

Determination 2007/108

The code compliance of exterior joinery units at 10 Ramphal Terrace, Khandallah, Wellington



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 that Department. The applicants are the owners of the building, Dr and Mrs Martyn (“the applicants”). I accept that EPC Ltd, the joinery supplier and installer (“the contractor”), is a person with an interest in the matter for determination. I have forwarded a copy of the determination to the Wellington City Council (the territorial authority) even though it is not directly involved.
- 1.2 This determination arises because the applicants are not satisfied that replacement external joinery units installed in their house comply with the Building Code² (First Schedule, Building Regulations 1992).
- 1.3 The matter to be determined is whether replacement exterior joinery units, (“the replacement units”), which were installed to replace existing joinery units in the walls of the house comply with clauses B2 “Durability” and E2 “External Moisture”

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

² The Building Code is available from the Department’s website at www.dbh.govt.nz.

of the Building Code (see sections 177 and 188 of the Act). By “the replacement exterior joinery units as installed” I also include other components, such as the jambs, flashings, associated trim, and sealants, as well as the way the components have been installed and work together.

- 1.4 In making my decision, I have considered the submissions of the applicants, the report of the independent expert commissioned by the Department to advise on this dispute (“the expert”), and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 6.1.
- 1.5 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building work

- 2.1 The building work consists of the installation of new exterior joinery units to replace those existing in a two-storey detached house. The house is situated on an excavated sloping site, which is in a specific engineering design wind zone for the purposes of NZS 3604³.
- 2.2 The replacement units comprise a total of 26 “Sheerframe” light oak exterior/white interior uPVC windows, doors, and associated frames. With the exception of one window that is fixed over fibre-cement cladding, the units are either fitted in brick reveals or are face fixed to walls clad with cedar weatherboards. The existing head flashings have been re-used and timber scribes, that abut the weatherboards, are fitted to the replacement units’ jambs.
- 2.3 The applicants have advised that a lower-level window was installed as a prototype, before work proceeded on the installation of the other 25 units.
- 2.4 I note, as a matter of fact, that a building consent was not obtained for the building work concerned.

3. Background

- 3.1 The contractor supplied a revised quotation for the replacement units on 24 June 2005. The contractor had previously noted that the installation included the removal of the existing joinery, preparing the openings, installing the new units, site glazing, and the supply and fixing of interior architraves. The revised quotation was apparently accepted by the applicants.
- 3.2 In a letter to the applicants dated 19 December 2006, the contractor stated that the replacement units had been installed.
- 3.3 From 11 January 2007 to 7 March 2007 there was correspondence between the applicants and the contractor regarding the applicants’ concerns as to the effectiveness of the replacement units. While the concerns mainly related to the

^{3 3} New Zealand Standard NZS 3604:1999 Timber Framed Buildings

weathertightness of the replacement units, there were also matters in respect of the quality of workmanship and finish.

3.4 On 21 March 2007, the Department received an application for a determination, and on receipt of the application fee, the determination process began on 11 April 2007.

4. The submissions

4.1 In a covering attachment, the applicants set out the background to the matters in dispute and noted that the relevant matter for determination was in relation to the weathertightness of the replacement units and their compliance with clauses E2, E3 and B2. The applicants stated that water passed through the head flashings of some windows when they were subjected to a “gentle hose test”. The applicants also expressed concern as to the effectiveness of the sealing that had been applied to the unit perimeters. The attachment also included some photographs illustrating details of the replacement units.

4.2 The applicants forwarded copies of:

- the quotations from the contractor
- the correspondence between the applicants and the contractor
- additional photographs showing details of the replacement units.

4.3 The contractor forwarded a Part 2 form dated 20 March 2007, indicating that it was aware of the application for determination.

4.4 In a letter dated 23 April 2007, addressed to the Department and to the applicants, the territorial authority noted that it had no record of a building consent being obtained for the building work in question. The territorial authority stated that a building consent would not be required if the work was carried out under Schedule 1 of the Act. The territorial authority did not consider that it could be of further assistance, and unless so directed by the Department, would not take any further action.

4.5 Copies of the applicant’s documentation were forwarded to the contractor.

4.6 The draft determination was submitted to the parties for comment on 18 July 2007. The applicant responded on 22 July 2007 accepting the determination. The contractor responded in a letter to the Department dated 10 September 2007 raising a number of matters which I have taken into account when making my final determination.

5. The expert’s report

5.1 As mentioned in paragraph 1.4, I engaged an independent expert, who is a member of the New Zealand Institute of Building Surveyors, to provide an assessment of the code compliance of the building with the replacement units.

- 5.2 The expert inspected the house on 18 May 2007 and furnished a report to the Department. The expert described the exterior elements of the house and some of the background information.
- 5.3 The expert took non-invasive moisture readings internally around the house and all readings were within the “equilibrium range”. Subsequently a number of invasive moisture readings were taken and, apart from one reading of 19% under the office window, results were within the “equilibrium range”. Generally, moisture levels that vary significantly after cladding is in place indicate that external moisture is entering the structure.
- 5.4 The expert also conducted a test that involved spraying water through a garden hose onto the wall above the head flashing of several windows. Water flowed through the junction of the window frame and the window jamb of the family room and master bedroom windows. Water also penetrated above the heads of the balcony doors leading to both the family room and the dining room.
- 5.5 The expert noted that the house was exposed to all wind directions but also noted an adjoining property provided some protection from the North. I consider the water test conducted by the expert to be a crude but relevant test in this instance given the exposure of the house and that it is located in a wind zone requiring specific engineering design.
- 5.6 Commenting specifically on the replacement units, the expert noted that:
- the standard of finish applied to the prototype window described in paragraph 2.3 was not replicated in the remaining units that were subsequently installed.
 - some of the units’ sash mitred joints have opened up
 - the re-used head flashings were completely inadequate at some locations, with evidence of gaps between the flashings and units, inadequate cover, and unsealed ends
 - the jamb scribes are poorly fitted and inadequately sealed at some locations
 - The openings between the unit jambs or sills with the brick veneer are not sealed
 - some weatherboards have been split during the installation of the units
 - the sealing tape to the external dining room door is not effectively secured.
- 5.7 The expert also noted that some of the internal finishing elements did not meet acceptable good trade practice standards. However, as accepted by the applicants, these are not matters on which I can make a determination.
- 5.8 Copies of the expert’s report were provided to the applicants and the contractor on 6 July 2007.

6. Evaluation for code compliance

6.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution, in this case E2/AS1, which will assist in determining whether the features of any house are code compliant.

However, in making this comparison, the following general observations are valid:

- Some Acceptable Solutions are written conservatively to cover the worst case so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add one or more other provisions to compensate for that in order to comply with the Building Code.

6.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, and the design features that are intended to prevent the penetration of water. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations⁴ (for example, Determination 2004/1) relating to weathertightness issues and these factors are also used in the evaluation process.

6.3 The consequences of a building or specific building elements 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.

7 Discussion

7.1 As noted in paragraph 2.4 and confirmed by the Wellington City Council, no building consent was granted for the building work in question. I accept that the reinstatement of the external joinery units falls within the ambit of Schedule 1 of the Act and therefore the work does not require a building consent. However, the Act requires that all building work is required to comply with the requirements of the Building Code, irrespective of the need or otherwise to obtain a building consent.

7.2 I consider that the expert's report clearly establishes that the installation of some of the replacement units can allow the ingress of moisture into the building at the present time. In particular, the replacement units demonstrate the key defects listed in paragraph 5.5. I note also that, as the house is in a specific design wind zone, the exterior joinery units can be subject to extreme weather conditions. Accordingly, I find that the replacement units as installed in the building do not comply with clause E2 at this time.

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

- 7.3 In addition building work 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 faults evident in regard to the replacement units allow the ingress of moisture now and would do so in the future, the house does not now comply with the durability requirements of clause B2.
- 7.4 In their submission, the applicants included clause E3 as a weathertightness issue. However, as E3 relates to the accumulation of internal moisture (ie moisture generated inside the building) I do not consider that the clause is relevant in this instance.
- 7.5 I decline to incorporate any waiver or modification of the Building Code in this determination.

8 What is to be done?

- 8.1 It is not for me to decide directly how the defects are to be remedied and the building brought to compliance with the Building Code. That is a matter for the applicants and the contractor to reach agreement as to how best to remedy the work. I believe that the expert's report, which is an independent opinion, can assist the parties in this respect.

9 The Decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the house with the windows as currently installed, does not comply with clauses B2 and E2 of the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 17 September 2007.

John Gardiner
Manager Determinations