



Determination 2008/117

11 December 2008

Dispute about a notice to fix issued for building underlay behind profiled metal wall cladding installed to an existing building in Main Street, Otautau



1. The matters 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 applicant is the owner, PGG Wrightson Ltd, acting through the metal cladding supplier (“the applicant”). The other party is the Southland District Council (“the authority”) carrying out its duties and functions as a territorial authority or building consent authority. The Department has identified the builder, Amalgamated Builders Ltd (“the builder”) as a person with an interest in the matter.
- 1.2 The dispute arises from the authority’s decision to issue a notice to fix in regard to the installation of the building underlay behind metal wall cladding, which the authority considered did not comply with certain clauses of the Building Code² (Schedule 1, Building Regulations 1992).

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.

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 As the applicant has restricted the matter to be determined to the installation of the building underlay, and I have received no information from the authority, this determination is limited to that matter only.
- 1.4 I therefore consider that the matter for determination is whether the installation of the wall underlay (“the underlay”) complies with Building Code Clauses B2 Durability and E2 External Moisture.

2. The building work

- 2.1 The installation of the underlay is part of alterations to a 50-year-old single-storey warehouse and retail building. The wall cladding is a mix of plastered concrete, vertical corrugated steel fixed to battens over stucco plaster, and vertical corrugated steel fixed to timber horizontal timber girts. The corrugated steel is the predominant cladding. The new vertical corrugated steel has been installed over an underlay.
- 2.2 The underlay is “Bitumac 860” which is described by the manufacturer as “heavy weight breather type building paper and self supporting roof underlay”. The underlay is supplied in rolls 1250mm wide and 40 metres long. The underlay is an absorbent kraft-based underlay as described in NZS 2295. The manufacturer has confirmed that the underlay is has a absorbency of 301g/m² (NZS 2295 requires an absorbency rate of 100g/m² for underlay to walls and a rate of 150g/m² for underlay to roofs).
- 2.3 The underlay has been installed vertically with 100mm minimum side laps.

3. Background

- 3.1 The authority issued a building consent (No 2006/30512/3) during 2006. I have not seen a copy of the building consent. I have received no records of any inspections undertaken during construction, but it appears that the alterations were undertaken in stages, with the recladding being the third stage.
- 3.2 Recladding of the exterior walls appears to have commenced in October 2007. The metal cladding was installed progressively along the length of each wall to ensure that the building remained continually secure and weathertight during the work, leading to the need to fix the underlay vertically with vertical overlaps.
- 3.3 According to the plumber undertaking the recladding (“the cladding installer”), the authority agreed during a site meeting that the system would be approved on condition that suitable verification was provided from the manufacturer of the underlay.
- 3.4 The authority issued a notice to fix dated 7 December 2007, which stated that the work was not compliant with Clauses B2 and E2 due to several matters, including:

The building paper is installed vertically. The best information to hand would indicate that the suppliers of the paper would not support this method of installation.

- 3.5 In a statement dated 21 February 2008, supplied to the cladding installer, the cladding manufacturer stated:
- Based on similar timber constructed commercial jobs, in low risk areas, where the underlay has been laid vertically without issues, our suppliers of the underlay material have approved the wall underlay to be laid vertically, provided the minimum overlap of 150mm is achieved.
- 3.6 In a statement dated 27 February 2008, the manufacturer of the building underlay said:
- The Bitumac 860 Underlay correctly installed vertically with a 150mm lap, in accordance with our data sheet, will meet the durability requirements and control condensation/moisture as per the performance requirement of the NZ Building Code.
- 3.7 The cladding installer supplied the statements to the authority, along with information from the NZ Roof and Wall Cladding Code of Practice³ (“the Code of Practice”). A succession of emails between the authority, the cladding installer and the project managers for the building work followed.
- 3.8 In a facsimile to the cladding installer dated 23 April 2008, the authority noted that it had reviewed the information supplied, but it considered that the Acceptable Solution⁴ for Clause E2 External Moisture, E2/AS1, is quite clear that underlay on walls should be run horizontally in lined buildings, concluding:
- On this basis I believe the [underlay] fitted to walls that are lined internally . . . needs to be replaced with horizontally run absorbent [underlay]. I can accept your alternative solution suggestion that on un-lined sections of wall framing the [underlay] can be run vertically, as any failure can be easily identified and there is plenty of airflow to allow drying if there is ever a problem. I can also accept your alternative solution that the wall [underlay] can remain fixed vertically where the metal cladding is simply used as an over cladding on battens where the existing stucco plaster exterior wall cladding remains.
- 3.9 Further correspondence continued without resolution, and the cladding installer sought the opinion of a metal cladding consultant (“the consultant”) on the matter. The consultant is acknowledged within the industry as a specialist in metal roof and wall claddings.
- 3.10 The consultant provided a report dated 19 July 2008, noting that he was the author of the Code of Practice. The consultant noted that his opinion was generic in nature, and included the following summarised points:
- E2/AS1 is only one means of compliance with the Building Code.
 - Authorities can accept alternative solutions if satisfied, on reasonable grounds, that they comply with the Building Code
 - The function of an underlay is to absorb moisture resulting from condensation, rather than from external moisture ingress.
 - The laps in an underlay are provided to ensure that, in extreme cases, any excess moisture can safely escape to the outside.

³ New Zealand Metal Roofing Manufacturers Inc.

⁴ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way (but not the only way) of complying with the Building Code. The Acceptable Solutions are available from The Department’s Website at www.dbh.govt.nz.

- The Code of Practice distinguishes between metal roof and wall claddings.
- E2/AS1 provides for vertical installation of underlays for roofs no less than 8°, which by inference includes a 90° pitch that is a wall.
- The Code of Practice recommends 100mm overlaps for vertical overlaps.

The consultant attached relevant sections from the Code of Practice:

4.3.9 Vertical laying

When it is not practical to place underlay horizontally, it can be run vertically...

On wall cladding the minimum vertical underlay side and end lap must be 100mm.

The consultant concluded by saying:

It is considered that 'on the reasonable grounds' presented in this letter of opinion, underlay can be fixed vertically under metal cladding and comply with B2, E2 and E3 of the NZ Building Code.

- 3.11 In an email to the cladding installer dated 24 July 2008, the authority acknowledged receipt of the consultant's report but considered that it contained nothing to change its stance on the installation of the underlay. The authority considered that E2/AS1 was clear on requiring underlay on walls to be run horizontally and, while the Code of Practice was an "excellent document", the authority should be guided more by the Acceptable Solutions, concluding that a determination was appropriate as:

Running the wall underlay vertically is therefore an alternative solution, which each individual Council carries liability in approving. I am not comfortable approving wall underlay run vertically for insulated/lined buildings and would much sooner have the decision made through the determination process, which removes liability from us and places it with [the Department].

- 3.12 In response, the consultant provided a further report dated 7 August 2008, which repeated that the compliance of an Acceptable Solution must be considered by an authority, noting:

The real issue here is that the [authority] has not attempted to explain in technical terms why the letter of opinion has been rejected.

- 3.13 The Department received an application for a determination on 9 September 2008.

4. The submissions

- 4.1 On behalf of the applicants, the cladding supplier explained the reasons for installing the underlay vertically. The cladding supplier stated that it was satisfied with the underlay installed with 100mm minimum vertical laps, noting that other buildings in the area have had similar installation and the underlay manufacturer had confirmed that the underlay installation would meet the performance requirements of the Building Code.

- 4.2 The applicant forwarded copies of:

- some of the drawings
- the correspondence with the authority
- the reports from the consultant

- statements from the cladding and building paper suppliers
- various other statements and information.

4.3 Copies of the submissions and other evidence were provided to each of the parties. Neither party made any further submissions in response to the submission of the other party.

4.4 Copies of a draft determination (“the draft”) were sent to the parties on 10 October 2008 so as to give them an opportunity to check the accuracy of the facts and note any errors or omissions.

4.5 Both parties accepted the draft without comment.

5. The legislation, the compliance document, and the New Zealand Standard

5.1 The relevant provisions of the Building Code are:

E2 External moisture

Performance

E2.3.2 Roofs and exterior walls shall prevent the penetration of water...

E2.3.6 Excess moisture present at the completion of construction shall be capable of being dissipated...

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

1.0 Scope

1.1 Construction included

The scope of this Acceptable Solution is limited to the materials, products and processes contained herein, for buildings within the scope of clause 1.1.2 of NZS 3604, and . . .

8.0 Roof claddings

8.1.5 Underlays

Where required, roof underlays comply with Table 23 shall be laid either:

- a) Vertically, when the roof pitch is not less than 8°...

9.1.7 Building wrap

The building wrap shall be in accordance with Table 23 shall:

- a) Be run horizontally...

5.3 The relevant sections of the NZS 2295⁵ are:

1.4 Definitions

For the purposes of this Standard the following definitions shall apply:

⁵ New Zealand Standard NZS 2295:2006 Pliable, Permeable Building Underlays

ABSORBENT UNDERLAY. A roof underlay must absorb more than 150 g/m², and to be classified as absorbent, a wall underlay must absorb more than 100 g/m².

Appendix A Underlay Installation

A2 Laps: Laps of wall and roof underlays should be as shown in table A1. All endlaps should be over framing or other solid blocking

Table A1 – Requirements for laps in building underlay

Application		Minimum overlap	
		Sidelaps (mm)	Endlaps (mm)
Wall underlay	Kraft-based	75	100
	Synthetic	100	100
Roof underlay	Horizontal	150	150
	Vertical	150	150

A3.2 Wall underlays should be run horizontally. Wall underlays should be run so as to minimise all laps. Endlaps should be kept to a minimum and should only occur over solid blocking.

6. Discussion

- 6.1 The building is outside the scope of the Acceptable Solution E2/AS1 (refer paragraph 5.2). Therefore, whatever solutions are chosen to ensure the building is weathertight and comply with Clause E2, can only be viewed as alternative solutions. In any event E2/AS1, is a non-mandatory document and only provides one way, but not the only way, of complying with the Building Code.
- 6.2 The scope of E2/AS1 is limited to buildings within Clause 1.1.2 of NZS 3604, which describes the construction of light timber-framed buildings. The requirement to install underlay horizontally to walls that have been constructed to NZS 3604 is appropriate given the ease which underlay can be installed horizontally to timber framing along with the reduced need for vertical laps.
- 6.3 Provided the laps in the horizontally-installed underlay are of the correct dimension, all laps will be weathertight, irrespective of whether they are side laps (horizontal), or end laps (vertical).
- 6.4 In respect of this building I consider that the relevant standard to which the underlay should be installed is NZS 2295. NZS 2295 says that wall underlays should be run horizontally (my emphasis). The standard does not say that wall underlays must be run horizontally. The standard also says the end laps should terminate over solid blocking.
- 6.5 It is relevant to note that NZS 2295 also allows for roof underlay to be installed either horizontally or vertically depending on how it is to be fixed to the roof framing. By its very nature roof underlay is at a significantly flatter pitch than wall underlay and will not drain as readily as wall underlay, yet NZS 2295 allows for both installation methods provided the laps are of the correct dimension (refer Table A1 in NZS 2295).

- 6.6 In this building the wall cladding is fixed to horizontal timber girts. The wall framing has few, if any, lines of solid blocking at which the end laps in the underlay can be terminated. If the underlay is run vertically, any end laps can be formed at the girts themselves.
- 6.7 The underlay is a heavy weight breather type building paper and self supporting roof underlay. I accept the manufacturer's confirmation that the underlay is appropriate for this situation.
- 6.8 Provided the laps to the underlay are of the correct dimension, as defined in NZS 2295, I am of the opinion that the underlay will perform as intended and will meet the requirements of the Building Code.

7. The decision

- 7.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the authority's decision to issue the notice to fix, dated 7 December 2007, is reversed.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 11 December 2008.

John Gardiner
Manager Determinations