Drowning of 0-5 Year Old Children in Private Swimming Pools & Spas in Victoria 1997-2001

A joint initiative of the

State Coroner’s Office

&

Department of Human Services

REPORT 2

Compiled by Lyndal Bugeja
Injury Prevention Research Officer

October 2004
AUTHORSHIP DETAILS

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Thank you for your assistance with this report.

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<thead>
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<th>Description</th>
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<tbody>
<tr>
<td>ABCB</td>
<td>Australian Building Codes Board</td>
</tr>
<tr>
<td>AS</td>
<td>Australian Standard</td>
</tr>
<tr>
<td>BC</td>
<td>Building Commission</td>
</tr>
<tr>
<td>BCA</td>
<td>Building Code of Australia</td>
</tr>
<tr>
<td>CSC</td>
<td>Coronal Services Centre</td>
</tr>
<tr>
<td>DHS</td>
<td>Department of Human Services</td>
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<tr>
<td>LCMS</td>
<td>Local Case Management System</td>
</tr>
<tr>
<td>LSV</td>
<td>Life Saving Victoria</td>
</tr>
<tr>
<td>MAV</td>
<td>Municipal Association of Victoria</td>
</tr>
<tr>
<td>MUARC</td>
<td>Monash University Accident Research Centre</td>
</tr>
<tr>
<td>NCIS</td>
<td>National Coroners Information System</td>
</tr>
<tr>
<td>RLSSA</td>
<td>Royal Life Saving Society Australia (now Life Saving Victoria)</td>
</tr>
<tr>
<td>SCO</td>
<td>State Coroner’s Office</td>
</tr>
<tr>
<td>SPASA</td>
<td>Swimming Pool and Spa Association of Victoria</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
<tr>
<td>SRV</td>
<td>Sport and Recreation Victoria</td>
</tr>
<tr>
<td>VBR</td>
<td>Victoria Building Regulations</td>
</tr>
<tr>
<td>VCFS</td>
<td>Victorian Coronial Facilitation System</td>
</tr>
<tr>
<td>VIFM</td>
<td>Victorian Institute of Forensic Medicine</td>
</tr>
<tr>
<td>VLGA</td>
<td>Victorian Local Government Association</td>
</tr>
<tr>
<td>VSPSSWP</td>
<td>Victorian Swimming Pool and Spa Safety Working Party</td>
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**ACKNOWLEDGEMENTS**

**Steering Committee**

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
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<tbody>
<tr>
<td>Graeme Johnstone</td>
<td>State Coroner</td>
<td>State Coroner’s Office</td>
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</tr>
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**General Acknowledgements**

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<tr>
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<th>Organization</th>
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<tbody>
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<td>Sarah Biggin</td>
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<td>Ed Szwaja</td>
<td>Director</td>
<td>High Impact Pty Limited</td>
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EXECUTIVE SUMMARY

An Injury Prevention Research Officer position, funded by the Public Health Group of the Department of Human Services (DHS), was established at the State Coroner’s Office (SCO) for a three-year period in October 2001. The role of the Research Officer was to conduct a number of projects across a range of topic areas on unintentional death. One of the areas under investigation was unintentional drowning.

This report presents the findings of an investigation into drowning deaths of young children in private swimming pools and spas in Victorian between 1997 and 2001. This is the second of three reports examining the issue of unintentional drowning of young children in Victoria. Report 1 examined drowning of young children in dams and Report 3 examines drowning of young children in bathtubs.

The purpose of the investigation was to examine factors contributing to these deaths, in particular the role of carer supervision and efficacy of safety barriers.

The major findings of the study were:

- 20 deaths occurred during the five year period;
- there was a gradual reduction in the number of deaths from 12 in 1989 to two in 2001;
- 65% of the deaths were of male children;
- 50% of the incidents occurred between 6:00 pm and 9:00 pm;
- 50% of the incidents occurred on the weekend, particularly a Sunday;
- 60% of the incidents occurred in Summer (December to February);
- there was an even distribution between the number of incidents that occurred at a premises the child was visiting and the child’s own premises; and
- 75% of incidents occurred in metropolitan Melbourne.

It was found that the deaths primarily resulted from a combination of inadequate carer supervision immediately prior to the drowning incident and inadequate safety barriers, primarily doors and gates, between the location of the child and the pool/spa. It was concluded that although drowning deaths of 0-5 year old children in swimming pools and spas has been significantly reduced in Victoria, there is concern that a resurgence of this problem could occur if public awareness does not remain high and an effective enforcement regime is not implemented in Victoria. The results of the current study identified a number of issues that could be addressed to prevent future deaths of this nature. These issues include:

1. amendments should be made to the Private Swimming Pool and Spa Safety Barrier to require the erection of safety barriers between the pool/spa and the remainder of the outside area. This should be a requirement for new pools and the feasibility of requiring this for existing pools should be determined.

2. improvements should be made to the current level of safety barrier compliance to relevant regulations by promoting and supporting measures to establish a safety barrier inspections program, such as a database of pools and spas in Victoria and the Municipal Pool and Spa Safety Guideline; and

3. continued education / public awareness:
a. awareness that many young children drown because the child re-entered the pool or spa in the period of time immediately following the cessation of water recreation, therefore carer supervision needs to be vigilant during this time and ensure that access points to the pool (doors and gates) and locked and never propped open;

b. development and distribution of education materials to:
   i. Real Estate Agents selling or buying property and those wishing to sell and / or buy a property with a swimming pool or spa whether inground or above ground; and
   ii. retailers of portable and / or inflatable swimming pools.

c. education material to include informaiton on:
   i. safety barriers;
   ii. supervision such as the RLSSA Keep Watch;
   iii. water familiarisation benefits and location of classes; and
   iv. CPR, including contacts for classes.

d. establish an information hotline both web site and telephone hotline for:
   i. swimming pool and spa retailers, installers and maintenance personnel;
   ii. Local Government Authorities;
   iii. building surveyors;
   iv. home sellers or buyers;
   v. Real Estate Agents;
   vi. swimming pool and spa owners; and
   vii. prospective swimming pool and spa owners.
INTRODUCTION

This report is the second of three reports on drowning deaths of children aged 0-5 years in Victoria. A report on unintentional drowning of 0-5 year old children in dams was completed in October 2002 and a third report on 0-5 year old children drowning in bathtubs had also being conducted. These reports are part of a joint project of the Department of Human Services (DHS) and the State Coroner's Office (SCO) to investigate the causes of unintentional deaths of Victorians, with the aim of contributing to the prevention of future deaths and associated injuries.

1. Drowning Deaths of Young Children

The Royal Life Saving Society Australia (RLSSA), Victoria Branch (2002) now Life Saving Victoria (LSV), reported that 106 children aged 0-5 years died from unintentional drowning incidents in Victoria between July 1992 and June 2002 (Figure 1). When compared with the number of drowning deaths of children in this age group in other Australian States and Territories, Victoria represents approximately 20%.

![Graph showing frequency of drowning deaths of 0-5 year old children, Victoria July 1992-June 2002](image)

At a national level, RLSSA, National Branch reported that 176 children under five years of age had drowned in backyard swimming pools and spas in Australia between 1992 and June 1998. The National Branch also reported in their 1999-2000 drowning summary that 0-5 year old children comprise over 20% of the total number of unintentional drowning deaths in Australia (RLSSA, 2000).

2. Mandate of Private Swimming Pools and Spas in Victoria

In 2001, the Building Commission (then the Building Control Commission) estimated that there were approximately 190,000 swimming pools and spas in the State of Victoria. The Building Commission also reported that the number of pools and spas was increasing, based on the 300 applications to construct private swimming pools they received every month (Building Control Commission, 2001).
Solicitors and land conveyancing practitioners are not required to advise owners and purchasers of the requirements for pool safety barriers. There is no requirement for any person who is aware of a potentially dangerous pool or spa to report the situation to the relevant Council’s Municipal Building Surveyor\(^1\).

**A. Safety Barrier Regulations**

Safety barrier requirements for private pools and spas have been regulated at a State and National level. At the National level, the Building Code of Australia (BCA) was produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Commonwealth, State and Territory governments. BCA 90 was implemented in Victoria in 1991 following community concern surrounding the number of young children drowning in private swimming pools and spas (Building Control Commission, 2001). As a result, owners of pools approved or constructed after 8 April 1991 were required to comply with *Australian Standard (AS) 1926*.

*AS 1926 Part 1 Fencing for swimming pools* outlines in detail the design and construction requirements of swimming pool and spa fences / barriers. The Building Control Commission (now Building Commission) (2000) summarised these requirements in a *Community Information Sheet* in February 2000. It stated:

> The Standard stipulates that swimming pool and spa safety fencing must be designed and constructed so as to be non-climbable by young children having regard to the height of the fence and any horizontal climbable members, openings, footholds in the fence, and the operations of self-closing and self-latching gates. The gates must swing outwards from the pool or spa area and the latching device must automatically operate on the closing of the gate and prevent the gate from being re-opened without manual release. The latching / locking device must be located at least 1.5 metres from the ground level.

> Fencing can be typical pool or spa fencing or existing boundary paling fences if the palings are on the non-pool or spa side. The fencing must be located in accordance with one of the options below (See Appendix 4) and must ensure that the effective fencing height is not compromised by nearby objects or projections such as trees.

> Walls of buildings can also be acceptable, subject to consideration of doors and windows as set out in AS 1926.1.

BCA 90 was not retrospective to pools and spas built prior to 8 April 1991. Safety barrier regulations for pools and spas approved and constructed prior to 8 April 1991 were introduced in July 1994 with the Victoria Building Regulations (VBR). Design and construction requirements for these pools and spas were outlined in Regulation 5.13 of VBR 94. VBR 94 brought about a distinction between the level of safety required for the construction of safety barriers for pools and spas installed before and after 8 April 1991. That is, BCA 90 required that pools constructed after 8 April 1991 comply with the pool fencing standards set out in AS 1926.1 where VBR 94 required that pools constructed prior to 8 April 1991 comply with Regulation 5.13.

Regulation 5.13 was not as stringent as AS 1926.1 in terms of the closing device requirements on doors and gates forming part of the barrier. AS 1926.1 required that

\(^1\) Evidence from surveyor in case number 3477/1999.
doors and gates forming part of a pool barrier to be self-latching / locking as well as self-closing. Regulation 5.13 required that such doors and gates be self-latching / locking but not self-closing. There was an option in Regulation 5.13 for compliance with AS 1926.1-1993, however it was not compulsory.

BCA 90 was superseded in August 1997 by BCA 96, which extended requirements that pool owners construct safety barriers in accordance with AS 1926.1 to pools constructed prior to 8 April 1991. Again this requirement was not compulsory as pool owners could choose whether they complied with AS 1926.1 or Regulation 5.13.

This disparity in the level of required safety between pre and post constructed April 1991 pools was eventually addressed by the *Building (Swimming Pool Fences) Regulations 2001*. Changes to Regulation 5.13, which took effect from 1 July 2002, related to swimming pools and spas constructed prior to 8 April 1991. Owners of these pools were required to ensure all doors and gates forming part of the pool barrier were self-closing as well as self-latching / locking. Other changes, as well as a summary of all the regulations outlined above, are summarised in Table 1. It must be noted that the most recent changes did not impact on any of the pools and spas examined in the current study. The period of time considered was 1997 to 2001, during which time VBR 94 applied to pre-1991 pools and BCA 90 applied to post-1991 pools until superseded in July 1997 by BCA 96. Note that VBR 94 required that pre-1991 pools comply with Regulation 5.13 by July 1997.

**TABLE 1**

<table>
<thead>
<tr>
<th>Date</th>
<th>Legislation</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Building Code of Australia 1990 (BCA 90)</td>
<td>Part G1, Clause G1.1(b) states:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A swimming pool associated with a Class 1, 2 and 3 building, with a depth of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>water more than 300 mm must have suitable barriers to restrict access by</td>
</tr>
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<td></td>
<td></td>
<td>young children to the immediate pool surrounds or safety fencing in accordance</td>
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<tr>
<td></td>
<td></td>
<td>with AS 2818 and AS 1926.1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All pools for which building approval was granted and pools subsequently</td>
</tr>
<tr>
<td></td>
<td></td>
<td>constructed after 8 April 1991 were required to comply with AS 1926.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Fencing for swimming pools.</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pool safety barriers required a building permit with compliance to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>assessed by a qualified building surveyor, prior to the pool being filled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BCA 90 was not retrospective, and therefore did not apply to pools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>constructed prior to 8 April 1991.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applied to any swimming pool:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• on an allotment containing a Class 1 building (i.e. residential);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• capable of containing a depth of water greater than 300mm; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• constructed or for which building approval was granted prior to 8 April</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A building permit was not required unless the fence was intended to be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>built to a height greater than 2 metres.</td>
</tr>
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<td></td>
<td></td>
<td>Regulation 5.13 (7) required pool owners to bring their swimming pools into</td>
</tr>
<tr>
<td></td>
<td></td>
<td>compliance:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• within three years of its commencement (1 July 1997); or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• if a contract for the sale of the allotment is entered into after that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>commencement, within 30 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Penalty for non-compliance, $200 on-the-spot fine or $500 (maximum) if</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dealt with by the courts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enforcement carried out by or on behalf of the municipal building surveyor.</td>
</tr>
<tr>
<td>1997</td>
<td>Building Code of Australia 1996 (BCA 96)</td>
<td>BCA 96 Volume 1, Clause G1.1(b) and BCA Volume 2, Clause 3.9.3.0 refer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>specifically to swimming pools with a depth of water more than 300 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>being required to be fenced with a safety barrier installed in</td>
</tr>
</tbody>
</table>
accordance with the requirements of AS 1926. BCA 96 was retrospective i.e. pools constructed and approved prior to 8 April 1991 were required to comply, however pools owners could choose to comply to the lesser standard Regulation 5.13 of VBR 94.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>2002</td>
<td>Victoria Building (Swimming Pool Fences) Regulations 2001</td>
</tr>
<tr>
<td></td>
<td>Regulation 5.13 Safety of existing swimming.</td>
</tr>
<tr>
<td></td>
<td>Any door or gate opening to the area containing a pre-1991 pool or spa must be fitted with a self-closing device:</td>
</tr>
<tr>
<td></td>
<td>• that is located not less than 1.5 metres above the ground, or the internal floor, level measured from the approach side; and</td>
</tr>
<tr>
<td></td>
<td>• that returns the door or gate to its closed position:</td>
</tr>
<tr>
<td></td>
<td>o from any position in the range of positions from fully open to resting on the lock or latch; and</td>
</tr>
<tr>
<td></td>
<td>o from a stationary start from any position within that range without the application of manual force.</td>
</tr>
<tr>
<td></td>
<td>All pool barriers must be maintained to operate effectively at all times. This means that:</td>
</tr>
<tr>
<td></td>
<td>• all existing components of the barrier must function as intended;</td>
</tr>
<tr>
<td></td>
<td>• no objects (including plants) must be located near a barrier which could take away from it effectiveness - even if on an adjoining allotment; and</td>
</tr>
<tr>
<td></td>
<td>• no doors or gates to the pool area are to be left open.</td>
</tr>
<tr>
<td></td>
<td>Building permit required for new pool and spa fencing.</td>
</tr>
<tr>
<td></td>
<td>Penalty for non-compliance, $200 on-the-spot fine or $5000 (maximum) if dealt with by the courts.</td>
</tr>
<tr>
<td></td>
<td>Tenants and visitors to a pool are responsible to meet requirements.</td>
</tr>
</tbody>
</table>

**B. Enforcement**

Local councils are responsible for the enforcement of legislation relating to swimming and spa pool fencing, by virtue of the *Building Regulations 2001*. Enforcement is undertaken by municipal building surveyors or their representative. The maximum penalty is a monetary fine of up to $5,000 for either: failure to install safety barriers and associated safety equipment; or failure to ensure self-closing and latching devices are maintained and operating effectively at all times.

Enforcement is hindered by incomplete records of allotments containing swimming pools and spas. Local councils have therefore experienced difficulties in locating some pools and spas, as records only exist if a Building Permit had been issued for it. Some records were also lost during local council amalgamations.

To overcome this problem the Building Commission in conjunction with the Victorian Swimming Pool and Spa Safety Working Party (VSPSSWP) commissioned a proposal for a database of swimming pools and spas in Victoria. The proposal was designed to inform municipal building surveyors about the structure of a swimming pool and spa database, the data required and the most appropriate means of populating and maintaining the database (CTL Pty. Ltd., 2003). In particular the report addressed:

- specifications of the database to allow Councils to monitor activities relating to swimming pools and spas;
- use of digital aerial photographs to identify pools and spas;
- method for the identification of swimming pools using aerial photography, Council planning permits and other databases;
- maintenance and updating the database;
- production of standard reports; and
- privacy principles.
### 3. Prevention Initiatives

A number of initiatives have been undertaken at all levels of government and by public health and safety organisations to address the issue of young children drowning in private swimming pools and spas. Many of the initiatives by water safety organisations such as the Australian Water Safety Council (AWSC), the Royal Life Saving Society Australia (RLSSA), Victoria Branch and Play it Safe by the Water were outlined in Report 12 of this series. Some of these initiatives have been included to reiterate their contribution to water safety. For full details refer to this earlier report.

#### A. Australian Water Safety Council

In 1998 the Australian Water Safety Council (AWSC) published the National Water Safety Plan. Young children were identified as one of the three at risk target groups for immediate action. The key issues recognised and strategies identified to reduce incidents of drowning of young children are outlined in Table 2.

**TABLE 2**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Strategy</th>
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<tbody>
<tr>
<td>Public awareness of key focus areas (e.g. supervision, fencing/legislation requirements, water familiarisation, and infant resuscitation)</td>
<td>Continue <em>Keep Watch</em> Public Awareness Campaign and provide for expansive coverage through various media groups, organisations and industry. To include dissemination of educational material to parents and carers.</td>
</tr>
<tr>
<td>Challenge cultural diversity and attitudes</td>
<td>Make available <em>Keep Watch</em> information for multi-cultural groups.</td>
</tr>
<tr>
<td>Education on existing Legislation</td>
<td>Reinforce existing Legislation and promote and evaluate Legislative change.</td>
</tr>
<tr>
<td>Education of parents and carers</td>
<td>Encourage attendance at Infant Resuscitation courses for all parents linking with the <em>Home Pool Safety Program</em>. Infant resuscitation accreditation to be made mandatory for all carers of children 0-5. Medicare rebate to be made available to parents and carers attending Infant Resuscitation courses</td>
</tr>
</tbody>
</table>

At a State level, government agencies and public health and safety organisations have worked together over the last three years, in particular, the Victorian Swimming Pool and Spa Safety Working Party (the Working Party), which was formed in February 2000. Refer to section below titled Swimming Pool and Spa Safety Working Party.

#### B. Building Commission

The Building Commission is a self-funding statutory authority established in 1994 to play a key role in the reform of building control in Victoria, which was initiated with the *Building Act 1993* (www.buildingcommission.com.au). The Building Commission administers the *Building Act 1993* and *Building Regulations 1994* and is responsible for communicating changes that occur in building legislation.

In February 2000 the Building Commission (then the BCC) released a Community Information Sheet titled *Swimming Pool and Spa Safety Barriers for Private Residence* (February 2000). The Information Sheet contained the following information:

- definition of a swimming pool and spa;

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fencing requirements for:
  o pools constructed prior to 8 April 1991;
  o pools constructed after 8 April 1991:
    - AS 1926.1; and
    - illustrations of acceptable safety fencing.
  o maintenance of safety barriers for all pools and spas;
  o fines; and
  o frequently asked questions.

Following the amendments to Regulation 5.13 of the Victorian Building Regulations, in February 2003 the Building Commission published another Community Information Sheet titled *Swimming Pool and Spa Barrier Laws for Private Homes*. The Information Sheet contained the following information:

- definition of a swimming pool and spa;
- what structures safety barriers were required for;
- fines;
- permit requirements;
- previous exemptions on existing swimming pools or spas:
  o fencing requirements for pools or spas built on or after 8 April 1991;
  - illustrations of acceptable safety fencing (See Appendix 4).
  o fencing requirements for pools or spas built before 8 April 1991
- maintenance checklist; and
- frequently asked questions.

**C. Local Councils**

In accordance with Section 212 of the *Building Act 1993* local authorities have responsibility for enforcing the *Building Regulations 1994* including the provisions in relation to existing swimming pools (See Table 3) (Sport and Recreation Victoria, 2000). As outlined earlier, it is a matter for each local council to decide how residents are informed of legislation and what enforcement practices are undertaken.

Given the large number of local councils in Victoria it was beyond the scope of the current study to report on what action each council undertook in relation to informing residents about swimming pool and spa safety barrier requirements and enforcement policies and procedures. An example of an initiative taken up in 1996 by one local council was the City of Kingston, who distributed an Information Kit for pool owners as part of the Safepool Campaign initiated by the Building Commission, Kidsafe and the Swimming Pool and Spa Association. The information kit contained the following information:

- why does anything need to be done?;
- what is required to be done?;
- what advice is available?;
- who provides this advice?;
- how to get work done; and
- what to do when work is done (included illustrations).

More recently, the Municipal Pool and Spa Safety Guideline (the Guideline) was developed for Councils’ administration and enforcement of *Building Regulations 5.13*
and 5.13A. The Guideline was an initiative of the Victorian Municipal Building Surveyors Group Inc (VMBSG Inc) and the Victorian Swimming Pool and Spa Safety Working Party. The aim of the Guideline was to provide municipal building surveyors with a simplified and uniform procedure for the administration and enforcement of regulation 5.13 and 5.13A of the Building Regulations 1994.

The Guideline consists of three policy options and their associated documentation for Councils to employ: a reactive policy; a proactive policy; and an education policy. It also contains ideas for public awareness, a flowchart for administration and enforcement, a general information sheet, and a guide for pool and spa barriers building regulations 5.13 and maintenance of barriers. The Guideline was launched in August 2003 and is currently under consideration by the Building Surveyors Group.

D. Royal Life Saving Society Australia / Life Saving Victoria

The RLSSA is a prominent organisation in raising awareness of water-safety issues in Australia. The RLSSA has an office in each State and Territory, as well as a National Office. Each year the RLSSA publishes the National Drowning Report, incorporating the number of drownings from each State and Territory.

In Victoria, the RLSSA is now known as Life Saving Victoria (LSV). LSV produces the Victorian Drowning Summary, which in recent years, has been partially funded by Sport and Recreation Victoria (SRV). The additional funding expanded the summary to include a more detailed account of drowning rates and key strategies devised to reduce these rates.

In addition the LSV also runs a number of water-safety programs. Currently, RLSSA / LSV run four national programs aimed at young children. These consist of:

- **Keep Watch**
  A public awareness and education campaign aimed at reducing toddler drowning. The program focuses on four key points: supervision; pool fencing; water familiarisation; and resuscitation.

- **Infant Aquatics**
  Launched in December 2002, this program is aimed at preschoolers and consists of four key components: water familiarisation; water safety; early buoyancy; and swimming development.

- **Swim and Survive**
  Launched in 1982, this program is aimed at school children to teach them swimming and aquatic survival skills.

- **Junior Lifeguard Club**
  A program for 8-15 year olds to introduce them to lifesaving activities.

- **Wet 'N' Wise**
  An education resource kit, which was sent to every Australian primary school. It contains water-safety lesson plans, teaching resources, posters and a board game.

The RLSSA's key program in relation to young children is the national **Keep Watch** campaign, which was launched in 1997. Since July 2000 in Victoria, this campaign has been linked with the **Play it Safe by the Water** campaign by incorporating the
“never take your eyes off” message. The focus of this program is on drowning of young children in backyard pools, in particular the need for parental supervision, adequate safety barriers, water familiarisation and knowledge of resuscitation.

The RLSSA *Keep Watch Information Manual*, developed as resource material for community health nurses, outlines risk factors associated with toddler drowning. These are divided into factors relating to parents and carers, and factors relating to the child. These are presented in Table 3.

**TABLE 3**
**Summary of factors relating to drowning in children under 5 years from RLSSA’s Keep Watch Program**

<table>
<thead>
<tr>
<th>Factors Relating to Parents / Carers</th>
<th>Factors Relating to the Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Absence or lack of supervision.</td>
<td>▪ Young children are attracted to water.</td>
</tr>
<tr>
<td>▪ Parental “vulnerable period” such as when family routine broken (e.g. visitor's call).</td>
<td>▪ Young children have limited strength, judgment and physical coordination.</td>
</tr>
<tr>
<td>▪ Underestimating a young child's capacity to gain access to areas where parental supervision is necessary.</td>
<td>▪ A young child is not able to understand the concept of danger and therefore may have difficulty in understanding that water could also cause harm.</td>
</tr>
<tr>
<td>▪ Unrealistic expectations of a young child's behaviour and self-control.</td>
<td>▪ An active, intensely curious child does not understand the consequences of falling into water.</td>
</tr>
<tr>
<td>▪ False sense of security when each parent or carer mistakenly assumes that the other is supervising the toddler.</td>
<td>▪ Infants and toddlers generally are not coordinated well enough to swim and breathe at the same time, so they cannot be taught effectively.</td>
</tr>
<tr>
<td>▪ False belief that the presence of several children reduces the threat of a child drowning.</td>
<td>▪ Young children who know how to swim are not necessarily water safe or <em>drownproof</em> as they may lose their swimming skills in an emergency.</td>
</tr>
<tr>
<td>▪ False belief that pool safety devices, such as a retractable pool ladder, pool cover, or an inadequate fence provides adequate protection.</td>
<td>▪ Very young children are susceptible to drowning because they are too heavy. (A young child leaning forward to look into water or reach for an object, easily topples over and can drown).</td>
</tr>
<tr>
<td>▪ Lack of knowledge of CPR.</td>
<td>▪ Childhood drowning is a silent event as children do not usually cry out for help.</td>
</tr>
<tr>
<td>▪ Illness (e.g. epilepsy).</td>
<td>▪ Acute injury.</td>
</tr>
<tr>
<td>▪ Disobeying parent / carer’s instructions.</td>
<td></td>
</tr>
</tbody>
</table>

**E. Play it Safe by the Water Campaign**

Since 1998 funding has been made available for water-safety initiatives in Victoria. *Play it Safe by the Water* is a government initiative that aims to increase community awareness of water safety. The theme for the 2003 / 2004 *Who’s looking out for you?*, is a public awareness strategy aired on television and other forms of media. A website has also been established at [www.watersafety.vic.gov.au](http://www.watersafety.vic.gov.au) and contains safety information on a number of aquatic environments, including home swimming pools. Water safety tips for the home consist of:

▪ Supervision means constant visual contact, not the occasional glance;
▪ If you leave the pool or water area, even for a moment, take the children with you;
▪ A swimming pool fence is not a substitute for supervision;
▪ Display a resuscitation chart on your pool fence;
▪ Familiarise children with water by taking them to lessons at the local pool;
▪ Empty paddle pools when they are not in use; and
▪ Empty baths, basins, sinks and troughs immediately after use.
Other aquatic environments and activities addressed by the *Play it Safe by the Water* web site include: the beach; inland waters; water crafts; and fishing. The web site also contains information on rips and learn to swim programs.

**F. Victorian Swimming Pool and Spa Safety Working Party (VSPSSWP)**

As a result of the 17 deaths of young children in the 1999-2000 financial year, 10 of which occurred in private swimming pools, the then Minister for Health and Minister for Planning instigated the Victorian Swimming Pool and Spa Safety Working Party (VSPSSWP) (the Working Party) under the auspices of the Building Commission. The aim of the Working Party was to develop strategies and recommendations to reduce the number of drowning deaths of young children in private swimming pools (VSPSSWP, 2000). It consisted of representatives from the Building Commission, Sport and Recreation Victoria (SRV), the Department of Human Services (DHS), the Royal Life Saving Society Victoria Branch, Kidsafe, Royal Children's Hospital Safety Centre (RCH), Municipal Association of Victoria (MAV), Victorian Local Governance Association (VLGA), City of Stonnington, City of Boroondara, and the Swimming Pool and Spa Association of Victoria (SPASA).

The Building Commission and municipal building surveyors formed a regulatory subgroup to examine existing swimming pool fencing legislation and recommend ways of improving consistency in the areas of interpretation, compliance, education and enforcement (VSPSSWP, 2000). The regulatory subgroup also examined the adequacy of existing legislation and enforcement (VSPSSWP, 2000). The Building Commission, SRV and water safety and community representatives formed an education and awareness subgroup to evaluate existing educational programs, including research (VSPSSWP, 2000).

The Working Party made a number of recommendations and proposed strategies related to both awareness and education and the regulatory framework for safety barriers. To date a number of the recommendations have been implemented, which are outlined in Table 4:

**TABLE 4**
**VSPSSWP recommendations and actions**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of cohesion and cost inefficiencies evident by individual water safety</td>
<td>Adopted &quot;Play it Safe by the Water&quot; as the singular public relations and advertising</td>
</tr>
<tr>
<td>promotion agency initiatives.</td>
<td>proposition to the public</td>
</tr>
<tr>
<td>Minimise the disparity between pools and spas that fall under Australian</td>
<td>Amendments to existing legislation were introduced in November 2001 and July 2002</td>
</tr>
<tr>
<td>Support Local Government in a sustainable pool and spa maintenance program.</td>
<td>A feasibility study based on the introduction of a centralised swimming pool and spa</td>
</tr>
<tr>
<td></td>
<td>database and &quot;Pool Safety Certification&quot; was completed in March 2003 and is pending action</td>
</tr>
</tbody>
</table>

**4. Previous Research**

Paine and Cassell (2003) conducted a survey of Victorian council building surveyors and inspectors. The aim of the survey was to determine the nature and extent of enforcement of pool safety regulations. The survey included 50 randomly selected council-employed or contracted Building Surveyors / Inspectors with responsibility for swimming pool safety at the local government level. The survey was conducted via telephone using a semi-structured interview with an informed consent form.
provided via fax. The survey was carried out between April and May 2003, and where respondents reported that their council conducted routine inspections, they were contacted again in September / October 2003 to confirm the accuracy of the data collected in the first survey (Paine & Cassell, 2003).

Seventy-seven percent of respondents (n=27 of 35) reported that their council recorded the number and location of private swimming pools in their municipality in a database. Ten (29%) of the 35 councils that responded to the survey, eight of which were located in metropolitan Melbourne, met the "good practice" criteria for local government enforcement of pool safety regulations. Ten councils (29%) conducted routine inspections of pools for compliance with safety regulations, 18 councils (51%) had written policy / procedure guidelines covering administration and enforcement of regulations and 32 councils (91%) distributed information on safety regulations to pool owners (Paine & Cassell, 2003).

Paine and Cassell (2003) concluded that young children remain vulnerable to the risk of drowning in private swimming pools in Victoria due to the ad hoc nature of the administration and enforcement of Victorian pool safety regulations by local government. The following recommendations were formulated by Paine and Cassell (2003):

1. Standards Australia Committee CS/34 Safety of Private Swimming Pools to upgrade current standard (formulated in 1993) including consideration of a requirement for 4-sided fencing for new pools, and a flexible and separate standard for existing pools;
2. Victorian Government and Building Commission to consider amending current Private Swimming Pool and Spa Safety regulations to require:
   a. complete an up-to-date registration of all existing and new pools on a centralised or council-controlled database to assist council enforcement and regulations;
   b. regular (biennial) inspection by councils of new and existing pools to ensure ongoing compliance with safety regulations;
   c. 4-sided fencing for new pools;
3. Building Commission to fund an independent baseline audit of the compliance of private pools in Victoria with safety regulations, and periodic audits thereafter;
4. Victorian Councils to agree to a common universally applied target compliance level for inspected pools;
5. Building Commission to investigate funding models to enable Councils to adopt best practice in pool safety enforcement at the local level;
6. All Councils to adopt Victorian Municipal Building Surveyors Group (VMBSG) policy guidelines for a proactive pool safety policy that includes routine inspection and enforcement;
7. Building Commission, Department of Justice (Emergency Services) and Councils should continue state-wide and local private pool safety awareness raising and education activities directed to pool and spa owners which explain their responsibilities and duty of care, with special attention to owners of above ground and inflatable pools;
8. Building Commission in conjunction with Department of Justice to develop a plain language brochure or, preferably, information in other visual media
(CD, video) in English and community languages to explain the pool safety regulations to pool owners in detail with illustrations, to be widely distributed by Councils, private building surveyors, pool and spa retailers and pool product retailers; and

9. Building Commission to investigate the amount and quality of information given to pool and spa customers at point of sale and provide training for salespersons to increase the dissemination of accurate information.

Williamson, Irvine and Sadural (2002) examined drowning deaths of children aged five years and under in New South Wales between January 1995 and April 2001. Thirty-four of the 82 deaths (41.5%) identified from Coroner's records, occurred in a swimming pool. This made swimming pools the most common location of drowning deaths in the study (Williamson et al., 2002). Williamson et al. (2002) reported that in 94.1% of the cases, the child was not engaged in recreational activities in the water at the time of the incident, 75% of the children were male and 40% were in the two year old age group. Eighty-eight percent of the incidents occurred in metropolitan NSW and 70.6% occurred at the child's own home.

Williamson et al. (2002) identified four major factors found to have contributed to these deaths. These included:

1. lack of supervision;
2. location of the child;
3. lack of safety equipment:
   a. pool fencing;
   b. other safety equipment (e.g. house barriers); and
   c. personal protective equipment (e.g. floaties).
4. other:
   a. environmental factors;
   b. medical condition; and
   c. common practices.

These factors were cross-referenced with "precursor events". Precursor events included: child's own behaviour (e.g. entering the pool, breaching a pool fence); adult / another child's behaviour (e.g. leaving open doors / gates, leaving child alone); and combination of events.

An analysis of the interaction between contributing factors and precursor events revealed the following four patterns of events:

1. inadequate pool fencing, lack of direct adult supervision and child's own behaviour [13 cases (38.2%)];
2. pool fence in apparently good condition, lack of direct adult supervision and access being provided to the pool by another child or adult [9 cases (26.5%)];
3. pool fence in apparently good condition, lack of direct adult supervision and child breached pool barrier [8 cases]; and
4. child in water without direct adult supervision and not wearing personal protective equipment [3 cases].

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3 This study included drowning deaths at public swimming pools (n=1).
From this analysis Williamson et al. (2002) identified a number of factors important for future prevention:

- **Age and gender** - one to two year old children and boys;
  - increased mobility coupled with inability to understand the concept of risk, particularly water as a danger;
  - insufficient stage of physical development to swim / rescue oneself from immersion;
  - risky, adventurous or inquisitive behaviour (e.g. taking oneself outside, wandering off, crawling under fences) exhibited by male children which resulted in contact with water.

- **Lack of direct, active adult supervision:**
  - role of vulnerable / busy times (child left unattended when a number of household chores need attending to); and
  - indirect supervision not sufficient to prevent drowning (if parent focused on another activity young children can easily wander away, if in a hazardous location parents not likely to notice the child entering the water, and parent unable to react in time to save the child from drowning).

- **Other behaviour:**
  - leaving open doors and gates resulting from errors/lapses in judgement or underestimating the risk involved.

- **Safety barriers:**
  - absence of fencing, inappropriate usage of gates, general state of disrepair, or faulty design.

Williamson et al. (2002) identified a number of strategies to address these factors were identified. These included:

- focus on the circumstances in which the child becomes vulnerable, rather than on modifying the child's behaviour;

- rather than telling supervisors to be more careful and keep watch 24-7, draw carers' attention to most vulnerable ages and stages of childhood and the circumstances and periods where carers should be especially alert to water hazards (e.g. male children between one and three years during the afternoon);

- behaviour due to poor judgement or hazard awareness could be moderated by programmes that provide education and awareness on childhood drowning risks;

- use of self-closing and self-latching gates, use of pool alarms and promoting swift action when faults are noticed;

- legislation of isolation fencing together with regular inspections; and

- more comprehensive data collection on fencing and compliance of fences/gates with Australian Standard 1926.1.

Williamson et al. (2002) concluded with the following four recommendations in relation to the prevention of drowning of young children in all aquatic environments:

1. provide information and guidance to adult supervisors and carers of small children on the potential risks involved in the different types of water
sources. Information should be provided on the risks of leaving young children unattended while they are exposed to sources of water;

2. adult carers should be alerted to the differences in vulnerability at the developmental stages of the child, between the ages of one and two years and the higher risk of drowning for male children. Information should also be provided on higher vulnerability at different times of the day, such as the late afternoon and during times when adult carers are busy;

3. efforts should be made to reduce access to bodies of water and to ensure that the barriers are adequate for the age and stage of the child. It is also essential that efforts are directed towards ensuring that the barriers installed to reduce access to water hazards are maintained so that they continue to function adequately. In particular, greater effort needs to be directed towards encouraging isolation fencing for private swimming pools and their ongoing and regular inspection and maintenance; and

4. attention should be directed to developing methods for alerting parents if the child comes into close or direct contact with water hazards especially in pools and natural bodies of water.

Blum and Shields (2000) conducted a study into drowning deaths of children aged 1-4 years in domestic swimming pools. Cases were identified from completed investigations at the State Coroner's Office in Victoria between 1992 and 1997. From the analysis of 33 incidents, it was reported that as age increased, the number of drownings decreased, with the majority of deaths being in the one year old age category. Sixty-three percent of the children were male, 46% of the incidents occurred in the summer months and 58% occurred in inground pools (Blum & Shield, 2000).

Blum and Shields (2000) identified inadequate safety barriers and absence of carer supervision as the two main contributing factors in these deaths. In relation to pool fencing, it was reported that the majority of the pools were either unfenced (n=18) or inadequately fenced (n=11). There were only three cases where the fence was compliant with the Australian Standard and in one case it was unknown. The child most often gained entry to the pool via the gate, either because it was inadequate/faulty (n=8) or propped open (n=3). In relation to carer supervision, in 28 of the 33 cases, the child was in the care of at least one of their parents at the time of the drowning. In nearly all of these cases the parent was engaged in home duties or social activities, which interrupted their supervision of the child (Blum & Shield, 2000).

Blum and Shields (2000) made a number of recommendations in relation to education, engineering, enforcement and evaluation, some of which have been implemented since the publication of the article.

The Western Australian Shire of Swan implemented a swimming pool inspection program, using the services of the Royal Life Saving Society, WA Branch. As part of the contractual arrangement between these two organisations, an education and public awareness campaign was conducted prior to the commencement of the inspection program. The aims of the campaign were to:
- increase general public awareness of swimming pool safety in the community;
- inform owners of their responsibility to provide a suitable enclosure to restrict access by young children to the pool; and
- make pool owners aware of the inspection program.

The aim of the campaign was to allow pool owners to rectify any problems prior to the commencement of inspections. It was found that the level of compliance in the Shire of Swan was higher than any other local government area inspected by RLSSA - WA Branch following the campaign. Not only did this result in fewer follow up inspections, it also promoted the inspections in a more positive manner to pool owners. Awareness of other safety issues such as carer supervision and resuscitation was an added benefit of the campaign. Strategies used in the campaign included: over 130 doctors' surgeries and 40 childcare centres displaying the "Keep Watch" promotions material; erection of shopping centre displays in all major centres; workshops with child health nurses to enable them to promote the latest drowning prevention strategies to parents and carers of young children; and media releases submitted to local newspapers highlighting the importance of a home pool inspection.

Ashby, Routley and Stathakis (1998) conducted an investigation into legislative enforcement and compliance for three injury areas, one of which was domestic pool drownings. It was contended that strategies for injury prevention could be placed into four major categories:
- legislation/regulation;
- environmental/design change;
- education/behaviour change; and
- community/organisation based programs.

For drowning and near drowning in Victoria, Ashby et al. (1998) reported that home pools/spas accounted for 51% of deaths, 31% of hospital admissions and 30% of emergency department presentations in the 0-4 year old age group.

The investigation aimed to determine the type and level of data collected on pool fencing, the barriers encountered in relation to both enforcement of pool fencing regulations and collection of enforcement related data (Ashby et al., 1998). It also aimed to determine the role of real estate agents in facilitating pool fencing requirements (Ashby et al., 1998).

A questionnaire was distributed to Municipal Building Surveyors at each of the 78 Victorian municipalities (47 rural, 31 metropolitan). Ten percent of the 226 Real estate agents who advertised properties with pools for sale in “The Age” on Saturday 14 March 1998, were anonymously telephoned to establish the status of pool fencing.

The results of the questionnaire found that the barriers to enforcement identified by Municipal Building Surveyors included lack of owner knowledge, confusion over requirements, pool owner attitude and cost of fencing. They also found that the estimated average municipal compliance with pool fencing regulations was under 60%. Ashby et al. (1998) argued that this finding suggested additional enforcement measures were required.

For the telephone survey, twelve (55%) of the advertised properties were stated as meeting the regulations and two were expected to meet the regulations by the time of
sale. The owners of three further properties were willing to make the pool compliant if it facilitated the sale of the property, and the remaining five (23%) pools did not comply with the regulations.

Ashby et al. (1998) concluded that to ensure pool fencing as a drowning prevention measure, improvements in compliance and increases in enforcement were necessary. It was recommended that residences with non-complying pool fences should be unable to be advertised for sale.

A report by Giles (1995), undertaken to inform an Australian Water Safety Strategy, made a number of safety recommendations compiled from various child safety publications and fact sheets. In relation to drowning of young children, recommendations regarding fencing, resuscitation, supervision, and water safety were made (Table 5).

**TABLE 5**
Summary of safety recommendations from Giles (1995)

<table>
<thead>
<tr>
<th>Category</th>
<th>Recommendations</th>
</tr>
</thead>
</table>
| **Fencing** | - ensure your pool fencing fully isolates the pool from the house;  
- pool fencing and gates should meet the Australian Standard (AS 1926.1-1993):  
  - height: a child resistant fence should be 1.2 metres high with a self-closing self-latching gate;  
  - structure: when designing the fence, considerations should be given to structures such as horizontal supports that could provide a foothold;  
  - gate: the gate should be self-closing and self-latching with the latch 1.5 metres above the ground. Consideration should be given to its location. The gate should be easily opened and closed so it is practical for regular users.  
- self-closing and self-latching gates should never be propped open, but should be kept closed at all times when not in use.  
- furniture and other objects which may be used by children to climb over the fence to the pool area, must not be left next to the pool fence.  
- regular maintenance of the pool fence, and the self-latching and self-closing devices is essential.  
- the type of fence and location of the pool within the fenced area should permit viewing through or over the fence so that the pool area may be viewed from commonly used areas of the house and yard. |
| **Resuscitation** | - learn resuscitation - the first few minutes are vital and knowing basic resuscitation techniques can make the difference in saving a child's life.  
- display an approved resuscitation chart around the pool where it can be easily seen. |
| **Supervision** | - know where your toddler is at all times, if your child is not in sight never just assume he / she is with your partner (or another adult).  
- although a secure pool is the first step, it is no substitute for supervision. If a child is in or around water, it's important to watch them at all times. |
| **Water Safety** | - teach water confidence to young children, but be aware that children cannot be drown proofed. |
| **Other** | - outdoor spas should be fenced the same as swimming pools.  
- empty children's paddling pools immediately after use.  
- above-ground pools should have a removable ladder, which should be removed and safely stored when the pool is not in use. |
5. Aims

The purpose of the current investigation was to examine fatal drowning incidents of 0-5 year old children in private swimming pools and spas in Victoria between January 1997 and December 2001. This investigation aimed to identify and examine the factors contributing to these deaths, in particular, absence of carer supervision and presence of and compliance with safety barrier legislation.

6. Definitions

A swimming or spa pool was defined in accordance with Australian Standard 1926.1 (1993) as:

any excavation or structure containing water and used primarily for swimming, wading, paddling, or the like, including a bathing or wading pool, or spa. (page 5)

There were no incidents of drowning in inflatable or wading pools during the study period.

A safety barrier was defined in accordance with Victorian regulations. Swimming pools and spas installed before 8 April 1991 are required to comply with regulation 5.13 of the Building Regulations 1994, which states:

A safety barrier can be a fence, wall, gate or screen, including doors, gates and windows subject to certain extra requirements.

1. A wall of a building is acceptable if:
   a. every door in the wall is fitted with a self-locking or self-latching device located at least 1.5 metres above the internal floor level; or
   b. the openable part of any window is the wall:
      i. is not less than 2.4 metres above the ground or paving immediately external to the window;
      ii. is not less than 1.5 metres above the floor of the room containing the window;
      iii. has a catch, bolt or lock located not less than 1.5 metres above that floor level;
      iv. has a securely fitted fly screen.

2. A paling fence is acceptable if:
   a. It is at least 1.5 metres in height measured above ground level on the approach side; and
   b. Any gate in the fence is fitted with a self-locking or self-latching device located at least 1.5 metres above the ground level and the self-locking or self-latching device will automatically operate on the closing of the gate and will prevent the gate from being re-opened without being manually released.

3. Fences and gates complying with AS 1926.1 - 1993 "Fencing for swimming pools" are also acceptable. (Building Control Commission, 2000 - page 3)

Swimming pools and spas installed after 8 April 1991 are required to comply with the Australian Standard 1926 "Fencing for swimming pools" as follows:
The Standard stipulates that swimming pool or spa safety fencing must be designed and constructed so as to be non-climbable by young children having regard to the height of the fence and any horizontal climbable members, opening, footholds in the fence, and the operation of self-closing and self-latching gates. The gates must swing outwards from the pool or spa area and the latching device must automatically operate on the closing of the gate and prevent the gate from being re-opened without manual release. (Building Control Commission, 2000)

Safety barrier types were adopted from Barker, Spinks, Hockey and Pitt (2003) outlined in Table 6.

**TABLE 6**  
**Pool fence types from Barker et al. (2003)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter fencing</td>
<td>The boundary of the house allotment has a fence restricting access to the property by a toddler but there is no restriction of physical access for toddlers from the house to the pool.</td>
</tr>
<tr>
<td>House containment</td>
<td>The only fence restricting access to the pool is perimeter fencing but all doors and windows in the house restrict access to the pool by a toddler.</td>
</tr>
<tr>
<td>3-sided fencing</td>
<td>A fence and building wall restricts access to the pool by a toddler but there is restricted access via a house-door from the house to the pool.</td>
</tr>
<tr>
<td>4-sided fencing</td>
<td>A fence or building wall restricts access to the pool by a toddler and there is no direct door access from the house to the pool but may include a window.</td>
</tr>
<tr>
<td>Isolation fencing</td>
<td>As for four-sided fencing except all ancillary structures (not related to the function of the swimming pool) excluded from the pool area and a maximum distance between the pool fence and the edge of the pool is prescribed.</td>
</tr>
</tbody>
</table>

A young child was defined as a child aged up to and including five years of age at the time of their death.

Cases were included in the current study if the drowning incident was unintentional and occurred in a swimming pool or spa on a privately owned residence. Drowning incidents in swimming or spa pools at commercially owned locations, such as motels, hotels, country clubs or caravan parks were not included in the current study. Drowning deaths in internal or spa baths were also not included, see Report 3.