, windows to be restricted to a 100mm opening.
2. Finish of fire place.
3. Increase height of the barrier at the top of stairs to 900mm.
4. Driveway to be finished as per plan.
5. Fit handrail to internal stairs.

3.3 The refusal to issue a code compliance certificate

- 3.3.1 No further inspections were carried out until the authority carried out final inspections on 12 May 2010. The inspection records identified a number of outstanding items and noted the need for 'an assessment of the cladding'.

- 3.3.2 In a letter to the applicant dated 28 May 2010, the authority referred to its inspections, noting there were 'some areas of concern with regard to the monolithic cladding system.' On that basis, the authority was:

...unable to be satisfied that the cladding, as installed, complies with clause E2 (external moisture) of the New Zealand Building Code and has to refuse to issue the Code Compliance Certificate on the dwelling "as is".

- 3.3.3 The authority gave the applicant the option of either applying to the Ministry for a determination or addressing 'the areas of concern as per the attached Notice to Fix, requiring you to bring the dwelling up to a code compliant standard.'

- 3.3.4 The attached a notice to fix, also dated 28 May 2010, stated that the building work did not comply Building Code Clauses B1, D1, E2 and F4 and listed the following items to be addressed:

1. Provide adequate ventilation to the monolithic cladding and into the frame space by means of either a ventilated cavity or alternate approved system; or
2. Cladding ground clearance to comply with NZBC, E2, External moisture.
3. Parapet flashings/cladding junctions to comply with NZBC, E2, External moisture.
4. Evidence of jamb and sill flashings to comply with NZBC, E2, External moisture.
5. Colour reflectivity % to be verified.
6. Interior handrail to be fixed to upper end with another bracket to comply with NZBC, B1, Structure and D1, Access

7. Un-latchable catches to be fitted to upstairs windows to comply with NZBC, F4, Safety from falling.
8. Fireplace to be inspected and certified by a licensed installer.

3.4 The inspection company's report

- 3.4.1 The applicant engaged a property inspection company to visit the house and carry out a 'moisture check'. The inspection company inspected the house on 19 February and 14 March 2013 and provided an undated report titled "Building Survey Report".
- 3.4.2 The inspection company described the construction and identified various minor maintenance items to be attended to. Non-invasive moisture readings were carried out and two elevated readings were noted. Interior linings were removed at those areas and no timber damage was observed. The framing was left exposed until moisture levels reduced to below 18% and repairs were then carried out.
- 3.4.3 Commenting on the exterior claddings, the inspection company noted (in summary):
 - Roofs are generally in good condition, with some loose nails.
 - Butyl rubber lined gutters drain to rainheads with overflow holes – and both need leaf debris cleaning out every year.
 - Parapets are generally sound, with metal cappings and fibre-cement sheet to the inner faces, which should be regularly cleaned and preferably painted.
 - The EIFS cladding and joinery is in good condition, with an upper window jamb/sill junction successfully repaired where sealant had peeled.
- 3.5 The Ministry received an application for a determination on 25 February 2014.

4. The submissions

4.1 The applicant's submission

- 4.1.1 The applicant made no submission but forwarded copies of:
 - the letter and notice to fix from the authority, dated 28 May 2010
 - the inspection company's undated report.
- 4.2 The authority forwarded a CD-Rom, entitled 'Property File', which contained some additional documents pertinent to this determination including:
 - the building consent, with the consent drawings and specifications
 - the inspection records
 - various certificates, producer statements, warranties and other information.
- 4.3 Copies of the submissions and other evidence were provided to each of the parties.
- 4.4 A draft determination was issued to the parties for comment on 7 May 2014.
- 4.5 The authority and the applicant both accepted the draft without further comment, in responses received on 13 and 21 May 2014 respectively.

5. The expert's report

5.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects and inspected the house on 31 March 2013, providing a report completed on 11 April 2013. A copy of the report was forwarded to the parties on 16 April 2013.

5.2 General

5.2.1 The expert noted that the house was 'generally finished to a good standard with reasonably straight, fair cladding', and sealed penetrations and appropriate flashings fixed 'competently in general'. However, he also noted that the reliance of silicone at the ends of parapet flashings and some issues with the window flashings resulted in doubt as to long term performance of those areas.

5.2.2 The expert noted that the general lack of cracking, with one unrepaired and two repaired cracks, indicated that the cladding system is 'sufficiently resilient to resist thermal and live load movements' despite the colour being darker than currently recommended.

5.2.3 The expert observed the following variations from the consent drawings:

- Omission of the north pergola.
- Projection of the chimney structure beyond the north wall.
- Various changes to windows and doors.

5.3 Windows

5.3.1 Windows and doors are recessed by the cladding thickness with aluminium head flashings. The expert noted that head flashings appeared to be installed in accordance with the manufacturer's instructions at the time, with no drainage gap between the flashing and the EIFS and no drip edge to the head reveal.

5.3.2 The expert removed a small section of plaster coating from the jamb/sill junction of the ground floor office window and compared the junction with the manufacturer's details. The expert observed:

- standard uPVC extrusions installed to the jamb and sloping sill, with window flanges overlapping the 'legs' of the flashings;
- the jamb flashing terminating about 40mm above the sill flashing;
- the resulting gap bridged with a 'C' channel, which underlapped the jamb flashing and was sealed to the sill flashing with silicone sealant.

5.3.3 The expert noted that the bridged gap did not provide the overlap between the jamb and sill flashing flanges shown in the manufacturer's instructions and considered that this latent defect provided a risk of moisture penetration, which could be repeated at other window junctions.

5.4 Moisture testing and destructive investigations

5.4.1 The expert inspected the interior, observing that external wall linings were 'free from mould or other signs of moisture ingress.' with non-invasive moisture readings low.

5.4.2 The expert also took invasive moisture readings using long probes from the inside at sample locations considered at-risk; recording levels between 14% and 18%. However, readings were taken at the end of summer and the expert considered that

moisture levels would be higher during wetter winter months. Although recorded moisture levels were below the level where decay is expected to occur in untreated timber, the expert noted soft drillings during two readings and investigated these locations further.

5.4.3 The expert removed small sections of cladding (“the cut-outs”) at the suspect locations to investigate the underlying framings and noted the following (with moisture readings shown in brackets):

- Cut-out 1 beside the garage door where ground clearances were limited; sample removed for analysis (16%)
- Cut-out 2 beside the north bi-fold door; obvious decay revealed at the bottom of the framing (15%).

5.4.4 The expert forwarded the sample from cut-out 1 for analysis. The laboratory report dated 7 April 2014 noted that the sample was boron treated to an equivalent of H1.2. The laboratory tests detected no structurally significant decay but revealed ‘prolific fungal growths’ which indicated that the framing had been exposed to moisture over a prolonged period, and the report warned that the ‘rate of future water damage may accelerate suddenly’. The expert noted that other areas with similar limited ground clearances may also be at risk.

5.5 The bi-fold doors

5.5.1 Cut-out 2 at the living room bi-fold door sill revealed that the ‘base of the stud, trimmer and packer were obviously rotten and fixings rusty’, though the moisture reading of 15% indicated that the framing had dried out since the leak. The expert dye tested the door frame mitre joint and concluded that the door was sound.

5.5.2 The expert therefore considered that further investigation was needed, as the damage could have resulted of from one or a combination of the following:

- Past moisture penetration from the window, which was identified by the inspection company and repaired in 2013.
- Moisture penetration at the parapet capping to wall junction above the door, with the junction reliant on silicon for weathertightness.
- Lack of a drip to the plastered door head reveal allowing water to track across the reveal to the head flashing, with visible water stains at the junction.
- Lack of ground clearance at the door.

5.6 Commenting specifically on the external envelope, the expert noted

- clearances from the ground or paving to the cladding and internal floor levels are insufficient and do not comply with the manufacturer’s instructions
- although currently dry, laboratory tests show past moisture penetration into framing beside the garage door where clearances are insufficient; and other areas of reduced clearances may be similar
- ends of parapet cappings butt against the cladding, with no saddle flashings and only sealant at the junction to protect the underlying framing
- there is a crack in the cladding
- the meter box is exposed and lacks a head flashing, with a vision panel also missing which allows rain to enter the box

- flashings exposed at the jamb to sill junction of one window did not comply with the manufacturer's instructions and investigation of other windows is needed to verify the weathertightness of similar junctions during wetter seasons
- reveals lack drip edges to prevent water tracking to joinery head junctions
- further investigation is needed to identify and repair the cause(s) of the leak that resulted in decay in the framing beside the bi-fold door
- further moisture testing is needed during wetter winter months, including to areas similar to those where defects and damage have been identified.

5.7 The expert made the following additional comments:

- Although clearances from apron flashings to the upper wall claddings are below the manufacturer's recommended 40mm in some areas, flashings are well finished and there is no evidence of associated moisture penetration.
- Despite colour reflectivity of 25% compared to current recommendations of 40% minimum, there is no indication of undue movement as a result of past thermal movement although it will be prudent to use a lighter colour when the cladding is repainted in the near future.

5.8 Other Building Code clauses

5.8.1 The expert assessed other items identified in the notice to fix, reporting that:

- an additional bracket has been fixed to the top of the hand rail (Clause B1)
- satisfactory window restrictors have been fitted to the upper windows (Clause F4).

5.8.2 In regard to the gas fire, the expert noted that the fire is apparently still sold and product certification for the model should be available. The fire can therefore be tested against the certificate and the results submitted to the authority.

5.9 On completion of his assessment of the house, the expert also concluded on the items of contravention listed in the first notice to fix. I have taken those comments into account in paragraph 8.1.

Matter 1: The external envelope

6. Discussion

6.1 The evaluation of building work for compliance with the Building Code and the risk factors considered in regards to weathertightness have been described in numerous previous determinations (for example, Determination 2004/1).

6.2 Weathertightness risk

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

Increasing risk

- the house is fairly complex in form, with multi-level roofs and roof parapets
- the walls have monolithic cladding fixed directly to the framing
- there are no eaves or verges to shelter the wall cladding

- most of external wall framing is not treated

Decreasing risk

- the bottom plates of the external wall framing are treated to provide some resistance to decay if they absorb and retain moisture.

6.2.2 Using the E2/AS1 risk matrix to evaluate these features, the elevations are assessed as having a high weathertightness risk rating. If details shown in the current E2/AS1 were adopted to show code compliance, a drained cavity would be required. However, this was not a requirement at the time of construction.

6.3 Weathertightness performance

6.3.1 Taking account of the expert's report, the external envelope generally appears to have been constructed in accordance with good trade practice and the manufacturer's instructions at the time of construction. However, I consider there is sufficient evidence to show that the external envelope at the bi-fold door area has not satisfied the performance requirements of Clause E2, and I consider that further investigation is required to establish whether compliance with Clauses E2 and B2 has been achieved in other areas.

6.3.2 Taking account of the expert's report, I conclude that the following areas require attention:

- identification and repair the cause(s) of the leak that resulted in decay in the framing beside the bi-fold door
- remedial work to the damaged framing beside the bi-fold door once the cause of the leak is established
- invasive moisture level measurement during wetter winter months around the window joinery, with investigation and repair of jamb to sill junctions should high moisture levels be found
- invasive moisture level measurement during wetter winter months at parapet/wall junctions and areas of inadequate ground clearances, with investigation of the underlying framing condition should high moisture levels be found.

6.3.3 I note the expert's comments in paragraph 5.7, and accept that these areas are satisfactory in the circumstances. I also concur with the expert that a colour with a minimum reflectivity of 25% would be prudent when the cladding is repainted.

6.3.4 Notwithstanding that the EIFS is fixed directly to timber framing, thus inhibiting drainage and ventilation behind the cladding, I note certain factors that assist the performance in this case:

- Apart from the identified defects, the cladding is installed according to the manufacturer's instructions at the time.
- After 14 years, the EIFS cladding is in good condition for its age, with little evidence of cracking.

6.4 Weathertightness conclusion

6.4.1 I consider the expert's report establishes that the current performance of the cladding is not adequate because there is evidence of past and likely current moisture penetration and damage to the untreated timber framing. I am therefore not satisfied that the external building envelope complies with Clause E2 of the Building Code.

6.4.2 In addition, the building envelope is also required to comply with the durability requirements of Clause B2. 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).

6.5 In this case the 14-year delay since the completion of the house in 2000 raises concerns that many 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.

6.6 I have considered this issue in many previous determinations and I maintain the view that:

- (a) the authority has the power to grant an appropriate modification of Clause B2 in respect of all the building elements, if requested by an owner
- (b) 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 at the time of substantial completion in 1995.

I therefore leave the matter of amending the building consent to modify Clause B2.3.1 to the parties once outstanding matters are resolved.

6.7 A modification of the Code's durability provisions will allow the durability periods stated in B2.3.1 to commence from the date of substantial completion in 2000. This means that the wall claddings have nearly met the 15-year minimum durability period required by the Building Code. However, the expected life of the building itself is a minimum of 50 years and careful attention to the performance of the claddings is needed to ensure that the external envelope continues to protect the underlying structure for its minimum required life of 50 years.

6.8 In the case of this particular house, and for the benefit of the applicant, I note the house design includes a number of high risk features. These require careful attention to their performance in order to ensure ongoing weathertightness of the cladding system. Particular attention should be paid to:

- ground clearances to the cladding and internal floors
- wall to parapet capping junctions
- cladding cracks
- the meter box
- the lack of drip edges to the head reveals to the external joinery.

6.9 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 Ministry 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 remaining Building Code clauses

7. Discussion

- 7.1 Taking account of the expert's report, as outlined in paragraph 5.8.1, I consider that the handrail and the upper windows comply with Clauses B1 and F4 of the Building Code (respectively) that was current at the time the consent was issued.
- 7.2 I concur with the expert's comments (see paragraph 5.8.2) that product certification for the fire should be available, against which the fire can be tested, and I therefore leave this matter to the parties to resolve in due course.

8. The notice to fix

- 8.1 Taking into account the expert's comments, the following table summarises my conclusions on items in the notice to fix dated 28 May 2010 referring also to relevant code clauses and related paragraphs within this determination:

Notice to fix		My conclusions	Code Clauses	Paragraph references
	Summarised requirements			
1	Inadequate ventilation to monolithic cladding	Adequate	E2, B2	Paragraph 6.3
2	Ground clearances	Remedial work required	E2, B2	Paragraphs 5.6 and 6.8
3	Parapet capping to wall junctions	Remedial work required	E2, B2	Paragraphs 5.6 and 6.8
4	Unknown jamb and sill flashings	Further investigation required	E2, B2	Paragraphs 5.6 and 6.8
5	Colour reflectivity	Adequate in circumstances	E2, B2	Paragraph 6.3.3
6	Fixing to top of interior handrail	Adequate	B1, D1	Paragraphs 5.8.1 and 7.1
7	Catches to upper windows	Adequate	F4	Paragraphs 5.8.1 and 7.1
8	Certification of fireplace	For parties to resolve	C	Paragraphs 5.8.2 and 7.2

- 8.2 I am satisfied that the house does not comply with the Building Code that was current at the time the consent was issued and that the authority made an appropriate decision to refuse to issue the code compliance certificate. However, I am also of the view that some items identified in the notice are likely to be adequate and I have also identified additional items and investigations that need to be attended to, so the notice should be modified accordingly (refer to paragraph 9.1).

9. What happens next?

- 9.1 The notice to fix should be modified to take account the findings of this determination, identifying the items listed in paragraph 6.3.2 and referring to any further defects that might be discovered in the course of investigation and rectification, but not specifying how those defects are to be fixed. It is not for the notice to stipulate directly how the defects are to be remedied and the house brought to compliance with the Building Code. That is a matter for the applicant to propose and for the authority to accept or reject. It is important to note that the Building Code allows for more than one means of achieving code compliance.
- 9.2 I suggest that the parties adopt the following process to meet the requirements of paragraph 9.1. Initially, the authority should revise and reissue the notice to fix. The applicant should then produce a response to this, in conjunction with a competent person with suitable experience in weathertightness remediation, as to the

investigation and 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.

10. The decision

10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that:

- the exterior building envelope does not comply with Clauses E2 and Clause B2 of the Building Code, and accordingly I confirm the authority's decision to refuse to issue a code compliance certificate; and
- the notice to fix is to be modified as described in this determination.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 23 May 2014.

John Gardiner
Manager Determinations and Assurance