

Swimming Pool & Spa Safety

OWNER BUILDER SUPPORT GUIDE 05-2018

Purpose

This practice note informs building practitioners, architects, designers and builders, swimming pool and spa installers and building surveyors about swimming pool and spa safety requirements.

Background

Swimming pools and spas can be dangerous if children are able to enter the water unsupervised. To prevent children from getting access to a swimming pool or spa, it is a requirement that swimming pools and spas have a safety barrier.

The construction of a swimming pool usually involves a large excavation. The excavation and a pool shell under construction are a fall hazard and can also hold ground or rain water. Precaution measures around the excavation and pool shell during construction is essential. There are a number of mandatory notification stages which provide for the Relevant Building Surveyor (RBS) to inspect precaution measures to protect the public during the construction works and the required safety barrier once the works are completed.

The building permit must contain details of precaution measures required during construction and prior to the pool shell being filled with water and details of the final safety barrier.

When a safety barrier is required

All swimming pools and spas containing a depth of water greater than 300 mm must have a safety barrier that complies with the requirements in the *Building Act 1993 (Act)* and *Building Regulations 2018 (Regulations)*.

A complying barrier must be in place at any time the pool or spa contains 300 mm of water. This may occur during the construction of a new swimming pool or spa. (i.e. a fibreglass swimming pool)

This requirement applies to all pools associated with Class 1, 2 and 3 buildings and a Class 4 part of a building, or a children's service.

The following pools and spas are covered by these requirements:

- outdoor in ground pools and spas;
- outdoor above-ground pools (including inflatable pools);
- indoor pools and spa pools;
- children's paddling and wading pools; and
- spas, jacuzzi, hot tubs and swim spas.

Safety barriers are not required for a:

- pool and/or spa that contains less than 300 mm of water;
- bath or spa used for personal hygiene and emptied after use (located in bathroom or ensuite);
- fish pond, fountain or birdbath; and
- water supply, storage tanks or dams.

Building Standards

In Victoria, the design, construction and installation of swimming pools, spas and safety barriers are subject to strict requirements under the Regulations.

The Regulations adopt the National Construction Code (NCC) which references the Australian Standards that are applicable for the construction of safety barriers for swimming pools and spas. The current Australian Standard for swimming pool and spa barriers is AS1926.1-2012.

Failure to comply with the Act, Regulations or building permit whilst building work is being carried out is a breach of section 16 of the Act.

Swimming pools and spas in Victoria must comply with several requirements including:

- a pool or spa and safety barrier must be constructed by a registered domestic builder or owner-builder;
- a site fence must be in place before any excavation for the pool or spa commences;

- as soon as the excavation, pool or the structure for the pool or spa contains more than 300 mm of water, a safety barrier complying with AS1926.1-2012 must be erected and maintained;
- all outdoor pools and/or spas built after 1 May 2010 must not have direct access to the pool area via a door from a building (i.e. house or garage);
- pool gates must be self-latching and self-closing; and
- safety barriers must not be installed near trees, barbeques or other climbable structures that could allow children to gain access to the pool and/or spa (this may include pot plants and outdoor furniture).

Requirement for a building permit

The Act requires a building permit be obtained for building work to build a new pool or spa or to alter a pool, spa or safety barrier.

Any building permit for a pool or spa must also include detailed information about the required safety barrier.

Where building work is to be undertaken on an existing safety barrier, the RBS can issue a building permit just for the barrier.

Where the building work is only for a pool that is being installed within an existing approved barrier that satisfies AS 1926 Parts 1 and 2, the RBS can issue a building permit just for the pool.

If work is undertaken on an existing pool, spa or barrier, the pool, spa or barrier will need to be brought into compliance with current Regulations.

Safety barrier building permit documentation

The building permit application must include detailed drawings and specifications of the proposed pool, spa and safety barrier.

Regulation 28 provides that the application must clearly show the location of the pool or spa and the barrier on the allotment and demonstrate how the barrier will comply with the Regulations. This means that the documents must show:

- how the barrier will comply with AS 1926.1-2012 and AS1926.2-2007;
- the layout of the safety barrier;
- the position of any climbable features such as large trees or fixed barbeques and

- a drawing of the proposed connection of the barrier to the ground.

It is not acceptable to have plans with limited or no detail that only refer to compliance with AS1926.

Water reticulation building permit documentation

AS1926.3-2010 Water recirculation and filtration systems, applies to all new and significantly altered pools.

A building permit application for a pool needs to include drawings of the recirculation and filtration system which are sufficient to enable the RBS to determine that the proposed work will comply. The RBS has discretion to ask for any documentation they need depending on the complexity of the system.

The following information should demonstrate compliance:

- detailed drawings of the recirculation and filtration system;
- detailed drawings showing the location of all suction points including solar suction to demonstrate that they will not be less than 600 mm apart; and
- details of the active main drain and outlet covers, or a note that outlet covers to be installed will be marked as tested in accordance with AS1926.3-2010 Appendix A.

Decisions on building permits

The RBS may refuse to issue a building permit if insufficient information is provided to demonstrate compliance with the Act and the Regulations.

From 1 July 2018, section 24A of the Act provides that the RBS must also refuse to issue the building permit if the work is being undertaken under a major domestic building contract and the name and registration number of the domestic builder is not the same as that specified on:

- the building permit
- the certificate of insurance and
- the major domestic building contract and
- the contract must also be entered into by a person entitled to do so under section 29 of the Domestic Building Contract Act.

The building permit must list building practitioners to be engaged in the building work.

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The building permit must list building practitioners to be engaged in the building work.

Incomplete Building work

Where the pool and the safety barrier have not been completed, a new building permit and building permit levy will be required prior to any building work continuing on the site. A stop work order should be issued where the builder continues working without a building permit. If the RBS determines that the incomplete work will be a danger to young children entering the pool area and considers that an emergency order should be issued they should contact the municipal building surveyor.

Building Code of Australia requirements

Definitions

Building Code of Australia means Volume One and Two of the National Construction Code.

Barrier height: The height of the barrier perpendicular to the finished ground level.

Boundary barrier: A dividing barrier between two adjoining properties.

Finished Ground Level: Ground level or other permanent stable surface.

Non-climbable zone (NCZ): A zone on a barrier and in the space adjacent to a barrier, running the full length of a barrier including a gate, that is intended to restrict climbing of the barrier by young children.

Pool area: means the area that contains the pool or spa and is enclosed by a safety barrier.

Swimming pool: means any excavation or structure containing water and principally used, or designed, manufactured or adapted to be principally used for swimming, wading, paddling, or the like, including a bathing or wading pool, or spa.

Young child: A child under the age of five years.

Energy efficiency for swimming pools

BCA Volume One J7.3 and J7.4 and BCA Volume Two Part 3.12.5.7 and 3.12.5.8 specify the energy efficiency requirements for swimming pools and spas.

The BCA requires that heating of pools other than a spa pool may be by a solar heater (not boosted by electric resistance heating); or a gas heater; or heat pump; a heater using reclaimed energy; or a combination of these.

A spa pool that shares a reticulation system with a swimming pool can be heated by one or a

combination of the following methods - a solar heater, a gas heater a heat pump or a heater using reclaimed energy.

Where the heating is by a gas heater or heat pump, the swimming pool must be provided with a cover and a time switch to control the operation of the heater.

A spa pool with a capacity of 680 litres or more is required to be provided with a time switch to control the operation of the circulation pump.

Child-resistant door sets must not be used in barriers for outdoor pools

AS 1926 -2012 .1 clauses 2.7 specifies that child-resistant door sets can only be installed for access to indoor pools and the indoor part of an indoor/ outdoor pool.

Therefore, doors from a building to an outside pool cannot be used to allow direct access to the pool area - a separate barrier between the building and the pool area is required.

Where a door exists, it must be either removed and replaced with a child resistant window or be altered to render the door un-openable. A door is rendered un-openable if all door furniture is removed and the door is screwed, bolted or fixed to the door frame using fixings cannot be removed. (screws should be the non-removable screws and bolts should have lockable nuts). However, walls of buildings and child-resistant windows can still be used as part of the barrier.

Indoor pools

Pools are considered to be indoors when they are fully enclosed by walls on all sides and roofed, and access to the pool is from within the building. For indoor pools, a side-hung door within the dwelling may be used. The door forming part of a barrier for the indoor pool must swing away from the pool area when opening. It must also be self-closing and self-latching in accordance with the requirements of AS1926.1–2012 and have a NCZ 1 located to the outside of the door. A self-closing and self-latching sliding door may also be used.

The design drawings will need to clearly show details of the pool barrier, child-resistant doorsets and the swing direction of doors as part of the building permit application.

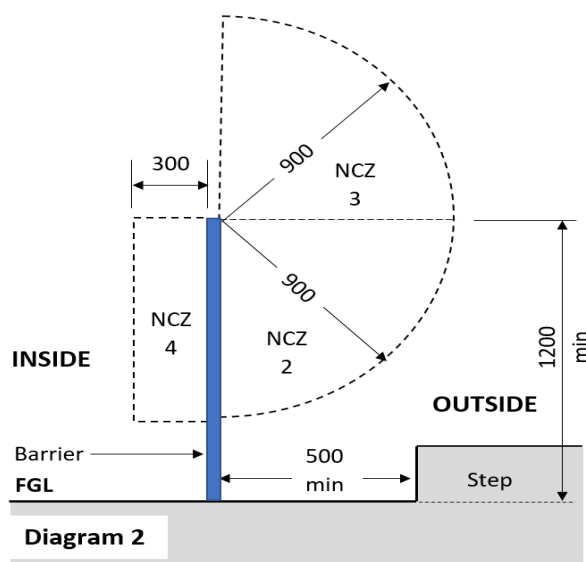
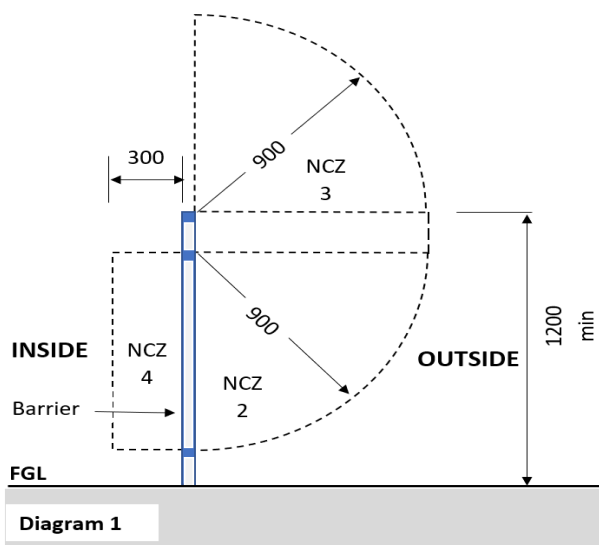
Pools under verandas or within an enclosure that is open to the elements on any side (not including windows in walls) are considered to be outdoor pools, and child-resistant door sets must not be used for access from the dwelling.

Electronically operated doors to indoor pool enclosures must be designed so that in the event of total power and battery failure, it automatically closes and self-latches. Any unlocking mechanism must be a minimum of 1.5m above the finished floor surface.

Non-climbable zones (NCZ)

AS1926.1–2012 has introduced five (5) “non-climbable zones” (NCZ). NCZ 1-4 apply to an internal barrier where the barrier height is less than 1800 mm. (Diagram 1).

An internal barrier (a barrier other than a boundary barrier) that is 1800 mm or greater in height does not require NCZ and may be climbable on both sides. NCZ 1 is a vertical plane on the outside face of the barrier.



Steps abutting fencing

A step, object or level change that abuts the fence is considered to be the finished ground level and therefore the 1200 mm must be measured to this point. Clause 2.3.1 of the Standard requires that steps, objects or level changes must be set back a minimum of 500 mm from the barrier. Refer to Diagram 2.

Total enclosure of property not sufficient

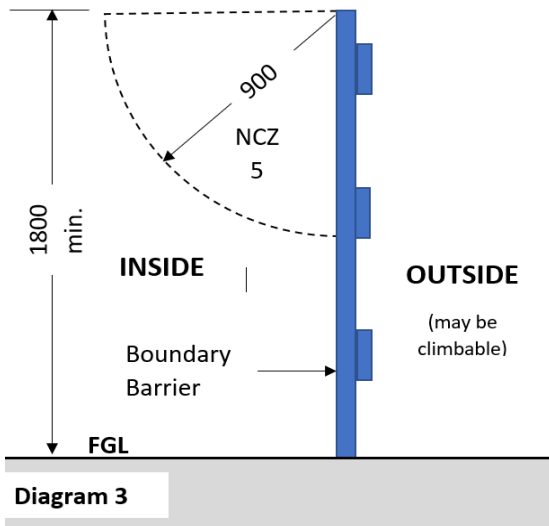
Designers and building surveyors need to be aware of the definition of pool area. AS 1926.1-2012 defines pool area as: “The area that contains the pool and is enclosed by a barrier”. Therefore, the whole allotment cannot be a pool area.

The pool area must be a separate, defined area on the allotment and access to it must not be directly available from any other building, including any dwelling and outbuilding on the allotment.

Adjoining properties – climbable elements and boundary fences

AS 1926 -2012 clause 2.2.4 contains the requirements for boundary fences that act as pool barriers. The barrier must be 1800 mm or greater in height above finished ground level on the inside and have NCZ (NCZ 5) measured down 900 mm from the top of the inside of the barrier. The outside of the barrier can be climbable. (Diagram 3)

The location of the NCZ inside the pool area means that it can be maintained by the pool owner or occupier.



Where a 1200 mm high internal barrier intersects with a 1800 mm high boundary fence and the top rail or surface of the internal barrier has a width of 50 mm or less, it may encroach into the 900 mm NCZ provided it intersects the boundary fence at an angle in plan, of between 45° and 135° to the 1800 mm boundary barrier.

Where the top surface or rail of the intersecting internal barrier exceeds 50 mm in width, the height of the lower barrier must be increased to a minimum of 1800 mm and extend not less than 900 mm from the intersection of the boundary fence. (Diagram 4 (a), (b) (c)).



Diagram 4 (a)

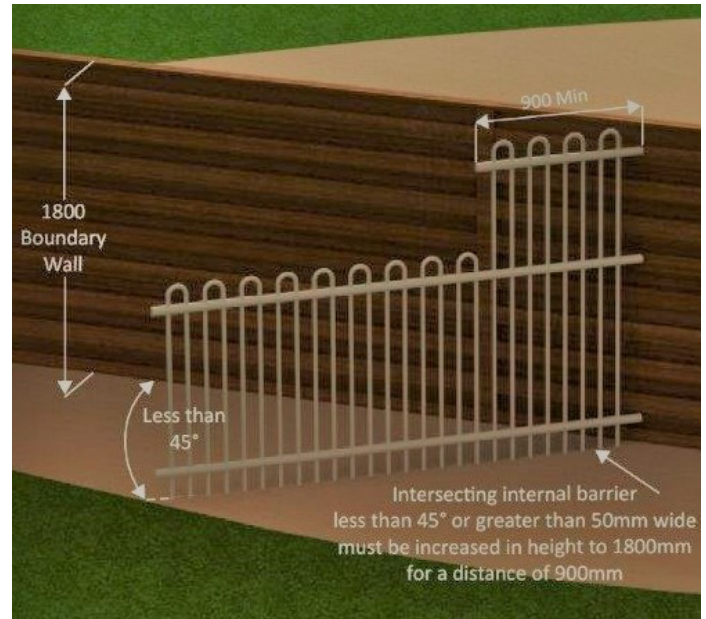


Diagram 4 (b)

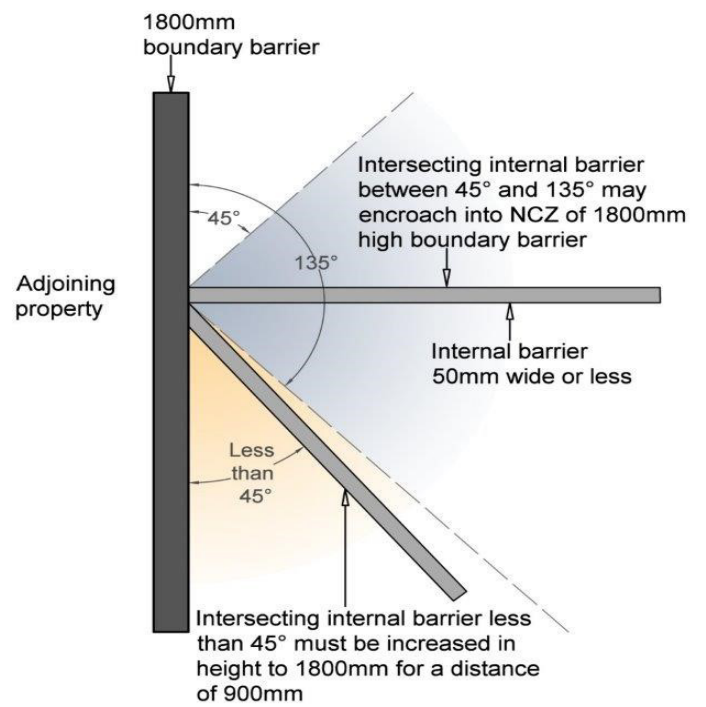


Diagram 4 (c)

Internal intersecting Barriers

Where a barrier is less than 1800 mm in height and it intersects an 1800 mm high barrier at an angle greater than 90°, the NCZ 1 (the vertical plane on the outside face of a barrier) and NCZ 2 (the 900 mm radius down from the top of NCZ 1) on the lower barrier are required to extend a minimum of 900 mm beyond that intersection. (Diagram 5 (a) and (b)).

Glass barriers

AS1926.1 now includes provisions (clause 2.3.3) for glass barriers and glass gates with top and bottom pivot style hinges. Glass in barriers must comply with the provisions of Australian Standard AS1288.

Garages and other Class 10a buildings forming part of a pool barrier

Roller doors and garage doors

The use of automatic closing roller doors or manual slide bolting of rollers doors in the closed position of garages or other Class 10a buildings are not appropriate solutions for compliance with AS1926.1. The temptation for owners to “unbolt” the roller door is too great and is an unacceptable risk.

AS 1926.1 2012 requires that the barrier must be a permanent structure. The definition of permanent structure is “A barrier or part of a barrier which cannot be removed without the use of tools”.

The door needs to be permanently fixed in the closed position through the appropriate use of fasteners that can only be removed using a tool such as a screwdriver, spanner or drill.

A side-hung door that would typically allow access to the garage from the yard cannot be used as part of the barrier. A separate barrier must be installed around a garage or shed door.

Gazebos, pool houses, and parts of Class 1 structures within the pool area or forming part of the barrier

Owners, designers and building surveyors need to carefully consider the location of gazebos, pool houses, and parts of Class 1 structures within the pool area or forming part of the barrier.

Tool sheds, garages, barbeques and enclosed non-habitable buildings should be located outside the pool area to reduce the likelihood of self-closing gates being propped open in order to gain access to those buildings.

An additional risk is that a child may be hidden by or within a structure is considerable, reducing the ability to adequately supervise children within the pool area.

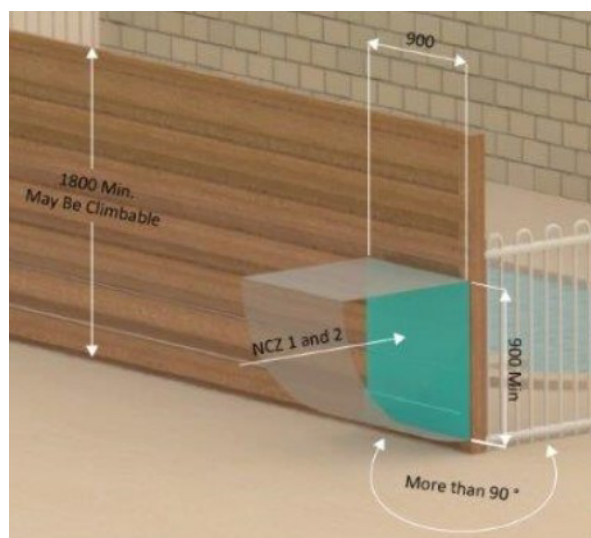


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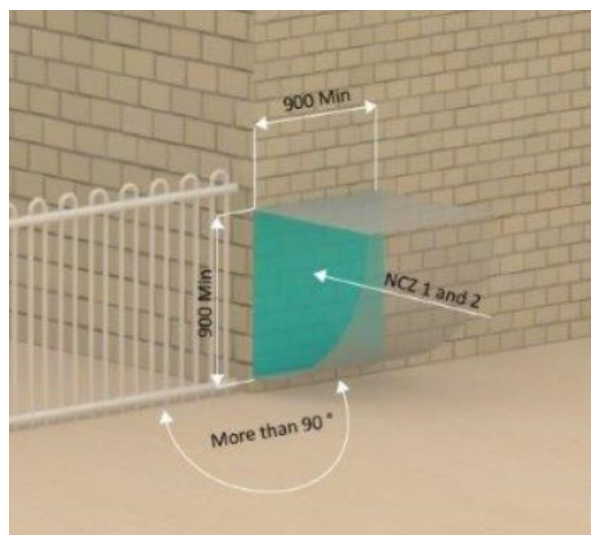


Diagram 5 (b)

Enclosed buildings/structures in the pool area that contain kitchens, playrooms, change rooms, or entertainment rooms that open directly into the pool area are habitable rooms that form part of the main building and are required to be separated from the pool area with a barrier. Furthermore, they may compromise the safety of children in the pool area by reducing or prohibiting visual supervision of the whole pool area.

An open-sided gazebo or other open shade structures supported by posts only are not considered to substantially reduce visibility within the pool and may be constructed, wholly or partially within the pool area without being separated by a barrier.

system elements to eliminate the risk of entrapment.

In using AS1926.3-2010, pool designers need to provide the RBS with the design and test data from the manufacturer of the main drain cover, and the RBS will need to ensure that the main drain cover has been installed in accordance with the building permit documentation and AS1926-2010 where appropriate.

Testing and inspection prior to sign off

The RBS will need to satisfy themselves the pool or spa has been built in accordance with the documentation approved as part of the building permit. The RBS may also ask for the pool or spa to be tested to ensure that no pipes have been blocked during construction.

Pool and spa builders must satisfy themselves that no blockages have occurred in the suction pipes prior to handover to the client and operation of the pool or spa.

Connection of pool or spa pipework – not plumbing work

Although the designs of the recirculation and filtration systems are required to be provided to the RBS as part of the building permit application, the work to connect the circulation and filtration system to pump systems and filters etc. is not plumbing work and does not need sign-off by a licensed plumber.

The *Plumbing Regulations 2008* do not define the connection of recirculation and filtration system pipe work as plumbing work and therefore the work is not required to be undertaken by a licensed or registered plumber.

However, where drain pipes are connected to the sewer, or in certain circumstances where allowed by water authorities to be connected to stormwater drains, the connection point is plumbing work that must be undertaken by a licensed plumber. Building surveyors are not required to seek plumbing certificates for the pool/spa pipe work connections and only need a Compliance Certificate to be provided if the cost of the connection to the main sewer is more than \$750.

Testing requirements in-situ and ensuring pools are constructed in accordance with the permit documentation

Pool barrier builders, building surveyors and building inspectors should familiarise themselves with test requirements that can be undertaken while the fence is being constructed.

These are specifically for the strength of posts and footings, barrier components and the operation of gates, and help to ensure that the barrier will be effective.

Strength of posts, and footings

Each post and its footing must withstand a horizontal force of 330N at 1200 mm above finished ground level. After loading, there shall be no permanent damage to any post, the footings must not loosen to impair the barrier's effectiveness and any gate must meet the requirements of Clauses 2.4.1.2, 2.4.2 and 3.4 in AS1926.1-2012. 330 N is approximately 33.0 kg.

This test can be conducted in the field by fastening one end of a calibrated spring balance to the post 1200 mm above ground level and pulling on the other end until a load of 33.0 kg is achieved. The post and footing should then be checked for any looseness or damage.

Operation of gates and doors

The gate or door must close and latch from any position from resting on the latching mechanism to fully open, under both of the following conditions:

- The natural weight of the gate or door; and
- After a mass of 25 kg supported by the top rail is placed at a point 100 mm from the outer edge of the locking stile of the gate or door.

This requirement is intended to indicate whether the automatic closing and latching mechanism is likely to remain effective after the gate or door has been subject to deflection, either under its own weight or because of children swinging on it.

The latching device and posts of the fencing to which the gate or door is attached must be capable of retaining the gate in a closed position when tested.

Strength of barrier components

Each component of the barrier such as panel infills, top and bottom rails, rods, palings, pickets and the like, must be capable of sustaining a force of 330 N without any component: - breaking, showing signs of fracture, loosening so the effectiveness of the panel is impaired or becoming permanently deformed by more than a factor of 1/200 over its length.

When undertaking a final inspection of a swimming pool and safety barriers, the RBS may request evidence of the in-situ testing or may require the testing to be conducted while they are present, to ensure the construction of the barrier meets the structural adequacy criteria and that the gate or door operates correctly.

Appendix 1

Building Regulations 2018 - Reg 169 Mandatory Notification Stages

