



## Determination 2017/002

# Regarding the requirement for fire resistance of a slatted timber deck over a car parking area to new townhouses at 350 Colombo Street, Christchurch

### Summary

This determination considers whether the proposed deck construction would comply with Clause C3 of the Building Code. The determination discusses whether the timber slatted deck over a carport is a roof for the purpose of C/AS1 and whether the design is an alternative solution.

### 1. The matter 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 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 are:

- Fletcher Living, the developers and owner under a development agreement, who applied for this determination (“the applicant”); acting through an agent who was also a consultant (“the consultant”)
- Christchurch City Council carrying out its duties and functions as a territorial authority or building consent authority (“the authority”)

1.3 I have provided the New Zealand Fire Service Commission (“the NZFS”) with the determination documentation for comment by way of consultation under section 170 of the Act<sup>2</sup>.

1.4 This determination arises from a disagreement between the applicant and the authority as to whether a proposed timber slatted deck over a carport would constitute a “roof” for the purpose of compliance by way of the Acceptable Solution C/AS1.

1.5 The matter to be determined<sup>3</sup> is therefore whether the proposed deck construction would comply with Clause C3 of the Building Code (First Schedule, Building Regulations 1992). In making my decision I have considered whether the proposed building work is in accordance with the Acceptable Solution C/AS1.

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<sup>1</sup> The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Ministry are all available at [www.building.govt.nz](http://www.building.govt.nz) or by contacting the Ministry on 0800 242 243.

<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> Under section 177(1)(a) of the Act

- 1.6 In making my decision, I have taken into account the submissions of the parties in this matter. I have not considered any other aspects of the Act or of the Building Code, nor have I considered any other building elements other than in regards to compliance of the deck with respect to resistance to external spread of fire.

## **2. The building work**

- 2.1 The building is one of seven buildings under development at this site, and contains 11 townhouses. The townhouses are timber-framed and have two levels (Ground Floor and First Floor).
- 2.2 One townhouse at the end of the block includes an attached garage, and the remaining town houses have adjacent car pads. Above the car pad, at first floor level, is a timber deck; the deck is supported by columns, a fire wall at one side, and connected to the façade. In this determination I refer to the car pad together with the timber deck and its associated support as a “carport”. It is the compliance of the carport that is the subject of this determination.
- 2.3 The proposed construction is shown in Figure 1 and Figure 2 (over page).
- 2.4 Each townhouse has an independent Type 4F fire detection and alarm system, and there are 30/30/30 FRR walls between adjoining townhouses that go up to the roofline.
- 2.5 Each carport is open on two sides. There is a 30/30/30 fire wall at the boundary between adjacent carports that extends to 1.8 metres above the level of the deck.

## **3. Background**

- 3.1 On 29 June 2016, as part of the pre-consent application process, the consultant sought to clarify with the authority whether paragraph 5.2.2 of the Acceptable Solution C/AS1 was applicable to the proposed design. The authority responded, advising that paragraph 5.2.2 was not applicable and also advising that paragraph 5.3 would need to be addressed.
- 3.2 On 30 June 2016 the consultant sought clarification from the authority, noting that:  
...these car ports hasn't (sic) got real roofs  
...We have got open car ports under the balconies those are open from two sides.
- 3.3 The authority responded on 30 2016 saying:  
The car parking area is not an open space as it has a structure over it. As it can't be considered an open space the structure over it is considered a roof.
- 3.4 On 6 July 2016 the applicant sought the opinion of an officer of the Ministry as to whether C/AS1 paragraph 5.3 was relevant.
- 3.5 The Ministry officer replied on 7 July 2016 (copied to the authority) saying:  
...as the deck does not prevent penetration of water it does not function as a roof and paragraph 5.3.2 does not apply  
It is also my view that the deck is open on two sides and very low fire risk from fire penetrating the deck to affect the neighbouring building  
...as roof is not defined the final decision lies with BCA whether this paragraph applies.

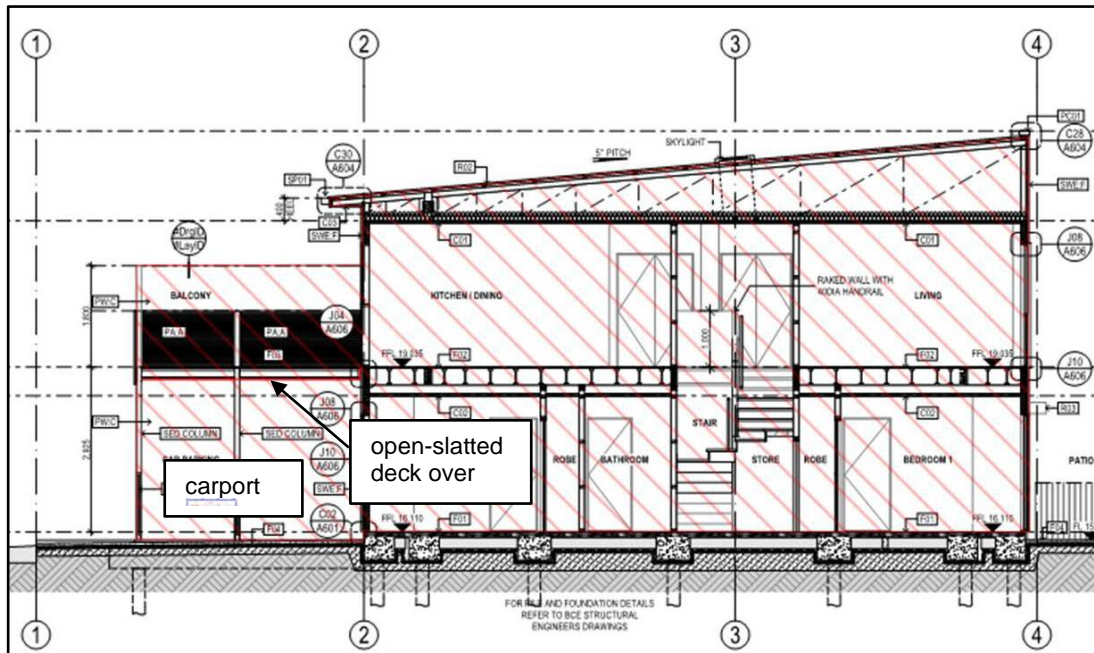


Figure 1: Sectional view of proposed construction

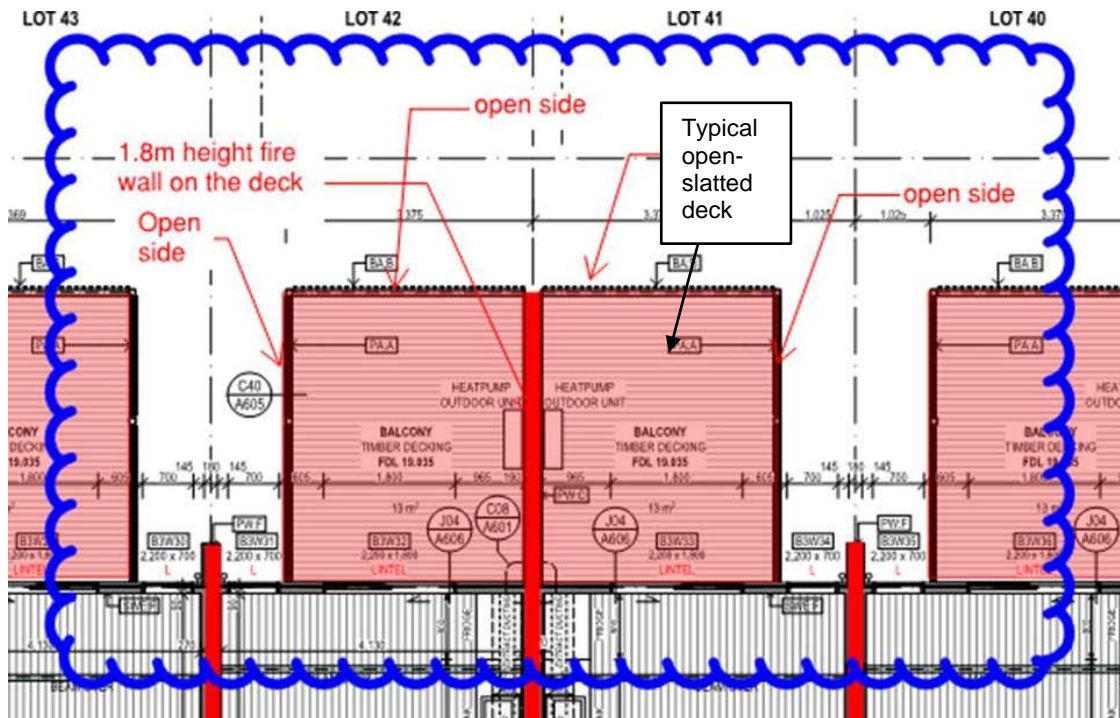


Figure 2: Partial plan view of proposed construction

- 3.6 The authority's response dated 7 July 2016 reiterated its earlier position regarding the roof:

... the car parking area is not an open space as it has a structure over it. As it can't be considered an open space the structure over it is considered a roof.

The definition of a roof in E2 is: 'That part of a building having its upper surface exposed to the outside and at an angle of 60° or less to the horizontal'.

The roof in this situation does not have to prevent the penetration of water as the water will not cause undue dampness or damage.

As this design is to comply with the acceptable solutions it must comply fully even although the risk of fire spread is very low.

- 3.7 The applicant applied for building consent on 4 August 2016, and an application for determination was received by the Ministry on 26 August 2016.

## 4. The submissions

- 4.1 In a submission dated 16 August 2016 the applicant provided the documents previously sent to the authority (see above). The applicant submitted (in summary) that the slatted deck was not a roof and therefore C/AS1 paragraph 5.3 was not applicable.

- 4.2 The applicant noted that the terms "deck" and "roof" are defined in the Acceptable Solution for Clause E2 External moisture, E2/AS1:

**Deck:** An open platform projecting from an exterior wall of a building and supported by framing. A deck may be over enclosed internal spaces, or may be open underneath. Refer also Enclosed deck. Also known as a balcony.

**Roof:** That part of a building having its upper surface exposed to the outside and at an angle of 60° or less to the horizontal.

- 4.3 The applicant referred to the correspondence with the Ministry officer noting the opinion that a slatted deck could not be considered a roof because a roof would have a performance requirement to prevent the penetration of water.

- 4.4 The applicant submitted that the definition of the roof cannot be the umbrella term for the slatted decks because slatted decks do not comply with the performance requirements of the Building Code for roofs, and that the requirements of C/AS1 paragraph 5.3 for lower roofs are not relevant for open-slatted decks.

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

- 4.6 The draft determination was issued to the parties for comment on 28 October 2016 and a copy was provided to NZFS on 31 October 2016. The draft considered the definition of the term "roof" in terms of its characteristics in preventing the passage of moisture into a building and concluded that the balcony was not a roof for the purpose of C/AS1. The draft concluded that additional fire rating of walls to adjacent units was not required in order to achieve compliance with Clause C3.

- 4.7 The authority responded by email on 3 November 2016, submitting that while based on historical information it agreed with the decision it considered the analysis in the determination was not based on sound fire engineering principles and that 'whether a roof is weathertight or not has questionable relevance to the effect on a fire under a structure'. The authority also noted that if a fire design does not fully comply with

the Acceptable Solution then it will be assessed as an alternative solution, albeit that the Acceptable Solution may still be used as a basis for the alternative solution.

- 4.8 The consultant responded by email on 11 November 2016, clarifying the alarm type and noting that it agreed with the authority's comments (above) but that the consultant remains of the view that the design complies fully with the Acceptable Solution as paragraph 5.3.1 does not apply in this case.
- 4.9 The NZFS responded by email on 25 November 2016, noting it had reviewed the draft determination but had no comments to make.
- 4.10 I have amended the determination as I consider appropriate.

## 5. Discussion

### 5.1 The legislation

- 5.1.1 The relevant clauses of the Building Code are Functional Requirement C3.3:

Buildings must be designed and constructed so that there is a low probability of fire spread to other property vertically or horizontally across a relevant boundary.

and Performance Requirement C3.6:

Buildings must be designed and constructed so that in the event of fire in the building the received radiation at the relevant boundary of the property does not exceed 30 kW/m<sup>2</sup> and at a distance of 1 m beyond the relevant boundary of the property does not exceed 16 kW/m<sup>2</sup>.

- 5.1.2 The requirement is in general terms that the adjacent property is to be protected from fire spread, and the question in this case is whether the intertenancy wall at 1.8m high above the deck would be sufficient to prevent the spread of fire to the adjacent property or whether the walls of adjacent units require fire rating.
- 5.1.3 Section 19 of the Act provides various means as establishing compliance with the Building Code, including but not limited to compliance with the relevant Acceptable Solution (C/AS1).

### 5.2 Acceptable Solution C/AS1

- 5.2.1 The relevant paragraphs of C/AS1 to consider in this case are 5.3.1 and 5.5. The application of those paragraphs turns on whether the deck is a 'roof'.

- 5.2.2 Paragraph 5.3 of the Acceptable Solution C/AS1 states:

#### 5.3 Protection from a lower roof in multi-unit dwellings

**5.3.1** Fire spread from a roof close to and lower than an external wall of an attached sleeping unit or attached building on other property shall be prevented by providing an FRR of 30/30/30 to either:

- a) The part of the roof within 5.0 m horizontally of the wall, or  
b) Any part of the wall within 9.0 m vertically of the roof.

- 5.2.3 Paragraph 5.5 of C/AS1 refers specifically to roofs over open sided carports:

#### 5.5 Carports and similar construction

A carport is permitted to have walls and roof with 100% unprotected area provided that all the following conditions are met:

- a) At least two sides are completely open to the environment, and  
b) The carport and adjacent building are under the same ownership, and

c) For a roof plan area of no more than 40 m<sup>2</sup>, no part of the roof is closer than 0.3 m to a relevant boundary.

- 5.2.4 Given that the deck is closer than 0.3m to the relevant boundary and on one side is bounded by another property, I do not consider paragraph 5.5 any further other than as to provide context to the discussion regarding whether the deck is also a “roof”.
- 5.2.5 The applicant has submitted that the term “roof” should be given the meaning applied in other parts of legislation and Acceptable Solutions, referencing those that relate to weathertightness. (I note here that the first draft of this determination also considered the term roof in terms of its function in resisting the passage of moisture.)
- 5.2.6 The authority has argued that the car pad has a structure above it, and therefore the carport is not open, and the deck must be treated as a roof because it is not open.
- 5.2.7 The term “roof” is not defined in the Acceptable Solution, and I am of the view that definitions provided in Acceptable Solutions are not necessarily transferable between different Acceptable Solutions. In considering the interpretation of the relevant paragraphs of C/AS1 in this case, I have considered how the term “roof” has been used within C/AS1 as well as its natural ordinary meaning.
- 5.2.8 The Acceptable Solution C/AS1 refers to roofs in:
- the definitions for building height, firecell and smokecell, and in the commentary to the definitions for relevant boundary and external wall
  - Part 5 – Control of external fire spread; specifically in paragraph 5.2 in relation to “roof projections” (eaves), paragraph 5.3 in relation to protection from “a lower roof”, and paragraph 5.5 relation to carports and similar construction
  - Paragraph 7.5.5 in relation to chimneys.
- 5.2.9 The ordinary meaning of the term “roof” relating to the upper covering of a house or similar structure is:
- a) The external upper covering of a house or other building; the framing structure on top of a building supporting this.<sup>4</sup>
- The Oxford English Dictionary also provides extended and figurative definitions for “roof”, which includes
- c) Something material which in form or function is regarded as comparable to the covering of a house.
- 5.2.10 Considering the term “roof” as it is used in C/AS1, the essential characteristic is that it is part of the building envelope that typically, though not always, encloses an area of the building. Paragraph 5.5 clearly contemplates a roof over an open space as a feature in a carport’s construction.
- 5.2.11 In my view, the deck in this case though not located over an enclosed space forms a “roof” over the car pad. As the space under the deck is designated a car park then the deck and adjacent walls form an open-sided building similar to a carport. I conclude therefore that the deck is a “lower roof” for the purpose of C/AS1. That being the case I am of the view the design does not comply by way of C/AS1; however, it does not necessarily follow that the design does not comply with the requirements of the Building Code as an alternative solution.

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<sup>4</sup> OED Third Edition, November 2010.

### **5.3 Are the walls to neighbouring property adjacent the deck required to be fire-rated?**

- 5.3.1 The carport is fully open on two sides, and on the boundary between adjacent properties there is a 30/30/30 fire wall along the full length of the carport that runs up to 1.8 metres above the level of the deck. Any fire in the carport would be vented to the outside via the two open sides and up through the unrated open-slatted deck.
- 5.3.2 In the absence of any of the proposed carport structure (the deck and the boundary fire wall), a fire in a carpark space would affect adjacent property to a limited extent as the effects of fire would vent to open air.
- 5.3.3 The presence of the 30/30/30 fire wall between carparks and the open deck means that that only the upper level of the adjacent property might be adversely affected by fire and to no worse an extent as if the deck and wall were not there.
- 5.3.4 It is my opinion that a fire in the open space would not generate sufficient heat to threaten the adjacent unit above, due to separation distance and angle; however this would need to be verified by calculation.

### **5.4 Conclusion**

- 5.4.1 Taking into account the evidence outlined above, I conclude that:
- the deck above the car pad constitutes a “roof” for the purpose of C/AS1 and the design does not comply with C/AS1;
  - it is unlikely that the balcony requires fire protection in order to comply with Clause C3.6 of the Building Code, though this requires calculation to verify.

## **6. The decision**

- 6.1 In accordance with section 188 of the Building Act 2004, I hereby determine that pending verification the slatted decking over carport as proposed for this building will comply with the Building Code Clause C3 Fire affecting areas beyond the fire source.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 17 January 2017.

John Gardiner  
**Manager Determinations and Assurance**

## Appendix A: The legislation

A.1 The relevant sections of the Act include:

### **19 How compliance with building code is established**

(1) A building consent authority must accept any or all of the following as establishing compliance with the building code:

- (a) compliance with regulations referred to in section 20:
- (b) compliance with an acceptable solution:
- (ba) compliance with a verification method:

A.2 The relevant clauses of the Building Code include:

**C3.3** Buildings must be designed and constructed so that there is a low probability of fire spread to other property vertically or horizontally across a relevant boundary.

**C3.6** Buildings must be designed and constructed so that in the event of fire in the building the received radiation at the relevant boundary of the property does not exceed 30 kW/m<sup>2</sup> and at a distance of 1 m beyond the relevant boundary of the pro

A.3 The relevant paragraphs of the Acceptable Solution, C/AS1, include:

### **5.3 Protection from a lower roof in multi-unit dwellings**

**5.3.1** Fire spread from a roof close to and lower than an *external wall* of an attached sleeping unit or attached *building on other property* shall be prevented by providing an *FRR* of 30/30/30 to either:

- a) The part of the roof within 5.0 m horizontally of the wall, or
- b) Any part of the wall within 9.0 m vertically of the roof.

**5.3.2** Fire rating of the roof is not required if the *household unit* is protected with a sprinkler system complying with NZS 4515

### **5.5 Carports and similar construction**

A carport is permitted to have walls and roof with 100% *unprotected area* provided that all the following conditions are met:

- a) At least two sides are completely open to the environment, and
- b) The carport and adjacent *building* are under the same *ownership*, and
- c) For a roof plan area of no more than 40 m<sup>2</sup>, no part of the roof is closer than 0.3 m to a *relevant boundary*.