The Children’s Hospital at Westmead

Working Party for the Prevention of Children Falling from Residential Buildings

Outcomes Report

February 2011
Preface

The Children’s Hospital at Westmead has seen an alarming increase in the number of children accidently falling from windows and balconies. Most of these children suffer serious injuries and, sadly, many of them never recover.

Recognising that these tragic accidents are preventable, staff at The Children’s Hospital at Westmead formed a working party in 2009 to address this important issue. Representatives from government and non-government organisations have produced this report, outlining the key issues and recommendations to curb this growing problem.

Nowhere is the old adage that prevention is better than cure more relevant than across the Sydney Children’s Hospitals Network (Randwick and Westmead). Staff are committed to recognising trends in preventable illness and injury and working with the community to keep children safe and well.

The Working Party for the Prevention of Children Falling from Residential Buildings hopes to see a dramatic reduction in the number of children admitted to hospital as a direct result of initiatives outlined in this report. These initiatives focus on education, awareness, regulatory measures for existing buildings and design standards for new buildings.

Successful implementation of the recommendations in this report will require support and co-operation at all levels of government, the private sector, professionals and the community. We look forward to moving forward to protect the health and well-being of children and families in NSW and beyond.

Elizabeth Koff
Chief Executive
Sydney Children’s Hospitals Network (Randwick and Westmead)
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1.0 Executive Summary

In 2008, The Children’s Hospital at Westmead (CHW) identified falls by children from residential buildings as an increasing cause of injury, often associated with serious and fatal outcomes. Further to this, the number of injuries with a high Injury Severity Score\(^1\) was also a factor in identifying the significance of the issue.

As a result, the CHW brought together a number of key people and organisations and established the ‘Working Party for the Prevention of Children Falling from Residential Buildings’. The Working Party met first in June 2009. The Working Party identified several key issues and established a number of ways forward to address the problem. These included the different safety issues associated with the design of new buildings and the more complex and problematic aspects presented by existing buildings, that met minimum safety requirements at the time of construction but cannot match the current and higher standards of the today’s building code and standards.

Accordingly, it may be necessary to develop different strategies for addressing this issue in both new and existing buildings, recognising that existing buildings present the predominant risk. A ‘package’ of approaches may need to be developed to address the different strategies and measures in common.

Through the work and experiences of public health authorities and building regulators in other countries, in particular the USA, the Working Party determined that effective and comprehensive education and safety awareness initiatives would form a key part of the Working Party’s investigations and considerations to establish the most effective solutions to reduce the incidence of child falls and injuries.

The Working Party identified a number of key areas of concern and causes associated with building falls. There were however some areas where the causes of falls and ways to deal with the problem were less clear and further work will be necessary to deal effectively with these particular aspects.

In addition to safety issues associated with the design of new buildings and the complexities of dealing with existing residential building stock, the Working Party also considered the increases in building falls likely to result from urban consolidation policies which will house a greater proportion of the population, including families, in multi-unit residential buildings in the future than at present.\(^2\)

A symposium was held in November 2009 to obtain a broad perspective of the problem and an overview of the issues, views and opinions from key government agencies, non-government organisations and industry groups. The information presented at the symposium and the feedback received assisted the Working Party in identifying the key issues and concerns, the development of potential solutions and, in part, the identification of matters for future research and direction.

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\(^1\) Injury Severity Score is a score assessing anatomical injuries and rating them according to the probability of death and long-term use of resources. A score greater than 12 will mean a significant use of resources such as a hospital stay in intensive care.

\(^2\) NSW Metropolitan Strategy aims to contain 70% of new development up to the year 2031 within Sydney’s existing footprint. This will inevitably mean more high-rise strata title development.
A broad analysis of the issues has allowed the development of a number of recommendations dealing with a range of issues and areas. From these recommendations the Working Party has identified several key areas where it is practical and feasible to allow prompt preventative action to be implemented to address the problem in the short-term, particularly for action in the spring/summer period when fall incidents peak due to windows being open and greater outdoor activity. Other recommendations will require further more detailed consideration and strategies for safety improvements and implementation.

The CHW will pursue implementation of the recommendations through the various government agencies and industry organisations including ensuring that effective and on-going education and awareness campaigns are undertaken.

**Recommendations:**

**Education and awareness**

1. Implement, as a high priority, an education and awareness program focusing on a whole of community endeavour with particular strategies aimed at specific areas of the community. Programs and campaigns should be adequately funded to ensure on-going education and awareness addressing the following areas:

   (a) **Parents and carers, culturally and linguistically diverse communities, grandparents:**
   - Education should focus on window and balcony falls exclusively;
   - Public-awareness raising should occur around the spring and summer months, when falls from windows and balconies are at their peak;
   - Key messages should address the false sense of security often attributed to insect screens. This has been a key message of other similar education campaigns;
   - Any educational approach should be grounded in behaviour change theory;
   - If a certain type of intervention is promoted, that intervention must be available and appropriate. For example, if limiting window openings is promoted, there must be an easy and cost-effective solution for renters, as well as home-owners;
   - Educational material should be disseminated through social services and media that families with young children access, for example, baby health centres, community centres, childcare centres, parenting magazines and non-English speaking newspapers.

   (b) **Industry**
   - Provide educational and awareness services on child safety issues and window safety products to window manufacturers through the Australian Window Association;
• Provide educational and awareness services on child safety issues and window safety to the Real Estate Institute of Australia and the Institute of Strata Title Management;

• Seek support from key building-related associations such as:
  - Master Builders Association;
  - Housing Industry Association;
  - Building Institute of Australia;
  - Australian Institute of Architects;
  - Building Designers Association of NSW;
  - Stair and Balustrade Association of Australia; and
  - Australian Institute of Building Surveyors,

  to encourage and promote industry-based safety enhancements in residential buildings particularly in regard to the design of windows and balustrades.

(c) Government Agencies

• Education and awareness regarding window and balcony falls should be part of an adequately funded, ongoing and dedicated campaign; and

• The Sydney Children’s Hospitals Networks to have a leadership role in education and awareness.

2. Seek the support of the Australian Window Association to promote window safety to their membership and to ensure a range of pre and retrofit window barrier devices such as window guards, durable and sturdy insect screens, locking or other safety devices are available to window manufacturers including encouraging manufacturers to incorporate these devices on all windows as standard features.

Regulatory considerations (existing buildings)

3. The Residential Tenancies Act 2010 should be amended to require landlords to provide safety devices (window guards, durable and sturdy mesh screens, locks, window opening limiters) or other permanently affixed devices on openable windows located above the ground floor (i.e. window sills more than 3 metres above an external surface below) to allow occupants to limit openings to a maximum of 100mm.

4. The Strata Schemes Management Act 1996 should be amended to require owners corporations in residential buildings to have all common property openable windows fitted with safety devices (window guards, durable and sturdy mesh screens, locks, window opening limiters) or other permanently affixed devices on windows located above the ground floor (i.e. window sills more than 3 metres above an external surface below) to allow occupants to limit openings to a maximum of 100mm.
5. That a review of relevant planning and building laws be undertaken to determine whether to require safety upgrading of windows and balustrades in existing residential buildings, including residential buildings undergoing alterations or upgrading works to minimise the risk of child falls, in parallel with seeking amendments to the Building Code of Australia (Recommendation 7).

**New buildings**

6. Monitor the outcomes of the review of the Building Code of Australia (BCA) regarding the fall safety provisions currently being undertaken by the Australian Building Codes Board (ABCB) including the ‘Slips, Trips and Falls’ report produced by Monash University for the ABCB.

7. Seek the support of the Australian Building Codes Board to undertake a review of the BCA to specifically consider the issues associated with child falls with a particular focus on window and balcony falls. The review should consider whether:
   
   (a) windows in residential buildings should be required to be fitted with appropriate barrier systems such as window guards or window opening limiting devices to allow occupants to restrict openings to a maximum of 100mm; and
   
   (b) the current balustrade provisions should require a greater minimum height and openings be restricted to a maximum of 100mm.

**General**

8. Seek support from Standards Australia to review AS 2047 – ‘Windows in buildings – selection and installation’ to consider incorporating provisions within this Standard to require barrier systems such as window opening limiting devices and locks to be fitted to windows as standard features.

9. Encourage the building design and construction sectors through respective industry institutes and associations to incorporate standard child safety features (window and balustrade designs) in all residential buildings.

10. Seek the assistance of the Commonwealth government to require all State and Territory governments to collect comprehensive incident and injury data, particularly where children are involved, to track national trends regarding building falls and design elements which may have contributed to falls and injuries.

11. Develop a comprehensive hospital-based system for the reporting of building-related fall incidents and injuries involving children to State and Territory building regulators including the national administrator of the Building Code of Australia, the Australian Building Codes Board, to allow for better tracking of fall trends in the built environment.

12. Undertake further research focusing on fall incidents involving balconies and decks including establishing the key causes for such falls. The research should determine the most appropriate and cost-effective methods and systems available to improve safety of existing balustrades in older buildings that do not meet today’s building standards.

13. Undertake a detailed review of the ‘Slips, Trips and Falls’ Report prepared by the Accident Research Centre - Monash University, to determine if its findings and recommendations can further benefit safety enhancements in buildings particularly window and balustrade designs to minimise child falls.
14. Give consideration to the potential impacts (increased child falls) from multi-unit residential buildings as a direct outcome of more families with young children residing in this form of housing as a result of increased housing densities in urban areas.

15. That consideration be given to developing a comprehensive web-based home (child) safety audit assessment system which should include a section on fall risks and ways to improve safety.

16. Seek the assistance of the Local Government and Shires Association of NSW to promote to their members (local councils and shires) the importance of safety awareness relating to child fall risks in residential buildings and disseminate safety information to local communities.
2.0 Background

2.1 Purpose

In 2008, The Children’s Hospital at Westmead (CHW) identified child falls from residential buildings as an increasing cause of injury, often associated with serious and fatal injuries as revealed by the number of injuries with a high Injury Severity Score.³

As a result, the Centre for Trauma Care, Prevention, Education and Research at CHW, together with the Kids Health promotion unit at CHW, established the ‘Working Party for the Prevention of Children Falling from Residential Buildings’.

This report aims to highlight the problem of children falling from residential buildings and proposes a number of ways forward to address the issue. The report and its recommendations are aimed at a broad audience including relevant government agencies, building related industries and community organisations to ensure that they are made fully aware of the problem to enable appropriate steps to be taken to deal effectively with this important issue.

The establishment of the Working Party and its work has been endorsed by the NSW Commission for Children and Young People. The Working Party believes that the findings and recommendations contained in the report are best directed to the general public, families, relevant government agencies, building related industries and community organisations as a way of improving safety awareness and features in residential buildings in which children reside or visit.

It is hoped that the general community, parents and child carers will benefit from the findings of the report and that education and general public safety awareness will be enhanced resulting in safety improvements to all residential buildings.

2.2 Establishment of the Working Party

Child falls from windows and balconies were identified by the CHW as an increasing problem, often associated with serious and fatal injuries. The Centre for Trauma Care, Prevention, Education and Research at CHW, together with the Kids Health promotion unit at CHW, therefore sought interest from several key government bodies, institutions and commercial organisations to be part of a taskforce to deal with the problem. As a result the Working Party was established in June 2009.

The Working Party identified several key issues and established a number of ways to address the problem. This included considering the different safety issues associated with the design of new buildings and the more complex and problematic aspects presented by existing buildings that, at the time of their construction, met minimum safety requirements but do not match the current and higher standards of the today’s building code and standards. A symposium was also seen as a way of gathering together other key

³ Injury Severity Score is a score assessing anatomical injuries and rating them according to the probability of death and long-term use of resources. A score greater than 12 will mean a significant use of resources such as a hospital stay in intensive care.
organisations and individuals to work through the problem, identify the issues and assist in the development of solutions.

On the 28 October 2009, the then current Premier of NSW, Nathan Rees, announced an education campaign to highlight the potential fall risks for children around the home. The Premier supported the initiatives of the taskforce (now the Working Party) and the upcoming symposium as a way of working through the issues including reviewing current regulations and considering whether legislative change is necessary.

2.2.1 Terms of Reference

The primary purpose of the Working Party is to provide a consultative forum to effectively address the issue of children falling from residential buildings and to seek a reduction in trauma admissions to hospitals, particularly in NSW. The full terms of reference for the Working Party are attached at Appendix A.

2.2.2 Organisations represented

The Working Party was made up of a group having a broad range of skills and experience including child trauma treatment, building control and enforcement, building regulation, statute law, child safety, child safety products and public relations. The following organisations were represented:

- The Centre for Trauma Care, Prevention, Education, & Research (CTPER), CHW
- Kids Health, CHW
- Public Relations, CHW
- University of New South Wales, Faculty of Law
- NSW Department of Planning
- Sydney City Council
- Tee-Zed Pty Ltd
- Bunnings Hardware

A full list of individual members and other contributors to this report can be found at Appendix B.

The NSW Commission for Children and Young People were also invited to have representation on the Working Party however the Commission declined requesting that they be kept informed of the Party’s work and progress via receiving minutes and other associated information.

2.2.3 Symposium

A symposium was held on 25 November 2009 to help raise awareness of the issue, seek information and comments from attendees and also discuss options to deal with the issue. The symposium structure consisted of a plenary session in the morning, followed by a workshop in the afternoon. The program and ‘flyer’ for the symposium can be found at Appendix C.

Some 40 people attended the symposium representing government and non-government organisations (see Appendix D for a list of invitees).
2.3 Statistics – incidents, injuries and other information

2.3.1 Overview

Until recently there has generally been an absence of co-ordinated and comprehensive information collection by hospitals treating child injuries resulting from building fall incidents. This Report therefore focuses solely on statistics gathered by the CHW from 1998-2008.

Data held by the CHW indicates that fall incidents are linked to two key areas of buildings: windows and balconies/decks. The CHW data shows an approximate 50/50 split in incidents for these two areas. Detailed statistical data is summarised in 2.5.1.

2.4 Matters considered by the Working Party

The Working Party considered several areas related to or causing building falls and ways to improve building safety. The following matters were investigated and considered:

(a) Overseas experience

A number of safety awareness campaigns and legislative changes in the US dealing with window falls were considered including programs implemented in New York, Boston and Minnesota.

(b) The NSW building laws

The NSW building legislation and the national building code (the Building Code of Australia) relating to controls to prevent or minimise window and balcony falls were reviewed and considered.

(c) Education and safety awareness

The benefits and effectiveness of pursuing education and awareness campaigns to improve building safety formed a key part of the Working Party’s consideration of the issues. A significant number of migrant families rent and reside in multi-unit housing. Special consideration relating to greater fall risks for this group was therefore given including the effectiveness of targeted education and awareness programs.

(d) Strata Schemes Management Act and Residential Tenancies Act

The application and scope of the SSMA and RTA to address fall safety risks in residential buildings including strata-titled buildings were examined as a possible option for dealing with safety issues, particularly for windows.

(e) New and existing buildings

The NSW planning and building laws relating to new and existing buildings were reviewed to assess their scope and application to make improvements in child fall safety in residential buildings including the need to consider introducing new controls to require the fitting, and retrofitting of safety features on windows.
Building fall statistics

Comprehensive nation-wide statistics on injuries and deaths associated with falls from residential buildings were found to be generally inadequate. Statistics compiled by the CHW over a ten year period were used therefore to obtain an understanding of fall incidents including age and gender details and injuries sustained.

Symposium

A symposium was held to bring together representatives from relevant government agencies, non-government organisations, building industry groups and childcare organisations. The symposium aimed to identify the various issues and causes of falls and gather information and feedback from participants to assist in the development of strategies to deal with the problem.

International building standards

A number of international building codes were reviewed to explore how other countries manage the problem of child falls through their building controls.

Safety products

Proprietary window safety products and systems were reviewed including giving consideration of the effectiveness, ease of installation, cost and any implications when used in tenanted premises.

The findings of these investigations then informed the Working Party’s recommendations (refer to 6.2).

2.5 Building falls - what is the problem?

The incidence of people including children falling from residential buildings is not a recent phenomenon. Building falls have been occurring nation-wide for many years resulting in serious injuries and deaths. The number of incidents involving children at a national level and the severity of injury is however not fully clear. The CHW through the treatment of children presenting to the hospital with fall related injuries has however noted in recent times an increase in the incidence of falls and injury.

Statistics on building fall related injuries have been collected by the CHW and are detailed in the following section. It is important to recognise that the fall incidents and injuries tabulated only relate to children presenting to the emergency department of one hospital. Many children injured as a result of building related falls attend hospital emergency departments and other health professionals across the nation. As noted above, detailed and accurate figures on the number and severity of injuries is not available however the CHW statistics provide an indicator of the likely significance of the problem throughout Australia.

2.5.1 Falls from windows and balconies – some statistics

The incidence rate for falls from windows and balconies/decks is approximately equal (see Figures 3 and 4).
Figures 2 - 4 show that falls from windows and balconies are greatest in young children aged between 2 and 4 years. Toddlers are curious and learning to explore their world, however they lack the ability to judge potentially dangerous situations, hence are at a greater risk of injury. Toddlers are also top heavy, making them more prone to fall injuries.
CHW Admissions for Falls from Balconies, by age, 1998-2008

Figure 3.

CHW Admissions for Falls from Windows and Balconies, by age group, 1998-2008

Figure 4.
Figure 5 clearly shows that fall incidents peak in the summer period. This can be attributed primarily to the warmer weather allowing or requiring windows to be open during both day and/or night and a greater level of outdoor activity which can lead to opportunities for falls from balconies and decks.

2.5.2 Gender: incident ratio

Statistics show that among children aged less than 14 years, boys are at a higher risk of injury than girls. This may be explained by boys being more likely to engage in more risk taking behaviour and rough play compared to girls. In the CHW building falls injury statistics collected between 1998 and 2008, boys were over represented, with a male/female ratio of 2:1.
### 2.5.3 Falls from windows and balconies – data tables

<table>
<thead>
<tr>
<th></th>
<th>Window</th>
<th>Balcony</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total falls</strong></td>
<td>91</td>
<td>78</td>
</tr>
<tr>
<td>Male</td>
<td>59</td>
<td>50</td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>28</td>
</tr>
<tr>
<td>Deaths</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Age range (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 4</td>
<td>59</td>
<td>55</td>
</tr>
<tr>
<td>5 - 8</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td>9 - 12</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>13 - 16</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>ISS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;15</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>12 - 14</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>9 - 11</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>&lt;9</td>
<td>56</td>
<td>45</td>
</tr>
</tbody>
</table>

**Figure 6.** Summary: Falls from windows & balconies, 1998 to 2008

<table>
<thead>
<tr>
<th>Surface finish</th>
<th>Window</th>
<th>Balcony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>Grass, garden, vegetation</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>Deck</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Not documented</td>
<td>43</td>
<td>57</td>
</tr>
</tbody>
</table>

**Figure 7.** Surface type involved in impact injuries
<table>
<thead>
<tr>
<th>Area/floor level</th>
<th>Window</th>
<th>Balcony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls through insect screens</td>
<td>19</td>
<td>-</td>
</tr>
<tr>
<td>(from any height)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground floor</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>1st Floor</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>2nd Floor</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>3rd Floor</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>4th Floor</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Not documented</td>
<td>7</td>
<td>19</td>
</tr>
</tbody>
</table>

Figure 8. Height of fall from windows & balconies/decks

2.5.4 Falls from windows and balconies – Injury statistics

Fall from windows: ISS* > 15  17 / 92 (18.5%)  ~ 1 in 5 - Deaths 1
Fall from balconies: ISS* > 15  14 / 76 (18.4%)  ~ 1 in 5 - Deaths 1

* Injury Severity Scores (ISS) have been used internationally in hospitals to assess the severity of injury to a person. The three most substantial injuries, in three regions of the body, are scored on a scale of one to five. These three numbers are then squared and summed to give the final ISS. For example a child with an injury to the head will have an AIS (Abbreviated Injury Scale) of 5, an injury to the abdominal area an AIS 3 and an injury to a limb (AIS 2), would receive an ISS score of 38.
<table>
<thead>
<tr>
<th>Body area</th>
<th>Injury type</th>
<th>Number (n)*</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head (n= 40)</td>
<td>Severe HI (Cranial)</td>
<td>17</td>
<td>16.5</td>
</tr>
<tr>
<td></td>
<td>Skull</td>
<td>23</td>
<td>22.3</td>
</tr>
<tr>
<td>Skeletal (n=12)</td>
<td>Extremity</td>
<td>9</td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>Spinal# (vertebral)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pelvic</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Abdominal (n=1)</td>
<td>Splenic</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chest &amp; Pelvis</td>
<td>Chest (hae/thorax, pne/thorax)</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>Chest</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>External</td>
<td>Lac, cont. abr.</td>
<td>46</td>
<td>44.8</td>
</tr>
</tbody>
</table>

Figure 9. Types of injury - Falls from windows & balconies, 1998 to 2008

2.5.5 Length of hospital stay (mean)
- Falls from windows: 3.3 days
- Falls from balconies: 3.9 days

2.5.6 How do falls occur?

Accident information obtained from parents of injured children presenting to CHW indicates a number of factors contributing to the fall incidents. Some examples include:

- Playing in bedroom with sibling or left unattended by parent;
- Climbed onto furniture and pushed insect screen or opened window;
- Jumping on bed, bunk bed near open window;
- Pushed by sibling;
- Sitting on window sill, reading or looking out, losing balance; and
- Upon waking up became anxious to get to dad or mum working in the garden.

Detailed information regarding the specific design features of the buildings or structures involved in the incidents such as window sill height, window design, type of insect screen (including fixing method) and the height and design of balustrades on balconies and decks is not comprehensive. It is therefore difficult to establish clear links of fall incidents directly or indirectly to a specific safety deficiency of a building element and thus the need to review the provisions for existing and new buildings.
In each case the available evidence however indicates that in the majority of cases both the actions of the child (climbing or jumping) or parent (allowing furniture to be placed near open windows or balcony balustrades) in conjunction with specific building components i.e. low sill or balustrade height, fully open or freely openable window and window insect screens that indicate a false sense of security, contributed to the incidents.

The placement of furniture near openable windows that are not fitted with latching or locking devices and balustrades on balconies and decks is a significant child safety issue. Bedrooms are of particular risk as often children are left unsupervised.

Furniture is also often placed near or beneath windows due to lack of sufficient room space to allow furniture to be positioned away from openable windows. This problem can be amplified when more than one child is accommodated in a bedroom.

Some examples of issues are shown in the following figures.

Figure 10. Large open windows with low sill heights are potentially dangerous for children. Many older buildings have windows with low sills.
The inadvertent placement of furniture, in this case toy containers, under openable windows can contribute to fall incidents.

Insect screens fitted to windows can provide a false sense of security for children. Unless specifically designed to withstand lateral loads such as a child or adult falling or pushing against them (see Figure 35) screens cannot be used as safety barriers as they are typically made from lightweight extruded aluminium frames with mesh attached using flexible rubber or PVC splines (see Figure 13).
**Figure 13.** A typical aluminium insect screen. In this example the mesh is held in place within the frame using flexible rubber or PVC splines inserted in a rebate. The fixing relies on friction between the spline and the rebate surfaces to hold the mesh in place. The mesh and plastic clips holding the screen to the window frame are not designed to withstand lateral loads such as a child pressing or falling against screens. Diagram: Courtesy of the Australian Window Association.

**Figure 14.** Flexible screens held in place using Velcro strips are effective and easily installed insect barriers however they are not designed to withstand pressure applied by a child pressing against them. The mesh can also be easily released from the frame. Photo: Courtesy of Flexiscreens
Figure 15. A bathroom with openable windows (sill height less than 865mm) and a child’s chair placed below the window. Baths and toilet pans near windows can allow easy child access to windows.

Figure 16. Built-in window seats in older houses also allow easy access to windows.
Figure 18. The positioning of movable planter boxes near balustrades creates a stable and easy climbing feature for children.

Figure 17. Furniture placed on balconies and decks significantly increases the risk of children climbing and falling from buildings.
Older buildings may also be contributing to building falls. For example, many older buildings do not have safety features that are required by today’s building code, the Building Code of Australia (BCA). Older buildings often have low window sills (without barriers of at least 865mm above the floor surface) and balustrades which may not be of sufficient height and/or have horizontal climbing elements that can allow easy climbing and access by children (Figure 21).
Figure 21. A residential flat building (circa 1970s) with balustrading that complied with the requirements of the time. The current building code has changed in three areas: minimum height (1000mm); maximum openings (125mm); and horizontal climbing elements (restrictions on their use).

2.5.7 Multi-unit and high-rise residential housing

The accommodation of families in multi-unit and high-rise residential accommodation may be a contributing factor to the increased incidence of building falls and the severity of injury. Census data from the Australian Bureau of Statistics show that for the Sydney Statistical Division for the year 2006, one (1) in 8.56 families resided in multi-unit housing (flats, units, apartments). This compares to one (1) in 9.3 families in 1996. A summary of the ABS data is set-out in Figure 22 below.

<table>
<thead>
<tr>
<th>Census year</th>
<th>Total number of family households* (all dwelling types)</th>
<th>Number of family households* residing in multi-unit housing</th>
<th>Ratio of multi-unit households to total family households*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>631,861</td>
<td>67,698</td>
<td>1:9.30</td>
</tr>
<tr>
<td>2001</td>
<td>662,723</td>
<td>72,719</td>
<td>1:9.11</td>
</tr>
<tr>
<td>2006</td>
<td>679,252</td>
<td>79,296</td>
<td>1:8.56</td>
</tr>
</tbody>
</table>

Figure 22. Australian Bureau of Statistics – Sydney Division – census periods 1996, 2001 and 2006 - Family households residing in multi-unit residential dwellings (flats, units, apartments). *For the purpose of this report ‘family households’ consists of couples and single parent families with children. ‘Children’ are in the age range 0-14 years.

As Sydney’s population continues to grow there will be a need to accommodate a greater number of people including families with young children in multi-unit residential buildings, including apartment buildings. This will inevitably mean more high-rise strata title development.
2.5.8 Single dwelling houses

Accurate and detailed data regarding the number of single storey and multiple level (2-3 storey) single dwelling house construction in NSW is not readily available. Detailed information for this area of housing construction would be valuable to determine if there are any trends in fall incidents from upper storeys of multi-level single dwellings. The information would also be beneficial in providing an indication of potential future impacts associated with falls from single dwelling housing.

Notwithstanding the lack of detailed formal data in this area, a number of large project home builders were contacted to gain a general understanding of the number of one and two-storey housing being constructed. The information obtained reveals that for the Sydney metropolitan region two-storey housing is the dominant form of housing. There are a number of reasons for this including smaller lot sizes and consumer demand for larger living spaces and specialty use rooms such as entertainment rooms resulting in greater overall floor areas which can only be accommodated by houses having more than one storey.
3.0 Overview of the building control framework

3.1 Building regulation in NSW and its application to occupant (child) safety

The principal statute regulating planning and building control in NSW is the *Environmental Planning and Assessment Act 1979* (EP&A Act). Planning and building regulation including enforcement is enabled under this Act and also through the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). The national building code, the Building Code of Australia, gains its authority and implementation powers in NSW through this legislation.

3.1.1 New buildings and new work in existing buildings

Building design and construction is controlled principally through the Building Code of Australia (BCA) including referenced Australian Standards which is applicable to the design and construction of new buildings and to new building work undertaken in existing buildings. The BCA is a performance-based document that prescribes the outcomes that must be achieved in a set of performance requirements. Compliance with the Code can be achieved through several pathways: compliance with the Deemed-to-Satisfy (DTS) provisions; development of an alternative solution; or a combination of alternative solution and DTS.

3.1.2 Existing buildings undergoing modification

The BCA is not generally applied retrospectively to existing buildings. The legislation only requires new building work in existing buildings to comply with the BCA. This is due to the individual nature of existing buildings, the physical constraints of existing structures and the potential impact of continuously upgrading a building.

However, under the legislation (Clause 94 of the *Environmental Planning and Assessment Regulation 2000*) when a building undergoing modifications in specified circumstances, a consent authority, such as a local council, may (among other things) consider the need for the existing building to be upgraded to meet the current BCA in part or in full. The provisions allow discretion to determine the extent of any upgrading that may be considered necessary. Fall safety issues, although not specifically referenced, are matters that could be considered.

3.2 The Building Code of Australia

The BCA is maintained and updated by the Australian Building Codes Board (ABCB) which is hosted and partially funded by the Commonwealth Government through the Department of Innovation, Industry, Science and Research. The ABCB is a joint initiative of all levels of government in Australia and includes representation from the building industry. The ABCB was established under an Inter-Government Agreement of all State and Territory governments and the Commonwealth.
The mission of the ABCB is to address issues relating to health, safety, amenity and sustainability by providing for efficiency in the design, construction and performance of buildings through the BCA and the development of effective regulatory systems. Safety aspects include building fall issues such as children falling from windows and balconies.

Technical assistance and advice is provided to the Board through the Building Codes Committee (BCC) which has representation from the Commonwealth and each state and territory building administration, local government, non-government organisations and industry groups. The BCC plays an important role in assisting the ABCB in meeting its obligations under the Council of Australian Governments (COAG) Guidelines and the Inter-Government Agreement.

3.2.1 Seeking change to the BCA

The BCA undergoes continual review, change and updating with new editions issued on 1 May each year. Change to the BCA can be sought by individuals and organisations through the submission of a ‘Proposal for Change’ (PFC) form.

Proponents of change are required to provide justification to support their proposal which must address aspects such as:

- clear evidence of the existence of a problem;
- how the proposal for change is expected to solve the problem; and
- what alternatives to regulation have been considered, and why they are not preferred.

PFCs are considered by the BCC and if a proposal is considered to have merit, the BCC may recommend that changes be included in the next public comment draft of the BCA. When considering more complex proposals, the BCC may recommend that the proposal be included on the ABCB’s work program for further research, analysis and consultation.

3.2.2 What are the key BCA controls currently regulating the design of windows and balustrades?

The BCA specifies when a fall barrier must be provided and the standard that a barrier must meet. The relevant controls under Volume One (public, industrial, commercial and multi-unit residential buildings) are set-out in Performance Requirement DP3 and in Part D2 of the Code which prescribes the minimum ‘Deemed-to-Satisfy’ provisions. Similar provisions are set-out in Volume 2 of the Code which applies to single dwelling houses and minor structures. The following is a brief overview of the Volume One provisions:

- **Performance Requirements DP3 (Volume One)**

  *Where people could fall—*

  (a) 1 m or more —
  
  (i) from a floor or roof or through an opening (other than through an openable window) in the external wall of a building; or
  
  (ii) due to a sudden change of level within or associated with a building; or

  (b) 4 m or more from a floor through an openable window,
a barrier must be provided which must be —

(c) continuous and extend for the full extent of the hazard; and
(d) of a height to protect people from accidentally falling from the floor or roof or through the opening; and
(e) constructed to prevent people from falling through the barrier; and
(f) capable of restricting the passage of children; and
(g) of strength and rigidity to withstand —
   (i) the foreseeable impact of people; and
   (ii) where appropriate, the static pressure of people pressing against it.

- The Deemed-to-Satisfy Provisions (summarised)

Windows

Where a person, including a child, could fall through an openable window located more than 4 metres* above a surface below, a balustrade or barrier** must be constructed with a height of not less than 865 above the floor beneath the window and any opening in the barrier must not allow a 125mm sphere to pass through it.

Balustrades (balconies and decks etc)

- Minimum height of 1000mm;
- Openings in the barrier must not allow a 125mm sphere to pass through; and
- Where the balcony or deck is more than 4 metres* above a surface below, the barrier must not incorporate horizontal or near horizontal (climbing) elements between 150mm and 760mm above the floor surface.

Notes: *The Australian Building Codes Board (ABCB) currently has a project on its work program that in part addresses the fall risks for children. The project is formed around a report, The relationship between slips, trips and falls and the design and construction of buildings, produced by the Accident Research Centre at Monash University.4 At the time of finalising this report a number of recommendations in the Monash Report dealing with fall issues were being considered by the ABCB for incorporation in the BCA. One of the proposed changes is to reduce the 4 metre height provision applying to windows and balconies/decks to 1 metre.

**A balustrade or barrier under an openable window can be constructed as the wall beneath the window sill or a fixed window pane, among other solutions.

3.3 Other Australian standards

Throughout the duration of the Working Party’s deliberation of the issues the aspect relating to an acceptable safe maximum opening for barriers was discussed and considered at length.

4 J. Ozanne-Smith, J. Guy, M. Kelly & A. Clapperton, Monash University Accident Research Centre - Report No. 281 [2008].
The BCA currently nominates a maximum aperture for barriers to prevent a 125mm sphere passing through it, however there are several Australian Standards that nominate smaller dimensions from as narrow as 89mm for windows and balustrades in housing (AS 4226:2008) to 100mm for openings in swimming pool safety fencing. Details of several Standards dealing with child safety and other related Standards which nominate various sizes for openings can be found at Appendix E.

To obtain clarification or the basis for the variation in dimensions between several relevant Standards the Working Party sought comment from Standards Australia. The following information was received:

- **AS 4226:2008 – Guidelines for safe housing design**

The Chair of the Committee for this Standard has advised that the Standard is primarily used for educational purposes highlighting that it uses non-mandatory language and is based on the latest research available. The maximum opening dimension of 89mm* for rectangular window and balustrade openings is to prevent head entrapment from feet-first and the Committee adopted this dimension based on the work and findings of the Committee responsible for AS 4685.1.

The 89mm dimension was strongly endorsed by the National Safety Council of Australia representative as there have been recorded cases of head entrapment in openings of 100mm.

- **AS 1926.1: 2007 – Swimming Pool safety – Safety barriers**

A longstanding member of this Committee is not aware of the basis of the 100mm maximum dimension for pool barrier fencing however it is likely to have come from earlier studies and research on the size of a toddler’s head taking into account the flexibility of some pool barrier elements.

- **AS 4685.1:2004 – Playground equipment – General safety requirements and test method**

The 89mm maximum dimension referred to in AS 4226:2008 is based on work undertaken by the European Committee for Standardisation (CEN), Standards Committee TG 136 for EN 1176-1:2008 - Playground equipment and surfacing – Part 1: General safety requirements and test methods and AS 4685:2004.

The CEN standard specifies dimensional requirements for test probes to prevent head and torso entrapment (head: maximum circular dimension of 130mm diameter; and torso (feet-first): rectangular dimensions of 89mm and 157mm). The test probe template for rectangular openings has been adopted by AS 4685:2004* however for circular openings the Australian Standard requires openings to be between 100mm and 230mm to prevent head entrapment. The test probe templates can be found in Appendix D of the Standard.

**Note:** *Refer to Section 3.6 - ‘Discussion and summary’ for clarification regarding dimensions of openings and the focus of the Working Party’s consideration of the issues and recommendations.*

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3.4 International building standards: windows and balustrades

To obtain an understanding of fall-prevention building standards in other English-speaking countries with similar building issues and standards as Australia a review of the building codes that apply in the United Kingdom, New Zealand, Singapore and Canada was undertaken. A summary is provided below.

**United Kingdom**

**Barrier construction:**

Balustrades on external balconies: 1100mm. Where buildings are likely to be used by children under 5 years openings in barriers must not exceed 100mm.

**Openable windows:**

Minimum sill height: 800mm. No provisions to require windows to have guards or restricted openings.

**New Zealand**

Performance provision (g): Restrict the passage of children under 6 years of age when provided to guard a change of level in areas likely to be frequented by them.

**Barrier construction:**

Balustrades on balconies/decks (single dwelling houses): 1000mm. Other buildings: 1100mm. In housing and other areas likely to be frequented by children under 6 years openings must not exceed 100mm.

**Openable windows:**

In housing and other areas likely to be frequented by children under 6 years of age a window with an opening width of less than 1000mm shall have either:

(a) the lower edge of the opening at least 760mm above the floor level; or
(b) a restrictor fitted to limit the maximum opening so that a 100mm diameter sphere cannot pass through it, or
(c) a 760mm high barrier protecting the opening of solid construction or with vertical members throughout its full height.
Singapore

Barrier construction:

Balustrades (generally): 1000mm. Openings in barriers must not exceed 100mm.

Openable windows:

Minimum sill height: 900mm. No provisions to require windows to have guards or restricted openings.

Canada

Barrier construction:

- Exterior landings (general): 1070mm.
- Exterior balconies (single family dwelling units): 900mm.
- Exterior stairs and landings more than 5 metres above a surface below: 1500mm.
- Openings (where children may be present): 100mm.

Openable windows*:

Minimum sill height (or guard): 1070mm above floor level or mechanisms capable of limiting a window opening to no more than 100mm where the bottom section of openable portion of a window is higher than 1800mm above an external surface below.

*Changes to the National Canadian Building Code relating to window designs and the risks posed to children falling through openings came into effect in November 2010. The changes apply to new construction only and do not require the retrofitting of window safety devices in existing residential buildings.

It is important to note that all four building codes specify a maximum opening dimension of 100mm.

3.5 Monash University – Accident Research Centre – ‘Slips, Trips and Falls Report’

In 2008 the Accident Research Centre at Monash University was commissioned by the ABCB to undertake a study of the incidence of slips, trips and falls and their relationship to the design and construction of buildings. The objective of the study was to review and analyse Australian fall injury and fatality data and the international scientific literature in order to establish whether the existing provisions of the BCA provide an acceptable minimum standard of safety relating to the incidence of slips, trips and falls in buildings.

The Monash Report and its findings were reviewed and considered by the ABCB. As a result, a number of amendments were proposed and incorporated into a public draft document released in June 2010. A Regulatory Impact Statement (RIS) was also released later to assess the impact of the proposed amendments.
The Working Party reviewed the Monash Report to identify those recommendations that may relate to BCA matters dealing with window and balustrade designs including any recommendation relating to the maximum size of openings in barriers. The Report has recommended a number of changes to address fall risks from balconies and windows however this primarily relates to fall height and the current BCA provisions i.e. reduction of the 4 metre height control to 1 metre (refer to the ‘note’ under 3.2.2).

At the time of finalising the Outcomes Report a consultation draft of the RIS was available for public comment and it is intended to be followed by a Final RIS that considers the impact of proposed amendments to the BCA. A submission on the draft RIS was lodged by the CHW and highlighted the work of the Working Party in the area of window and balustrade design and fall risks to children.

It is worthy of noting that the Monash Report highlights that children under 9 years of age account for 5.3% of all falls in the home which represents the highest proportion of slip, trip and fall injuries sustained in buildings of any age group under 65 years.\(^7\)

The Monash Report makes no specific recommendation to change the current BCA provisions applying to barriers including the maximum 125mm aperture control applying to openings in barriers, which includes windows in certain circumstances. However Appendix 2 of the Report deals with matters affecting likelihood of falls and harm outcome and an aperture size of 100mm is identified as a relevant matter for consideration (see below for an extract of Appendix 2 from the Report).

### APPENDIX 2 - Relevant matters affecting likelihood and harm outcome

**Falling between levels**

For windows, matters relevant to the likelihood of an occurrence include:

- Opening limiters – no restriction preventing windows being opened more than 100mm.

For balconies, landings, roof parapets, basement wells, etc, matters relevant to the likelihood of an occurrence include:

- Openings in guarding – openings greater than 100mm.

The Working Party specifically considered this aspect as part of its deliberations in establishing and recommending a safe maximum dimension for openings of windows and window guards.

### 3.6 Discussion and summary

Three Australian Standards and four international building codes were reviewed, of which five specify a maximum aperture of 100mm for openings. Two Australian Standards (AS 4226:2008 and AS 4685:2004) however specify a maximum opening of 89mm/157mm for rectangular openings to prevent entrapment of the head and neck when a child falls through an opening feet-first.

Information received from Standards Australia reveals that the 89mm/157mm dimension is based on a European Standard (EN 1176-1:2008) to prevent torso/head entrapment (feet-

\(^7\) J. Ozanne-Smith, J. Guy, M. Kelly & A. Clapperton, Monash University Accident Research Centre - Report No. 281 [2008], page xi.
first), not head/neck entrapment (head-first). The European Standard specifies a maximum opening of 130mm to prevent “small head” entrapment. This dimension is similar to the 125mm maximum dimension specified in the BCA.

The Working Party considered the recommendation of 89mm in both AS 4226:2008 and AS 4685.1:2004 and noted that the dimension relates to torso/head entrapment through children falling through openings (feet-first). The incident and injury statistics held by the CHW indicate that in the majority of cases children have fallen through window openings head or upper body first. This is due primarily to the age group involved (toddlers) and the anatomical attributes of this group being “top heavy” which contributes to falls (head-first).

Approximately 50% of the falls recorded by the CHW involved balconies and decks. The 89mm dimension for torso/head entrapment may therefore be appropriate for the design of balustrades to address feet-first falls. Factors associated with falls from these areas of buildings are however not clear and further research and investigation of these types of falls is necessary to determine more precisely the factors involved and the solutions required to address the issue of balcony falls. This matter is discussed further in 4.2.

Based on the various standards reviewed including Australian and several international buildings codes, the Working Party determined that it is appropriate to recommend a maximum dimension of 100mm for window openings and proprietary safety devices such as window guards. This dimension also aligns with the recommendations of several US States and cities (maximum dimension: 4 inches) which have regulated for safer residential buildings and/or undertaken education and awareness campaigns to minimise window fall incidents.
4.0 Safety devices and safety enhancement systems

There are a number of proprietary devices available in the market which can be retrofitted to windows to improve child safety. There are also a number of ways to modify windows to restrict or limit openings. Unsafe elements in balustrades can also be modified to improve safety which will not only benefit children, but also provide greater safety for teenagers and adults. Examples of several safety features are set-out below.

4.1 Windows

4.1.1 Locks and latches

There are many types of locks and latches available to secure windows in both the fully closed and partially open positions.

Figure 23. Combined window-winder and locking device allows openings to be set at a maximum 100mm. The fixed window transom in the lower portion also forms an effective fall barrier (see also Figure 31).

Figure 24. Double-hung sash window incorporating a lockable latch.
4.1.2 Window opening limiting devices

Window opening limiting systems are simple proprietary devices which can be easily and quickly fitted. These devices are available from most large hardware stores and some baby retail shops.

**Figure 25.** Window opening limiting arms can be fitted easily to casement and hopper windows. These devices are ideally suited to older houses which commonly have these types of windows.

**Figure 26.** A typical sliding aluminium window fitted with a simple metal block incorporating an Allen key screw clamp allowing easy fitting.
4.1.3 Window guards

Window guards or barriers can be fitted to all types of openable windows including sliding, double-hung, casement and hopper windows. They are relatively easy to install and come in various sizes to suit most common window sizes.

A key advantage of window guards is that they are permanently in place, unlike window locks that need to be physically unlocked and relocked when opening and closing windows. Another advantage is that windows can be fully opened for ventilation purposes without...
compromising safety. This is particularly important during the warmer months when the statistics show a peak in fall incidents from windows.

Figure 29. Window guards are an effective way to protect window openings allowing windows to be fully open for ventilation purposes. This is particularly important during the hot summer months. Photo: courtesy of windowSafe.

Figure 30. Internally fitted adjustable plantation shutters typically installed for shade and privacy purposes can also form an effective barrier to prevent falls.
4.1.4 New windows

Figure 31. Windows can be designed and fabricated to allow maximum natural lighting of rooms and also maintain views from buildings without compromising safety. In this example fixed glass transoms are provided in the lower portions of the window frames. Glass panels can also be installed to floor level.

4.1.5 Permanently fixing windows to open no more than 100mm

Permanently screw-fixing window sashes to prevent them opening more than 100mm is a simple and cost-effective solution to improve safety. This approach may however be inappropriate for tenanted properties as the approval of landlords would be required and a request could be denied. In these cases, a proprietary system such as the devices shown in Figures 26 and 27 could be used which would have no adverse affect on window frames but provide some degree of safety protection.

There are also other simple solutions such as placing timber dowel firmly within a window track to prevent window sashes being opened or alternatively to limit the opening part of the sash to a maximum of 100mm.
4.1.6 Other systems

4.1.6.1 Physical barriers

Other systems such as glass louvre windows, durable mesh screens and external metal louvres (fixed or adjustable) allow for effective ventilation of buildings but at the same time form effective fall barriers. Three examples are shown in the following figures.

Figure 32. Timber dowel firmly inserted into the window track to prevent the window sash opening more than 100mm.

Figure 33. External window louvres with 100mm maximum spacings allow windows to be fully open. They can also have other benefits such as solar shading, security, privacy and noise attenuation.

In this example the size of the openings at the bottom of the screens would need to be reduced for enhanced safety.
Figure 34. Operable glass louvre windows allow effective natural ventilation of spaces but also form an effective fall barrier.

Figure 35. Robust and durable mesh insect screens securely fixed and latched to window frames can act as an effective fall barrier and allow for windows to be left open for full ventilation. In this example the mesh screen is side-hinged and can be opened (by key) to allow easy window cleaning. Photo: courtesy of Crimsafe
4.1.6.2 Warning labels

As highlighted earlier in the report insect screens fitted to windows can lead to increased fall risks for children. Most screens are not designed to withstand lateral loads such as a child pressing or falling against them. In the United States this issue has been addressed in part by the Screen Manufacturers Association which has made available to their members (and the general public) warning labels that can be affixed to insect screens warning of child fall risks through screens. An example of one of the labels is shown in Figure 36. 

![Warning label](image)

Figure 36. An example of a warning label used in the USA. Image: Courtesy of the Screen Manufacturers Association (USA).

Warning labels are used by all members of the Association to mitigate potential litigation resulting from falls where screens are involved. They are also used to raise safety awareness to minimise fall incidents.

4.1.7 Securing window openings – impacts on emergency escape

Openable windows in residential buildings, particularly one and two-storey houses, can act as escape routes when internal egress paths such as hallways and stairways are affected by fire and smoke. Fire safety issues associated with the locking and permanent latching of windows with restriction devices and the use of window guards and screens were therefore considered by the Working Party to ensure that addressing one safety issue (window falls) did not result in adverse impacts on other occupant safety related aspects.

Although there are no provisions in the BCA that prohibit the fitting of key-operated locks/latches or window guards such as security grilles, it is nonetheless important that the potential fire safety issues (emergency escape) be considered. Fire and Rescue NSW (formerly the NSW Fire Brigades) was therefore consulted and advice sought regarding any significant fire safety issues associated with fitting devices to secure window openings to prevent falls and if so, what measures can be taken to minimise these risks.

Comments received from Fire and Rescue NSW indicate that they strongly recommend that building occupants have an effective escape plan incorporating multiple escape routes. A minimum of two routes is recommended and in low-rise residential buildings such as one and two-storey buildings, this could include openable windows. Escape through windows of higher buildings such as multi-level apartment buildings is less likely therefore fire safety issues in latching or guarding windows in these types of buildings is not as significant.

Fire and Rescue NSW does not have conclusive incident data to indicate the method of escape from house fires. It is therefore not possible to establish the extent of risk associated with latching or fitting guards to window openings which may interfere with the evacuation of a building on fire. Fire and Rescue NSW however acknowledge that the risks associated with children falling from buildings are a present problem and therefore there may be a need to protect window openings to minimise fall incidents and child injuries.
To minimise the potential fire safety issues associated with latching or fitting guards to windows in smaller scale residential buildings such as one and two-storey dwelling houses, Fire and Rescue NSW has recommended that any safety devices be designed to allow unlatching or unlocking by occupants (other than young children) and in the case of window guards or other barriers, they be designed to be removable by adults.

4.2 Balustrades

Approximately half of all fall incidents treated by the CHW are linked to falls from balconies and decks. The three key safety features applying to balustrades are minimum height; maximum openings; and elimination of horizontal or near horizontal elements to prevent climbing by children.

Many older buildings have balustrades that satisfy minimum safety requirements for the time of their construction however do not meet current standards of today’s building code in a number of areas. Safety improvements to older balustrades are more problematic than modifying windows to address safety issues due to the variance that may exist in the three key safety elements and acceptable and cost-effective solutions to enhance these balustrades.

It is not impossible to improve balustrade safety however a more detailed examination of the issues and cost-effectiveness of making changes is necessary to deal with this aspect effectively and comprehensively. Nonetheless, there are a number of ways to improve the safety performance of balustrades in older buildings and some examples are shown in the following figures.

A more detailed analysis of fall incidents involving balconies and decks is also required to establish more precisely the causes of falls including whether furniture or other climbable elements on balconies were involved in these types of falls. A detailed review of both international and Australian standards relating to child safety in the built environment is also required (refer to 3.6).

Until this work is undertaken it is considered appropriate, as an interim measure to address fall risks, that education and awareness be promoted to highlight issues associated with some older balustrades and provide some simple measures that can be made to improve child safety.
4.2.1 Height

Figure 37. An older flat building where the balustrades have been retrofitted with glass infill panels to improve safety by increasing the balustrade height and eliminating low-level openings.

Figure 38. A very low existing balustrade which has been altered to increase its height (to 1000mm) to improve safety for building occupants (both adults and children).
4.2.2 Openings

**Figure 39.** An example of a heritage-listed building which has been converted to residential apartments. The original balustrade formed an important heritage element however large openings and climbing elements within 760mm of the balcony floor presented a safety risk. Glass panels fixed to the existing masonry wall and having minimal visual impact resolved the safety issue.

**Figure 40.** A simple solution to deal with large openings in balustrades is to install durable mesh to the inside face. In this case woven shademesh has been used. The approval of owners corporations in strata buildings may however be required for this change.
4.2.3 Climbing elements

**Figure 41.** Horizontal elements in balustrades allow easy scaling by children. There are a number of solutions to deal with this issue. In this example, glass panels have been fixed to the inside face of the balustrade.

**Figure 42.** Balconies can be made safer for children by full height screening. In this example the screens also provide shading and privacy but also allow airflow to balconies.
5.0 Options for safety improvements

5.1 Overview

The high presence and increasing trend for families with young children to reside in multi-storey buildings and the dominance of two and three-storey dwelling houses, particularly in the Sydney metropolitan area, indicates that this issue needs to be looked at holistically in the context of both new and existing buildings. While the solutions may be very different for new and existing buildings due to the method in which they are regulated there are common issues that need to be addressed for both. The problem is best addressed using a number of strategies with education and safety awareness forming a key approach for both.

Many existing buildings have building elements that do not meet current building codes and standards and which are not required to comply with today’s higher standards. As highlighted earlier in this Report there are no retrospectivity provisions in the NSW legislation to automatically require older buildings to be upgraded to comply with the current building code and standards. An alternative approach is therefore necessary to address child safety issues in these buildings.

The older building stock in NSW, particularly in the greater Sydney region, is extensive and any legislative change to the planning and building statutes to require safety improvements to windows and balustrades would, if enacted, take many years to achieve a significant improvement in safety in the majority of buildings.

Other legislative changes, requiring relatively simple retrofitting aimed at those owners with existing safety obligations (e.g.: landlords), have the potential to produce early and effective results and could be pursued in conjunction with well developed and targeted education and awareness campaigns.

5.2 Education

There is evidence to show that dedicated education and awareness campaigns targeted at falls from windows can significantly reduce the number of fall incidents. In the city of Boston, USA, an awareness campaign ‘Kids Can’t Fly’ was instigated in 1993 by the Boston Public Health Commission. The program is based on education, not legislation, and promotes the use of window guards in protecting children from falling through windows. The program achieved an 83% decrease in hospitalisations due to window falls from 1993-1995 and a 95% decrease between 1993 and 2000. Falls from windows have consistently remained at less than four per year from 1998 to 2005.8

In New York City, an initial education campaign saw a 35% reduction in deaths and a 50% reduction in incidents.9 However, due to incidents still occurring, a law was passed requiring

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all landlord owners of multiple-storey dwellings to provide window guards in tenanted apartments where children 10 years and younger reside.

The education campaigns in both Boston and New York City included free distribution of window safety products, with workshops for residents and landlords targeted to high-risk areas (see Appendix F for the flyer advertising one of these programs).

It is important to note that greater reductions in falls in New York were achieved when the initial education campaign was complemented by enforcement through legislation regarding window safety devices. A 96% reduction in hospital admissions was recorded.10 11

The window fall programs in Boston and New York were conducted by government health departments as a dedicated, ongoing program.

A further important aspect of education and awareness initiatives is that programs with a specific focus on reducing falls have been shown to be more effective than programs focusing on the reduction of multiple injury outcomes.12 In other words, education to prevent falls worked to reduce both the number and severity of falls.

Education and awareness campaigns therefore need to focus on fall safety issues from windows and balconies. This is particularly important for fall-related risks where furniture, pot plants and other items can increase the potential for falls.

Figure 43. Furniture placed near balustrades on balconies and decks provide easy access for children to climb and reach the top rail. There is no legislation that regulates or controls this problem therefore effective education and awareness campaigns focussing on this safety aspect are crucial.

5.3 Options for safety improvements to existing buildings

Existing buildings cover a broad period of design and construction standards and codes and are not generally subject to the ever-changing requirements of planning and building regulations, unless substantial new work is undertaken. In specified circumstances, a consent authority (local council) may, as part of the development approval process, require improvements or upgrading to an existing building. This can include, where necessary, safety enhancements to meet contemporary building standards. The upgrading of whole residential buildings, particularly strata-titled buildings, is however uncommon and therefore the statutory provisions of the EP&A Regulation (refer to 3.1.2) are rarely fully applied.

Legislative change can be a complex and lengthy process and therefore, any change to achieve improvements in window and balcony safety will take time. In addition there is a lack of detailed information for some types of fall incidents such as the contribution that furniture and other climbable elements make when placed near windows and on balconies and decks.

Legislation cannot address all contributing factors and therefore effective education and awareness campaigns are essential. Legislation could however complement this by mandating behavioural change for certain categories of owners such as landlords and owners corporations who are already required by law to implement safety measures in their properties. This is dealt with in Section 5.5.2.

5.3.1 Existing buildings: safety improvements

There are several potential avenues available to require mandatory safety improvements to existing buildings. The alteration of existing windows such as the retrofitting of latching devices to prevent windows being opened or limiting devices to allow windows to be latched in an open position (maximum 100mm) is a relatively simple way to easily and quickly enhance window safety.

Window guards (grilles or heavy duty mesh screens) are also effective in maintaining safety. They also allow windows to be fully open for ventilation purposes (see Figures 29 and 35) which is advantageous during the warmer months. There are also simple non-proprietary systems that can be used to address safety issues such as securely placing dowel rod in the running track of sliding and double-hung sash windows (Figure 32).

5.4 New buildings

The design and construction of new buildings is regulated through the State and Territory administrations (refer to Section 3.0). The principal building code in Australia is the Building Code of Australia (BCA) which is called-up by state and territory governments.

The current Code contains a number of design provisions to minimise fall risks however the BCA does not regulate to deal with potential hazards of window openings above a sill height of 865mm as it does not address the issue of window locks, window opening limiting devices or window guards.

To further address window fall safety issues in new building work (new buildings and alterations to existing buildings) the BCA could be amended to require safety devices as standard features on windows that would apply to new residential buildings or new windows installed in existing buildings. As highlighted in 3.2.1 any proposal to change the BCA must
follow a prescribed process set-down by the ABCB including that the proponent seeking change demonstrate a clear need at a national level.

If a proposal for change Australia-wide is not supported by the BCC, a State or Territory may consider the introduction of a variation to reflect (among other things) specific needs such as regional variations and/or policy provisions. It must be noted however that a strategy has been adopted nationally for reducing variations in the BCA to achieve greater national consistency in the Code.

If any state or territory determined that it should have additional window safety standards a State or Territory variation to the BCA could be applied to require window safety devices for all new buildings constructed. The need for such change at a State or Territory level must still be clearly demonstrated to justify a variation from the national provisions of the BCA if it is to be supported and implemented.

It should be noted that any proposal for change to the BCA at a State or Territory level takes time to proceed through a rigorous process. An education and awareness campaign focussing in part on the building design sector could therefore make significant immediate inroads into improving safety in new buildings by enhancing understandings of the key ways to minimise fall risks. This could also result in child safety improvements in the long-term as residential buildings are constructed.

Some examples of ways to enhance safety include educating building designers and residential property builders about safety enhancement features for windows such as window locks and/or window opening limiting devices and the design configuration and size of bedrooms to allow for the placement of all furniture away from windows.

The design and layout of bedrooms including minimum room sizes is beyond the scope of the BCA therefore targeted industry-based awareness campaigns in this area could be beneficial. Educating designers to consider incorporating adaptable features in their designs may also help to ensure that a dwelling is able to change easily with the needs of the occupants.

5.5 Models for improving safety and relevant legislation

Several models for improving safety in buildings using legislation were identified and explored to determine their viability and appropriateness for preventing falls from buildings and windows in particular.

5.5.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

5.5.1.1 Smoke alarms model

A reasonably successful model for retrofitting existing buildings is the Environmental Planning and Assessment Amendment (Smoke Alarms) Regulation 2006. While the BCA has required the installation of smoke alarms in all new private dwellings and places of shared accommodation since mid-1996, the Environmental Planning and Assessment Amendment (Smoke Alarms) Regulation 2006 was enacted to address existing buildings in which people sleep. Owners of residences that already had smoke alarms in good working order and in the correct positions were not required to take action.\textsuperscript{13}

The Regulation provides that a person must not interfere with a smoke alarm and that no development consent or consent of an owners corporation is needed to install an alarm. Clause 186F allowed a six month period from the commencement of the Regulation for owners to install alarms.

The Regulation was supplemented by amendments to various other Acts, including the Residential Tenancies Act 1987 (NSW) in which s29A was inserted. This provides:

It is a term of every residential tenancy agreement that:

(a) the landlord is to ensure that smoke alarms are installed in accordance with section 146A of the Environmental Planning and Assessment Act 1979 if that section requires them to be installed in the residential premises, and

(b) neither the landlord nor the tenant may, except with reasonable excuse, remove or interfere with the operation of a smoke alarm installed in the residential premises.

The amendment to the Residential Tenancies Act 1987 reflected the landlord’s obligation under the Environmental Planning and Assessment Regulation to install smoke alarms.

Section 29A also gave tenants direct rights under the Residential Tenancies Act 1989 to compel the landlord to install the smoke alarms. This is a faster, cheaper, and more accessible redress option compared to court action for a breach of the EP&A Act.

Section 24(1)(c1) was also inserted to allow landlords to access residential premises, with two days notice, to install smoke alarms. S29A has been replaced by a general provision in s52(3) of the Residential Tenancies Act 2010, requiring landlords to comply with their statutory obligations relating to the health or safety of the residential premises. This would include the requirement for owners to install smoke alarms in accordance with the Environmental Planning and Assessment Act and swimming pool fences as required by the Swimming Pools Act 1992.

To increase community awareness, the Conveyancing (Sale of Land) Regulation 2005 was amended to require the following warning in all contracts for the sale of land.

**WARNING**

**SMOKE ALARMS**

The owners of certain types of buildings and strata lots must have smoke alarms (or in certain cases heat alarms) installed in the building or lot in accordance with regulations under the Environmental Planning and Assessment Act 1979. It is an offence not to comply. It is also an offence to remove or interfere with a smoke alarm or heat alarm. Penalties apply.

### 5.5.1.2 Adapting the smoke alarm model to address window falls

A model similar to the smoke alarms legislative amendments could achieve the broadest coverage by requiring all owners of residential premises to fit safety ‘devices’ (window guards, durable and sturdy mesh screens, locks, window opening limiters) to openable windows. It would capture both strata and non-strata homes, those that are owner-occupied and through s52(3) Residential Tenancies Act 2010, those that are tenanted.

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There would however be a logical difficulty in requiring existing buildings to have windows retrofitted with safety devices without requiring windows in new buildings to also have them. Consequently it would make sense to have parallel consideration to address new and existing buildings to ensure that the BCA were amended to require all new buildings or new windows installed in existing buildings to be fitted with safety devices for windows above a certain height.

A World Health Organisation report on child injury prevention\(^\text{15}\) notes the results of a study in the United States which evaluated the cost effectiveness of smoke detectors in residential buildings compared to healthcare costs associated with injuries from fires. The study found that for every $1 spent on smoke alarms, there is a $26 saving in healthcare costs as a result of preventing injury.

### 5.5.2 Other avenues for legislative change

While the law does not generally regulate the behaviour of owner-occupiers in relation to ongoing maintenance and safety in their own homes, where justified, the law routinely imposes mandatory obligations on landlords and owners corporations as their behaviour has the potential to detrimentally affect others.

The *Residential Tenancies Act* 2010 and/or the *Strata Schemes Management Act* 1996 could be altered, without any amendment to the *Environmental Planning and Assessment Act*. This would achieve narrower coverage, leaving out owner-occupied freestanding homes, but would still capture a large proportion of children at risk, as:

- apartments present a particular risk as they are obviously higher from the ground and children are more likely to fall on to concrete than softer surfaces such as grass or garden beds; and
- 70% of children who live in high-rise buildings in Sydney are the children of tenants.\(^\text{16}\)

Thus, legislative amendments aimed at strata and tenancies would provide protection to a significant proportion of children likely to be at high risk of a fall of this type. Overseas experience demonstrates that mandatory provisions result in significant decreases in child fatalities. As noted above, in New York, education campaigns produced a 50% reduction in incidents, while legislative change almost doubled that figure to a 96% reduction in hospital admissions.

Amendments to the *Residential Tenancies Act* 2010 and/or the *Strata Schemes Management Act* 1996 would also fit with existing legal obligations landlords and owners corporations have to address safety measures in their properties. These two Acts are discussed in more detail below.

#### 5.5.2.1 Residential Tenancies Act 2010

Sections 70-73 of the *Residential Tenancies Act* 2010, require premises to have locks or other security devices. Failure to comply could render landlords liable for losses suffered by tenants from burglary.\(^\text{17}\) A tenant can also be reimbursed for the cost of installing locks


\(^{16}\) B Randolph, *Children in the Compact City: Fairfield as a suburban case study*, (2006), City Futures, Sydney: 16.

\(^{17}\) Verano & Crofts v Albrando (Tenancy) [2006] NSWCTTT 232 (3 April 2006)
themselves if the landlord unreasonably refuses to do so. Landlords of single storey dwellings must install locks on every external window and door. Landlords of two-storey premises and apartments are essentially excused from the obligation to install locks on higher windows, on the assumption that they do not present a security risk.

If legislation can compel a landlord to protect a tenant’s property, it may be reasonable for it to also compel a landlord to afford protection to a tenant’s child by providing windows that are able to be made safe for children. While second storey or higher windows may not present a risk for intrusion, we know through the CHW accident statistics they present a risk to children’s safety and lives (refer to Figure 8). With increasing numbers of children living in apartments most of whom are children of tenants, windows present an increasing risk.

Section 66(2) of the Residential Tenancies Act 2010 provides that a landlord may not unreasonably withhold consent to a tenant’s written request to install a fixture or make a minor alteration or addition. In the Minister’s Second Reading speech for the Residential Tenancies Bill 2010, she specifically flagged the installation of window locks for children’s safety as a minor change to which a landlord could not reasonably withhold consent.

While this change is welcome, it alone is not sufficient to protect children’s safety. A tenant would still have to obtain a landlord’s written consent to the installation of the lock and consent might be withheld. The tenant would then need to make an application to the Consumer, Trader and Tenancy Tribunal for an order that the consent is being withheld unreasonably. In the meantime, they could install the lock and take the chance that if sued for breach of s66(1), the Tribunal would hold that the landlord had acted unreasonably. This can be a convoluted path for a tenant to take. Further, installing permanently fitted locks or guards on some windows may not necessarily be a “minor” alteration. Drilling through window frames requires tools and if not done properly, can compromise the weatherproofing aspects which may cause damage to internal parts of the building.

Even if s66 allows some tenants to install locks or other safety devices, this presupposes they are aware of the risks that the leased premises’ windows present to children. Children who live in apartments are overwhelmingly young children and the children of recent migrants. As new members of the Australian community and/or new parents, tenants may not have been exposed to education campaigns highlighting the risks of unrestricted windows to children. Landlords, on the other hand, as the long-term owners of premises, have a greater opportunity both to be made aware of the risks and to remedy them.

It would seem preferable that responsibility for window safety devices, like other security and safety measures in the fabric of the building, rests with the landlord. There is nothing unreasonable about imposing this additional obligation on landlords which may not rest on

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18 Evans, Joanne (Tenant) v Power, Marion (Landlord) [1998] NSWRT 108 (1 June 1998).
20 B Randolph, Children in the Compact City: Fairfield as a suburban case study, (2006), City Futures, Sydney.
21 The South Australian Court of Appeal used this reasoning in refusing a cross-claim against a parent by a landlord who had been found liable for injuries suffered by a child who fell out the window of a short-term holiday rental apartment: Towart v Alder (1989) 52 SASR 373. The Court reasoned that as the person familiar with the premises, the landlord should not have placed bunk beds next to the window.
all owners, as this is already the case with locks for security. Owner-occupiers can leave their residential properties without locks, landlords cannot.

It is therefore considered appropriate that the Residential Tenancies Act 2010 be amended. This could include an amendment to s70(1) to require that:

A landlord must provide and maintain the locks or other security devices necessary to ensure that the residential premises are reasonably secure and that windows located more than 3 metres above a surface below are fitted with safety devices on openable windows to allow occupants to restrict openings to a maximum of 100mm.

5.5.2.2 Strata Schemes Management Act 1996

Amendments to the Strata Schemes Management Act 1996 could be considered for three reasons. First, as highlighted above, most strata schemes involve buildings of two or more storeys. Second, the number of children living in apartments in Sydney is steadily increasing. Third, strata schemes have the complicating factor that the windows are invariably common property. As a result, they do not belong to the owners of units, but to the owners corporation. As a general rule, individual owners own the “inner core” of their apartment, from the underside of the ceiling, the upper surface of the floor and the inner surface of the external walls. The structural shell of the building, including windows and balconies, is generally common property, owned by everyone.

Individual owners are not permitted to damage common property. The standard Residential By-law 5 that applies to most schemes states that an owner “must not mark, paint, drive nails or screws or the like into, or otherwise damage or deface, any structure that forms part of the common property without the approval in writing of the owners corporation”. However by-law 5(3)(c) exempts from owners corporation approval any structure or device that prevents harm to children “unless the device is likely to affect the operation of fire safety devices in the lot or to reduce the level of safety in the lots or common property” Any such device must be in keeping with the appearance of the rest of the building. The owner of the lot is then responsible for maintenance of the installation. As a result, it is possible for individual owners (including landlords) to install window safety devices without placing them in breach of strata by-laws.

It may however be more logical, efficient and safer to impose the obligation to install safety devices on owners corporations. First, the reason external windows are designated common property in strata plans is to ensure a uniform appearance to a building. If every owner could replace or paint their windows any way they chose, the facade of buildings would look like a patchwork quilt. The installation of different devices (especially grilles) could potentially detrimentally affect the visual appearance of the building facade.

Second, the responsibility to maintain and repair common property is imposed on the owners corporation, not individual owners. This is an absolute statutory obligation under

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22 Owners corporation is the NSW term for body corporate. It is the body made up of all strata lot owners: s11 SSMA. On registration of a strata scheme, the common property becomes the property of the owners corporation: s18 Strata Schemes (Freehold Development) Act 1973.

23 Strata Schemes Management Regulation 2010, Schedule 2, cl 5.

24 “The obligation under subsections (1) and (2) of s.62 is not merely to exercise reasonable skill and care with a view to achieving the requirements of those subsections: the obligation is absolute”: per Hodgson JA in Ridis v Strata Plan 10308 [2005] NSWCA 246 at [5].
s62 Strata Schemes Management Act 1996 (SSMA) to maintain common property in a “state of good and serviceable repair”. It includes an obligation to ensure common property does not pose a safety risk to occupants or entrants, including children as visitors to a residential property.25

Further, under the common law, as “occupier” of common property, an owners corporation owes a duty of care to entrants. If a child fell out of a window, it is arguable, but by no means certain, that an owners corporation could be liable as a result. While common sense might prompt us to think that a parent is responsible for a child’s safety, the law rarely finds parents legally liable for their children’s injuries.26 Courts however have found other people liable for children’s injuries quite often. For example, the South Australian Court of Appeal found a landlord liable for injuries a child suffered when she fell through an insect screen while climbing on a bunk bed that the landlord had positioned next to the window in a holiday apartment.27

An owners corporation’s liability for a child’s fall would hinge on the question of whether s6228 the common law imposes an obligation to install safety devices on windows that are otherwise in a state of repair. Analogous cases are those involving injuries from non-safety glass. An owners corporation would certainly be liable if an entrant injured themselves on broken glass in a door, but is it liable when someone is injured by non-safety glass which can no longer be installed in buildings, but which owners are not required to retrofit? The majority of the Court of Appeal in Ridis v Strata Plan 10308 [2005] NSWCA 246 held that an owners corporation was not liable for failure to retrofit glass. However, in contrast, in Morgan v Owners Strata Plan 13937 [2006] NSWSC 1019 Brereton J held an owners corporation liable for failing to provide a non-slip doormat in accordance with non-mandatory safety standards.29 Brereton J said that

In the context of the front entrance of a multi-unit residential building, where the landing was located at the top of a flight of five steps and was known to be exposed to rain, and given the availability of such mats for only $25, reasonable care for persons exiting the building required compliance with the Standard by provision of an external slip-resistant weatherproof doormat, [emphasis original].

With increased public awareness of the dangers posed to children by unrestricted window openings, a court could hold that a reasonable owners corporation should address the risk and install safety devices. It could be seen as unreasonable and may possibly be culpable for an owners corporation to fail to take relatively simple precautions to prevent extremely serious injury. Many owners corporations, particularly in well-managed schemes, are already aware of this and are addressing the problem. Unfortunately, it is often the rundown strata schemes, with large numbers of landlord owners, which are often the least well

25 For example, it is possible for an owners corporation to decide to not to replace or repair common property, but not if this would compromise the safety of the building: s62(3) SSMA. See Ridis v Strata Plan 10308 [2005] NSWCA 246 and Morgan v Owners Strata Plan 13937 [2006] NSWSC 1019.
28 Courts have long held that the obligation under s62 can require the owners corporation to make additions to common property if this is necessary to keep the common property in a state of repair: Proprietors Strata Plan No. 6522 v Furney [1976] 1 NSWLR 412; Lin & Anor v The Owners - Strata Plan No. 50276 [2004] NSWSC 88
managed and least likely to act in this regard. These are also the schemes in which young children are most likely to live.  

The question of whether an owners corporation would be liable under the common law could ideally be avoided by imposing a direct legislative obligation on owners corporations in residential strata schemes to install safety devices.

Under s65 Strata Schemes Management Act 1996 an owners corporation has the power to enter individual apartments to carry out work required under the Act and an owner must not hinder or obstruct an owners corporation or its agents in the course of carrying out the work. This is in part because the owners corporation’s obligation to maintain and repair common property under s62 is not discretionary, it is absolute. Under s65A, an owners corporation has the power to make additions to common property for the purposes of enhancing or improving it, if approved by a special resolution passed at a meeting of the owners corporation.

It is recommended that the Strata Schemes Management Act 1996 be amended, such as by the insertion of an additional provision s65D. This should require that:

The owners corporation in a residential strata scheme has an obligation to ensure that all common property windows located more than 3 metres above a surface below are fitted with safety devices to allow occupants to restrict openings to a maximum of 100mm.

Balustrades:

Balustrades and balconies in strata schemes, like windows, are invariably common property, not the property of the individual lot owner. Individual owners cannot alter balustrades without owners corporation consent, which is unlikely to be forthcoming if it would lead to a lack of uniformity in the building facade.

As highlighted above, balustrades in old strata schemes present a particular risk to children, however, unlike window safety devices, which can be inexpensive to fit, retrofitting balustrades with safety enhancements or features is more onerous. For this reason, it is not recommended that owners corporations be imposed with any immediate legislative obligation to alter balustrades however further consideration of this safety aspect should be undertaken to determine cost-effective solutions to address this issue.

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30 B Randolph, *Children in the Compact City: Fairfield as a suburban case study*, (2006), City Futures, Sydney documents the connection between high levels of socio-economic disadvantage, poorly maintained rented strata housing stock and disproportionately high numbers of children.

31 The Strata Schemes Management Act 1996 applies to all strata schemes, many of which are commercial.

32 Bereton J in *Seiwa Pty Ltd v Owners Strata Plan 35042* [2006] NSWSC 1157 (6 November 2006) at [3].

33 Although additions to common property for maintenance and repair under s62 do not necessarily require compliance with s65A: *Stolfa v Hempton* [2010] NSWCA 218.

34 Landlords of premises in strata schemes would effectively have their obligation under an amended s70(1) Residential Tenancies Act 2010 to install window limiting devices discharged by the owners corporation of which they are a member.
5.5.3 Electrical safety switches – Western Australia model

The introduction of legislation in Western Australia in May 2009 to require all residential properties including existing properties to be retrofitted with electricity safety switches, termed ‘residual current device’ (RCD) is another model that could be applied in NSW for window safety devices. The amending legislation known as the *Electricity Amendment Regulations* (No. 3) 2007(WA) was gazetted on 8 May 2009 (Regulation 17 inserted in Gazette 8 May 2009 p. 149). The provisions are contained in Part IV of the *Electricity Regulations* 1947 (WA). The Regulation requires RCDs to be installed:

(i) in both owner-occupied and tenanted residential premises, on individual and common property under the *Strata Titles Act 1985*; and requires an owner of a residential premises to install at least two residual current devices (RCDs); or

(ii) prior to the title to the premises being transferred (sale of the property); or

(iii) before the owner enters into a residential tenancy agreement; or

(iv) before an owner makes a premises available for hire.

In the case of tenanted premises, in the event of any of the above three circumstances not occurring, the owner must install at least two RCDs before the second anniversary of the commencement day of the legislation, i.e. 8 May 2009.

Prior to the legislation being introduced the WA Government, through the *Department of Consumer and Employment Protection*, issued a Position Paper in October 2008 which detailed the electricity safety issues in residential buildings. The Paper put forward a number of options.

Although the WA model is not as comprehensive as the NSW smoke alarm legislation it does highlight that State administrations are prepared to make legislative change to require safety improvements in existing buildings where they do not meet a satisfactory level of safety as would apply to new buildings.

It is worthy of noting that in putting forward the Position Paper for the retrofitting of RCDs in residential premises the Paper highlighted that of the 36 non-workplace fatal electrical incidents which occurred over a 16 year period, 31 of these incidents would have been prevented had RCDs been installed to protect the electrical wiring and appliances involved in the incidents.

5.5.4 Summary

The EP&A Act 1979 (smoke alarm) model is considered to be potentially the best method for improvement regarding window safety as it would capture all residential premises including owner-occupied premises. There are however difficulties with this model as the BCA does not currently require safety devices on windows of new buildings and any legislation if it were to be introduced would require amendments to the BCA. This model therefore needs to be considered in parallel in seeking concurrent amendments to the BCA.

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Changes to the *Residential Tenancies Act 2010* and the *Strata Schemes Management Act 1996* would therefore be the next best option as they would capture children of tenants and/or children living in multi-level residential buildings, who are at the greatest risk of injury or death from window falls.
6.0 Conclusion and recommendations

6.1 Conclusion

The Working Party has considered the issues broadly and established several potential solutions to address the problem. Further research is however still required to gain a better understanding of the factors involved in building falls, particularly falls from balconies and decks.

Statistics captured by the CHW indicate that fall incidents are linked to two key areas of buildings: windows and balconies/decks. Accident information obtained from parents of injured children is not comprehensive, however from the available data it is clear that there are a number of key factors which contribute to falls. A number of recommendations have therefore been made to address these key areas.

The Working Party found that there are often several factors leading to a child falling from a building. The placement of furniture near unsecured windows and balustrades on balconies and decks is one of the factors and is a significant child safety issue. Young children left unsupervised on balconies and in bedrooms were noted as being of particular risk and concern. Education and safety awareness is therefore considered essential for parents and carers to recognise fall risks and to reinforce the need for the proper supervision of children.

The Working Party also found that many older existing buildings have building elements that although meeting minimum safety requirements that applied at the time of their construction do not meet today’s building codes and standards. As highlighted in the Report there is generally no retrospectivity provisions in the NSW legislation to automatically require older buildings to be upgraded to comply with current building standards. It may therefore be necessary to develop different strategies for addressing this issue in both new and existing buildings, recognising that existing buildings present the predominant risk. A ‘package’ of approaches may need to be developed to address the different strategies and measures in common.

The Working Party has therefore recommended that a review of the specific planning and building laws be undertaken to establish if it is practical and feasible to require safety upgrading of windows and balustrades in existing residential buildings.

International experience indicates that dedicated education and awareness campaigns targeted at falls from windows can significantly reduce the number of fall incidents. Safety improvements have been achieved solely through awareness campaigns however others have required legislative intervention in conjunction with awareness campaigns to achieve a significant reduction in fall incidents.

Legislative change can complement safety education campaigns by mandating behavioural change for certain categories of owners, such as landlords and owners corporations, who already have legislatively mandated safety obligations and in whose properties present a higher risk of falls. Amendments to the Residential Tenancies Act 2010 and the Strata Schemes Management Act 1996 are therefore recommended to achieve safety improvements to windows in the higher risk multi-level buildings and tenanted buildings. Dedicated safety awareness campaigns together with other recommendations are also made.
The CHW will pursue implementation of the recommendations set-out in 6.2 below through contact and continued liaison with the various government agencies and industry organisations including ensuring that effective and on-going education and awareness campaigns are undertaken.

### 6.2 Recommendations

The Working Party makes the following recommendations:

**Education and awareness**

1. Implement, as a high priority, an education and awareness program focusing on a whole of community endeavour with particular strategies aimed at specific areas of the community. Programs and campaigns should be adequately funded to ensure on-going education and awareness addressing the following areas:

   (a) **Parents and carers, culturally and linguistically diverse communities, grandparents:**
   - Education should focus on window and balcony falls exclusively;
   - Public-awareness raising should occur around the spring and summer months, when falls from windows and balconies are at their peak;
   - Key messages should address the false sense of security often attributed to insect screens. This has been a key message of other similar education campaigns;
   - Any educational approach should be grounded in behaviour change theory;
   - If a certain type of intervention is promoted, that intervention must be available and appropriate. For example, if limiting window openings is promoted, there must be an easy and cost-effective solution for renters, as well as home-owners;
   - Educational material should be disseminated through social services and media that families with young children access, for example, baby health centres, community centres, childcare centres, parenting magazines and non-English speaking newspapers.

   (b) **Industry**
   - Provide educational and awareness services on child safety issues and window safety products to window manufacturers through the Australian Window Association;
   - Provide educational and awareness services on child safety issues and window safety to the Real Estate Institute of Australia and the Institute of Strata Title Management;
   - Seek support from key building-related associations such as:
- Master Builders Association;
- Housing Industry Association;
- Building Institute of Australia;
- Australian Institute of Architects;
- Building Designers Association of NSW;
- Stair and Balustrade Association of Australia; and
- Australian Institute of Building Surveyors,

to encourage and promote industry-based safety enhancements in residential buildings particularly in regard to the design of windows and balustrades.

(c) **Government Agencies**

- Education and awareness regarding window and balcony falls should be part of an adequately funded, ongoing and dedicated campaign; and
- The Sydney Children’s Hospitals Networks to have a leadership role in education and awareness.

2. Seek the support of the Australian Window Association to promote window safety to their membership and to ensure a range of pre and retrofit window barrier devices such as window guards, durable and sturdy insect screens, locking or other safety devices are available to window manufacturers including encouraging manufacturers to incorporate these devices on all windows as standard features.

**Regulatory considerations (existing buildings)**

3. The *Residential Tenancies Act 2010* should be amended to require landlords to provide, in addition to security locks which are currently required to be provided, safety devices (window guards, durable and sturdy mesh screens, locks, window opening limiters) or other permanently affixed devices on openable windows located above the ground floor (i.e. window sills more than 3 metres above an external surface below) to allow occupants to limit openings to a maximum of 100mm.

4. The *Strata Schemes Management Act 1996* should be amended to require owners corporations in residential buildings to have all common property openable windows fitted with safety devices (window guards, durable and sturdy mesh screens, locks, window opening limiters) or other permanently affixed devices on windows located above the ground floor (i.e. window sills more than 3 metres above an external surface below) to allow occupants to limit openings to a maximum of 100mm.

5. That a review of relevant planning and building laws be undertaken to determine whether to require safety upgrading of windows and balustrades in existing residential buildings, including residential buildings undergoing alterations or upgrading works to minimise the risk of child falls, in parallel with seeking amendments to the Building Code of Australia (Recommendation 7).
New buildings

6. Monitor the outcomes of the review of the Building Code of Australia (BCA) regarding the fall safety provisions currently being undertaken by the Australian Building Codes Board (ABCB) including the ‘Slips, Trips and Falls’ report produced by Monash University for the ABCB.

7. Seek the support of the Australian Building Codes Board to undertake a review of the BCA to specifically consider the issues associated with child falls with a particular focus on window and balcony falls. The review should consider whether:

   (a) windows in residential buildings should be required to be fitted with appropriate barrier systems such as window guards or window opening limiting devices to allow occupants to restrict openings to a maximum of 100mm; and

   (b) the current balustrade provisions should require a greater minimum height and openings be restricted to a maximum of 100mm.

General

8. Seek support from Standards Australia to review AS 2047 – ‘Windows in buildings – selection and installation’ to consider incorporating provisions within this Standard to require barrier systems such as window opening limiting devices and locks to be fitted to windows as standard features.

9. Encourage the building design and construction sectors through respective industry institutes and associations to incorporate standard child safety features (window and balustrade designs) in all residential buildings.

10. Seek the assistance of the Commonwealth government to require all State and Territory governments to collect comprehensive incident and injury data, particularly where children are involved, to track national trends regarding building falls and design elements which may have contributed to falls and injuries.

11. Develop a comprehensive hospital-based system for the reporting of building-related fall incidents and injuries involving children to State and Territory building regulators including the national administrator of the Building Code of Australia, the Australian Building Codes Board, to allow for better tracking of fall trends in the built environment.

12. Undertake further research focusing on fall incidents involving balconies and decks including establishing the key causes for such falls. The research should determine the most appropriate and cost-effective methods and systems available to improve safety of existing balustrades in older buildings that do not meet today’s building standards.

13. Undertake a detailed review of the Slips, Trips and Falls Report prepared by the Accident Research Centre - Monash University, to determine if its findings and recommendations can further benefit safety enhancements in buildings particularly window and balustrade designs to minimise child falls.

14. Give consideration to the potential impacts (increased child falls) from multi-unit residential buildings as a direct outcome of more families with young children residing in this form of housing as a result of increased housing densities in urban areas.

15. That consideration be given to developing a comprehensive web-based home (child) safety audit assessment system which should include a section on fall risks and ways to improve safety.
16. Seek the assistance of the Local Government and Shires Association of NSW to promote to their members (local councils and shires) the importance of safety awareness relating to child fall risks in residential buildings and disseminate safety information to local communities.
Appendix A - Terms of Reference

The CHW Working Party for the Prevention of Children Falling from Residential Buildings

- Terms of Reference –

1. TITLE


2. PURPOSE

To provide a consultative forum to effectively address the issue of children falling from buildings, thereby reducing trauma admissions to hospitals, particularly in NSW.

3. MEMBERSHIP

3.1 The working party should include the following members:

- The Director of Trauma at the Children’s Hospital at Westmead
- The Scientific Director of the Centre for Trauma Care, Prevention, Education, & Research
- Head of Department, Kids Health Promotion Unit of The Children’s Hospital at Westmead
- Public Relations, The Children’s Hospital at Westmead
- External experts in the areas of planning, building codes, local government, building law, safety product industry, Commission for Children and Young People and the building industry.

3.2 A quorum of members must be present before a meeting can proceed. At least three members must be present for the meeting to proceed.

3.3 Internal or external observers may be invited to attend the meetings at the request of the Chairperson on behalf of the working party to provide advice and assistance where necessary. They have no voting rights and may be requested to leave the meeting at any time by the chairperson.

3.4 Decisions will be made by consensus.

4. VACANT POSITIONS

Any vacant positions will be filled on a casual basis until the term of office has expired.

5. CHAIRPERSON

The Chairperson shall be elected by the working party for the period of the working party. His/her responsibilities include:

5.1 Scheduling meetings and notifying committee members;
5.2 Inviting specialists to attend meetings when required by the working party;
5.3 Guiding the meeting according to the agenda and time available;
5.4 Ensuring all discussion items end with a decision, action or definite outcome; and
5.5 Reviewing and approving the draft minutes before distribution.
6. MINUTE TAKER SECRETARY

The role of the minute taker is to:

6.1 Prepare agendas and issue notices for meetings, and ensure all necessary documents requiring discussion or comment are attached to the agenda;
6.2 Distribute the Agenda one week prior to the meeting;
6.3 Take notes of proceedings and prepare minutes of meeting;
6.4 Distribute the minutes to all committee members one week after the meeting; and
6.5 The minutes shall be checked by the chairperson and accepted by committee members as a true and accurate record at the commencement of the next meeting.

7. DURATION OF MEETINGS

Meetings shall be called by the chairperson on a needs basis. A meeting will normally last for a period of one hour. It is anticipated that there will be one meeting before the official launch of the Working Party scheduled at the end of June or early July 2009. The Working Party will then organise the CHW Injury Prevention Symposium. After the Symposium, the working party will continue working on the issue for another 2-3 months with monthly meetings.

8. FUNCTIONS

The functions of CHW Working Party for the Prevention of Children Falling from Buildings are:

8.1 To facilitate co-operation amongst CHW staff, different Federal and State Government Departments, NGOs, and the Industry in initiating, developing, and carrying out strategies to prevent children falling from buildings in NSW and beyond;
8.2 To organise a Children’s Hospital Injury Prevention Symposium on Children Falling from Residential Buildings; and
8.3 To work together towards a plan to prevent further falls. This plan may include;
   - changes in legislation;
   - changes in planning and building design;
   - development of new home safety products; and
   - promoting media interest in the issue.
## Appendix B - Members of the Working Party and other contributors

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and organisation</th>
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<tbody>
<tr>
<td>Danny Cass (Chair)</td>
<td>Head Trauma &amp; Academic Surgery, CHW</td>
</tr>
<tr>
<td>Lauren Cohen</td>
<td>Health Promotion Officer, CHW</td>
</tr>
<tr>
<td>Peter Conroy</td>
<td>Senior Building Surveyor, Sydney City Council</td>
</tr>
<tr>
<td>Candace Douglass</td>
<td>Department Head, Kids Health, CHW</td>
</tr>
<tr>
<td>Toffee Foltyn</td>
<td>Product Education Manager, Tee Zed</td>
</tr>
<tr>
<td>Stephen Durnford</td>
<td>Team Leader, Building Systems Unit, NSW Department of Planning</td>
</tr>
<tr>
<td>Julie Rudnicka</td>
<td>Senior Building Codes Officer, Building Systems Unit, NSW Department of Planning</td>
</tr>
<tr>
<td>Lawrence Lam</td>
<td>Deputy Director Academic Surgery, CHW</td>
</tr>
<tr>
<td>Patricia Manglick</td>
<td>Data Manager, CHW</td>
</tr>
<tr>
<td>Frank Ross</td>
<td>CNC Trauma, Academic Surgery, CHW</td>
</tr>
<tr>
<td>Nikkie Beltran</td>
<td>Public Relations Coordinator, CHW</td>
</tr>
<tr>
<td>Cathy Sherry</td>
<td>Senior Law Lecturer, University of New South Wales</td>
</tr>
<tr>
<td>Soundappan Soundappan</td>
<td>Surgeon, CTPER, CHW</td>
</tr>
<tr>
<td>Paul Wiggins</td>
<td>Marketing Services Manager, Bunnings Hardware</td>
</tr>
</tbody>
</table>

### Other contributors to the development of the Outcomes Report:

The following government agencies provided comments and feedback on the Outcomes Report:

- Fire and Rescue NSW regarding aspects of fire safety and emergency evacuation of residential buildings.
- The Australian Building Codes Board regarding aspects relating to the administration of the Building Code of Australia.

The Working Party acknowledges and appreciates the contributions made by these agencies.
Appendix C - Symposium program and ‘flyer’

The Children’s Hospital at Westmead Injury Symposium

Kids Can’t Fly: Preventing Children Falling from Residential Buildings

Date: 25th November 2009
Time: 8:30am - 3:45pm
Venue: Lorimer Dods Lecture Theatre, Level 4, The Children’s Hospital at Westmead

The aim of the symposium is to discuss issues surrounding injuries to children resulting from residential building falls, particularly the prevention of children falling from windows. This symposium is relevant to those interested in child injury prevention (particularly home safety) and those interested in better building design and regulations to ensure a safer built environment for children.

Program
0830-0900 Registration

The problem
0900-0910 Welcome and Housekeeping
Dr. Lawrence Lam, Deputy Director, CTCPER

0910-0920 Opening
TBA

0920-0930 Personal experience of a family
TBA

0930-0955 Overview of the problem—epidemiological and clinical picture
Prof. Danny Cass, Director of Trauma and Director of CTCPER

0955-1025 A report card on the Monash study on falls
Ms. Erin Cassell, Director, Victorian Injury Surveillance Unit (VISU)
Monash University Accident Research Centre

How can we prevent children falling from residential buildings?
1025-1040 Experience from overseas
Ms. Lauren Cohen, Kids Health, CHW

1040-1055 A word from the safety product industry
Mr. Toffee Foltyn, Education Manager, Tee-Zed Pty Ltd

1055-1125 Morning Tea (Provided)

What are the issues relating to children falling from residential buildings?
1125-1155 The legal issues
Ms. Cathy Sherry, Senior Lecturer, Faculty of Law, UNSW
1155-1210 Regulatory issues and process
   Mr. Stephen Durnford, Team Leader, Building Systems Unit
   Department of Planning

1210-1225 The role of local government
   Mr. Peter Conroy, Senior Building Surveyor, Sydney City Council

1225-1240 A national approach
   Mr. Brian Ashe, Manager, Major Projects and Research, Australian Building Codes Board

1240-1250 Questions and Answers
   Panel of Speakers

1250-1300 Working groups: Instructions
   Dr. Lawrence Lam

1300-1400 Lunch (Provided)

Working Groups
1400-1445 Working group activity

Discussion and Close
1445-1530 Panel Discussion

1530-1545 Evaluation and Close

Registration

Cost: Free
Registrations Close: 20th November 2009

To register for the symposium or make enquiries, please contact Kids Health via the following methods:
Telephone: (02) 9845 3585
Email: kidsh@chw.edu.au (please provide details requested below)
Fax: Fill in the details below and fax to: (02) 9845 3562

<table>
<thead>
<tr>
<th>Full Name</th>
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<tbody>
<tr>
<td>Organisation</td>
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<td>Telephone/Fax</td>
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<td>Email</td>
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<td>Dietary requirements</td>
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Directions: Please see next page for directions and map.

Organised by: The CHW Working Party for the Prevention of Children Falling from Residential Buildings- includes the following institutional members: CHW Centre for Trauma Care, Prevention, Education, & Research (CTCPER); CHW Kids Health; University of New South Wales Faculty of Law; NSW Department of Planning; City of Sydney Council; Tee-Zed Pty Ltd and Bunnings.
The Children's Hospital at Westmead is located at the corner of Hawkesbury Road and Hainsworth Street, Westmead. The Hospital is only minutes from the major centre of Parramatta, and about 35 minutes by train from Sydney city.

**By train...**
Westmead railway station is approximately 15 minutes walk. It is an easy access station with lifts, ramps and security. For information phone 131 500 or visit [www.cityrail.info](http://www.cityrail.info) or [www.countrylink.info](http://www.countrylink.info).

**By ferry...**
The ferry leaves from Circular Quay, McMahons Point, Meadowbank and Rydalmere to Parramatta. Travel time from Circular Quay is about 55 mins. For information, phone 131 500 or visit [www.sydneyferries.info](http://www.sydneyferries.info).

**By bus...**
Many local bus services from all over Sydney connect at Parramatta. Ask your local bus company for advice. For information, phone 131 500 or visit [www.sydneybuses.info](http://www.sydneybuses.info).

**By car...**
Westmead is about ten minutes drive from Parramatta, and about 50 minutes from the city.

**Paid parking**
Children's Hospital – multi-storey complex located Hainsworth Street with entrance on roundabout. Fee is determined at the auto pay station prior to returning to your vehicle on exit. The auto pay stations accept coins, and notes up to $50 or credit cards and provide change as appropriate.

- **Free parking** (most street parking limited to 2 hours)
  Westmead - Hawkesbury Rd, Caroline St, Helen St, Jessie St and Hainsworth Street.
  Northmead - Redbank Rd, Beamish Rd, Brelogail, Bevan and Balfour Streets.
  Parramatta Park - parking bays located in Parramatta Park (entry via bottom end of Hainsworth Street).

**Lorimer Dods Lecture Theatre**
Enter through the main front doors, turn left and take the glass elevator to level 4. Walk along corridor and take the left into the Foyer of the Lecture Theatres.
Appendix D - Symposium – list of invitees

Australian Building Codes Board
windowSAFE
Public relations – Children's Hospital at Westmead (CHW)
Parramatta Family Day Care
POW - Medical Research Institute
Australian Institute of Building Surveyors
Director of Trauma - CHW
Monash University Accident Research Centre
CHW - generally
Sydney City Council
NSW Department of Planning
SSWAHS
Kidsafe NSW
Tee-Zed Pty Ltd
K idsafe Hunter
K idsafe ACT
P arramatta Family Day Care
NSW Fire Brigades
Australian Window Association
City of Ryde Council
Commission for Children & Young People
NSW Fair Trading
Deputy Director CTCPER - CHW
NSW Commission for Children & Young People
Holding Redlich Lawyers
Housing NSW
Data Manager Trauma - CHW
Tenants Union of NSW
Australian Institute of Architects
Australian Institute of Architects - NSW
Willoughby/Lane Cove Family Day Care
The Infants Home Child & Family Services
NSW Department of Health
Sids & Kids
CNC Trauma - CHW
Faculty of Law, UNSW
Senior Social Worker Rehabilitation - CHW
Trauma Surgeons - CHW
Child & Family Services Wyong Shire
Bunnings Hardware
Chinese Family Day Care
Property Council of Australia - NSW
Mirvac
Meriton Apartments
Austcorp
Bovis lend Lease
Landcom
Stockland
Walker Corporation
Urban Taskforce
Directory of Australian Architects
Tyrells Property Inspections
NSW Building Professionals Board
Australian Institute of Building
Master Builders Association - NSW
Housing Industry Association
Institute of Strata Title Management
NSW Strata Management
Macquarie University (Early Childhood Studies)
University of Melbourne
Health Promotion Association of Australia
Health Promotion Service: South East Sydney and Illawarra Area Health Service
Health Promotion Service: North Coast Area Health Service
Central Coast Health Promotion Unit
Macquarie Health Promotion Unit
Northern Beaches Health Promotion Unit
Lower North Shore Health Promotion Unit
Ryde Health promotion Unit
Narellan Community Health Centre
High Jardine Building
Healthy Cities Illawarra
Health Cities Shoalhaven
Bankstown Community Health Centre
Youthsafe
Injury Risk Management Research Centre: University of New South Wales
Australian Injury Prevention Network
Centre for Health Advancement: NSW Department of Health
George Institute of International Health
Sydney Morning Herald
Lifeline Western Sydney
Crimsafe (security screens)
Department of Local Government
Department of Services: Technology and Administration
Local Government and Shires Association
Engineers Australia
Health NSW
Rural Fire Services
Real Estate Institute of Australia (NSW)
National Childcare Accreditation Council Inc.
Child and Family Director: SSWAHS
## Appendix E - Australian Standards: Maximum dimensions for openings

<table>
<thead>
<tr>
<th>Standard/Title</th>
<th>Maximum dimension/s for openings</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>AS/NZS 2172: 2003</strong>&lt;br&gt;Cots for household use – Safety requirements&lt;br&gt;50-95mm (to prevent/minimise limb and head entrapment)</td>
<td>Clause 9.2 of the Standard deals with entrapment issues and prescribes three key measurements: • 5-12mm (fingers); • 30-50mm (limbs); and • greater than 95mm (head).&lt;br&gt;NB: The Standard includes a note that there is potential for head entrapment for openings exceeding 95mm.</td>
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<tr>
<td><strong>AS 4226: 2008</strong>&lt;br&gt;Guidelines for safe housing design&lt;br&gt;Windows (sills less than 1200mm above the floor): 89mm&lt;br&gt;Balustrades: 89mm</td>
<td>Not called-up by the Building Code of Australia (BCA).</td>
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<tr>
<td><strong>AS 4685-1: 2004</strong>&lt;br&gt;Playground equipment – General safety requirements and test method&lt;br&gt;Rigid circular openings must not have internal diameters of between 100mm and 230mm (head-first entrapment) and for rectangular openings 89mm/157mm (feet-first torso/head entrapment)</td>
<td>Standard does not address openings to prevent falls – focuses on entrapment aspects generally.</td>
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<tr>
<td><strong>AS 5039: 2008</strong>&lt;br&gt;Security screen doors and security window grilles&lt;br&gt;Three types (specifications):&lt;br&gt;Type I – prevents an (adult) arm passing through - maximum aperture 65mm).&lt;br&gt;The Standard however requires that no aperture exceed 90mm in any direction;&lt;br&gt;Type II – may allow an arm to pass through but not bodily entry. Aperture size based on ratios of height to width e.g.: 300mm high, width must be less than 150mm (Note: maximum aperture size as specified for Type I screens does not apply to Type II screens); and&lt;br&gt;Type III – 3mm aperture openings (insect screens)</td>
<td>Not referenced in the BCA. This Standard deals with preventing entry to buildings through security doors and windows. It does not deal with occupants (children) falling through window grilles although it has some relevance to building falls as windows security grilles, where fitted, could also assist in preventing children falling through windows.&lt;br&gt;The Standard does not appear to address potential entrapment issues.</td>
<td></td>
</tr>
<tr>
<td><strong>AS 1926.1: 2007</strong>&lt;br&gt;Swimming pool safety – Safety barriers&lt;br&gt;100mm</td>
<td>The Standard is called up by the NSW Swimming Pools Act 1992 and Swimming Pools Regulation 2008. Also referenced in the BCA.</td>
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Appendix F - Boston Public Health Commission - ‘Kids Can’t Fly’ Brochure

WHERE CAN I GET WINDOW GUARDS?

Many local hardware stores and home improvement stores carry window guards.

Boston residents can purchase low-cost window guards at the:

BOSTON BUILDING MATERIALS CO-OP
Monday – Friday 8:00 a.m. – 6:30 p.m.
Saturday 9:00 a.m. – 1:00 p.m.
100 Terrace St, Boston, MA 02120
617-442-2262 • www.bbcem.com

HOW CAN I REQUEST WINDOW GUARDS FROM MY LANDLORD?

Boston Housing Authority (BHA) residents can call the BHA Work Order Line at 617-482-HELP (4357).

Installation of child safety window guards is mandatory. Ask your landlord about installing them in your building.

For more information, please contact:

BOSTON PUBLIC HEALTH COMMISSION
Childhood Injury Prevention Program
774 Albany St, 2nd Floor, Federal Bldg.
Boston, MA 02118
617-334-5197
www.bphc.org/childinjuryprevention

SAFETY TIPS TO PREVENT WINDOW FALLS

1. Lock all unopened windows and doors.
2. Keep furniture or anything a child can climb on away from windows.
3. Open windows from the top, not the bottom.
4. Install child safety window guards.
5. Be sure children are always supervised.

WHAT ARE CHILD SAFETY WINDOW GUARDS?

• Aluminum or steel bars with a minimum four-inch spacing that are installed in the bottom half of a double-hung window.
• Guards are designed and tested to withstand 150 pounds of pressure. Window screens are designed to keep bugs out and are NOT strong enough to prevent a child from falling.
• Operable window guards have an emergency release mechanism so that they can be easily removed by an adult in the event of a fire. Operable guards are recommended by the Boston Fire Department.
• Fixed window guards are permanently installed and cannot be removed. Fixed window guards must not be installed on any emergency or fire escape window.

WHO NEEDS WINDOW GUARDS?

• Any family with children under the age of seven should have window guards. Grandparents and caregivers should also have window guards.
• Window guard installation is recommended for all windows above the first floor and for the first floor of the window no over 15 feet above the ground.
• Window guards are not needed on windows that are locked shut, are open from the top, or have stops installed which prevent the window from opening more than four inches.

Facts on Window Falls & Child Safety Window Guards

In just six months in 1993, eighteen children in the Greater Boston area fell from windows. Three of them died.

Falls are the leading cause of injury to children age five and under. Window falls cause serious injuries, yet they can be prevented. By combining education (see Safety Tips) and technology (window guards), we have reduced the risk of children falling from windows.