



## Determination 2009/80

# Dispute over an amendment to a building consent for a house with a shingle roof at 146 Blakie Road, Ryal Bush, RD 6, Invercargill

### 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 applicants are the owners R and B Robson (“the applicants”), acting through the roof cladding supplier (“the shingle supplier”) and the other party is the Southland 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 an amendment to the building consent for the substitution of roof claddings to a new house, because it is not satisfied that the substituted roof cladding complies with certain clauses of the Building Code<sup>2</sup> (Schedule 1, Building Regulations 1992).
- 1.3 The matter for determination in terms of section 177(a) and 177(b)(v) is whether the authority was correct in its decision to refuse to amend the building consent in respect of the asphalt shingle roofing. In making this decision I have considered the following:
- Whether the asphalt shingles as installed on the building (“the shingle roof system”) comply with Clause B2 Durability, Clause C1 Spread of Fire, Clause E2 External Moisture and Clause F2 Hazardous Building Materials of the Building Code.
- 1.4 By “the asphalt shingles as installed” I mean the components of the shingle roof system such as the shingles, the roof underlay, the underlying substrate, the joints and the flashings, as well as the way the components have been installed and work together.

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

- 1.5 I have received no evidence relating to a dispute about any other matters related to this building, and this determination is therefore limited to the shingle roof system.
- 1.6 In making my decision, I have considered the submissions of the parties, the test reports and technical information supplied by the shingle manufacturer and supplier, and the other evidence in this matter. I have evaluated this information using a framework that I describe more fully in paragraph 5.1.

## **2. The building work**

- 2.1 The building work covered by the consent consists of a detached house that is two-storeys high in part and is situated on a flat rural site in a high wind zone for the purposes of NZS 3604<sup>3</sup>. The house is a fairly simple rectangular form, with a single-storey garage wing that extends to the south.

### **2.2 The roof**

- 2.2.1 The roof over the house is a simple gable form, with a hipped roof to the garage wing extension. The main roof is pitched at 35°, with eaves and verge projections of about 500mm. Three skylights are installed within the roof and a “chimney” structure projects through the ridge line of the main roof.
- 2.2.2 A 1.8m deep 20° pitch verandah extends along the north elevation and part way along the east elevations. The north verandah roof is a continuation of the main roof, while the east verandah roof forms a lean-to against the gable end walls.

### **2.3 Asphalt shingles in general<sup>4</sup>**

- 2.3.1 Asphalt shingles typically comprise an inner core of glass fibre mat reinforcing, with a coating of asphalt on both sides and a mineral chip coating to the upper face providing the final finish as well as providing UV protection to the underlying asphalt. A minimum roof pitch of 15° to 18° pitch is generally recommended for shingles, and ventilation of the roof cavity is required to avoid condensation and prevent shingles deforming.
- 2.3.2 The roofing material is supplied in sheets that are “notched” to give the appearance of individual shingles. The sheets are progressively laid up a roof slope, with each row overlapping the previous row, and are nail or staple-fixed over a breather-type underlay and a plywood substrate. In high wind zones, fixings are increased by 50%. A heat-activated self-adhesive strip fixes the shingles at the lower edge.
- 2.3.3 Shingles are supplied as a roof cladding system, with a purpose-made underlay and accessories. As most shingles are manufactured in the United States or Canada, standards used by manufacturers are generally American-based, with ASTM D3462<sup>5</sup>, ASTM E108<sup>6</sup> and ASTM D3161<sup>7</sup> commonly referred to, along with the Underwriters Laboratories for testing (“UL”).

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<sup>3</sup> New Zealand Standard NZS 3604:1999 Timber Framed Buildings

<sup>4</sup> Source: BRANZ Bulletin 385

<sup>5</sup> Manufacturing standards for glass-fibre-reinforced asphalt shingles (also referenced as NZS 4408)

<sup>6</sup> Standard for fire-resistant properties (also referenced as UL790)

<sup>7</sup> Standard for wind resistance (also referenced as UL997)

## 2.4 The asphalt shingles to this house

- 2.4.1 The shingles to this house are ‘Oakridge PRO30’, which are manufactured in the United States by Owen Corning (“the shingle manufacturer”). The shingles are supplied in sheets where the finished shingles consist of two layers bonded together (refer Fig 1 below).
- 2.4.2 The shingle roof system has been UL-tested and issued with a ‘Certificate of Compliance’ dated 6 April 2005, which states that the shingles comply with ASTM D3462 and, via UL790 and UL997, with ASTM E108 and ASTM D3161.
- 2.4.3 The shingle roof system has been evaluated by ICC Evaluation Service, which provides a product certification service that is an ANSI<sup>8</sup> accredited program. The ES Report (ESR-1372) evaluates the system for weather resistance, wind resistance and fire properties; and also references the ASTM standards applicable for the underlay.
- 2.4.4 The shingle manufacturer provides detailed installation instructions for the shingle roof system, which note ‘standard slope’ roofs as 18° pitch or more and the roof substrate as 15mm plywood. The shingle manufacturer’s instructions also specify 4 fixings per shingle sheet in low and medium wind zones and 6 fixings in high wind zones, an increase of 50%.
- 2.4.5 The New Zealand ‘authorised distributor’ of the manufacturer’s shingles also provides a range of details for various roof junctions and intersections, which are adapted for local conditions and requirements. These include specific details for venting of the roof cavity at ridges and eaves.
- 2.4.6 An independent review of the technical information was carried out by consulting engineers (“the product assessor”), and a ‘Certification’ of the shingle roof system dated 16 June 2008 concludes that, providing the shingles are installed to the manufacturer’s instructions, the shingle roof system will comply with Clauses E2 and B2 of the Building Code.

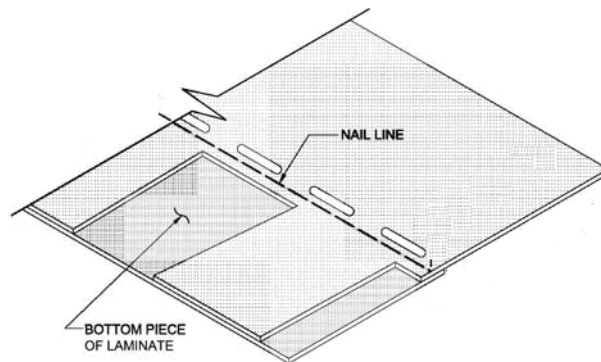


Figure 1 Schematic diagram of a laminated asphalt shingle

## 3. Background

- 3.1 The building consent for the house (No. BLD/2007/40879/1) was issued in 2007 for drawings that specified a profiled metal roof. I have not seen a copy of the consent. Most of the construction appears to have been carried out during 2008.

<sup>8</sup> American National Standards Institute

- 3.2 While obtaining prices for the metal roof, the applicants investigated changing to a shingle roof system. Knowing of shingle roofed houses within the same or nearby regions, the applicants committed to the change as they were apparently not aware that this type of roofing was 'not accepted as a roofing solution' by the authority.
- 3.3 On informing the authority of the change in material, they were told that the shingle roof system 'was not passed as an alternative roofing solution so at this stage could not be used'. The authority advised that an application for the amendment would be needed, but there was no guarantee of acceptance. On explaining that roof materials were partly paid for and due to arrive on site, the authority apparently advised that they 'could go ahead and put on the roof', while adding that there was no guarantee that it would be 'signed off' and the roof could need to be replaced if it were not passed.
- 3.4 On behalf of the applicants, the roofing contractor applied to the authority for approval of the roof system, with the shingle supplier providing some technical information to the authority. Additional clarification was supplied, various changes were made as requested, and the roof installation proceeded in the meantime.
- 3.5 In a letter to the roofing contractor and the shingle supplier dated 2 April 2008, the authority advised that the application to use the shingle roof system as an alternative solution had been considered and declined at that stage:
- ...on the basis that risk and consequences of failure were such that it was felt that independent third party verification of the technical and installation was necessary in support of the application.
- 3.6 The house appears to have been completed during 2008, with some other more minor changes made during construction, which also needed to be resolved prior to a code compliance certificate being issued. The following year, the applicants applied to the authority for an amendment to the building consent to cover these changes.
- 3.7 On 29 May 2009, the authority responded to the application, outlining various additional information required in regard to the other changes. The authority added:
- The asphalt shingles have not been approved as an alternative solution and until the information requested in the last correspondence dated 2 April 2008 is received this building consent application can not be issued.
- 3.8 In a follow-up letter to the applicants dated 4 June 2009, the authority repeated its earlier refusal to approve the roofing system, concluding:
- Basically we are seeking an independent third party verification of building code compliance and fitness for purpose by way of a product appraisal typically carried out by an organisation such as BRANZ. Building code clauses to be considered could include:
1. B2 "Durability"
  2. C3 "Spread of Fire"
  3. E2 "External Moisture"
  4. F2 "Hazardous Building Materials"
- 3.9 The applicants appointed the shingle supplier to prepare an application for a determination on their behalf. The Department received the application on 11 August 2009.

## **4. The submissions**

### **4.1 The applicants' submission**

4.1.1 In the submission dated 5 August 2009, the shingle supplier explained that the dispute had arisen from the authority's refusal to accept the shingle roof system as an alternative solution. The supplier noted that the manufacturer's range of shingles had been used in New Zealand for 15 years and the shingles were 'readily accepted by most Councils'. By insisting on a 'BRANZ type appraisal', the supplier considered that the authority:

...does not give any weight to the quality of the technical information available, the amount of independent testing conducted internationally or the historical use of the product here in NZ or worldwide.

4.1.2 In a separate statement, the applicants explained the background to the change in roof cladding and noted that they had been aware of shingle roofs used on houses within the region. When the decision to change was made, they therefore had no idea that the shingles would not be accepted and, by the time they became aware of any potential problem, they were committed to the shingle roof system.

4.1.3 The shingle supplier forwarded copies of:

- the consent drawings
- the applicant's statement and photographs of the house
- the shingle manufacturer's certificates, assessments and testing information
- the shingle manufacturer's and supplier's technical instructions
- the correspondence with the authority
- a schedule of local projects completed since 2003
- various other statements and information.

4.2 A copy of the submission and other evidence was provided to the authority, which made no submission in response.

4.3 A draft determination was issued to the parties for comment on 31 August 2009. The applicant accepted the draft and noted two errors which have been corrected.

4.4 The authority accepted the draft but reiterated that it would continue to seek third party verification in instances such as this (refer paragraph 6.3).

## **5. Establishing code compliance**

5.1 In order for me to form a view as to code compliance of the shingle roof system, I need to establish what evidence is available. In this case, the evidence consists of:

- the available test and technical information on the system
- the history of use of the system
- other general information on asphalt roof systems which includes BRANZ Bulletin 385 on Asphalt Shingle Roofing.

## 5.2 The manufacturer's test information

5.2.1 Underwriters Laboratories Inc. (UL) is an internationally recognised independent testing organisation established to evaluate products for public safety. The UL test report and 'Certificate of Compliance' dated 6 April 2005 states that the shingle roof system complies with:

- ASTM D3462 Standard specification for asphalt shingles made from glass felt and surfaced with mineral granules (which also accords with NZS 4408).
- UL790 Tests for Fire Resistance of Roof Covering Materials (which accords with ASTM E108 Standard Test Method for Fire Tests of Building Construction and Materials)
- UL997 Wind Resistance of Prepared Roof Covering Materials (which accords with ASTM D3161 Standard Test Method for Wind-Resistance of Asphalt Shingles).

5.2.2 The evaluation report is from ICC Evaluation Service, which provides a product certification service that is an ANSI accredited program. The ES Report (ESR-1372) evaluates the test reports and the system for weather resistance, wind resistance and fire resistance; and concludes that the shingles comply with the 2003 International Building Code and the 2003 International Residential Code. The report limits the use of the product to wind speeds less than 49 metres per second. (I note that maximum wind speeds for NZ high wind zones are 44 metres per second.)

## 5.3 The technical and other information

5.3.1 The other information available for this product includes:

- the shingle manufacturer's detailed instructions for handling and fixing the shingle roof system
- the NZ shingle supplier's instructions and construction details
- the NZ product assessor's certification dated 16 June 2008.

5.3.2 I accept that the shingle manufacturer's information includes independent confirmation on various qualities of the shingle roof system, and the certification from the product assessor allows me to link that information to the weathertightness and durability performance requirements of the New Zealand Building Code.

## 5.4 The history of use

5.4.1 The shingle supplier has provided a schedule of more than 500 local projects completed since the supplier became the NZ distributor for manufacturer's shingles in 2003, including 15 in the southern half of the South Island.

5.4.2 Fibreglass-reinforced asphalt shingle roof claddings have been used internationally for many years and in New Zealand for more than 20 years. I accept that the manufacturer's range of shingles has been used for about 15 years, and I note the number and geographical spread of projects completed with shingles provided by the supplier in the past 5 years.

5.4.3 I also note the letter dated 22 November 2006 from the Waitakere City Council to the shingle supplier, which advises that the 'Oakridge Pro 30 Laminate Roof Shingles System is approved as an alternative solution', providing the system is installed in accordance with the manufacturer's installation instructions by an approved installer.

## **5.5 The use on this building**

5.5.1 In regard to the use of the shingle roof system to this house, I also note the following:

- The shingle supplier is an authorised distributor of the manufacturer's shingles, and has provided the components of the shingle roof system.
- The installer of the roof system is approved by the shingle supplier, and product and workmanship guarantees will be provided.
- The shingle supplier includes specific details applicable for the junctions and intersections that apply to the roof of this house.
- The roof pitch is 35°, with 20° for the verandah. These pitches are higher than the recommended minimum pitches of 15° to 18°, and fall within the manufacturer's description of 'standard slope' roofs
- The house is in a high wind zone, which is within the recommended use limits. The shingle manufacturer also specifies fixings to be increased by 50% in high wind zones, which accords with recommended practice for high wind zones.
- Ventilation of the roof cavity is required, and the shingle supplier includes specific details for venting of the roof cavity at ridges and eaves.

5.5.2 Providing the roof to this house has been installed in accordance with the shingle manufacturer's and the supplier's instructions and details, I am satisfied that the shingle roof system will comply with the relevant provisions of the Building Code.

## **6. Conclusion**

6.1 Taking into account the evidence outlined above, and in the absence of any evidence to the contrary, I am satisfied that the shingle roof system is adequate for the purpose used in this building when installed in accordance with the shingle manufacturer's and supplier's instructions and details.

6.2 I consider that this type of roof cladding cannot be described as particularly unusual, and I am therefore of the opinion that the evidence provided by the shingle manufacturer and shingle supplier is sufficient to establish to provide reasonable grounds for the view compliance with the Building Code will be achieved.

6.3 The authority's view is that it will 'continue to seek independent third party verification for alternative solution applications'. In this instance I believe such verification was supplied by the applicant in the form of the UL test report and 'Certificate of Compliance', and the NZ product assessor's certification.

6.4 It is emphasised that each determination is conducted on a case-by-case basis. Accordingly, the fact that a particular shingle roof system has been established as being code compliant in relation to a particular building does not necessarily mean that the same system will be code compliant in another situation.

## **7. The decision**

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

- the shingle roof system complies with Clauses B2, C1, E2 and F2 of the Building Code, and accordingly
- the authority's decision to refuse to amend the building consent, in respect of the shingle roof system is reversed.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 29 September 2009.

John Gardiner  
**Manager Determinations**