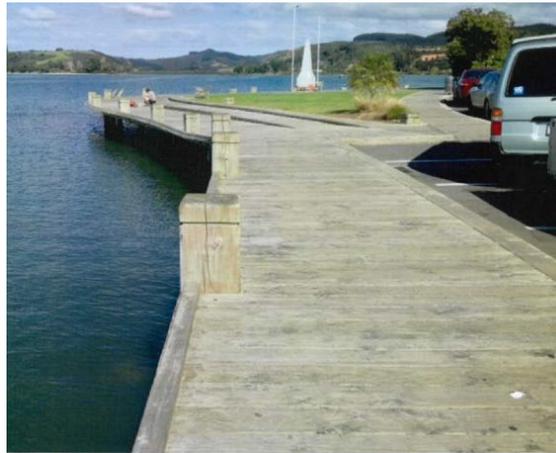




Determination 2018/010

Regarding whether proposed barriers to a timber walkway along the shoreline at Mangonui Harbour, Northland will satisfy Clause F4 Safety from falling



Summary

This determination is concerned with the compliance of proposed barriers to a walkway. The determination considers whether the barrier satisfies the Acceptable Solution or complies as an alternative solution.

1. The matter 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, Katie Gordon, Manager Determinations, 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:

- Far North District Council (“the authority”), carrying out its duties as a territorial authority or building consent authority. The authority applied for the determination.
- Far North District Council as the owner of the walkway (“the owner”), acting through its Asset Management Branch.

1.3 This determination, which is the third sought by the authority, arises as a result of ongoing debate about the design of a barrier to a timber walkway constructed along the shoreline. Determination 2016/045 (“the first determination”) considered whether a safety net along the timber walkway (“the walkway”) would comply with Clause F4 Safety from falling, and it concluded the proposed safety net complied.

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.

Determination 2017/041 (“the second determination”) considered whether proposed barriers to a wharf and the section of the walkway located above it complied with Clause F4. It concluded as the fall height from the walkway to the wharf was less than 1m a barrier was not required, and a barrier was incompatible with the intended use of the wharf.

- 1.4 The authority has sought this determination to clarify whether a barrier to the walkway must be designed to the Acceptable Solution for it to comply with Clause F4² of the Building Code (First Schedule, Building Regulations 1992). Accordingly, the matter to be determined³ is whether the proposed barrier as described in this determination complies with Clause F4 of the Building Code.
- 1.5 In making my decision, I have considered the submissions of the parties, and the other evidence in this matter.

2. The building work

- 2.1 The existing walkway is approximately 168m long and is located on the shoreline of the Mangonui Harbour. The walkway is 4 to 5m wide, and is adjacent to a road and car parking. The walkway ends against retail outlets at the southwest end and returns to the footpath at the northeast end. The areas considered in this determination (“non-wharf walkway”) are shown in Figure 1.

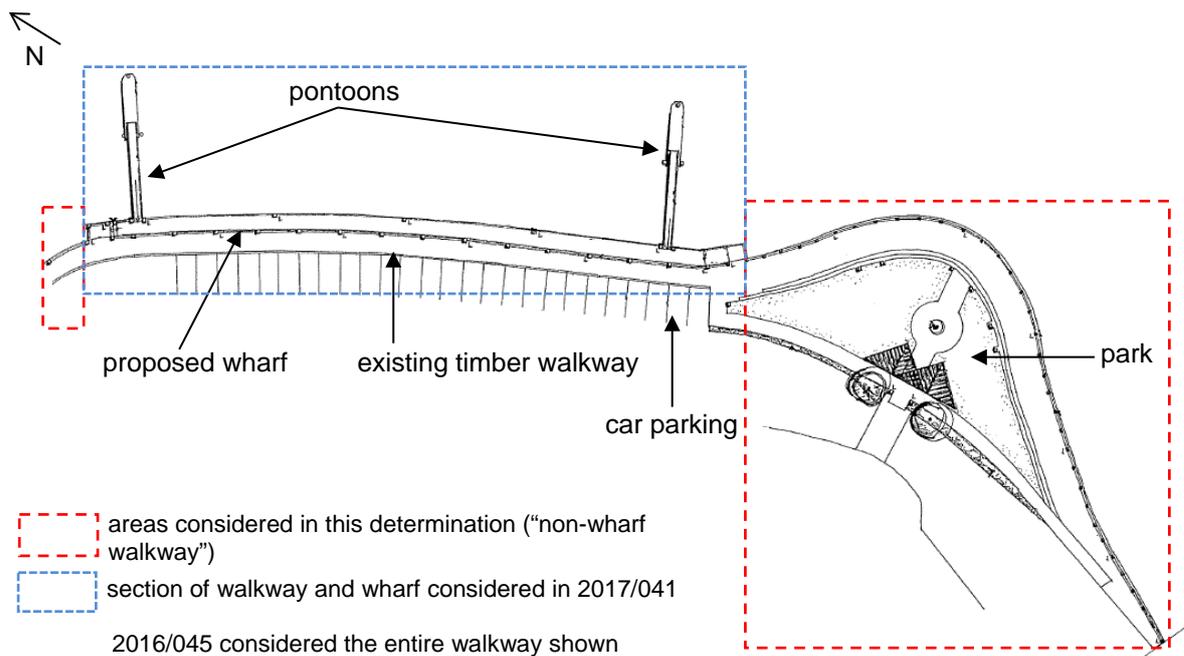


Figure 1: Site plan of the existing timber walkway (not to scale)

- 2.2 At present the entire walkway does not have a safety barrier. However, there is a timber curb 100mm wide and 75mm high, with 400 x 400mm timber bollards about 600mm high, evenly spaced along the seaward edge.
- 2.3 The original proposed barrier (“the original barrier”) to the non-wharf walkway (see Figure 2) consists of:

² In this determination, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

³ Under section 177(1)(a).

- timber bollards that are 1050mm high spaced every 2.5m, with recessed lights in bollards spaced at 19m
- 50mm thick marine rope attached to each bollard at approximately 900mm high
- timber curb fixed between the bollards, ending 200mm above the timber decking of the walkway.

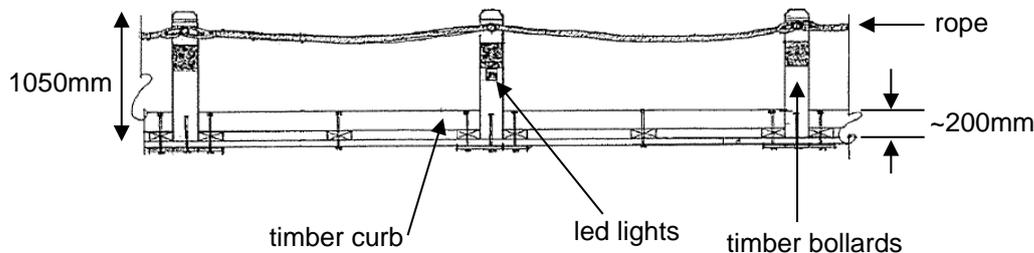


Figure 2: Diagram of original proposed barriers to the walkway (not to scale)

The modified barrier

- 2.4 Following the issue of the draft determination, the original barrier design was modified (“the modified barrier”). The modified design proposed an additional rope between the top of the timber bollards and the timber curb. The other elements from the original proposed design were unchanged.

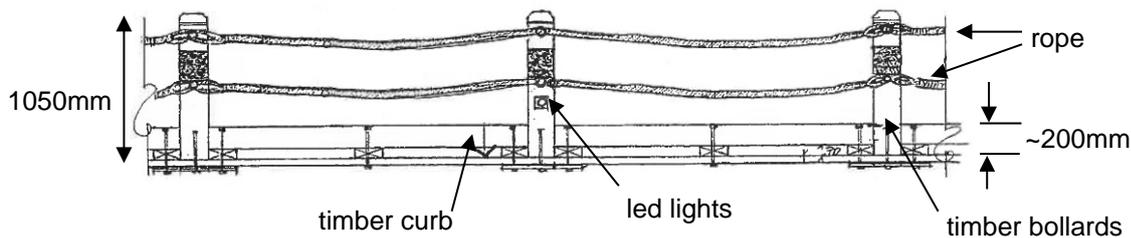


Figure 3: Diagram of modified barriers to the walkway (not to scale)

3. Background

- 3.1 The authority issued building consent BC-2007-2710/1 on 26 July 2007 for the construction of the walkway along Waterfront Drive. The consent included a design for a vertical safety barrier to protect people from falling from the walkway.
- 3.2 The owner amended the building consent in 2009, removing the safety barrier from the design. On 12 August 2009 in accordance with section 68 of the Act, the authority notified the Chief Executive of the Ministry⁴ of a waiver of Clause F4.
- 3.3 The building work was undertaken in accordance with the amended plans and a code compliance certificate was issued on 5 April 2011.
- 3.4 Subsequently, the authority re-visited the need for a safety barrier along the walkway and applied for the first determination on whether a design for a horizontal safety net barrier would comply with Clause F4. The determination concluded the then proposed safety net to the side of the walkway would comply with Clause F4.

⁴ Then the Department of Building and Housing, being the predecessor to the Ministry.

- 3.5 The community later raised concerns regarding the proposed safety net in relation to the visual impact and the need for regular maintenance. The authority then applied for the second determination, which concluded barriers were not required for the section of walkway above the wharf, or to the proposed wharf itself.
- 3.6 For this determination the authority propose to construct a barrier to areas shown in Figure 1. The barrier is proposed as an alternative solution and the owner is of the view the barrier should be designed to satisfy Acceptable Solution F4 to comply with Clause F4.
- 3.7 The Ministry received an application for a determination on 6 July 2017.

4. The submissions

- 4.1 The authority included a submission with its application that stated as follows:
- The edge of the walkway will be delineated by new timber bollards, a timber curb, and lighting.
 - The original barrier is designed to make people aware of the edge of the walkway, alerting the user to the difference in levels and reducing the likelihood of an accidental fall.
 - The walkway borders car parking and a memorial park providing varying activities of use associated with each space, but it is reasonable to assume children under 6 years old would be supervised by an accompanying adult.
 - The authority is of the view the original barrier will comply with the performance requirements of Clause F4. The barrier is continuous for the full extent of the non-wharf walkway, is an appropriate height, rigid and durable, will support a person and prevent someone from falling through, and limits the passage of children under 6 years old.
 - There has not been a barrier to the walkway for the last ten years and there is no record of a child falling off. The authority considers that adequate supervision of children has prevented an accidental fall.
- 4.2 The authority included copies of the following:
- photographs of the walkway
 - plans for the proposed barrier and site plan design.
- 4.3 The owner acknowledged the determination on 17 August 2017 but made no submission.
- 4.4 A draft determination was issued to the parties for comment on 9 October 2017.

Responses to the draft determinations

- 4.5 On 19 October 2017 the authority stated it did not accept the decision of the draft determination, and noted it would provide a further submission at a later date.
- 4.6 On 22 January 2018 the authority submitted a modified barrier design that included:
- an additional 50mm marine rope at the midpoint of the timber bollard and timber curb, which would “assist to guard against young children”
 - signage would be erected to indicate children are to be supervised when on the timber walkway.

The authority is of the view the modified barrier design will restrict the passage of children under 6 and comply with Clause F4.3.4(g).

- 4.7 In response to an email sent by the Ministry on 26 January 2018, the authority responded on 1 February 2018 as follows (in summary):
- The proposed lighting, signs, and ropes provide a mix of visual alerts for the change in level. The visual alerts and the barrier design will restrict the passage of children under 6 years old, and protect people from the fall.
 - It is unlikely children under 6 years old would frequent the area without adult supervision based on the location of the timber walkway.
- 4.8 On 5 March 2018 the authority reversed its 19 October 2017 decision regarding the draft and accepted the draft determination decision.
- 4.9 The owner responded on 6 March 2018 accepting the draft determination decision and made no further submission.

5. Discussion

5.1 The applicable legislation and the requirements of Clause F4

- 5.1.1 It is not in dispute that the walkway is a “building” as defined in section 8 of the Act.
- 5.1.2 The objective of Clause F4 (outlined in Clause F4.1) is to safeguard people from injury caused by falling and the functional requirement (Clause F4.2) requires buildings to be constructed to reduce the likelihood of accidental fall. This requires the risk of accidental fall to be reduced, as no person can ever be completely protected from falling⁵.
- 5.1.3 Performance requirement F4.3.1 states:
- Where people could fall 1 metre or more from an opening in the external envelope or floor of a building, or from a sudden change of level within or associated with a building, a barrier shall be provided.
- 5.1.4 The limits on application for this Clause do not apply in this case.

5.2 The Acceptable Solution

- 5.2.1 The owner is of the view the original barrier should be designed using F4/AS1⁶, whereas the authority is of the view the proposed barrier complies with Clause F4 as an alternative solution.
- 5.2.2 Acceptable Solutions are one means of establishing compliance with the Building Code. If the barrier design satisfies the Acceptable Solution F4/AS1 it is deemed to comply with Clause F4.
- 5.2.3 For the original barrier to satisfy F4/AS1 it is required to have a minimum barrier height of 1100mm and have openings no larger than 100mm where children under 6 are likely to frequent.
- 5.2.4 The original barrier’s height is less than 1100mm and it has openings larger than 100mm; it does not satisfy the requirements of F4/AS1. The design must therefore be considered as an alternative solution.

⁵ See Determination 2010/085 Safety from falling from an infinity edge swimming pool at a house.

⁶ Acceptable Solution F4 Safety. The relevant diagrams are laid out in Appendix A.

5.3 Compliance of the original barrier as an alternative solution

5.3.1 Acceptable Solutions are not the only way of establishing compliance with the Building Code. Alternative solutions are designs that establish compliance with the performance requirements of the Building Code.

5.3.2 I have considered the proposed design of the barrier against the performance requirements for Clause F4:

Requirements of F4.3.4, a) to h)	Comments on compliance in relation to the proposed barrier design
(a) be continuous and extend for the full extent of the hazard	The proposed barrier extends the full extent of the hazard.
(b) be of appropriate height	The timber bollards have a height of 1050mm. The height of the rope between the timber bollards is unclear because the rope is fixed below 1050mm, and it will sag even lower between the bollards (the extent to which will depend upon the tension of the rope).
(c) be constructed with adequate rigidity	The timber bollards are fixed into the timber curb with a metal plate. I consider it is likely to be constructed with adequate rigidity and strength.
(d) be of adequate strength to withstand the foreseeable impact of people and, where appropriate, the static pressure of people pressing against them	
(e) be constructed to prevent people from falling through them	This will be satisfied by the use of the rope that is hung between the bollards, which will have adequate strength to prevent somebody breaking through the rope or bollard.
(f) [Revoked]	-
(g) restrict the passage of children under 6 years of age when provided to guard a change of level in areas likely to be frequented by them	There are gaps of approximately 650mm between the timber curb and the rope that will not restrict the passage of children.
(h) be constructed so that they cannot readily be used as seats	The size of the timber bollards is not clear from the drawings provided. However, the tapered edges of the bollard and small circumference of rope do not lend themselves to be easily used as seats. I note the existing timber bollards can be used as seats.

5.3.3 The proposed design does not comply as an alternative solution with the requirements of Clause F4.3 with respect to F4.3.4(b) and (g).

Compliance of the modified barrier design with Clause F4.3.4(g)

5.3.4 The authority provided a modified design it believed would comply with Clause F4.3.4(g). The modified design proposed an additional rope, visual alerts (signage and led lighting), combined with adult supervision to restrict the passage of children under 6 years old.

5.3.5 It is clear gaps of 300mm will not restrict the passage of children. The inclusion of the additional rope, while reducing the gap, still leaves about 300mm each side of the

rope between the timber curb and top rope. The lighting and signage, while providing a visual alert regarding the change of level, does not restrict the passage of children under 6 years old.

5.3.6 The commentary in F4/AS1 notes horizontal elements are climbable by children who are 2 years or older. I consider the horizontal ropes, depending upon the level of tension, could be climbable by a child.

5.3.7 In regard to the supervision of children, the level of supervision required to prevent a fall is not sustainable. Also, supervision would not necessarily prevent injury even if the child was rescued after passing through the barrier. The performance requirement of Clause F4.3.4(g) recognises children are less aware of the risks posed by an accidental fall. The functional requirement of Clause F4 reflects the intent that the Building Act does not cover management/supervision practices. Adults and older children can have different attitudes to the risks present from the walkway and varying levels of supervision that would be required to prevent a fall. This is why the functional requirement requires buildings to reduce the likelihood of an accidental fall, rather than relying on management to safeguard from injury.

5.3.8 The modified design does not comply as an alternative solution with the requirements of Clause F4.3 with respect to F4.3.4(g).

5.3.9 I note the authority, as the territorial authority, can consider issuing a building consent subject to a waiver or modification of the Building Code under section 67. I have noted in previous determinations⁷ the factors an authority should consider and balance regarding whether it is reasonable to grant a waiver:

- The extent and possible consequence of the non-compliance with the specific performance clause.
- The availability of other reasonably practicable solutions that would result in the building work fully complying with the Building Code and associated costs.
- Any special and unique circumstances of the building work subject to the waiver.
- The extent to which the waiver will still be consistent with the purposes and principles of the Act.
- The extent that the waiver complies with the relevant objective and functional requirement of the specific clause of the Building Code.

⁷ Determination 2015/010 Regarding the authority's refusal to grant a modification of Clause C3.4(a) of the Building Code in respect of materials used for internal surface linings at a new school hall at 90-98 Blake Street, Greymouth (Ministry of Business, Innovation and Employment) 31 March 2015.

Determination 2017/022 Regarding the refusal to grant a waiver of Clause C3.4(b) of the Building Code in respect of the use of an artificial turf floor surface lining at 14 Newtown Street, Mount Maunganui (Ministry of Business, Innovation and Employment) 10 April 2017.

6. The decision

- 6.1 In accordance with section 188 of the Building Act 2004, I hereby determine the original and modified barrier designs do not comply with Clause F4 of the Building Code.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 23 March 2018.

Katie Gordon
Manager Determinations

Appendix A: The Acceptable Solution F4/AS1

A.1 Barrier construction diagrams

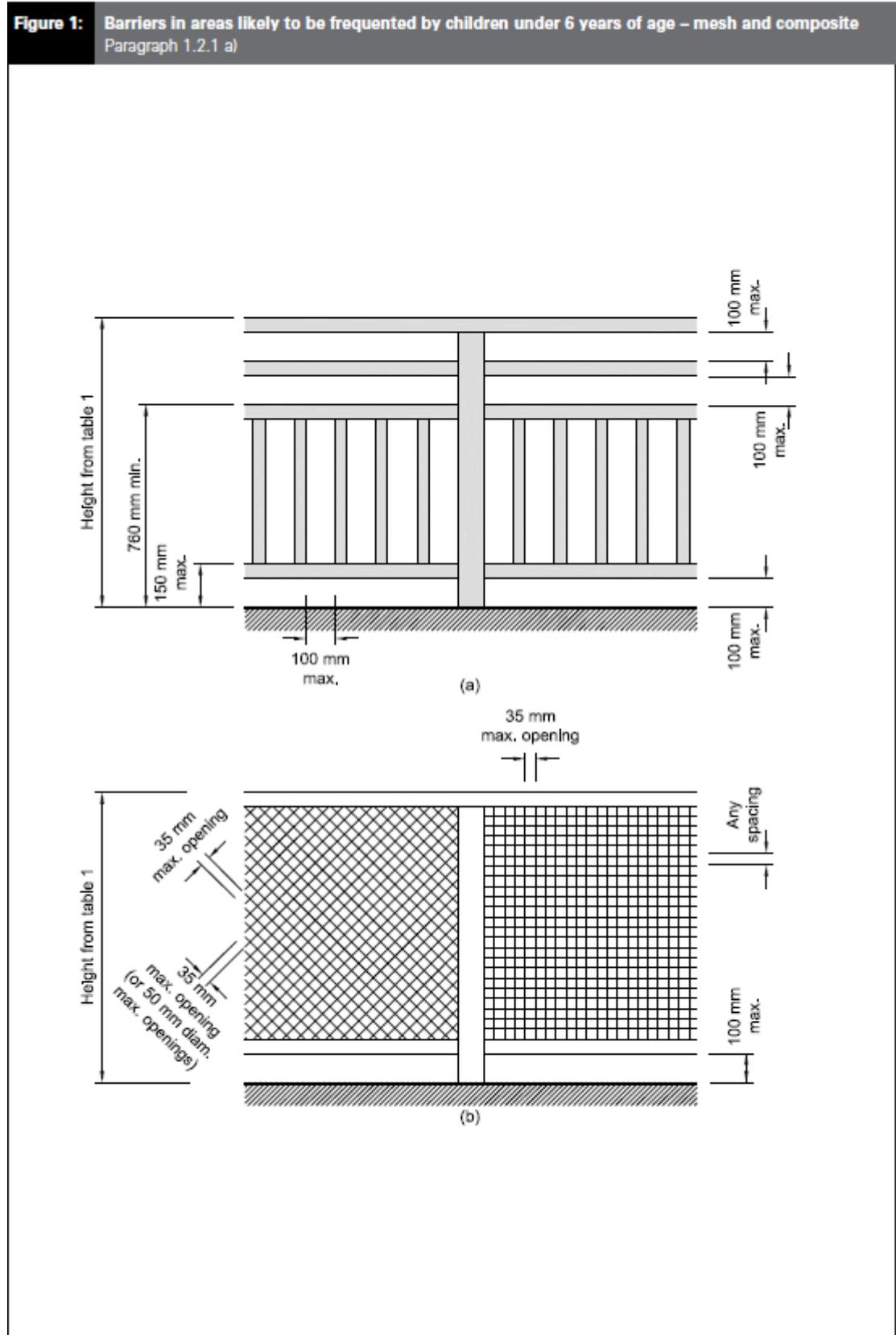


Figure 2: Barriers in areas likely to be frequented by children under 6 years of age – parallel members
Paragraph 1.2.1 a)

