

# Specifying Balcony Drainage Systems in Multi-Residential Design



## Introduction

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Since 2009, Australia has experienced successive years of record apartment approvals and developments.<sup>1</sup> 2015 saw for the first time the number approvals to build apartments exceeding the number of approvals for free-standing houses<sup>2</sup>.

This dramatic shift in the Australian residential landscape has brought about a host of new challenges to the industry, with the difficulty in meeting these challenges reflected in the increasing number of defects<sup>3</sup> experienced. These defects are of obvious concern to designers, developers, owners and residents.

## Balconies as the new backyards

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Australia's love affair with the outdoors has seen balconies become one of the most desirable features of any apartment. While demand is high, balconies are a relatively new construction paradigm.

Balconies are an external element of the building that must be properly integrated to work with the internal elements of the building. Balconies require appropriate drainage and isolation from the internal elements of the building.

Balcony design, and in particular drainage systems are a critical design consideration for multi-residential developments.

## Specifying Balcony drainage

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A common error in specifying linear drains on balconies is to indicate a standard linear drain for threshold areas where a specific Threshold drain is required. If this error is only discovered at a later stage of the building process, it can lead to costing problems for the whole building project. At worst the building project will be delayed because of the wrong drainage in place specified, which can lead to costly variations.

Providing sufficient drainage is essential for ensuring the safety and structural integrity of both the indoor and outdoor areas of an apartment. Due to its proximity to indoor areas, any breach of the sub-sill could see water penetrate wall and floor finishes, causing damage to moisture-sensitive materials, or even balcony collapses<sup>4</sup>.

Threshold drainage is an ideal solution for protection against water from the outside while still providing a continuous accessible path between the inside and outside.

Apart from the threshold drain there is still a place for standard linear drains. Popular placements for linear drains is at the outer edge or across a balcony in cases of extreme water exposure or for design considerations.



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## Threshold drainage for balconies

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A threshold drain consists of an external linear grate which sits externally beside the door track. An integrated, concealed, sub-sill collects water and condensation around the doorway and conveys it to the external drainage system.

Threshold drainage is a critical element of residential design, preventing water from entering the premises while at the same time providing an unbroken path between internal and external surfaces.

A linear threshold drain creates a disguised water barrier between the balcony and the inside of the apartment. This flat threshold removes 'trip-and-slip' hazards such as stepdowns and high gradient falls that exist with traditional doorways with rolling, sliding and bi-fold doors, while still achieving the water protection of the door system.

As the door systems drain the water to the outside of the building at the sill, the linear drain can be positioned on the outside of the door to capture that water while not impacting the designed water performance of the door system.

Keeping water out of a building is a requirement of the NCC. Threshold drains must meet Australian Standards for waterproofing *AS-4654 Waterproofing membranes for external above-ground use*. Requirements of these standards include ensuring a threshold drain:

- Is manufactured with 316 marine grade (corrosion resistant) stainless steel that withstands high water flows, harsh chemicals and suspended solids
- Can resist shrinkage and expansion of substrate materials, framing and finishes, and temperature variations from -5°C to +50°
- Substrate area is protected by waterproof membranes that meet strict requirements of AS-4858 Wet area membranes

Threshold drainage must also meet the requirements of *AS1428.1-2009 Design for access and mobility*. The thresholds at doorways of a continuous path of travel must:

- Have a maximum rise of 35mm
- Have a maximum length of 280mm
- Have a maximum gradient of 1:8
- Be located within 20mm of the door leaf which it serves

The edges of the threshold ramp must be tapered or splayed at a minimum of 45° where the ramp does not abut a wall.<sup>5</sup>

## Superior Quality Meets Sophisticated Design: The Stormtech Solution

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For over 25 years, Stormtech has delivered superior quality and elegant solutions for residential and commercial drainage projects. Further, Stormtech have pioneered many of the drainage solutions commonly used today such as the Slot Drain, Shower Channels, and Manifold Drainage.

The Stormtech Slimline range of products is suitable for multi-residential drainage projects, both small and large-scale. Featuring award winning design, Stormtech linear drainage systems provide extreme surface water removal efficiency, and ease of access in high traffic areas.

Stormtech was a pioneer of the level threshold drainage system. From its advent in universal access, to its emergence as a popular design solution,

Stormtech remains at the forefront of threshold drainage innovations and sleek contemporary designs.

Stormtech was directly involved in the development of Australia's Waterproofing standards (AS-3740 & AS-4654) and continues to work closely with certifiers, architects and inspectors to ensure their threshold solutions are of the highest quality and fitted for purpose.

Stormtech offers the largest variety of threshold drainage options in the market, including curved options to cater to any design needs. With an unrivalled range of grates, doortracks and sub-sill configurations, Stormtech can help tailor a customised threshold solution for any building project.

## REFERENCES

- <sup>1</sup> [http://delwp.vic.gov.au/\\_\\_data/assets/pdf\\_file/0015/301542/Better-Apartments-Discussion-Paper-FINAL-ONLINE-version.pdf](http://delwp.vic.gov.au/__data/assets/pdf_file/0015/301542/Better-Apartments-Discussion-Paper-FINAL-ONLINE-version.pdf)
- <sup>2</sup> <http://www.smh.com.au/business/the-economy/apartments-townhouses-continue-to-drive-australian-building-approvals-20150504-1mzb3y.html>
- <sup>3</sup> <http://www.domain.com.au/news/defects-are-the-biggest-concern-for-australian-apartment-owners-report-20150524-gh6r97/>
- <sup>4</sup> [http://www.mercurynews.com/my-town/ci\\_28325887/expert-dry-rot-caused-berkeley-balcony-collapse](http://www.mercurynews.com/my-town/ci_28325887/expert-dry-rot-caused-berkeley-balcony-collapse)
- <sup>5</sup> Australian Standards AS1428.1-2009 Design for access and mobility

