MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

Determination 2017/081

Regarding the compliance of a ground floor landing to a set of stairs in a residential unit at 21 Commercial Street, Takaka

Summary

This determination considers the compliance of a 435mm long landing at the bottom of a set of internal stairs. The determination compares the landing length with the Acceptable Solution, and discusses whether there is adequate activity space on the landing between the door and the stairs.

1. The matter to be determined

1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004[1] ("the Act") made under due authorisation by me, Katie Gordon, Manager Determinations, Ministry of Business, Innovation and Employment ("the Ministry"), for and on behalf of the Chief Executive of the Ministry. The decision under section 184 of the Act to make this determination was made by the previous Manager Determinations.

1.2 The parties to the determination are:

- the owner of the building E J Stevenson Family Trust ("the owner") acting through a designer[2] ("the agent")
- Tasman District Council ("the authority"), carrying out its duties as a territorial authority or building consent authority.

1.3 This determination arises from dispute between the authority and the agent with regard to the size of a landing to a set of internal stairs.

1.4 The matter to be determined[3] is whether the landing to the stairs complies with Clause D1 – Access Routes of the Building Code (First Schedule, Building Regulations 1992)[4].

1.5 In making my decision, I have considered the submissions of the parties and the other evidence in this matter.

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[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.

[2] The designer is approved as a licenced building practitioner, but the work that is the subject of the determination falls outside the definition of restricted building work; the designer is therefore not a party to this determination.

[3] Under section 177(1)(a) of the Act

[4] In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building work and background

2.1 The building is a double-height steel-framed Nissen hut with a timber framed extension. The building work was carried out as part of alterations that included strengthening the building and adding an upper level within the existing envelope to establish a residence ("the upstairs flat")[5].

2.2 The building work that is in dispute concerns a set of timber stairs that provide the means of access from the ground level entrance door to the upstairs flat (see Figure 1). In dispute between the parties is the compliance of the landing at the bottom of the stairs.

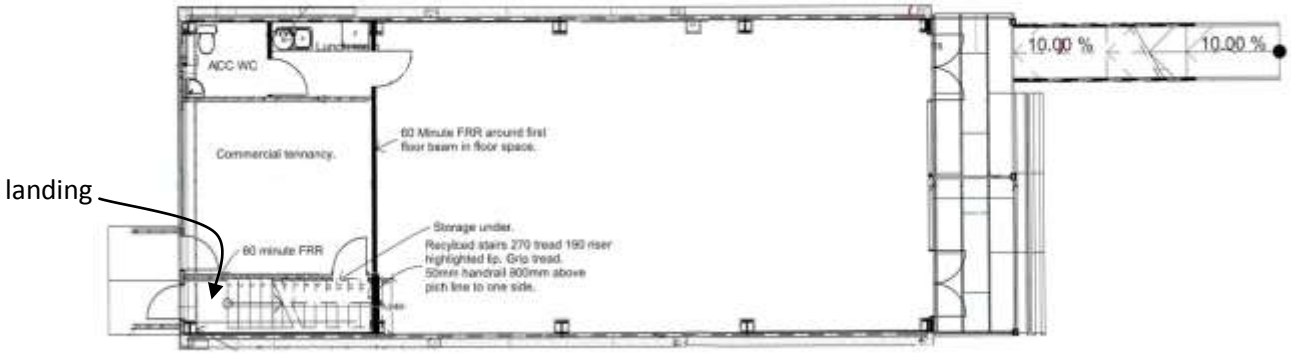

Figure 1: ground floor plan from consent documentation (not to scale)

2.3 The application for building consent was lodged on 4 November 2015, and the application stated the means of compliance for Clause D1 was 'D1/AS1 and alternative solution'.

2.4 The plans submitted for building consent show a landing 1.24m wide and 1002mm long from the external door to the first riser. It was noted on the plans that the stairs were to be a recycled building element from a different building, with 270mm treads and 190mm risers.

2.5 In assessing the proposed use of the recycled stairs the authority noted the following in regards to the landing:

> The stairs open onto a landing at the bottom of 1.00m, open to the floor area at the top and has a rise of 237mm…
>
> D1.3.3(l) landing size exceeds the acceptable solution and complis (sic) with code clause …

The assessment concluded:

> The recycled stair poses no danger to the user and fully satisfies the code requirements in a SH risk Group. …

2.6 The authority issued building consent No. 160056 on 28 April 2016 for the alterations. The building consent was subject to an amendment issued on 14 September 2016; the dimension of the ground floor landing in the approved plans[6] is shown as 0.961mm.

[5] The fire safety report prepared by the designer noted 'the building's owner intends to offer professional offices to the first floor and retail/offices to the ground', but goes on to classify the use of the building as 'Commercial below Housing' and risk groups CA & SH respectively.

[6] Drawing no 1.4 dated 8 September 2016

2.7 The authority carried out a pre-line inspection on 10 January 2017. In regards to the stairs the inspection report noted 'Stairs to first floor are not compliant with D1. [Code compliance certificate] cannot be issued …'.

2.8 The designer wrote to the authority on 11 January 2017, noting that some changes had been made to the stairway during construction and due to the location of a steel member the landing space at the bottom of the stairs was reduced. The designer put forward the view that: as the door opens outward, the requirement for a landing to accommodate door swing is not required; the reduced landing size does not impact on the safe use of the stairs; and 'there is room between the last stair and the door for the safe placement of feet before opening the door'. The designer considered that the landing meets the requirements of Clause D1.3.3(m).

2.9 The authority responded to the designer on 13 January 2017, noting that the landing did not comply with Clause D1.3.3(l) or (m). The authority stated

> The alternative solution was agreed to on the basis of a 1,002mm long landing at the bottom of the stair … For some reason this has not been achieved. A landing length of just 450mm (as measured on site) is a significant difference and therefore not 'minor' in nature.
>
> … the current situation would appear not to comply with the D1 acceptable solution, and clearly is not in compliance with the Building Consent. …

2.9.1 The authority noted that the owner could make a formal application for a waiver or modification of Clause D1, and that an amendment to the building consent would be required.

2.10 There was ongoing correspondence between the designer, the builder, and the authority from 2 February 2017. I have summarised the views of the designer and the authority regarding the size of the landing as follows:

The Designer

- 'The portal locations have changed minorly *(sic)* and the stairs, although tread and riser dimensions are the same, is longer. This has led to the landing being smaller than originally proposed'
- D1.3.3(l) concerns landings along a stair to prevent fatigue.
- In regards to Clause D1.3.3(m): the door does not create a hazard because it opens outward and this clause does not dictate the size of the landing in this case where there is no inward door swing to consider.
- The size of the landing is appropriate and adequate on the basis of a standing space for one person of $0.4m^2$ (based on calculations for occupant loads in Acceptable Solutions for the C Clauses).
- Compliance by way of an Acceptable Solution is not mandatory, and as the majority of the use of the stair would be single way traffic from a two-bedroom flat it was less than the 'high risk worst case scenario' contemplated in the Acceptable Solution.

The authority

- The landing does not comply with the building consent and does not comply with the Acceptable Solution.
- The building work would have complied with the Acceptable Solution if it had been constructed in accordance with the building consent.

- The authority does not agree with the designer's interpretation of D1.3.3(l)
- D1/AS1 paragraph 4.3.1 states "landings shall be provided at the top and bottom of every flight of stairs", and paragraph 4.3.4 that "landing length shall be no less than 900mm" (see Appendix A).
- A landing of 450mm was not safe even though the door opens outward, and an application for a modification or waiver was unlikely to be successful; the stair serves a dwelling and the authority considers the size of the landing does not meet the objective of Clause D1.

2.11 On 21 February 2017 the authority advised the owner that the as-built landing did not comply with the building consent and did not comply with Clause D1 of the Building Code.

3. The submissions

3.1 The application for determination and initial submissions

3.1.1 The Ministry received the application for a determination from the designer on 21 August 2017.

3.1.2 The designer set out some of the history and background to the dispute, and submitted (in summary):

- Clause D1.3.3(l) is limited to landings required to prevent fatigue in the navigation of stairs.
- The Acceptable Solution is silent with regard to landings at the base of stairs, but requires 400mm clear space from any door on landings where the door opens onto the landing.
- A person is able to have both feet on the level landing before engaging the door, and as the door opens outward it does not present a hazard to a person on the landing.
- The use of the word "appropriate" in Clause D1.3.3(l) allows for landings less than the dimensions in the Acceptable Solution.

3.1.3 The designer provided copies of:

- the pre-line inspection report dated 10 January 2017
- relevant correspondence between the parties and with the builder
- ground floor plan drawings dated:
  - 8 September 2016 which shows the landing 0.961mm, and
  - 16 August 2017, which shows the landing at 450mm.

3.1.4 On 28 August 2017 the authority provided a copy of the approved plans for building consent no. BC 160056. On 1 September 2017 the authority advised it would be making a submission in response to the application for determination. The authority provided its submission on 22 September along with copies of relevant correspondence and an inspection report dated 5 September 2017.

3.1.5 The inspection report included a number of photographs and recorded the dimensions of the stairs as follows:

- 435mm from first riser to door frame
- risers 165mm
- tread 270mm
- 15 treads and 16 risers.

3.1.6 The authority set out some of the background to the events and submitted its views on the matter as follows (in summary):

- During the processing of the building consent the designer submitted an application for an alternative solution to use an existing recycled timber stair with risers that didn't meet D1/AS1. That application noted the landing at the bottom of the stairs was 1000mm, and the alternative solution was approved.
- The as-built landing at 435mm does not comply with the building consent which had a dimension of 1002mm for the landing, nor does it comply with the Acceptable Solution D1/AS1 which would require 900mm.
- The authority considered a previous determination (2015/055[7]) that confirmed that the minimum length of landing was 900mm to comply with D1/AS1.

3.1.7 The authority also provided its assessment of whether a waiver would be appropriate in the circumstances, concluding that it would not grant a waiver or modification in relation to the length of the landing whilst noting that 'other factors such as adequate lighting in the stairway, floor finish, and contrasting nosings would also be considerations'. The authority's concerns were related to:

- People who are less ambulant or with less physical independence, and visitors.
- The space does not present a safe means of entering, the bottom step creates a tripping hazard, it will impair the ability to enter and exit from the building safely, and is more likely to present a hazard in the event of a fire.
- The authority must consider future users over the building's intended life and is of the view that 'this is not a low risk situation'.

3.1.8 On 25 September 2017 the designer made a further submission (in summary):

- The stair was purchased from Christchurch and dimensions were provided by the seller before purchase. The dimensions were then sent to the owner.
- Determination 2015/055 is not relevant to this matter as it concerned a deck overhang above a landing and a non-graspable handrail.
- Landings are required under Clause D1.3.3(l) for prevention of fatigue, and under D1.3.3(m) where a door presents a hazard to the person where it opens from or onto a landing.
- The Acceptable Solution is written for multi-story buildings with significant occupant load and multi-directional traffic. The occupant load of the upstairs flat of four people is significantly lower.

[7] Determination 2015/055 Regarding the code compliance of building work in a new house (7 September 2015)

- Stairs within a household unit are not required to be accessible – NZS 4121[8] is not relevant.
- The door poses no risk to the user; a person is able to place both feet on the same level surface before operating the door or ascending the stairs. There is no tripping hazard to users.
- The plans were drawn on the information available at the time. Some of this information was wrong and compounded the changes to the consented layout.
- The as-built stairs were the subject of an assessment as an alternative solution and the assessment could have been amended to address the landing length.

3.1.9 On 26 September 2017 the Ministry advised the designer that the application that had been made by the designer was not valid; the designer was not a party under section 176 of the Act because the design work did not involve restricted building work[9].

3.1.10 On 28 September 2017 the Ministry received an application for the same matter from the owner with confirmation that the designer would act on the owner's behalf.

3.2 The draft determination and submissions in response

3.2.1 A draft of the determination was issued to the parties for comment on 10 October 2017.

3.2.2 On 20 October 2017, the authority accepted the findings of the draft without additional comment.

3.2.3 On 27 October 2017, the designer advised he did not accept the draft and provided a further submission that included modelling of movement on stairs and a video of a person on the landing. The designer maintains the view that although the length of the landing is not "ideal" it is still meets the performance requirements of the Building Code as it provides "adequate" activity space in which to stand to open the door. The designer submitted (in summary):

- When compared against the Acceptable Solution dimensions and international research, the landing at 435mm provides adequate space to perform the activity of opening the door when the door opens away from the landing.
- The 435mm landing provides a clear space, which is in excess of 400mm across the full width of the landing beyond the outer arc formed by a door opening onto a landing.
- 435mm exceeds the 280mm stair depth that is allowed in D1/AS1 at the top of some flights of stairs[10]
- It is a common for people to stop on the landing to operate the door, and people adapt their gait when faced with different situations and make up of paths and stairs.
- A person's heels will not contact the riser of the bottom stair; once stationary at the bottom of the landing there is no need for a change in direction that would cause them to contact the stair.

[8] New Zealand Standard NZS 4121: Design for Access and Mobility – Buildings and Associated Facilities

[9] Under section 7 of the Act "building work" includes both construction activities and "design work". However, the definition of "design work" is limited to restricted building work, which is defined by Order in Council. The building work that was the subject of the determination falls outside this definition. That being the case the designer was not a party under section 176(d).

[10] Paragraph 4.3.1 of D1/AS1: '…A landing need not be provided between a flight and a door where the rise of the flight is no more than 600mm and the door slides or opens away from the steps (see Figure 14)'.

- The depth of a stair tread is proven in practice to be adequate space to stand and operate a baby gate or similar.

3.2.4 The designer also raised the possibility of seeking a waiver or modification of the relevant clause.

3.2.5 On 27 October the authority made a further submission noting that it concurred with the conclusion reached in the draft determination regarding non-compliance with Clause D1.3.3(a). The authority reiterated points made in previous correspondence with the designer (refer paragraph 2.10) and in its earlier submissions, noting also that

> [The authority] went to some effort to see whether there was any acceptable solution for the length of a landing (that could possibly justify a landing length of just 435mm), and could find nothing. In the cases found, the length of any landing had to be at least the same dimensions as the width of the stairway.

3.2.6 The designer made a further submission on 30 October, noting that an amendment had been sought to the consent to address the fact that the stairway was not in accordance with the Acceptable Solution, and it was the refusal to grant that amendment that necessitated the application for determination. The designer set out his view that the provision in the Acceptable Solution for no landing at the top of a flight of stairs of 600mm where the door opens away from the stair presented a greater risk than the subject landing at the bottom of the stairway. The LBP also requested the determination grant a waiver in respect of the landing length.

3.2.7 On 7 November 2017 the Ministry wrote to the parties regarding the designer's request to expand the matters to incorporate whether the authority correctly exercised its powers in refusing to grant a waiver, and asked the applicant confirm the matter for determination.

3.2.8 The applicant responded on 8 November 2017, confirming that they did not wish to expand the matters to incorporate consideration of a waiver for the landing length.

4. Discussion

4.1 The legislation

4.1.1 The relevant clause of the Building Code in this case is Clause D1 – Access Routes.

4.1.2 Function requirement D1.2.1 provides:

> Buildings shall be provided with reasonable and adequate access to enable safe and easy movement of people.

Performance Clause D1.3.1 requires:

> Access routes shall enable people to: …
>
> (b) enter buildings,
>
> (c) move into spaces within buildings by such means as corridors, doors, stairs, ramps and lifts, …

4.1.3 Performance Clause D1.3.3 goes on to describe the attributes an access route shall have[11], including:

> (a) adequate activity space,…
>
> (m) landings of appropriate dimensions where a door opens from or onto a stair, ramp or ladder so that the door does not create a hazard, …

[11] I note here that the parties also discussed D1.3.3(l) which concerns landings "at appropriate intervals along a stair or ramp to prevent undue fatigue". This clause does not apply to the ground floor landing considered in this determination.

4.2 Compliance of the landing

4.2.1 Considering the as-built stairs as an alternative solution requires an assessment of the likely performance within the context of this particular building.

4.2.2 In evaluating the design, it is useful to make some comparisons with the relevant Acceptable Solution D1/AS1[12]. The Acceptable Solution D1/AS1 is a prescribed means of achieving compliance with the Building Code, but it is not the only means.

4.2.3 In making a comparison with the Acceptable Solution, the following general observations are valid:

- Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
- Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.

4.2.4 Paragraph 4.3.1 of D1/AS1 states 'Landings shall be provided at the top and bottom of every flight of stairs ...' and paragraph 4.3.4 of D1/AS1 states landing length 'shall be no less than 900 mm'. The landing clearly does not meet the criteria in paragraph 4.3.4 of D1/AS1. I must therefore consider whether the landing area is of an "appropriate dimension" and whether it provides "adequate activity space".

4.2.5 The landing at the bottom of a set of stairs provides for adjustment in footing before ascending or when reaching the bottom of the stairs, and ensures the first step is not a tripping hazard when entering the stairs. The landing also provides a flat surface on which to stand to operate a door.

4.2.6 The designer has submitted that because a clear space of 400mm is acceptable under D1/AS1, where a door opens onto a landing (refer Appendix A.2), in comparison the as-built landing at 435mm provides adequate space to meet the requirements of Clause D1.

4.2.7 I disagree with the designer in this matter. I do not consider the clear space in D1/AS1 for a door swing onto a landing is relevant to the question of what is adequate for the landing considered in this determination. When opening a door that swings onto a landing, clear space is provided for the person to move around the door without needing to use the steps; as shown in the figure below there is a significant area of the landing still available outside the swing of the door that is well away from the top riser.

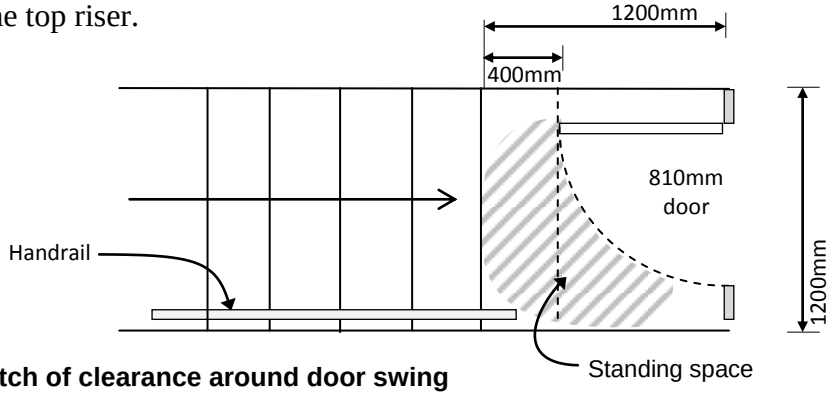

Figure 2: sketch of clearance around door swing

[12] For clarity I note that the relevant paragraphs and figures of the Acceptable Solution in the current version (Amendment 6, effective from 1 January 2017) are no different to the version that was current at the time the building consent was granted.

4.2.8 Turning now to the as-built landing: I consider the distance from the door to the first riser is not so small that the first step would present a tripping hazard to a person entering the building, nor does the outward opening door present a hazard.

4.2.9 However, I am of the view that the landing at 435mm is restrictive in terms of providing an adequate space for a person exiting the building to easily stand on and operate the door without the need to make use of one or more steps behind. Although the door opens outward, standing with both feet on the landing in a position to open the door would mean the person's heels would likely be very close to or against the first step riser, and one foot may remain on the first stair tread.

4.2.10 A person operating the door lock or handle should be able to easily do so from a level surface with adequate activity space so the door handle is also operated at the intended height.

4.2.11 In conclusion, I consider the area between the door and the first riser does not provide adequate activity space for a person to stand and operate the door and so does not comply with Clause D1.3.3(a).

5. The decision

5.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the stair landing at the base of the stairs does not comply with Clause D1.3.3 of the Building Code.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 20 November 2017.

Katie Gordon
Manager Determinations

Appendix A: The regulations

A.1 The relevant clauses of the Building Code discussed in this determination:

Functional requirement

D1.2.1 Buildings shall be provided with reasonable and adequate access to enable safe and easy movement of people.

Performance

D1.3.1 Access routes shall enable people to: …

(b) enter buildings,

(c) move into spaces within buildings by such means as corridors, doors, stairs, ramps and lifts, …

D1.3.3 Access routes shall:

(a) have adequate activity space, …

(l) have landings of appropriate dimensions and at appropriate intervals along a stair or ramp to prevent undue fatigue,

(m) have landings of appropriate dimensions where a door opens from or onto a stair, ramp or ladder so that the door does not create a hazard, …

A.2 Relevant paragraphs from Acceptable Solution D1/AS1

4.3 Landings

4.3.1 Landings required – Landings shall be provided at the top and bottom of every flight of stairs, ramp or ladder, or where a door opens into the stairway. A landing need not be provided between a flight and a door where the rise of the flight is no more than 600 mm and the door slides or opens away from the steps (see Figure 14).

4.3.4 Landing length shall be no less than 900 mm.

4.3.5 Obstructions – Landings shall be clear of any permanent obstruction. A clear space of at least 400 mm across the full width of the landing shall be available beyond the outer arc formed by any opening door (see Figure 15).

Figure 14: Landings Not Required at Door Locations
Paragraph 4.3.1

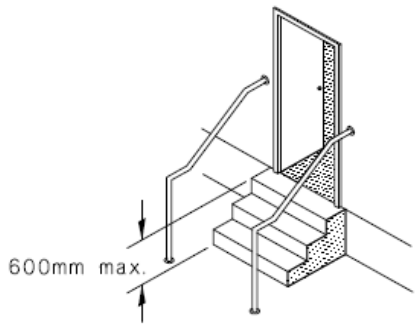

Figure 15: Clearances at Door Locations
Paragraph 4.3.5