



Determination 2019/001

Regarding the code-compliance of sliding and hinged doors that form part of a barrier to a pool at 14 Galatea Terrace, Herne Bay, Auckland



Summary

This determination considers the code compliance of sliding and hinged doors that form part of the barrier to a pool. The determination assesses the barrier against the performance requirements of Building Code Clause F9 – Means of restricting access to residential pools.

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:
 - the owner of the house, E Parker (“the applicant”) who applied for this determination, acting through an architect as an agent (“the agent”)
 - Auckland Council (“the authority”), carrying out its duties as a territorial authority or building consent authority.
- 1.3 The matter arises from the applicant’s proposal to apply for an amendment to a building consent in relation to the sliding door and hinged doors that form part of a barrier to restrict access to the immediate pool area. The authority is of the view the proposal will not comply with Clause F9 – Means of restricting access to residential pools² of the Building Code (First Schedule, Building Regulations 1992).

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

- 1.4 The matter to be determined³ is whether the barrier as proposed will comply with Clause F9 of the Building Code. I have not considered whether the barrier complies in relation to the area enclosed within it; the immediate pool area has been approved by the authority as part of the building consent and is not a matter for the determination.
- 1.5 In making my decision, I have considered the submissions of the parties and the other evidence in this matter.
- 1.6 I have included sections from the relevant Standards and legislation in Appendix A.

2. The building work and background

2.1 This determination concerns use of an exterior wall of the house to form part of the barrier that restricts access to the swimming pool by unsupervised young children. There are two sets of doors in the exterior wall that lead from the house to the consented immediate pool area:

- a sliding door from the family room to an outdoor dining area
- a two-leaf hinged door from the living room to a covered deck

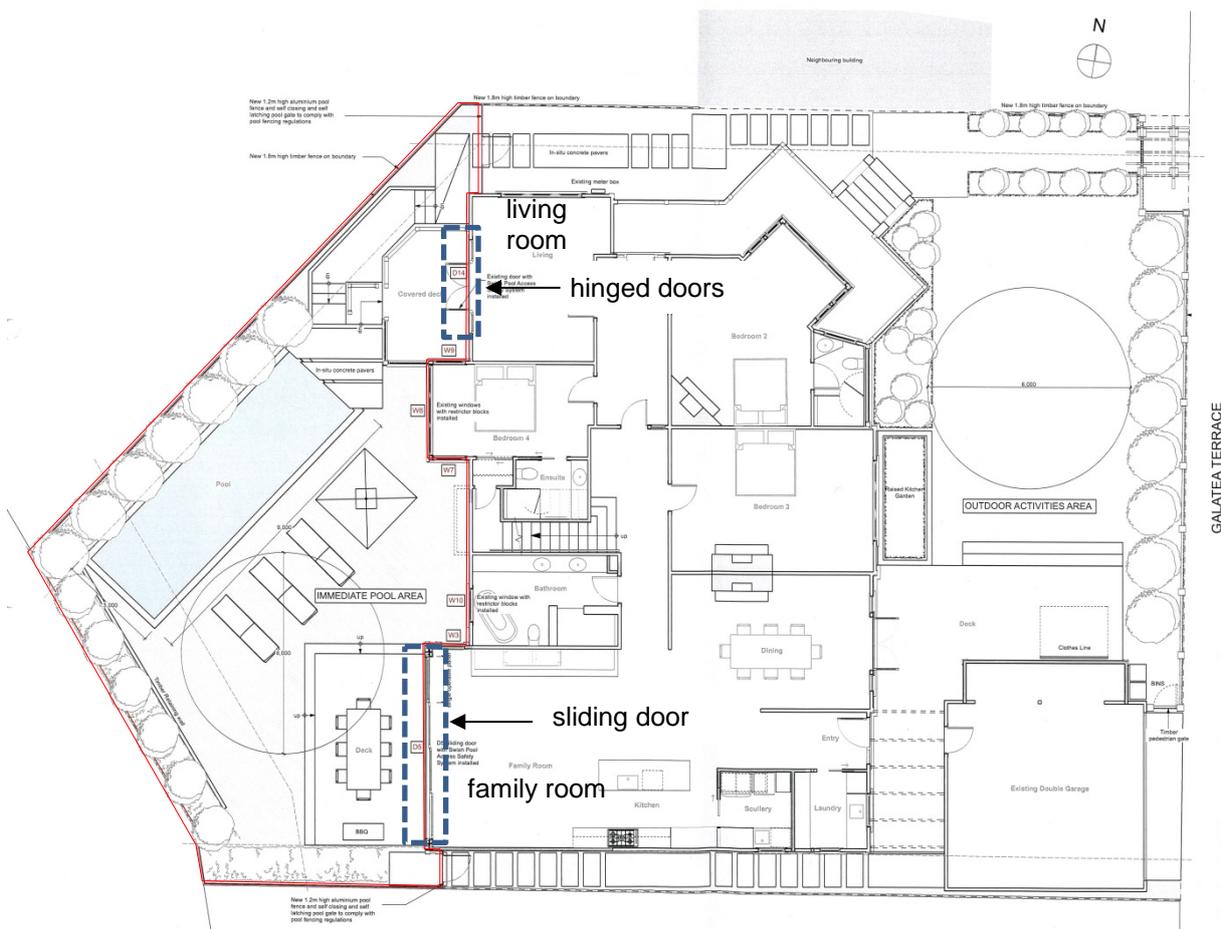


Figure 1: Site plan (not to scale)

³ Under section 177(1)(a) of the Act.

2.2 On 4 August 2017, during the consent process, the authority noted the following items, amongst other things, to be addressed:

1. Point 3:F9.4.2 – Acceptable Solutions F9/AS1 have been cited in The Building Act 2004. They are mandatory and used to establish compliance with the New Zealand building code.

To use an alternative solution, your client will be required to apply for a Determination with MBIE. They will need to demonstrate how this proposal achieves compliance with F9.

2. Point 5: Your Client will also be required to demonstrate the reasons why the entire rear part of the site should be accepted as the immediate pool area.

(I have discussed the authority's statements regarding the means of establishing compliance in paragraph 5.2.)

2.3 On 29 August 2017 the authority issued building consent no. BCO10248745 for various internal alterations and the construction of an in-ground pool. As part of the barrier that restricts access to the immediate pool area ("the barrier"), the building consent approved:

- a sliding door installation with four leaves: three leaves fixed⁴, and one leaf openable and fitted with a self-closing and self-latching mechanism ("the mechanism")
- hinged doors, with: one leaf fixed, the other leaf fitted with the mechanism and an audible alarm⁵.

2.4 The proposed amendment includes:

- a sliding door consisting of one fixed leaf and three openable leaves, with the first openable leaf fitted with the mechanism
- hinged doors, with both leaves openable and fitted with the mechanism and an audible alarm.

The applicant also proposes to affix a sign to each set of doors in accordance with Acceptable Solution F9/AS1⁶ paragraph 4.2.2(d)(i).

2.5 The mechanism incorporates:

- a restrictor that is designed to prevent the sliding door⁷ from opening more than 950mm (restricting the opening size of the first leaf does not prevent the subsequent leaves from being able to be moved),
- a self-closing feature, which utilizes a tensioned telescopic system to return the door to a closed position, and
- a self-latching feature, which must be manually operated to be opened, and as per the specifications is to be installed 1500mm above the inside floor level.

2.6 I have carried out site visits at two existing and similar installations to view examples of the mechanism in operation, and my observations are recorded in paragraph 4.

2.7 The Ministry initially received an application for a determination on 24 October 2017 from the supplier of the mechanism. As the supplier is not a party under

⁴ I have not received any information regarding how the leaves were to be fixed.

⁵ The agent has described the alarm as compliant to UL 2017-2002 UL Standard for safety general-purpose signalling devices and systems.

⁶ Acceptable Solutions F9/AS1 for New Zealand Building Code Clause F9 Means of restricting access to residential pools.

⁷ To satisfy F9/AS1 doors that provide access into the immediate pool area are required to be less than 1000mm in width. Each leaf of the hinged doors have an opening width under 1000mm and do not require a restrictor.

section 176 of the Act that initial application could not be accepted. A new application, sought by the agent on behalf of the applicant, was then received by the Ministry on 17 November 2017, though the application fee was not paid until 14 February 2018.

3. The submissions

3.1 The following table summarises the parties' views on the matter for determination based on the submissions and information provided:

Table 1

General	
Agent	<p>The mechanism has been in use in other buildings for over 10 years. There have been no coronial reports that have called into question the use of the mechanism. The in-service history of the mechanism provides sufficient evidence for an authority to be satisfied on reasonable grounds the proposal will comply.</p> <p>To get the building consent issued, the four leaf sliding door was proposed to have a single moving leaf and three leaves fixed.</p> <p>The proposed amendment is described in paragraph 2.4. The sliding doors are proposed as an alternative solution, so the width requirement of paragraph 4.2.1 in F9/AS1 is "not applicable".</p> <p>Pool gates can be "easily defeated or disabled" by an adult, especially gates with self-closing hinges that can be prevented from closing by a heavy object in the gate swing path.</p> <p>NZS 8500⁸ was cited as the means of demonstrating compliance for the proposed barrier.</p>
Authority	<p>It seemed illogical to incur the additional cost of fitting a non-compliant sliding door and then immobilising some of the leaves to make the door comply. The relevant door leaves would require a method of fixing permanently and irrevocably to make such a proposal acceptable.</p>
Operation of the sliding door	
Authority	<p>Sliding doors of the type proposed can fail if the second leaf is moved slightly. The self-closing safety feature is not sufficient to close the leaves if a second or subsequent leaf is open, meaning the first leaf will remain open. The second leaf can be used as a "hold open device" to prevent the sliding door from automatically closing after it's been opened.</p>

⁸ New Zealand Standard NZS 8500:2006 Safety barriers and fences around swimming pools, spas and hot tubs.

Agent	<p>In response to the authority's comments (above) the agent provided an explanation of how the sliding door operated: multiple-leaf sliding doors operate sequentially, with the first panel opening its full width, which then picks up the second panel and so on.</p> <p>In normal use a second leaf can't be opened the same time as the first leaf when a self-closing and self-latching mechanism is installed. It would require a deliberate action to circumvent the "normal door-set operation".</p> <p>The sliding door in question was being "operated outside of their design criteria". It required two people to open the second leaf, which could not be achieved by children 5 years or younger. Also, the fact it could only be carried out by adults indicated supervision is present.</p> <p>The supplier provides instructions to homeowners to only open a sliding door sequentially.</p> <p>"Reasonable and sensible behaviour" of the operator will prevent the sliding door from bouncing and failing to self-latch.</p>
Compliance of the sliding door and hinged doors	
Agent	<p>There are three safety features incorporated in the mechanism: the self-latch, self-closer, and optional alarm. The self-latch is installed a minimum of 1500mm above the floor level. The self-latch is the primary safety feature.</p> <p>The self-closing system moves the door from an open position to a closed position when released. When the door reaches the fully closed position the self-latch will refasten.</p> <p>The alarm complies with UL 2017⁹ and turns off automatically after a specific length of time. The alarm's automatic shut-off is included to avoid an adult deliberately turning it off and then forgetting to reactivate the alarm.</p>
Authority	<p>Sliding doors with multiple moving leaves are not acceptable as an alternative solution.</p> <p>The authority has observed issues regarding a sliding door with the mechanism installed, noting with "minimal movement" of the second leaf, the first leaf no longer automatically closed; the sliding door was left in an open position and was no longer compliant.</p>
Disabling the mechanism	
Agent	<p>The self-latch cannot be disabled. However, the self-closing safety feature and the alarm can be disabled. The self-close feature can be "temporarily deactivated when the pool is in use and adults are supervising". The alarm can be either left to run for the pre-set time or temporarily disabled by an occupant. The ability to "temporarily deactivate" these safety features has been designed to only be carried out by an adult.</p> <p>There is adequate supervision when the pool is in use, because only an adult can disable the safety mechanisms. The "supervising adult" will open the doors and leave them open. Child safety provisions are still in effect because the features can't be disabled by children younger than 5 due to the height of the latch and self-closing feature, and alarm control panel (if installed).</p> <p>When the pool activity ceases, the alarm (if installed) and the self-closing mechanism are "reactivated" and the door will self-latch upon returning to a fully closed position. The pool barrier is then returned to its "fully functioning state".</p> <p>A door with the mechanism installed will close soon after the user has passed through. However, the self-closing feature is designed to be disabled to allow the door to be kept open for an extended period of time while an adult is present and the pool is in use.</p> <p>When the mechanism is disabled it is for the purpose of conducting supervised activities in the immediate pool area, which is expanded to include parts of the</p>

⁹ UL 2017 Standard for General-Purpose Signaling Devices and Systems.

	<p>house.</p> <p>The legislation is to prevent unsupervised access of children to the pool or immediate pool area. Reasonable measures must be in place when the pool is unsupervised. But when there is supervision those measures become less significant.</p> <p>If a person chooses to not actively supervise the pool when children are present it is their personal choice to place the children at risk, which is not behaviour anticipated by section 162A.</p> <p>The barrier can be left open indefinitely if the pool is supervised.</p>
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- 3.2 A draft of this determination was issued to the parties for comment on 6 August 2018. On 14 August 2018 the authority accepted the decision of the draft determination and made no further comment.
- 3.3 On 14 September 2018 the agent did not accept the draft determination and provided a submission, which has been incorporated into Table 1.
- 3.4 Appendix B contains a summary of the correspondence during the course of the determination process.

4. The site visits

- 4.1 On 31 May 2018 I visited two sites in Auckland to view the mechanisms in operation. The subject house was not visited because the sliding doors had not yet been installed. The owners of both properties visited were present, and I was accompanied by:
- the agent for the applicant
 - the supplier of the mechanisms
 - an officer of the authority
 - two officers of the Ministry.
- 4.2 The first site visit was to view the sliding door referenced in the authority's submission dated 21 May 2018. The sliding door in question is an 80kg sliding door with one fixed leaf and two openable leaves and has the mechanism installed. (The sliding door that is the subject of this determination weighs 105kg and is proposed to have three openable leaves and one fixed).
- 4.3 The supplier demonstrated the operation of the mechanism, showing how the first leaf of the sliding door could not open to its full width due to the restrictor. Also, when the first leaf was moved the second leaf did not move. To demonstrate the mechanism, the supplier released the first leaf from a partially open position; the leaf closed and latched without manual intervention. The supplier stated he informs all owners to control the close and not simply let the door go.
- 4.4 The first leaf was then released from its full openable width; it bounced and closed but failed to latch. Manual intervention was required to push the sliding door until the latching mechanism activated. The supplier stated the bounce could be removed by adjusting the spring pressure. He stated the pressure was reduced to ensure the owners don't have to force the door open and to control the closure speed.
- 4.5 To test the authority's concern (refer Table 1 "Compliance of the sliding door and hinged doors") the second leaf was moved while the first leaf was partially open (see Figure 2). There was no difficulty in opening the second leaf, although another person was required to open the first leaf. I observed the second leaf didn't require

- the first leaf to be fully open for it to be able to move. When the first leaf was released it caught on the second leaf and could not automatically close because the mechanism, set at its current pressure, was not strong enough to close both leaves.
- 4.6 The supplier also demonstrated how the self-closing feature can be disabled via a cable located in the top track of the sliding door. The cable is pulled down and unhooked, then placed into the door frame. Unhooking the cable disables the self-closing feature; the door can then be opened to its full extent, if all the leaves are not permanently fixed, and will not close automatically. To reinstate the cable and reactivate the self-closing feature, the cable is removed from the door frame and looped around a hook in the top track.
- 4.7 At the second site visit I observed the operation of a sliding door that weighed 180kg and had two openable leaves and two fixed leaves. The sliding door had the mechanism installed to the first leaf, which prevented the first leaf from fully opening.
- 4.8 The pressure in the mechanism was higher than that at the first site, which resulted in more force required to open the door. The supplier demonstrated the first leaf of the sliding door could not open fully due to the restrictor. Unlike the first site visit, when the first leaf was released from a fully open position it closed without bouncing back. I note the supplier stated he would reduce the spring pressure to make it easier to use, however I note this could have the effect of allowing the door to bounce when released.
- 4.9 Again, the second leaf was moved to test the authority's concern (refer Table 1 "Operation of the sliding door"). When the second leaf was moved and the first leaf released:
- from the full extent of its opening, it caught the second leaf and could close (although it appeared the first leaf still had to be pushed to latch it)
 - from a smaller width, it caught on the second leaf and the second leaf prevented the door from automatically closing.
- 4.10 The mechanism in this sliding door set could also be disabled, though it was by pushing in a rod in the top track and turning it 45 degrees, rather than disconnecting a cable.
- 4.11 I did not view at either site the mechanism on hinged doors, and neither sliding door had an alarm installed.

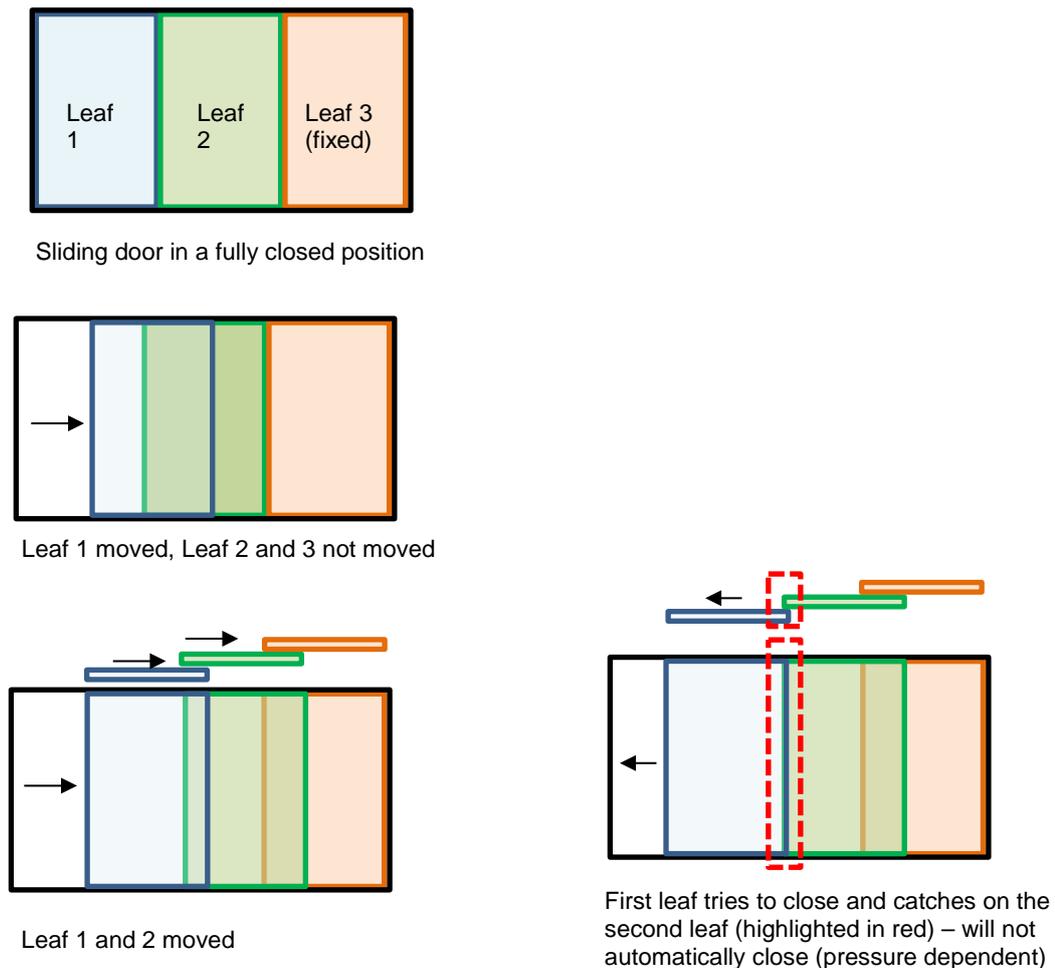


Figure 2: Testing the self-closing system at the first site visit

5. Discussion

5.1 The legislation

5.1.1 Swimming pools and spa pools present a risk to young children. Building Code Clause F9 aims to prevent injury or death of young children involving residential pools, by requiring physical barriers that restrict access of unsupervised young children to the immediate pool area.

5.1.2 The functional requirement Clause F9.2 states:

F9.2 Residential pools with a maximum depth of water of 400 mm or more that are filled or partly filled with water must have means of restricting access that prevents unsupervised access by a child under 5 years of age.

5.1.3 Performance requirement Clause F9.3.1 states:

Residential pools must have or be provided with physical barriers that restrict access to the pool or the immediate pool area by unsupervised young children (ie, under 5 years of age).

- 5.1.4 Where a building forms part of a barrier to the immediate pool area, and specifically doors, Clause F9.3.4(a) requires:

F9.3.4 Where a *building* forms all or part of an *immediate pool area* barrier,—

(a) doors between the *building* and the *immediate pool area* must not be able to be readily opened by children, and must either—

- (i) emit an audible warning when the door is open; or
- (ii) close automatically after use: ...

5.2 Means of compliance

- 5.2.1 I note with concern the authority has stated to the applicant the use of Acceptable Solution F9/AS1 is mandatory, and that the only means by which an alternative solution can be considered is by way of a determination (refer paragraph 2.2). I am aware of at least one other instance of the authority making similarly incorrect statements.
- 5.2.2 Under section 19 of the Act, the authority must accept compliance with the Acceptable Solution F9/AS1 as establishing compliance with the Building Code. However, an Acceptable Solution is not the only means of establishing compliance, and the building consent applicant is not restricted to only this method of establishing compliance.
- 5.2.3 The Building Code is performance-based and it is open to a building consent applicant to use different methods than those detailed in the Acceptable Solutions and Verification Methods to demonstrate compliance.
- 5.2.4 Under section 49(1) of the Act the authority must grant a building consent “if it is satisfied on reasonable grounds that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application”. A building consent authority cannot refuse to consider the compliance of a proposal simply on the basis the means of compliance is an alternative solution.
- 5.2.5 Consideration of an alternative solution requires an assessment against the performance requirements of the Building Code and the likely performance within the context of the particular building. A building consent authority must make this assessment when considering a building consent application that proposes an alternative solution to achieve compliance.
- 5.2.6 Whatever form of barrier is chosen, to access the immediate pool area to use the pool the barrier must be breached. Complying with the performance requirements in Clause F9 prevents the breach of the barrier continuing longer than is required for simply accessing the pool. This is clear in the requirement in Clause F9.3.3(c) that gates in pool fences must be self-closing, and Clause F9.3.4(a) that doors in external walls opening into the immediate pool area must be either self-closing or alarmed.

5.3 Compliance of the proposed amendment to the barrier

- 5.3.1 The applicant's amendment proposes to incorporate the following as part of the barrier to the immediate pool area:
- a sliding door with three openable leaves, and one fixed leaf, with the first leaf fitted with the mechanism
 - hinged doors, with both leaves openable and fitted with the mechanism¹⁰ and an audible alarm.
- 5.3.2 As the doors form part of the barrier that restricts access to the immediate pool area, they must comply with the performance requirement Clause F9.3.4, that is they must (in summary):
- not be readily opened by children (F9.3.4 (a)); and
 - either admit an audible warning or, close automatically after use (F9.3.4 (a)(i) or (ii)).

I have considered each of these criteria in turn.

Can the doors be opened by children under 5 years of age?

- 5.3.3 The Building Code does not prescribe the features of door sets that would 'not be readily opened'. In this matter I have referred to Acceptable Solution F9/AS1 for guidance:
- 4.2.2 Doors in a building wall providing access into the immediate pool area shall have:
- ...
- b) A self-latching device that automatically operates on the closing of the door and that must be released manually, and
- c) The release for the latching device located not less than 1500 mm above the inside floor, ...
- 5.3.4 Clause F9.3.4 (a) can be met through appropriate "self-latching" devices installed at an appropriate height. Self-latching mechanisms hold door leaves closed even if the door hardware is operated to open the door, and when installed at a height that young children cannot easily reach and open the latch, this prevents young children opening a door by themselves to gain access to the immediate pool area. The manual release of self-latching devices must not be easily manipulated by young children. Other features of door sets that can assist in achieving this performance requirement can include the direction of the swing and the weight of the door.
- 5.3.5 In this instance, the self-latching feature on both the sliding and hinged door sets is proposed to be installed 1500mm above floor level, a height typically accepted as it is the height stated in F9/AS1 and is not easily accessible by young children. In the case of the sliding door, the manual release requires two hands, with one hand moving the latch up to release it, and the other hand to pull the door open. For the sliding doors, when the first leaf is latched the subsequent leaves are unable to be opened.

¹⁰ The mechanism for the hinged door is contains both self-closing and self-latching safety features. However, the safety features appear to operate differently from the sliding door mechanism.

- 5.3.6 I consider, in relation to this feature in isolation, the sliding door cannot readily be opened by children: it self-latches, the latch is not easily reachable by young children, and it requires two hands to release the latch and open the door.
- 5.3.7 However, it is not clear if two hands are required for the hinged doors, and in the draft of this determination I invited the parties to provide further information or evidence regarding this aspect. However, I note no additional information was provided by the parties. Further, I note the hinged doors are shown to swing outwards, which will not assist in restricting the access of young children.
- 5.3.8 For the self-latching mechanism to function, the doors must return to the closed position. I now consider the self-closing function and whether the doors as proposed meet the performance requirement in Clause F9.3.4(a)(ii).

5.4 The self-closing feature

Effectiveness of the self-closing feature

- 5.4.1 During the building consent process the authority raised concerns that if the second or subsequent leaves of the sliding door were openable, they could be moved to prevent the first leaf from closing. I note the authority did not raise any concern regarding the hinged doors being able to be kept open.
- 5.4.2 I acknowledge the authority's concern regarding the openable leaves. During the site visits I observed several instances where the first leaf of a sliding door failed to properly self-close. At the first property, the first leaf bounced due to the pressure settings and failed to latch. The agent has stated the owners of both properties manually temper the speed to ensure the door latches adequately. However, I note future owners or other people in the house who use the doors could be unaware of the need to control the close of the door when it self-closes.
- 5.4.3 At both properties the first leaf of the sliding doors were prevented from closing by the second or third leaf being moved.
- 5.4.4 In some door sets the second leaf can be moved without the first leaf having to be fully opened, because once the first leaf has been slightly moved, it is possible to reach over and move the second leaf at the same time. In other door set designs it is difficult or even impossible to open the second leaf without the first being fully opened by one person if the first leaf is quite wide. However, the proposed sliding door has leaves with a width of approximately 1.3m and I am of the opinion it is possible the second leaf could be moved accidentally or intentionally opened, thus preventing the door from self-closing.
- 5.4.5 I conclude the self-close feature of the mechanism does not comply with Clause F9.3.4(a)(ii) because there are situations where it is ineffective and will not automatically close after use.

Disabling the self-closing feature of the mechanism

- 5.4.6 The self-closing feature can be disabled with relative ease and requires active steps to reinstate it. The agent is of the view it is acceptable to have the sliding doors and/or hinged doors kept open while the pool is in use, because of the presence of a supervising person. The agent submitted that when the pool activity stops the mechanism would be reinstated by the supervising person and the doors would then self-close and self-latch.
- 5.4.7 I do not agree with the agent's view in this matter. The Building Code states the door must either emit an audible alarm (F9.3.4(a)(i)) or close automatically after use

- (F93.4(a)(ii)). Disabling the self-closing feature directly results in the doors no longer complying with Clause F9.3.4(a)(ii) because they will not close automatically after use. (See paragraph 5.5 for discussion on the alarm.)
- 5.4.8 When gaining access to the pool or immediate pool area the breach of the barrier should be minimised. To comply with the performance requirements of Clause F9, barriers to the immediate pool area must be closed and the immediate pool area inaccessible to young children whenever there is no supervising person in the pool area, even if the supervising person only leaves temporarily. If the barrier complied with Clause F9, a child would not be able to enter (or re-enter) the pool area because they would be unable to open the doors.
- 5.4.9 In this case, the mechanism is designed to allow for the sliding door and hinged doors to be kept open (see Figure 3). I note all of the doors could be kept open when the mechanism is disabled because three leaves of the sliding door and both hinged leaves are proposed to be openable. Compliance then relies solely on the vigilance of a person to reinstate the barrier to be effective. This is a weakness of the proposed barrier that doesn't exist with a compliant door or pool gate.
- 5.4.10 An owner with a compliant pool barrier does not have to do anything to ensure continuing compliance with Clause F9. The compliant doors and gates will close automatically behind them when they leave the pool area (or the door alarm will remind them to close the door).
- 5.4.11 An argument could be made that a self-latching and self-closing pool gate could also be disabled, for example by being propped open to prevent the gate from closing. In this example of an otherwise compliant barrier, a user could place a weighted object in front of the gate to render the barrier ineffective. This could be viewed as similar to an adult disabling the self-closing feature to render the barrier ineffective.
- 5.4.12 Both scenarios require an active step by a person to render the barrier ineffective. However, the significant difference is the ability to render the barrier ineffective in this case is designed into the mechanism, and there is no equivalency in the design of a compliant pool gate. Because the self-closing feature of the mechanism is designed to be disabled, to keep the sliding door or hinged doors open a person does not need to retrieve an additional object to prevent the door from automatically closing.
- 5.4.13 Also, the mechanism requires a person to always take the positive step of remembering to close and latch the doors when the self-closing feature of the sliding door and hinged doors is disabled, to ensure compliance with Clause F9. It is a case of not acting (not remembering or choosing not to reinstate the mechanism) that leaves the barrier ineffective.
- 5.4.14 I also consider a supervising person may believe there is tacit approval to keep the doors open because the ability to disable the self-close feature (and alarm) is inbuilt into the mechanism. I note this ability to disable the self-closing feature (and alarm) is not apparent in the supplied technical information.
- 5.4.15 The agent has stated the doors will only be kept open while the pool is in use. However, I consider the size and configuration of the sliding and hinged doors adjacent to the living areas lends to the idea the doors will be kept open for reasons not in relation to the pool. I consider there is a reasonable expectation the deck and/or covered deck will be used together with the family room and living room, when the pool is not in use.

- 5.4.16 A comment in F9/AS1 notes how doors that satisfy the Acceptable Solution:
 ...enable the barrier to the pool to remain effective except when the doors are briefly used for access.
- 5.4.17 This comment illustrates the intent to minimise the length of time the barrier is open and ineffective. When the pool is in use, reinstated barriers prevent children entering the area without the knowledge of those in the immediate pool area.
- 5.4.18 In general, the Building Code places an emphasis on buildings rather than management practices to achieve the performance requirements. As noted in paragraph 5.2.6, the performance requirements in Clause F9 rely on the barrier itself minimising the length of time compliant barriers are breached to allow for access into the pool area to use the pool. Therefore, I conclude retaining the ability to be able to open all the leaves, coupled with the ease of disabling the mechanism, and the likelihood of it not being reinstated results in the barrier failing to meet the performance requirements of Clause F9.
- 5.4.19 I note here homeowners often do not want to install a fence around a pool because they perceive it may negatively impact on aesthetics and could increase building costs. There is a balancing act inherent in the Building Code between aesthetics and usability of a building and ensuring the safety of all occupants. Sacrifices are required when a feature that increases safety risk is incorporated into a building's design. So, when doors are the physical barrier to the pool or immediate pool area instead of a fence, the ability to keep the doors open to allow easy movement is sacrificed to prevent injury or death of young children.

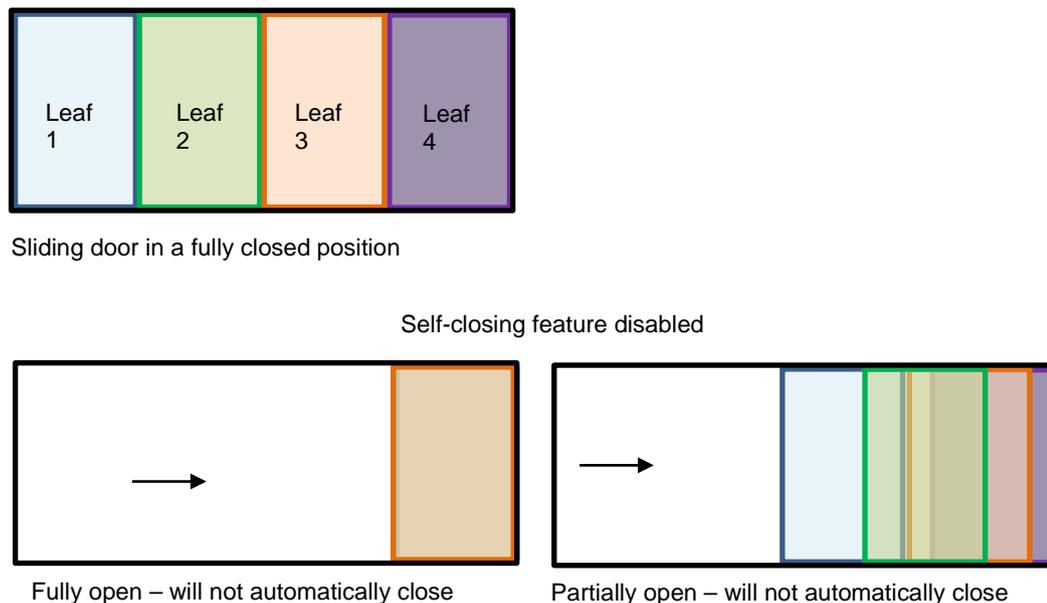


Figure 3: Sketch of proposed doors with safety features disabled

- 5.4.20 The agent also submitted the additional openable leaves were required for large pool maintenance equipment to be able to fit through the door. In this situation, there are multiple entrances that maintenance equipment could be brought through into the immediate pool area. If a power cable is needed, I note there are means by which power could be supplied other than through the doors that are the subject of this determination.

5.4.21 In conclusion, I consider both the sliding door and hinged doors as proposed to be amended and fitted with the mechanism are designed in such a way that they do not always automatically return to the closed position after use. Therefore, the doors as the barriers do not comply with Clause F9.3.4(a)(ii).

5.5 The alarm

5.5.1 Clause F9.3.4(a) requires doors that form part of a barrier to a pool or immediate pool area (in addition to being not readily opened) must either close automatically after use, or emit an audible warning when the door is open. This requirement recognises for the physical barrier to restrict access of young children to the pool or immediate pool area it must either automatically close, or an alarm must sound to prompt someone to manually close the barrier.

5.5.2 The proposed amendment specifies the alarm to the hinged door only. The alarm is also described as an optional feature, but no further information is provided in this respect. The alarm is specified as compliant with UL 2017.

5.5.3 The Building Code does not prescribe the mandatory features for an audible alarm, except for stating that it must sound when the door is open. In this matter I have referred to F9/AS1 for guidance:

4.2.4 A door alarm shall:

- a) Produce an alarm tone of 75dBAL₀ when measured at a distance of 3000 mm that commences 7 seconds after the door's self-latching device is released, and
- b) Automatically return to a state of readiness when the door is closed and latched, and
- c) Have a low battery charge warning that may be visual or audible.

4.2.5 Door alarms may be provided with a deactivation switch placed not less than 1500 mm above floor level that silences the alarm for not more than 15 seconds.

Comment: A deactivation switch can be useful when maintenance materials or pool furniture needs to be moved through a door.

5.5.4 The agent has submitted that the alarm is compliant with UL 2017. UL 2017 requires an alarm to sound:

- within 7 seconds of the door being moved to an open position
- for no less than 30 seconds until the door is closed;
- or for no less than 30 seconds and if the door is still open, the alarm shall continue or be cycled (as above) until closed;
- or continue to sound until a cancel switch is operated, however this only temporarily disables the alarm for no more than 15 seconds, and then the alarm will continue to sound.

(see Appendix A.4 for more detail)

5.5.5 However, the agent described the normal operation of the alarm as follows:

- 10 seconds after the door has been opened, if it remains open the alarm will sound.
- The alarm then silences after a set period of time, regardless of whether the door remains open. The length of time that the alarm will sound has not been specified. (I have not received information as to how the alarm will return to a state of readiness after it silences.)

- 5.5.6 The agent stated the alarm can be “temporarily disabled” and will not sound when the door is opened. I take this to mean the alarm can be disabled on a more permanent basis, which appears to be consistent with the mechanism fitted to the doors being designed to allow for the doors to be kept open. I have not received any information to indicate how the alarm can be disabled.
- 5.5.7 I consider the alarm to the hinged door does not satisfy the requirements of UL 2017 nor does it satisfy F9/AS1, because: it sounds 10 seconds after the door has been opened (not within 7 seconds), it can be disabled for a period of more than 15 seconds, and it can be silenced even if the door is open.
- 5.5.8 I have not been provided with any further supporting information regarding the performance of the alarm and therefore I am of the view there are no mitigating features that would mean the alarm achieves compliance with Clause F9.3.4(a)(i) as an alternative solution.
- 5.5.9 I conclude the hinged doors as proposed in the amendment with the alarm fitted do not comply with Clause F9.3.4(a)(i).

5.6 Does the proposal satisfy NZS 8500?

- 5.6.1 The agent has stated the proposal cited NZS 8500 as the means of compliance for the proposed alternative solution. I note part of this Standard is cited in F9/AS1 in relation to designing the barrier strength.
- 5.6.2 I note NZS 8500 is not an Acceptable Solution for Clause F9 (except for the part regarding barrier strength). For completeness, I note building consent authorities must still assess any proposed solution using this Standard as a means of demonstrating compliance as an alternative solution.
- 5.6.3 I have included the relevant sections of NZS 8500 in Appendix A.2. This standard sets out specific criteria for doors that are not self-closing and self-latching:
- lockable door latch 1500mm above finished floor level
 - an automatic pool cover that complies with ASTM F1346-91¹¹
 - an alarm complying with UL 2017 that when activated emits a sound of 85 decibels or more.
- 5.6.4 I consider the intent of ensuring a barrier is not breached for longer than necessary to gain access to the immediate pool area or pool is reflected in the requirement for an alarm that complies with UL 2017.
- 5.6.5 In this instance, there is a lockable door latch but an automatic pool cover has not been proposed, and the alarm does not comply with UL 2017.
- 5.6.6 For the reasons stated above, I conclude the proposal does not satisfy the Standard and I have not considered it further. As an alternative solution, the proposal would need to comply with the performance requirements of Clause F9, which I have already considered in paragraphs 5.3– 5.5.

¹¹ ASTM F1346-91 (2003) Standard Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs.

5.7 Conclusion

- 5.7.1 I conclude the sliding doors are not able to be readily opened by children. However, the sliding door and hinged doors fail to comply with the criteria listed in Clause F9.3.4(a).

6. The decision

- 6.1 In accordance with section 188 of the Building Act 2004, I hereby determine the proposed barrier that incorporates the external wall of the house does not comply with Clause F9 of the Building Code.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 31 January 2019.

Katie Gordon
Manager Determinations

Appendix A: The legislation and Standards

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

Clause F9—Means of restricting access to residential pools

Objective

F9.1 The objective of this provision is to prevent injury or death to young children involving *residential pools*.

Functional requirement

F9.2 *Residential pools* with a maximum depth of water of 400 mm or more that are filled or partly filled with water must have means of restricting access that prevents unsupervised access by a child under 5 years of age.

Performance

F9.3.1 *Residential pools* must have or be provided with physical barriers that restrict access to the *pool* or the *immediate pool area* by unsupervised young children (ie, under 5 years of age).

F9.3.2 Barriers must either—

(a) surround the pool (and may enclose the whole or part of the immediate pool area); ...

F9.3.3 A barrier surrounding a *pool* must have no permanent objects or projections on the outside that could assist children in negotiating the barrier.

Any gates must—

(a) open away from the pool; and

(b) not be able to be readily opened by children; and

(c) automatically return to the closed position after use.

F9.3.4 Where a *building* forms all or part of an *immediate pool area* barrier,—

(a) doors between the *building* and the *immediate pool area* must not be able to be readily opened by children, and must either—

(i) emit an audible warning when the door is open; or

(ii) close automatically after use:

(b) ...

A.2 The relevant paragraphs of NZS 8500:

2.3.2 Specific requirements for pools

For new and existing pools at least one of the following requirements shall be met:

...

(f) The pool shall be enclosed by an isolation barrier where a wall of house contains doors opening from the house to the immediate pool area...Should the doors not be self-closing and self-latching, then a lockable door latch 1500mm above finished floor level shall be provided on every opening door-set. In addition there shall also be:

(i) An automatic pool cover that complies with ASTM F1346-91, and

(ii) An alarm complying with UL 2017 capable of detecting unauthorised access from the house into the immediate pool area, and that when activated emits a sound of 85 decibels or more to be heard from the house.

A.3 The relevant paragraphs of the Acceptable Solutions discussed by the parties:

F9/AS1

4.2 Doors in the building wall

4.2.1 Doors in a building wall that provide access into the immediate pool area shall be single leaf doors that are not more than 1000 mm in width. These doors shall be side hinged or sliding.

4.2.2 Doors in a building wall providing access into the immediate pool area shall have:

- a) Either a self-closing device or an audible alarm, and
- b) A self-latching device that automatically operates on the closing of the door and that must be released manually, and
- c) The release for the latching device located not less than 1500 mm above the inside floor, and
- d) A sign which shall be:
 - i) fixed adjacent to the inside door handle at a height between 1200 mm and 1500 mm stating:
'SWIMMING POOL. CLOSE THE DOOR.', and
 - ii) composed of black letters of minimum height 5 mm complying with Paragraphs 2.2 and 3.2.2 of F8/AS1.

Comment:

a) Doors will usually require two-handed operation, one to release the high level latch and the other to operate the door handle lock set.

b) Doors described in Paragraphs 4.2.1 and 4.2.2 enable the barrier to the pool to remain effective except when the doors are briefly used for access.

c) Signs on pool doors are a requirement under Clause F8 'Signs', which does not apply to detached dwellings or to household units in multi-unit dwellings (such as apartment units). However, homeowners may choose to fit signs to their pool access doors as a reminder for visitors.

4.2.3 For hinged doors that open towards the pool, a self-closing device shall return the door to the closed and latched position from any position when the door is stationary. For all other doors, a self-closing device shall return the door to the closed and latched position when the door is stationary and 150 mm or further from the closed and latched position.

4.2.4 A door alarm shall:

- a) Produce an alarm tone of 75dBAL10 when measured at a distance of 3000 mm that commences 7 seconds after the door's self-latching device is released, and
- b) Automatically return to a state of readiness when the door is closed and latched, and
- c) Have a low battery charge warning that may be visual or audible.

4.2.5 Door alarms may be provided with a deactivation switch placed not less than 1500 mm above floor level that silences the alarm for not more than 15 seconds.

Comment:

A deactivation switch can be useful when maintenance materials or pool furniture needs to be moved through a door.

A.4 The relevant sections from UL 2017 are as follows (my emphasis added):

*Exception: **An on/off switch...shall not be used with a Residential Water hazard Entrance Alarm.***

78.2 A residential water-hazard entrance alarm system shall produce an audible alarm signal whenever a moveable access (such as a door or screen) to a water hazard such as a swimming pool...is in an open position...

78.3 With the moveable access in the closed position, the alarm system shall be in the normal supervisory condition...

78.4 With the alarm system in the normal supervisory condition, moving the access to the open position shall cause an audible alarm **within 7 seconds**. The audible alarm shall continue to sound for not less than 30 seconds. One of the following conditions shall then occur:

- a) When after 30 seconds of alarm sounding the moveable access is in the closed position, the alarm shall automatically restore to the normal supervisory condition and be automatically ready to detect and annunciate any subsequent opening of the access;
- b) When after 30 seconds of alarm sounding the moveable access is still in the open position, the **audible alarm shall continue to sound** or shall be cycled in accordance with the above until the access is moved to the closed position; or
- c) The audible signal **shall continue to sound** until a cancel switch...is operated.

78.5 A cancel switch of the momentary, self-restoring type is not prohibited from being provided to silence the audible alarm signal. When the access is in the closed position when the cancel switch is operated, the system shall restore to the normal supervisory condition. When the access is in the open position when the cancel switch is operated, the alarm condition shall be re-cycled or the switch operation shall have no affect on system operation...

78.6 A momentary self-restoring switch to **temporarily disable** the system for a single opening is not prohibited. Such **deactivation shall last for not more than 15 seconds**...

Appendix B: Submissions received

Date	Party	
30 November 2017	Agent	Application for determination and submission Technical information regarding the mechanism Building consent application and correspondence between the parties
6 March 2018		Copy of the landscape plan
9 March 2018	Ministry requested confirmation of the matters in dispute by Council	
14 March 2018	Agent	Clarification of scope of the matters to be determined – excluded the immediate pool area
9 April 2018	Authority	Building consent documentation Submission in response to the application
12 April 2018	Agent	Submission in response to the authority's submission
17 April 2018		Provided five drawings showing the consented and the proposed amendment Additional comments regarding background
20 April 2018	Authority	Comments regarding when sliding doors are not compliant as an alternative solution
15 May 2018	Ministry requested authority to provide evidence of sliding doors failing to close, and questioned the agent if the Ministry could view any local examples of similar sliding doors with the mechanism installed	
21 May 2018	Authority	Example provided where a sliding door with the mechanism had failed to close because the second leaf was moved.
22 May 2018	Agent	Submission in response to authority's comments
23 May 2018	Ministry requested information from the agent regarding the ability to disable the safety features	
23 May 2018	Agent	Provided further information
6 August 2018	Ministry sent out draft determination	
14 August 2018	Authority	Responded to the draft determination
14 September 2018	Agent	Responded to the draft determination