Building Commission

Practice Note
2013-05

Issued April 2013

Swimming pools and spas and safety barriers

This updates the previous Practice Note 2011-05 issued April 2011

GENERAL REGULATORY REQUIREMENTS

Reference to the Building Code of Australia in this Practice Note means Volumes One and Two of the National Construction Code series. This Practice Note applies to swimming pools, spas and safety barriers constructed from 1 May 2013.

(1) SUMMARY

All swimming pools and spas with a depth of water more than 300 mm (referred to as "pool" throughout this document) associated with Class 1, 2 and 3 buildings and a Class 4 part of a building or a children's service must have safety barriers to restrict access of children under the age of five to the pool area. It is the responsibility of owners and occupiers of a property to ensure that a pool and associated barriers are maintained and in good working order.

In addition, a water reticulation and filtration system which is provided to a pool must minimise the risk of entrapment or injury of people using the pool and provide for the safe operation of skimmer boxes and outlet systems.

On 1 May 2013 Volume Two of the BCA will reference AS1926.1–2012, AS1926.2–2007 and AS1926.3-2010. Parts 1 and 2 comprise the requirements for pool barriers while Part 3 relates to water recirculation and filtration systems. AS1926.1–2012 clarifies the requirements for boundary fencing which is part of the barrier. In addition, AS1926.1–2012 incorporates the requirement which has been applied through the BCA since 2010, which prohibits the use of child-resistant doorsets in barriers for an outdoor pool.

Volume One of the BCA also references AS1926.1–2012, AS1926.2–2007 and AS1926.3-2010 for the construction of swimming pool safety barriers where a swimming pool is associated with a Class 2, Class 3, and Class 4 part. Volume One of the BCA also contains a Victorian variation that retains the previous editions AS1926.1-1993 and AS1926.2-1995 in relation to a swimming pool associated with a children's service.

Designers, building surveyors and other industry practitioners should obtain a copy of AS1926 as this Practice Note does not replace the Standard, but it clarifies some issues with pools and their associated barriers.

2) KEY DEFINITIONS

Some new key definitions are introduced by AS1926.1–2012 as outlined below:

Barrier height (replaces fencing height):

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

Designers will need to consider any step, landing, finished ground level, retaining wall or other climbable object abutting (or adjacent to) a barrier, so that the effective height of 1200 mm is not reduced when measured from the outside of the pool area.

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:

The area that contains the pool and is enclosed by a barrier.

Young child:

A child under the age of five years.

The definition of swimming pool is:

Swimming pool

Any excavation or structure containing water to a depth greater than 300 mm and used primarily for swimming,

Contents

wading, paddling or the like, including a bathing or wading pool, or spa pool.

3) WHEN IS A BARRIER REQUIRED

Generally barriers are required for:

In-ground pools and spa pools

- Above-ground, including inflatable pools holding more than 300 mm of water
- Indoor pools and spa pools
- Bathing and wading pools containing more than 300 mm of water
- Spas and swim spas (including portable spas)
- Jacuzzis
- Hot tubs.

Barriers are not required for structures not used principally for swimming, paddling or wading, such as:

- Bird baths
- Fountains
- Water supply/storage tanks
- Fish ponds
- Dams
- Baths used for personal hygiene and emptied after each use
- Pools or spas not containing a depth of water greater than 300 mm
- Inflatable swimming pools (typically toddler or wading pools) not containing a depth of water greater than 300 mm
- Spas inside a building used for personal hygiene, such as a spa bath in a bathroom or ensuite and emptied after each use.

4) BUILDING A SWIMMING POOL, SPA AND BARRIER REQUIRES A BUILDING PERMIT

The Building Act 1993 and the Building Regulations 2006 require that a building permit must be obtained when proposing to build or alter a pool and associated barrier.

An application for a building permit for a pool must include details of the barrier as part of the building permit for the pool. The building permit must be issued as one building permit for the barrier and pool and not as a staged building permit.

5) BUILDING PERMIT DOCUMENTATION FOR BARRIERS

When applying for a building permit, the designers of the pool will need to include detailed drawings and specifications of the proposed pool and barrier in accordance with Part 3 of the Regulations. (refer to Practice Note 2013-63).

It is not appropriate that designers only use general notes such as: “Pool barrier to be constructed in accordance with AS1926.1–2012, AS1926.2–2007 and AS1926.3-2010”.

Such statements do not provide sufficient detail for the RBS to issue a building permit or for the builder to construct the barrier correctly. Designers should not rely on the RBS or the builder to “guess” the compliance level they are trying to achieve.

6) BUILDING PERMIT DOCUMENTATION FOR WATER RETICULATION

AS1926.3–2010 Water recirculation and filtration systems was introduced into the BCA 2011 on 1 May 2011. The design requirements of the recirculation and filtration system need to be provided as part of the application for a building permit.

Building surveyors must ensure they get sufficient documentation from the applicant as part of a building permit application to show compliance. This may include, but is not limited to:

- Schematics of the recirculation and filtration system showing connection of common lines;
- Detailed drawings of active main drain/suction point covers;
- Section through the skimmer box;
- For spas, drawings showing the location of suction points to ensure they are not less than 600 mm apart;
- Details of the design water velocities;
- Details of the pump system must be included.

The RBS may refuse to issue a building permit if not enough information is provided to ensure their safe use and compliance with the AS 1926.3 - 2010.

7) COMMENCEMENT AND COMPLETION DATES

Regulation 315 specifies the commencement and completion dates required to be nominated on the building permit for building work. In the case of construction of a new pool and associated barrier, regulation 315(1)(a)(ii) requires the work must commence within 12 months of the date of issue of the building permit. In this instance the building permit can specify a date by when works must commence.

However, for completion of the building work to construct a pool and associated barrier, a specific date will not be known until construction of the pool or barrier commences in accordance with regulation 315(1)(b)(i).

Therefore the building permit must contain a statement such as:

“The construction of the swimming pool and associated barrier must be completed within 6 months of construction commencing on the swimming pool and associated barrier.”

In these circumstances the RBS should place a condition on the building permit requiring the owner, builder or person in charge of building work to notify the RBS that construction of the pool and associated barrier has commenced. The RBS is then in a position to nominate the date by which the work must be completed and notify the owner and builder of such date.

Where a building permit has been issued which includes a pool and barrier as well as other building work, the requirements for the pool and barrier to be completed within 6 months of construction commencing on the pool and barrier still apply.

Example Permit Wording

Where a building permit has been issued for a "dwelling, swimming pool and associated barrier", the following would apply:

> "Permit issue date: **01/01/2013**.
>
> **Commencement And Completion**:
>
> This building work must commence by: **01/01/2014**
>
> This building work must be completed by: **01/01/2015** in the case of the dwelling and, within 6 months of construction commencing on the swimming pool and associated barrier in the case of the swimming pool and associated barrier.
>
> **Condition(s):**
>
> This permit is subject to the following conditions –
>
> The owner, builder or person in charge of building work must notify the RBS that construction of the swimming pool and associated barrier has commenced."

The RBS can, in accordance with regulation 315(4), extend the period within which any building work is required to be completed prior to the lapse of the permit if the relevant building surveyor considers that the extent of the building work warrants an extension. In considering a request for an extension to the completion date for a swimming pool and associated barrier, the RBS should consider the use of an appropriate and suitable temporary barrier if the swimming pool is an open excavation or has been filled with water. A temporary pool barrier erected prior to the installation of a permanent barrier as detailed on the building permit must comply with the height, opening, NCZ and impact requirements of AS1926.1 and 1926.2.

8) SITE SAFETY BEFORE AND DURING CONSTRUCTION

Site safety needs to be considered when constructing a pool in relation to the risk of a person falling from a height or a young child drowning.

Three stages need to be considered when constructing a pool:

- Prior to the issue of the building permit; and
- After excavation work; and
- When the pool is filled with water.

Prior to the issue of the building permit the RBS must consider the requirements of regulations 602, 603, 604 and 605 to determine any proposed precautions required to protect the adjoining property, the public and any dwelling occupants during the construction of the pool. (Refer to Practice Note 2006-20 Protection works process and Practice Note 2007-58 Protection of public).

Once construction has commenced, a pool excavation which can become partly filled with ground water or rainwater or a pool that is left incomplete can potentially be dangerous, creating a potential drowning hazard, especially for young children.

Where such works are inadequately protected and are accessible from a street, public reserve, another allotment or an occupied dwelling, the RBS may consider using the power provided under regulation 604 (3) to require safety precautions to ensure the safety of the public or a building occupant who is a young child and prevent them from gaining access. The RBS could do this by issuing a direction as to work pursuant to section 37 of the Act or a building order for minor work if the RBS considers that the work required is of a minor nature.

In instances where the pool may be filled with water before providing a permanent barrier, the RBS must consider appropriate safety precautions. The RBS should require drawings showing safety precautions during construction and include a permit condition to provide a temporary pool barrier. This will be important should the owner elect to engage separate pool and fencing contractors. Should a temporary barrier be removed before a compliant permanent barrier is erected, the RBS or the Municipal Building Surveyor (MBS) can utilise the enforcement process through the use of notices and orders.

As noted above, a temporary pool barrier must comply with AS 1926.1 and AS 1926.2 to restrict the access of young children. A temporary barrier must not provide or permit access to the pool area.

Instances where the pool should have a temporary pool barrier if a permanent barrier is not installed immediately are:

- Prefabricated pools which are filled on installation
- In situ in-ground pools which are not self-draining and will not be maintained during construction allowing rainwater to accumulate in the pool
- In situ in-ground pools where the pool needs to be filled on installation
- The dwelling is occupied during construction.

For all other pools, the pool should not be filled with water prior to the RBS certifying that the permanent barrier complies with the Building Regulations. In cases where the pool will not be filled to a depth greater than 300mm during construction and the property is not occupied during construction, site fencing should be required to restrict access by the public at the property boundary.

9) LAPSED PERMITS

Where a building permit for a swimming pool has lapsed, the RBS must take appropriate action to ensure any danger due to incomplete work is addressed. The RBS should inspect the property and engage with the owner and builder to determine what stage the building work has reached. This will help in determining an appropriate course of action for the RBS.

9.1 Building work complete

Where the swimming pool and the permanent barrier have been completed in accordance with the building permit, a final inspection can be undertaken. Any minor non-compliant work can be made to comply by the issue of a minor works order. If the building work fully complies, a certificate of final inspection can be issued.

9.2 Building work not complete

Where the swimming pool and the permanent barrier have not been completed, a new building permit and building permit levy will be required prior to any work continuing on the site. A stop work order may be required where the builder continues working. If the work is a danger, an emergency order may be required to remove the danger and can only be issued by the MBS. If the owner does not apply for a new building permit for the work promptly, a building notice may be issued.

9.3 Building work not commenced

Where work has not commenced, the RBS should take notes for their file and may include photos of the site verifying this. A letter should be sent to the owner and builder advising that the permit has lapsed, a new permit and building permit levy will be required and no work on the swimming pool and safety barrier may proceed.

The above is a guide only to suggest a process the RBS should follow where the permit has lapsed, because work did not commence within 12 months of the permit being issued or was not completed within 6 months after construction commenced. The RBS also has a duty to include the date a permit lapsed in the monthly levy report to the Building Commission.

10 SWIMMING POOL AND SPA MAINTENANCE

Regulation 1220 requires that the occupier of an allotment or building containing a swimming pool or spa must:

10.1 maintain and ensure that the swimming pool barrier, door, gate lock, latch, catch, bolt or fly screen restricting access to the swimming pool or spa is maintained and operating effectively at all times; and

10.2 ensure that any gate or door forming part of a swimming pool or spa barrier or fence that provides access to the swimming pool or spa is in the closed position except when a person is in the act of entering or leaving the swimming pool or spa.

11 APPLYING THE BUILDING CODE OF AUSTRALIA AND AS1926.1 – 2012 TO NEW POOLS AND BARRIERS

11.1 Energy efficiency for swimming pools

BCA 2012 Volume One J7.3 and J7.4 and BCA 2012 Volume Two Part 3.12.5.7 introduced energy efficiency requirements for swimming pools and spas.

The BCA requires that heating of pools other than a spa pool must be by a solar heater and cannot be boosted by electric resistance heating. Therefore, boosting of the swimming pool solar heater may be by a gas heater or heat pump or both.

Should solar heating not be able to be provided to a proposed swimming pool, an alternative solution may be formulated to meet the performance requirements JP1, JP2, JP3 or P2.6.2. or an application may be made to the Building Appeals Board to modify the regulations.

Heating of 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 or a heat pump.

11.2 Child-resistant doorsets must not be used in barriers for outdoor pools

AS 1926 -2012 .1 clause 2.7 specifies that child-resistant doorsets 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 must not be used to allow direct access to the pool area - a separate barrier between the building and the pool area is required.

However, walls of buildings and child-resistant windows can still be used as part of the barrier.

11.3 Indoor pools

Designers need to be aware that for indoor pools the standard also provides that a door forming part of the barrier must not open towards the pool. 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 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.

Pools under verandahs 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 doorsets must not be used for access.

Electronic doors to indoor pool enclosures must even in the event of total power and battery failure, be adequately self-closing and self-latching.

11.4 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. NCZ 1 is a vertical plane on the outside face of the barrier.

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.

11.5 Steps abutting fencing

In certain circumstances a step, object or level change may be adjacent to barriers and may still be outside the NCZ. For instance, as NCZ can be taken from the top of the pool barrier at a height of 1200 mm in a 900 mm arc on the outside of the barrier, there is effectively 300 mm left below the non-climbable zone. It is important to interpret this correctly. The 1.2 m barrier height is measured from any point from the top of the barrier to the finished ground level on the outside of the barrier. A step, object or level change that abuts the fence is considered to be the finished ground level and therefore the 1.2 m 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.)

11.6 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.

11.7 Adjoining properties – climbable elements and boundary fences

AS 1926 -2012 clause 2.2.4 has clarified 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) measure from the top of the inside of the barrier. The outside of the barrier can be climbable.

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

Attention also needs to be given to the intersection of a 1.2m high internal barrier with a boundary fence. Where the top rail or surface of the intersecting 1.2m internal barrier has a width of 50 mm or less, it may encroach into the NCZ provided it intersects the boundary fence at an angle in plan, of between 45º and 135º to the 1800 mm boundary barrier

Where the top surface or rail of an intersecting internal barrier exceeds 50 mm, it is a climbable object within the 900 mm NCZ on the boundary barrier. In this instance 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

11.8 Internal intersecting Barriers

Where a barrier is less than1800 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.

11.9 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.

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

The use of automatic closing roller doors or bolting of rollers doors in the closed position of garages or other Class 10a buildings are not appropriate solutions for non-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 by the use of a tool such as a screwdriver, spanner or drill.

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

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

Owners, designers and building surveyors will need to carefully consider the location of these structures. The 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. Where a structure is totally enclosed by the pool barrier, consideration of the use and design of the structure needs to be undertaken to determine compliance with the requirements of AS1926.1.

AS 1926.1 - 2012 prohibits the use of a child-resistant doorset that opens into an outdoor pool area. A separate barrier must be provided that separates the door of the building from the pool area. Enclosed pool buildings that may contain kitchens, playrooms, change rooms, or entertainment rooms, are habitable, and therefore form part of the building, a satellite building to the main building and 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.

12) DESIGN AND CONSTRUCTION CONSIDERATIONS

12.1 Single footing for fence posts to maintain the gate and latch operation

A common problem with pool barriers is that the posts supporting the gate and the latches tend to spread over time. This has the effect of not allowing the gate to latch properly and in some circumstances, causes it to swing freely between the posts.

It is recommended that the footings for fence posts supporting the gate and latches are poured “monolithically”, or as one footing across the opening. This ensures that the posts are “connected”. As the ground moves, the posts should move together, reducing the likelihood of them “spreading”, and ensuring that the gate will continue to be self-latching.

12.2 Perforated material or mesh

A barrier within the property consisting of perforated or mesh materials with apertures of the mesh not greater than 13mm (measured horizontally across the widest part) must be a minimum of 1200 mm in height and shall have a NCZ of not less than 900 mm.

Barriers using material with apertures more than 13mm but not greater than 100mm (measured horizontally across the widest part) must have a minimum height of 1800mm. Any material with apertures greater than 100mm shall not be used.

Barriers of perforated or mesh materials must be of sufficient height so that a 25kg weight supported at any point along the top of the barrier will not reduce the height to less than 1200 mm.

The bottom of the barrier must be installed in such a manner that the gap at the bottom must not exceed 100mm when applied with a vertical lift force of 100 N.

12.3 Main drain/suction design – using alternatives to AS1926.3 for pools and spas

Part 3.9.4 of the BCA 2010 first referenced AS1926.3-2010 Water recirculation systems and was adopted by the BCA 2011 on 1 May 2011.

Designers and builders of pools should be aware of the requirement for performance-based testing of 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.

12.4 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.

12.5 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.

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.

13) TESTING REQUIREMENTS IN-SITU AND ENSURING POOLS ARE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING 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 and the operation of gates, and help to ensure that the barrier will be effective.

13.1 Strength of posts and footings

Each post and footing must withstand a horizontal force of 330N at 1.2m 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 33.6 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 33.6 kg is achieved. The post and footing should then be checked for any looseness or damage.

13.2 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:

13.2.1 the natural weight of the gate or door; and

13.2.2 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 as a result 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.

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.

If you have a technical enquiry please email technicalenquiry@buildingcommission.com.au or phone 1300 815 127

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