



Determination 2011/029

Dispute over the slope of an existing deck to a house at 7A Churchill Road, Murrays Bay, North Shore

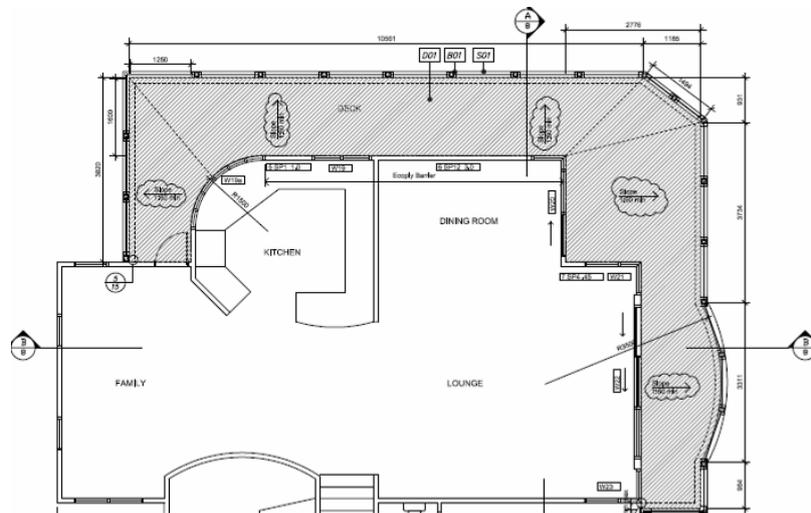


Figure 1: First floor plan as submitted for consent (deck shown shaded)

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 of the house D Hart (“the applicant”) acting via the architect for the alterations, and the other party is the Auckland Council (“the authority”), carrying out its duties as a building consent authority.
- 1.2 This determination arises from the decision of the authority to issue a building consent for alterations with amendments made by the authority, to the proposal submitted by the architect in respect of the replacement of a deck floor. The authority was not satisfied that the building work will comply with the Building Code (First

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

Schedule, Building Regulations 1992) and is concerned about the inability of the proposed deck to shed water.

- 1.3 The matter to be determined² is therefore whether the decision of the authority to issue a building consent, which was subject to amendments made by the authority, was correct. I have considered whether the replacement deck floor, as proposed, complies with Clause E2 External Moisture of the Building Code. By “the deck floor as proposed” I mean the components of the floor (such as the deck structure, the substrate material and the membrane) as well as the way the components are designed to work together.
- 1.4 The replacement deck is included in alterations and repairs proposed for the house; including re-cladding, other repair work and other alterations, which are not part of the matter to be determined. This determination is there limited to the proposed deck, and in particular to the fall proposed for the deck floor.

2. The building work

- 2.1 The building work consists of the replacement of a 35m² moisture-damaged deck to the upper floor of an existing house situated in a very high wind zone for the purposes of NZS 3604³. The house was built in the 1990’s and issued with a code compliance certificate upon completion. The house is two-storeys high with a basement garage. It has monolithic cladding, aluminium windows, and a concrete tile roof. It is assessed as having a high weathertightness risk.

2.2 The proposed deck

- 2.2.1 The upper level deck wraps around the north east and south east elevations, with the deck floor situated above lower rooms. The drawings show a minimum fall of 1:60. The existing deck is to be stripped back to the original floor joists with any decayed timber framing to be replaced.
- 2.2.2 New work includes new H3.2 boundary joists which oversail lower walls by about 50mm; with a new 19mm H3.2 treated plywood deck floor substrate extending a further 65mm. An aluminium angle is fixed to the underside of the plywood and the deck membrane turns down and is fixed to the leg of the angle to form a drip edge. The layout of the deck is shown in Figure 1.
- 2.2.3 A timber fascia is fixed to the boundary joists below the plywood and extends to form a drip edge at the bottom. Metal posts for a glazed balustrade are supported by brackets fixed to the fascia, with the posts positioned clear of the deck edge. A copper gutter is fixed to mounting blocks screw-fixed into the fascia, with a butyl-rubber flashing trimmed around the balustrade brackets.

2.3 The deck membrane system

- 2.3.1 The membrane system is a self-coloured 1.5mm PVC sheet membrane reinforced with a polyester fabric mat, with lapped and heat-welded joints specified. The membrane manufacturer provides contact adhesive and various flashings and

² Under sections 177(1)(a) and 177(2)(a) of the Act

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

accessories; and offers a 20-year product warranty, providing the membrane is installed in accordance with its specifications by approved applicators.

2.3.2 The membrane system has been appraised by BRANZ⁴. The appraisal is current and states that the system will comply with Clauses E2 and B2 as an alternative solution, providing the system is ‘designed, used, installed and maintained’ according to the conditions described in the certificate. The scope of the appraisal includes the following conditions:

- buildings to be within the scope of E2/AS1, with timber-framed decks
- decks to be a maximum area of 40m²
- deck falls to be a minimum of 1:60 (1°)
- allowance for deflection and settlement to maintain deck falls with no ponding
- plywood substrates to be CCA treated to H3
- membrane joints to be overlapped by 20mm minimum
- membrane to be installed by trained applicators, approved by the manufacturer.

2.3.3 Subject to the above conditions, the appraisal certificate concludes that the installed membrane system will:

- be impervious to water and will give a weathertight deck
- will have a serviceable life of at least 15 years
- will not need maintenance, provided no significant substrate movement occurs.

3. Background

3.1 The authority issued a building consent (No. BA-1240738) for the repairs and alterations on 23 February 2011. The drawings submitted with the consent application detailed 1:60 deck falls to the replacement deck.

3.2 When the applicant uplifted the approved consent drawings, the architect found that the plans had been annotated by the authority. The specified falls had been crossed out and replaced with ‘1:30 min’ in line with the authority’s requirements for this particular membrane (see paragraph 5.1.2). The framing plan for the deck was annotated with the hand written note ‘Nogging⁵ at 400mm min. centres to support plywood, refer to membrane manufacturers specifications’.

3.3 In an email to the authority on 15 March 2011, the architect described the particular circumstances of the proposed deck and asked the authority to reconsider its decision. The authority responded on 17 March 2011 and noted that, although the ‘use of Butynol or EPDM at 1 degree would meet the acceptable solution’, its:

...position remains unchanged with alternative solutions for deck/roof falls and requiring 2 degrees of falls.

Our experience has been that in these situations the risk of failure is significantly greater therefore compliance with the Building Code is not met.

⁴ BRANZ Appraisal Certificate No. 411 (2005)

⁵ Which I take to mean ‘solid blocking’.

- 3.4 On 21 March 2011, the Department received an application for a determination from the architect on behalf of the applicant.

4. The submissions

- 4.1 The architect made a submission on behalf of the applicant in a letter dated 18 March 2011 describing the background to the dispute and the design of the proposed replacement deck. The architect listed the features of the proposed deck floor which he considered reduced weathertightness risks and noted the dimensional constraints imposed by the existing house, concluding that the authority's approach:

...does not comply with the obligation of [an authority] under the BA2004 to consider an application on reasonable grounds including the merits of each proposed application.

- 4.2 The architect provided copies of:

- the consent drawings and specifications relevant to the deck
- the building consent
- BRANZ Appraisal No. 411(2005)
- correspondence with the authority.

- 4.3 A draft determination was issued to the parties for comment on 25 March 2011. Both the parties accepted the draft without comment

5. Discussion

5.1 General

- 5.1.1 The architect maintains that the fall of the deck complies with the falls specified in E2/AS1 (refer paragraph 4.1), and therefore complies with the provisions of the Building Code. The applicant therefore considers that the authority is requiring the fall of the proposed deck to be greater than that required in the Building Code, in contravention of Section 18(1)(a) of the Act (refer Appendix A.1).
- 5.1.2 The authority maintains that the proposed deck membrane material does not fall within the scope of E2/AS1, and must therefore be assessed as an alternative solution. I note that the authority has no objections to the use of the particular product, but only to the degree of fall proposed for the replacement deck. The authority is of the opinion that the fall of the deck does not meet the performance requirements of Clause E2 in that it is unable to shed water (refer Appendix A.2).
- 5.1.3 The authority's practice note⁶ titled 'External and internal membranes – alternative solutions' recommends 1:30 falls but does not specify minimum falls. However, the authority's 'External membranes register' lists various membrane brands; and specifies their use, limitations and 'conditions of consent', which includes a fall of 1:30 for this particular membrane product. I consider that such documents may be used as advice only, and cannot take precedence over provisions of the Building Code and the Act.

⁶ Practice Note BLD-142-PN dated 1 July 2010

5.2 Evaluation of the proposed deck floor system

- 5.2.1 I note that the width of the deck generally varies from about 1.2m to 1.6m, except at the north corner where the walls are recessed and the width increases to about 2.8m. The manufacturer's installation instructions do not appear to require solid blocking at 400mm centres as sought by the annotation added by the authority. I accept that solid blocking will be required to support the plywood sheet edges. Solid blocking at 400mm centres also exceeds the requirements of NZS 3604.
- 5.2.2 I also note that the replacement deck is limited by the dimensional constraints of the existing structure. Providing the framing and substrate provide sufficient rigidity for these limited spans, this deck floor is unlikely to deflect in such a way as to cause 'ponding' on the membrane surface.
- 5.2.3 I acknowledge the authority's concerns with respect to the performance of low-pitched membrane decks to buildings where deflection of the structure may give rise to ponding. I also accept the authority's view that the proposed deck membrane material does not fall within the scope of E2/AS1, and I have therefore considered this particular proposal as an alternative solution.
- 5.2.4 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution and with the manufacturer's instructions, which will assist in determining whether the features of the building work are code compliant. In the case of this replacement deck, I note the following:

| E2/AS1 requirements for deck falls | The proposed deck floor system |
|---|--|
| E2/AS1 specifies a minimum deck fall of 1:60 (refer Appendix A3). | The 35m ² deck meets the conditions of the BRANZ appraisal, which concludes the membrane is suitable for decks with a minimum fall of 1:60, providing appraisal conditions are met (refer paragraph 2.3.2). The membrane manufacturer provides a 20-year product warranty at the proposed deck fall of 1:60 (refer paragraph 2.3.1). |
| E2/AS1 specifies a minimum thickness of 1.5mm for deck membranes (refer Appendix A3). | The sheet membrane is 1.5mm thick (refer paragraph 2.3.1). |
| E2/AS1 is limited to membranes composed of butyl or EPDM (refer Appendix A3). | The membrane is an alternative solution, which is generally accepted by the authority as a product suitable for certain types of decks. |
| The manufacturer's requirements | |
| Plywood deck substrates to be 17mm minimum | 19mm plywood specified so increasing rigidity. The existing structure is also unlikely to settle. |
| Flush weld joints are available as an alternative option to lapped joints | Joints are specified to be lapped as per BRANZ appraisal – with hot air welding for increased reliability of the lap bonds. |
| Installation by approved applicator | An approved installer is specified. |

| The manufacturer's requirements (continued) | |
|--|--|
| | <p>In addition, the deck floor:</p> <ul style="list-style-type: none"> • sheds water all along its perimeter • has no internal gutters or scuppers • drains to external copper gutters • oversails lower walls • includes drip edges at the outer edges • has balustrades side-fixed clear of the floor • is accessible for regular inspection. |

5.2.5 Taking into account the above observations, I am satisfied that the replacement deck floor proposed for this house is likely to perform at least as well as the materials and systems included within E2/AS1.

5.2.6 I therefore have reasonable grounds to conclude that the proposed deck floor system, including the deck fall specified in the consent application, will meet the performance requirements of Clause E2 for the deck to shed water.

5.2.7 The authority appears to have assessed this deck on the basis of its general policies, without appropriate evaluation of the deck's design features against the particular weathertightness risks. I am therefore of the opinion that, in changing the fall to this deck, the authority has effectively applied conditions to the consent without advising the applicant or architect, and has also adopted the role of designer by unilaterally making changes to construction details. I consider that these actions are not proper practice for a building consent authority.

5.3 Other matters

5.3.1 I note discrepancies in the drawings between the description of the deck framing taken from the authority's records and as shown in the details for the proposed work, in respect of joist sizes and how the deck falls are to be achieved. I suggest that as-built drawings are provided once the existing framing is exposed and new work completed.

6. The decision

6.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the decision of the authority to issue the building consent, subject to amendments that it made, was incorrect. The decision of the authority to issue the building consent is modified to remove the amendments made by the authority.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 5 April 2011.

John Gardiner
Manager Determinations

Appendix A : The legislation

A.1 The Building Act

The relevant section of the Act is:

18 Building work not required to achieve performance criteria additional to or more restrictive than building code

1. A person who carries out any building work is not required by this Act to-
 - (a) achieve performance criteria that are additional to , or more restrictive than, the performance criteria prescribed in the building code in relation to that building work; or
 - (b) take any action in respect of that building work if it complies with the building code.

A.2 The Building Code

The relevant Clause of the Building Code includes:

E2 External moisture

Performance

E2.3.1 Roofs must shed precipitated moisture...

(I note that the same requirement applies to enclosed decks.)

A.3 The Compliance Documents

The relevant paragraphs of the Acceptable Solution E2/AS1 include:

8.5 Membrane Roofs and Decks

8.5.1 Limitations

This Acceptable Solution is limited to membranes composed of butyl or EPDM installed over plywood substrates for:

- a) Roofs with a minimum fall of 1.5° (1:40),
- b) Decks with:
 - i) a minimum fall of 1° (1:60),
 - ii) a maximum area of 40 m²...

8.5.4 Butyl and EPDM

Butyl rubber and EPDM rubber used form membrane roofing or decks shall:

- a) Be a minimum thickness of:
 - i) 1 mm for roofing, or
 - ii) 1.5 mm for decks ...