



Determination 2015/049

Regarding the refusal to issue a code compliance certificate for alterations to an existing house at 43 Waikaraka Drive, Te Puna



Summary

This determination considers the compliance of alterations to a house to extend an existing deck drain through roof space to a gutter, and the particular jointing method used. The determination discusses the required durability for the deck drain and considers current and future performance.

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 and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.

1.2 The parties to the determination are:

- the owners of the house, K and F Frogley (“the applicants”), acting through the builder of the alterations (“the builder”)
- Western Bay of Plenty District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority
- M. Symons, who is the licensed building practitioner (“LBP”) concerned with the deck drain (“the roofer”).

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

- 1.3 This determination arises from the decision of the authority to refuse to issue a code compliance certificate for alterations to an existing house because the authority was not satisfied that part of the alteration work complied with certain clauses² of the Building Code (First Schedule, Building Regulations 1992). The authority's concerns about the compliance relate to whether an outlet from an existing deck will remain watertight for the period set out in Clause B2.
- 1.4 The matter to be determined³ is therefore whether the authority was correct to refuse to issue the code compliance certificate. In deciding this matter, I must consider whether the altered outlet from the existing deck ("the deck drain") complies with Clause E2 External moisture and Clause B2 Durability of the Building Code. The deck drain includes the components of the system (such as the existing deck and existing outlet, the new pipework and the membrane applied over the junction) as well as the way components have been installed and work together.
- 1.5 I have received no information about the remaining alteration work and this dispute is limited to the new deck drain and its installation. This determination does not consider the remaining building work or the existing house, except where the altered deck drain intersects with new or existing components. This determination only considers the authority's refusal in respect of the compliance of the altered outlet from the existing deck, and not in respect of other elements of the alteration.
- 1.6 In making my decision, I have considered the submissions of the parties and the report of the expert commissioned by the Ministry to advise on this dispute ("the expert") and the other evidence in this matter.

2. The building work and background

- 2.1 The building work consists of alterations to a large two-storey detached house originally constructed in the mid 1990's on a large rural site. The house has an existing upper level deck that sits above ground floor living areas on the rear north-facing elevation.
- 2.2 The existing deck was originally set within lower lean-to roofs, with lower eaves at the deck floor level and a bay window roof extending up to the underside of the metal capping to the weatherboard-clad deck balustrades. Deck outlets at the ends of the deck originally drained via two scupper outlets onto roofs of the lower eaves.

2.3 The 2014 alterations

- 2.3.1 The 2014 alterations included a single-storey timber-framed addition to the east to form a semi-outdoor dining area ("the dining addition"). The roof to the new dining area intersects with the original lower roof, blocking one of the original outlets to the existing deck as shown in Figure 1 (over page).

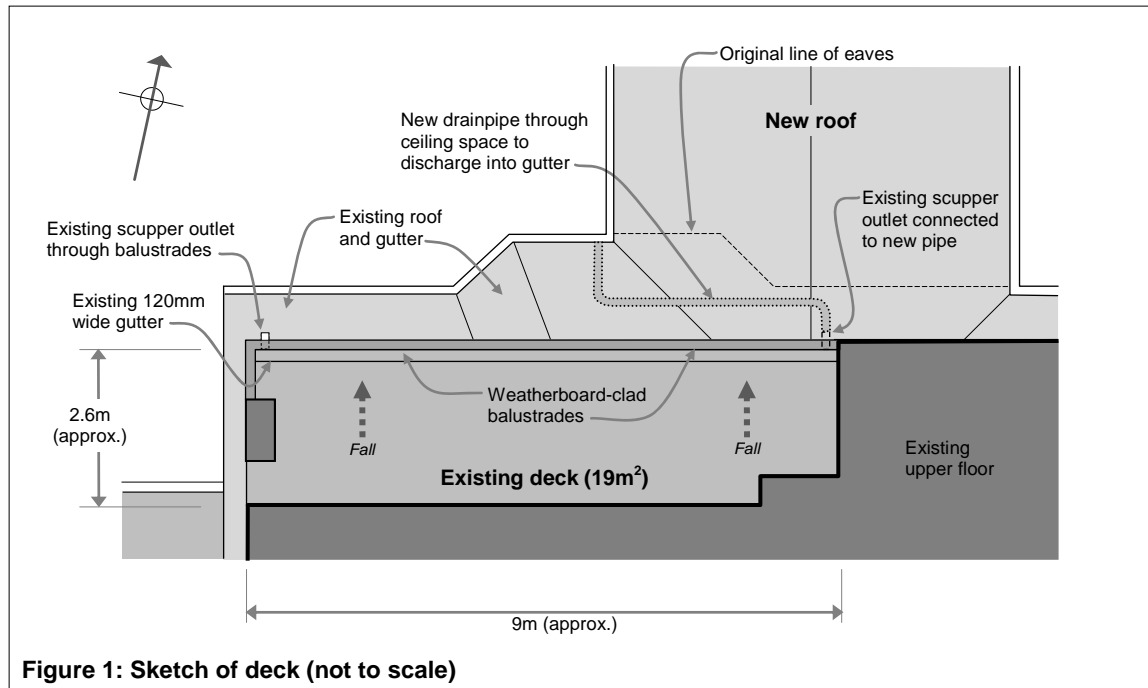
2.4 The altered deck outlet

- 2.4.1 The existing membrane deck floor falls towards a full-length 120mm wide membrane-lined gutter at the front edge, which drains to 90mm x 65mm scupper outlets at both ends. The west outlet remains unchanged, while the east outlet is re-routed through the lower roof space to discharge into the gutter.

² 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.

³ Under sections 177(1)(b) and 177(2)(d) of the Act

- 2.4.2 The existing east scupper outlet was apparently re-used so as not to disrupt the deck membrane and a detail dated 15 May 2013 titled 'Information Request Amendment' was provided by the designer. The detail provided a schematic sketch of the proposed junction between the existing and new pipes, with a note stating 'sealed joint with [butyl rubber] wrap'.



- 2.4.3 The existing 90mm x 65mm scupper pipe was modified to allow it to slide into the new 100mm x 50mm uPVC downpipe, with the joint waterproofed with butyl rubber membrane wrapped around the junction and overlapping each pipe by about 100mm. After the pipe was installed, the authority raised questions about the durability of the junction and the roofer sought and received advice from the membrane supplier.

2.5 Continuing correspondence

- 2.5.1 In an email to the builder dated 18 September 2014, the authority noted that the roofer could not provide a 'full system warranty' because he was not a listed approved applicator of the membrane. The roofer had instead provided a design certificate as an LPB, which the authority did not consider a producer statement.
- 2.5.2 The authority asked for a detailed description of work done on the joint, including products such as 'adhesives, tape, primer/activator' and confirmed that a pressure test to be observed by the authority was required. Because the membrane application was not the 'usual application for the product', the authority noted that it had asked the supplier to confirm that the 'use of the material and the way it has been put together is appropriate and acceptable'.
- 2.5.3 In a letter to the authority dated 26 September 2014, which was not forwarded to the builder, the membrane supplier confirmed that the use of the membrane to the pipe joint was not standard but noted that it would 'have no issues with applying the standard 20 year product warranty' although this would not cover installation. The supplier also stated that the membrane:

...has been applied to the PVC components using the correct method. Cleaning the surfaces with SES225 BMA solvent cleaner and then both surfaces have been

primed with HP250 primer and then SMT076V lap tape has been applied and pressure rolled.

- 2.6 The roofer subsequently carried out a water pressure test of the pipe jointing system to the authority's satisfaction and the builder sought approval of the installation. In an email to the builder on 28 November 2014, the authority noted that the membrane supplier was only prepared to give a warranty for the membrane product and stated:

This makes things difficult for [the authority] to be satisfied as to continued compliance of the installation as required by the building code, and you will need to look for a suitably qualified and/or experienced person to review and confirm the future performance of the junction.

- 2.6.1 The authority attached a copy of the supplier's letter and the builder responded, noting that the letter did not state that 'the product was not suitable for use in this application'. The builder maintained that all the authority's requests had been met but an extra requirement had now been added with no clear indication that this would resolve the matter. The builder therefore considered that the authority was effectively refusing to issue the code compliance certificate for the alteration work.

- 2.7 The Ministry received an application for a determination on 9 February 2015.

3. The submissions

- 3.1 In a brief statement supporting the application, the builder outlined the background to the dispute about the pipe jointing system and provided copies of:

- the detail of the pipe joint
- correspondence with the authority
- the letter from the membrane supplier dated 26 September 2014
- construction photographs of the pipe installation.

- 3.2 The authority made no submission in response to the application.

- 3.3 A draft determination was issued to the parties for comment on 16 June 2015.

- 3.4 All of the parties accepted the findings of the draft determination without any further comment or submissions.

4. The expert's report

- 4.1 As mentioned in paragraph 1.6, I engaged an independent expert to assist me. The expert is a member of the New Zealand Institute of Architects. The expert inspected the house on 14 May 2015, providing a report dated 2 June 2015 which was provided to the parties on 3 June 2015.

- 4.2 The expert noted that his investigation was limited to considering the:

- condition and performance of the existing deck
- context and background to the deck drain installation
- installed scupper/new pipework junction
- durability and likely consequences of future failure.

4.3 The existing deck

4.3.1 The expert inspected the existing deck and observed that:

- the 20-year-old butyl rubber deck appears to be well maintained and in very good condition and the owner reported that they have never seen ponding
- the deck has sufficient fall toward a 120mm full length gutter along the north edge (And I note that membrane is appropriately lapped in the slope direction)
- the membrane-lined gutter drains to scupper outlets at each end, which are 90mm wide x 65mm high and penetrate the bottom of the balustrade
- the deck and scuppers have not been altered, apart from a modification to the east scupper to allow for the junction to the new deck drain.

4.4 The alterations

4.4.1 The expert described the context of the deck drain and the jointing method chosen, and noted that:

- the roof to the new dining area abuts the front of the existing enclosed deck and as a result is built over one of the deck outlets, which therefore needed to be extended to allow discharge into the guttering
- the designer apparently decided to leave the existing scupper in place so as not to disturb the existing satisfactory deck/balustrade membrane junctions
- the outlet pipe was extended using a standard 100mm x 50mm uPVC downpipe that runs through the roof space to the gutter (as shown in Figure 1)
- the mismatch in dimensions between existing and new pipes has required a modification to the 65mm height of the north end of the scupper pipe to allow the new pipe to overlap the bottom and sides, with a butt joint to the top
- because the joint is not a 'normal fit', the junction is wrapped with membrane.

4.5 The pipework junction

4.5.1 The roofer removed roof tiles to allow the expert to view the underlying framing, the deck drain, and the junction between existing and new pipework. There were no signs of moisture penetration since the new pipe was installed some 2 years ago.

4.5.2 The expert reviewed construction photographs and other information and noted:

- the membrane supplier confirmed that the correct method and materials were used to adhere the membrane to the pipes but will only guarantee the products
- the roofer as an LBP has provided a 'Certificate of Design Work' to cover the installation
- the new pipework and junction were subjected to a satisfactory water pressure test under the authority's observation
- there is no evidence of current moisture problems at the junction.

4.6 Consequences of future failure

4.6.1 The expert also considered the likely consequences of any future failure of the deck drain and the durability needed for the system, noting:

- the deck drain runs through the ceiling space above the existing kitchen/dining area of the house
- should any future leak occur in the pipe system, moisture would be absorbed into the plaster ceiling below and be readily visible during ‘normal use’
- the pipework is not difficult to access and repair as roof tiles can be removed without disruption to the building structure
- repairs can be promptly carried out before framing damage occurs.

4.6.2 Taking account of the above, the expert considered the minimum durability required would be limited to 15 years.

4.7 The expert’s conclusions

4.7.1 The expert noted that the existing deck is well drained and provided with outlet drains. The existing 19m² deck has similar provisions for drainage as called for in E2/AS1 for a deck area up to 40m². The expert considered that the deck drain does not compromise the efficient drainage of the upper deck.

4.7.2 The expert considered that the method of jointing appeared satisfactory, with no evidence of current moisture problems and no apparent defects which would prevent the system from meeting a 15-year durability period.

4.7.3 The expert concluded that the subject pipework met the performance requirements of Clauses E2 and B2 and therefore considered that the authority was ‘not justified in withholding a Code Compliance Certificate’ for the alteration work.

5. Discussion

5.1 Performance of the deck drain

5.1.1 Taking account of the expert’s report and the other evidence, I consider the following features to be relevant to the deck drain:

The existing deck

- The upper deck is well away from trees likely to shed leaves onto the deck floor and which could result in debris likely to block the drainage outlets to the deck.
- The existing deck is well maintained and in good condition, with adequate floor clearances and no evidence of ponding or other moisture problems.
- The existing deck is of an area half the limit for drainage provisions set out in E2/AS1, but has outlets equivalent to those called for in E2/AS1.
- The existing west scupper is a simple direct outlet through the balustrade and is likely to be sufficient to drain the deck should the deck drain be blocked; so allowing blockages to be cleared before any damage results.

The pipe junction

- The products used to adhere the membrane to the pipe junction have been confirmed as appropriate by the membrane supplier.
- The new pipework and junction has been pressure tested, with no sign of failure at the joint and the expert has noted no sign of moisture after about two years and no obvious defects in the deck drain likely to result in future leaking.

- Any failure of the pipe junction would be evident by moisture marks in the ceiling below and therefore ‘easily detected during normal use of the building’.
- The deck drain is easily accessed by lifting roof tiles.

5.1.2 Taking account of the expert’s report together with the factors outlined above, I am satisfied that the deck drain as installed and jointed is currently watertight and is likely to be so in the future. The ongoing performance of the junction is reliant on the durability of glued joints: it is suggested that mechanical clamps, or similar, be installed around the butyl rubber wrap to secure it to the pipework.

5.2 Durability of the deck drain

5.2.1 The deck drain is also required to comply with the durability requirements of Clause B2, which requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life. The authority maintains that the deck drain, including the pipe joint, is ‘concealed and difficult to access’ and therefore requires a 50 year minimum durability.

5.2.2 Clause B2.3.1 says ‘Building elements must, with only normal maintenance, continue to satisfy the performance requirements of [the Building Code] for’:

- (b) 15 years if:
- (i) those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or
 - (ii) failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance

5.2.3 Table 1: Durability Requirements of Nominated Building Elements’ in Acceptable Solution B2/AS1, says:

- a durability period of not less than 50 years is required for gutters and downpipes ‘incorporated within the structure (e.g. downpipes cast into a column or boxed in behind claddings)’ ; and
- a durability period of not less than 15 years is required for ‘internal or valley gutters, fascia gutters or built-in downpipes’.

(I consider downpipes referred to above perform the same function as the deck drain.)

5.2.4 Taking account of the expert’s report, and considering the above, I consider the deck drain moderately difficult to access or replace, but that the failure of the deck drain would be detected during normal use of the building. The expert considered that any failure of the deck drain would be readily observable. I also do not consider the deck drain is ‘incorporated in the structure’ as contemplated in Table 1 of B2/AS1 for a downpipe requiring a durability period of not less than 50 years.

5.2.5 I consider the deck drain is only required to satisfy a 15 year minimum durability period, and that given normal maintenance the deck drain will satisfy this requirement. I am therefore satisfied that the deck drain complies with the durability requirements of Clause B2.

5.3 Conclusion

- 5.3.1 I consider the expert's report and the other evidence establishes that the current performance of the deck drain is adequate because there is no evidence of current moisture penetration into the ceiling void and framing. I am therefore satisfied that the drain pipe complies with Clause E2 of the Building Code. I am also satisfied, given normal maintenance, that the deck drain will remain adequately watertight for the minimum 15 year durability required by the Building Code.
- 5.3.2 Effective maintenance of the existing deck and outlets will be important to ensure ongoing compliance with Clauses B2 and E2 of the Building Code and is the responsibility of the building owner.

6. The decision

- 6.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the new deck drain complies with Clauses E2 and B2 of the Building Code. Accordingly I reverse the authority's refusal to issue a code compliance certificate in regard to the deck drain.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 11 August 2015.

John Gardiner
Manager Determinations and Assurance

Appendix A

A.1 Clause B2.3.1 says:

B2.3.1 *Building elements* must, with only normal maintenance, continue to satisfy the performance requirements of this code for the lesser of the *specified intended life* of the *building*, if stated, or:

- (a) The life of the building, being not less than 50 years, if:
- (i) Those *building elements* (including floors, walls, and fixings) provide structural stability to the building, or
 - (ii) Those building elements are difficult to access or replace, or (iii) Failure of those building elements to comply with the building code would go undetected during both normal use and maintenance
- of the building.
- (b) 15 years if:
- (i) Those building elements (including the building envelope, exposed plumbing in the subfloor space, and in-built chimneys and flues) are moderately difficult to access or replace, or
 - (ii) Failure of those building elements to comply with the building code would go undetected during normal use of the building, but would be easily detected during normal maintenance.
- (c) ...

A.2 The relevant table from the Acceptable Solution for Clause B2 Durability, B2/AS1, says (excerpt from Table 1):

Building Element	Component	Situation/Function	Not less than 50 years	Not less than 15 years	Not less than 5 years
Guttering and downpipes (See note at top of table)		Gutters or downpipes incorporated within the structure (e.g. downpipes cast into a column or boxed in behind <i>claddings</i>), or secret gutters (e.g. hidden verge or valley gutters)	✓		
		Internal or valley gutters, fascia gutters or built-in downpipes		✓	
		External gutters and downpipes			✓