



## Determination 2009/81

# Dispute over a building consent for alterations to a house due to the slope of the roof at Riverside Village 25, Glenavy

### 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 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 applicant is the owner A Thistoll (“the applicant”), acting through an agent (“the agent”) and the other party is the Waimate District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.2 This determination arises from a decision by the authority to refuse to grant a building consent for alterations to an existing house unless changes were made to the material used for the proposed roof extension, on the grounds of inadequate fall. Although those changes were made and the authority agreed to issue a building consent on that basis, the applicant is seeking a determination on the compliance of the roof material that was originally proposed.
- 1.3 I therefore consider that the matter for determination, in terms of sections 177(a) and 188 of the Act<sup>2</sup>, is whether there are reasonable grounds to come to the view that the roofing material originally proposed for the extension to the roof of the house (“the roof extension”) would comply with Clause E2 External Moisture of the Building Code<sup>3</sup> (Schedule 1, Building Regulations 1992).

---

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

<sup>2</sup> 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.

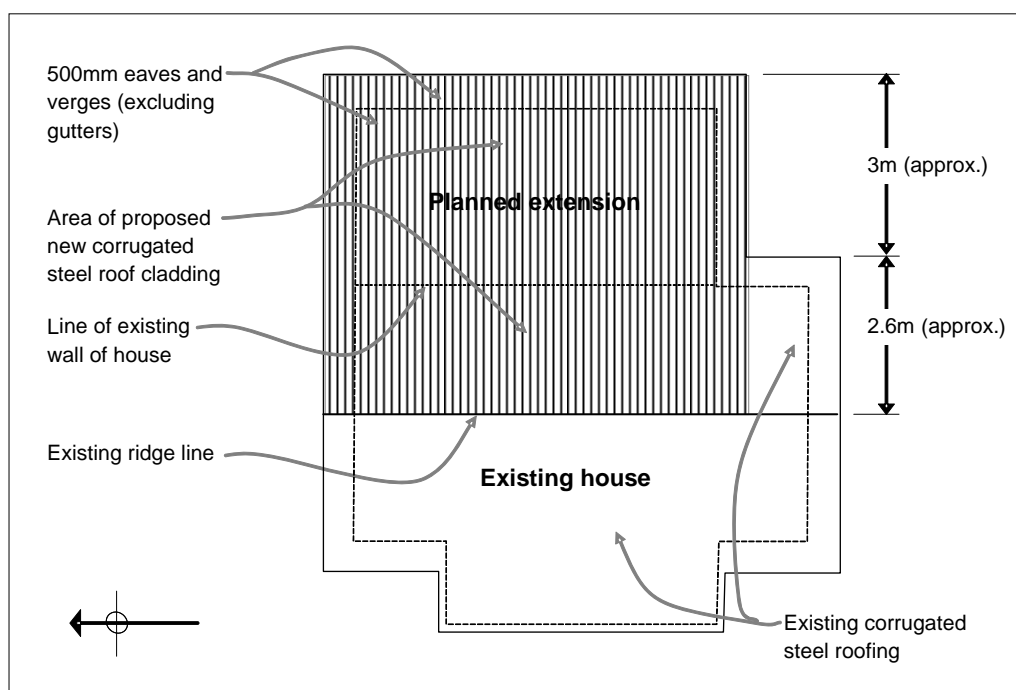
<sup>3</sup> The Building Code is available from the Department’s website at [www.dbh.govt.nz](http://www.dbh.govt.nz).

## 2. The building work

- 2.1 The proposed building work consists of an extension and alterations to a small single-storey house situated on a flat site, which is in a high wind zone for the purposes of NZS 3604<sup>4</sup>.
- 2.2 The original building was constructed during the 1960's or 1970's as a school dental clinic, with a simple rectangular shape and a low pitched gable roof. The building was subsequently converted to a one-bedroom cottage of about 40m<sup>2</sup>.

### 2.3 The roof alterations

- 2.3.1 The existing roof cladding is corrugated galvanised steel at 6° pitch; and a 3 metre extension to the east is proposed as shown below:



- 2.3.2 The proposed work will include the replacement of the existing roof back to the ridge flashing. The roof cladding originally proposed for the extension was to match the existing cladding with respect to material, profile, side laps and pitch. The eaves and verge projections to the extension will be 500mm (excluding gutters) to match the existing roof.

## 3. Background

- 3.1 Prior to applying for a building consent for the alterations to the house, the agent met with the authority to discuss the proposed building work and was apparently advised that either the roof pitch would need to be increased or the roofing would need to be changed to a profile that complied with the minimum roof pitches for profiled metal roof claddings as shown in E2/AS1.

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

- 3.2 Following that meeting, the designer of the alterations (“the designer”) was instructed to base the consent documents on a roofing profile that maintained the existing roof pitch and complied with E2/AS1. The designer then prepared drawings that showed trapezoidal roofing extending over the entire area of roof to the east of the ridge, with the ridge flashing over the inter-cladding junction.
- 3.3 In a letter to the authority dated 29 June 2009, the designer objected to the refusal to allow the use of corrugated steel, as using a ‘complying trapezoidal section roofing’ would be more expensive, wasteful and difficult to flash at the ridge. The designer noted that the preference was to match the existing roofing, which he noted was ‘in very good condition’. The designer proposed that the purlin spacing under new corrugated steel could be reduced to 500mm centres to provide additional support.
- 3.4 The authority responded in a letter to the applicant dated 22 July 2009, which confirmed that it had ‘refused to allow the use of a corrugated roofing material in a situation where only 6 degrees of pitch is available’. The authority noted that a minimum of 8 degrees is required for “long run” corrugated steel with no laps, and stated:
- The building can go ahead with trapezoidal roofing with the option of changing to corrugated if the owner decides to go for a determination from the Department of Building and Housing, and the determination is found in his favour.
- 3.5 The Department received an application for a determination on 14 August 2009.

## **4. The submissions**

- 4.1 In a statement that accompanied the application, the agent briefly explained the history of the building, expressed the applicant’s desire to match the existing roofing, and noted that the existing roof was more than 40 years old and had ‘never leaked’.
- 4.2 The applicant forwarded copies of:
- the consent drawing showing trapezoidal steel roof cladding
  - some of the consent application documentation
  - the correspondence with the authority
  - various other photographs and information.
- 4.3 A copy of the submission and other evidence was provided to the authority, which made no submission in response.
- 4.4 A draft determination was issued to the parties for comment on 1 September 2009. Both parties accepted the draft without comment.

## **5. The legislation**

- 5.1 The relevant section of the Act is:

### **112 Alterations to existing buildings**

- (1) A building consent authority must not grant a building consent for the alteration of an existing building, or part of an existing building, unless the

building consent authority is satisfied that, after the alteration, the building will-

- (b) continue to comply with the other provisions of the building code to at least the same extent as before the alteration.

5.2 The relevant provisions of the Building Code are:

**E2 External moisture**

**Performance**

E2.3.1 Roofs must shed precipitated moisture...

5.3 The relevant sections of the Acceptable Solution E2/AS1 are:

**8.5 Profiled Metal Roof Cladding**

**8.4.5 Roof pitch**

For roofs up to 18 metres in length, pitches shall be:

- (a) Corrugated – not less than 10° (1:6), or 8° (1:7) if no end laps are present.

## **6. Discussion**

6.1 The agent maintains that the pitch of the existing roof has demonstrated its satisfactory performance over more than 40 years, and the roof extension would match the material and pitch of the original roof. Although the pitch of the roof extension does not comply with E2/AS1 (refer paragraph 5.3), the proposal would still comply with the performance requirements of the Building Code for the roof to shed water (refer paragraph 5.2).

6.2 In assessing the proposed roof, the authority appears to be of the opinion that, as the pitch of the existing and proposed roof is 6°, a corrugated profile will not comply with the building code because it does not comply with E2/AS1 (see paragraph 5.3).

6.3 I note that an Acceptable Solution is a prescriptive design solution that provides only one way of complying with the Building Code. The proposed roof pitch to the roof extension does not comply with E2/AS1 and must therefore be considered as an Alternative Solution; entailing an assessment of the roof's likely performance within the context of this house. An assessment of the proposed roof as an alternative solution follows.

### **6.4 The existing and proposed roof**

6.4.1 I note that the minimum 8° roof pitch for corrugated roofing provided for in E2/AS1 is limited to roofs with no end laps and lengths up to 18 metres. The proposed roof cladding is long run that will not include end laps, and the length of roof cladding from the ridge to the gutter is approximately 5 metres.

6.4.2 In the case of the proposed roof extension, I make the following observations:

<b>The legislation and Compliance Documents</b>	<b>The existing and proposed roof</b>
<p><b>The Act</b> The alterations must continue to comply with the provisions of Clause E2 of the building code to at least the same extent as before the alteration.</p>	<p>The proposed roof will match the material, profile and pitch of the existing roof The roof extension is proposed to have purlins at 500 centres to provide additional support to the new corrugated cladding.</p>
<p><b>Clause E2</b> The proposed roof must shed precipitated moisture.</p>	<p>The existing corrugated roof has demonstrated its ability to shed moisture effectively for more than 40 years.</p>
<p><b>E2/AS1</b> A corrugated metal roof, with no end laps, shall be a minimum of 8°.</p>	<p>If the roof cladding were changed to trapezoidal, it would not match the existing roof to the west of the ridge line; and the ridge flashing would be complicated as it would need to accommodate different profiles.</p>

6.5 Taking into account the above, I consider that:

- any re-roofing of the existing house with corrugated steel would not require a building consent, as it is considered exempt work under Schedule 1 of the Act by the use of:
  - comparable materials, or replacement with a comparable component or assembly in the same position, of any component or assembly incorporated or associated with a building . . .
- the corrugated steel roofing proposed for the extension is likely to perform at least as well as the existing roof, which has demonstrated weathertightness performance for more than 40 years on this small house
- the new section of roof cladding is proposed to extend in one length up to the ridge flashing, with no additional junctions introduced to the roof
- despite the low pitch, maintaining the original profile will allow junctions to be minimised and simplified, resulting in no significant difference in weathertightness risk from the current situation
- changing the roof material would introduce a different material to one area of the roof, which would create a vulnerability to moisture penetration via a complex ridge flashing, and this would increase the weathertightness risk.

6.6 I note that the designer has proposed that purlin spacing could be reduced to 500mm centres to provide additional support beneath the new roof (refer paragraph 3.3). I concur with this proposal; however, I note that with the purlins at these centres, fixing the roof at every purlin will be necessary to comply with the manufacture's fixing instructions to resist wind uplift. I also suggest the side laps be increased to provide additional protection against wind blown rain in this high wind zone.

## **7. Conclusion**

- 7.1 Given the discussion in paragraphs 6.5 and 6.6, I consider there are reasonable grounds to come to the view that the corrugated steel roof cladding proposed for the existing roof pitch is able to comply with the performance requirements of Clause E2 of the Building Code as an alternative solution. It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular profiled roof cladding on a particular roof pitch has been established as being code compliant in relation to this building alteration does not necessarily mean that the same material on the same roof pitch will be code compliant in another situation.

## **8. The decision**

- 8.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the roof material originally proposed for the extension to this building will comply with Clause E2 of the Building Code.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 30 September 2009.

John Gardiner  
**Manager Determinations**