

Specification Guide to Pool Area Drainage



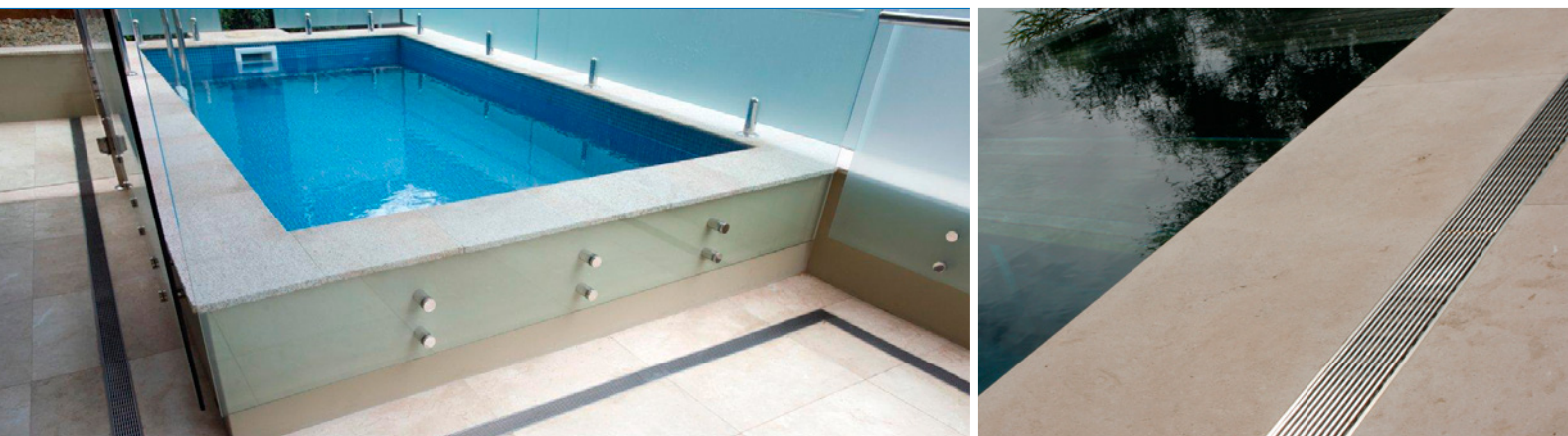
Introduction

This is a specification guide to surface water management systems for aquatic facilities such as pool and spa drainage applications.

The landscape design of the surrounding deck or patio of a pool area can be just as important to the enjoyment and longevity of the pool as the water itself. If poorly designed, it can compromise not only the aesthetics of the space, but also the safety of those using it and may not be as sustainable a solution as possible. The drainage of pool areas plays an important part in this.

The challenges of pool area drainage product design and specification for applications with high volume water flow are to counter health, safety, aesthetic and sustainability issues.

Here we review the specification of drainage products in some detail for architects, landscape architects and garden designers to sustainably design for high capacity flow whilst minimising risk.



The importance of pool area drainage

Generally speaking, a continuous walkway around a pool should provide drainage away from the pool edge in a manner that will not create muddy, hazardous or objectionable conditions within the pool enclosure and will facilitate unobstructed backwash and wastewater drainage.

Health and Safety - The combination of water from the pool and popular concrete or tiling deck options can quickly become hazardous. Slips and falls on pool decks are common due to the large amounts of moisture, slick floors, and minimal footwear worn.

Aesthetics - When there is insufficient surface drainage on the deck algae and mildew problems can occur, which are further magnified by water ponding (standing water) on non-porous concrete or tiled surfaces. This algae and mildew can easily grow out of control and cause difficult to remove staining to the decking.

Sustainability - Increasingly relevant to pool surround design is the sustainable specification of a swimming pool or spa drainage that addresses the high capacity water flow associated with it (water splashed out of the pool). Where there is insufficient drainage, there can be increased water waste through improper drainage handling and attenuation of the waste pool water contaminating the stormwater system.

Directing water off the deck to a grate and drainage system is critical to improving safety, aesthetic and sustainability issues and to avoid the need for redoing poorly specified work and the costs that this kind of remedial work entails.

The legislative considerations of pool area drainage

Legislation prohibits the disposal of backwash water from swimming pools into a stormwater system as it can be environmentally harmful to natural ecosystems. This renders it necessary for pool and spa drainage solutions to also be considered integrally with the surface water management system of the property and the wider context they are related to.

The International Code Council

The International Code Council recommends a pool deck should slope away from the pool towards the drain no less than 1% (3mm per metre) but no more than 2% (6mm per metre), and shall be constructed and finished to prevent standing water¹. Water is directed to the drain, the choice of which will determine the level of water removal.

Decks should be slip-resistant and not interfere with deck drainage or impede emergency access.

Pool drains are designed to collect water from the patio and divert it to another location. Modern pool drainage solutions should provide a balance of style and sustainability, dispose of backwash or wastewater correctly, whilst providing maximum surface water drainage, minimising water loss and keeping the deck dry and slip resistant to maximise safety.

Further details from the Australian Code of Practice are provided later in this Specification Guide.



Linear drainage has become popular in residential applications for its ability to complement modern pool design

The specification of drainage grating and channels

Dimensions:

Traditionally speaking, the wider the drainage grating and larger the surface area, the better the water removal will be. Standard traditional widths are 200 & 300mm, and depths are the same at 200 & 300mm respectively.

Slimline drain widths are 38mm/65mm/100mm, 21mm-25mm/26mm, with depths of 35mm/40mm/45mm and a variety of drain lengths are available. Custom dimensions are also available.

Materials:

The two most common types of materials for drainage channels are uPVC plastic and stainless steel. Modern uPVC is manufactured from tough, durable, UV stabilised plastics, and also anti-corrosion properties to ensure no damage even after long-term exposure to the elements.

316 “marine grade” Stainless steel is the preferred material which is both aesthetically pleasing and provides durability, performance and easy maintenance against common chemicals used in pool environments.

Styles:

There are two different styles of pool deck drainage products– spot drains and strip drains (trench drains).

Spot drains are typically smaller single drains, tied together underground by PVC pipe. While this often a cheaper solution a spot drain may not be able to provide the water removal required for pool areas.

Linear Drains (or trench drains) are long narrow grates which water trickles into the flows through the underground trough away from the patio. Traditionally popular in public and commercial pool settings, this drainage type has become popular in residential applications for its ability to complement modern pool design while providing high water volume removal. Trench drains work particularly well with wet-edge or infinity pool applications, where the grate and drain can run parallel to the length of the pool.

An additional benefit of infinity/wet-deck pool design is the reduced wave action in the pool. This consequently reduces pool water loss by returning this water to the pool system instead of the waste system or contaminating the stormwater system.

Specifying Stormtech

The core reasons to specify Stormtech derive from the large variety of options when it comes to design, size and flow rates.

A key differentiator of Stormtech drainage products is its patented manifold drainage system. The Special Assembly is a manifold drainage system that reduces the need for traditional wider grating. It is composed of a PVC channel with outlets every 200mm connected via downpipes to corresponding sockets in the pipe below. This allows the channel to be installed level while the pipe is given sufficient fall to be self-cleaning.

The Special Assembly is then completed with a stylish slimline stainless steel grate.

Stormtech's Slimline 38G90 and 65AG100 Special Assembly products are unique to the Australian market, providing narrow profile, high capacity drainage systems that allow for flexibility in landscape and pool design and construction, including wet edge or infinity pool situations. These products respectively have either a 38mm or 65mm wide stainless steel grate, available in wedge-wire, or for a more budget conscientious option, a punched hole or slotted version.



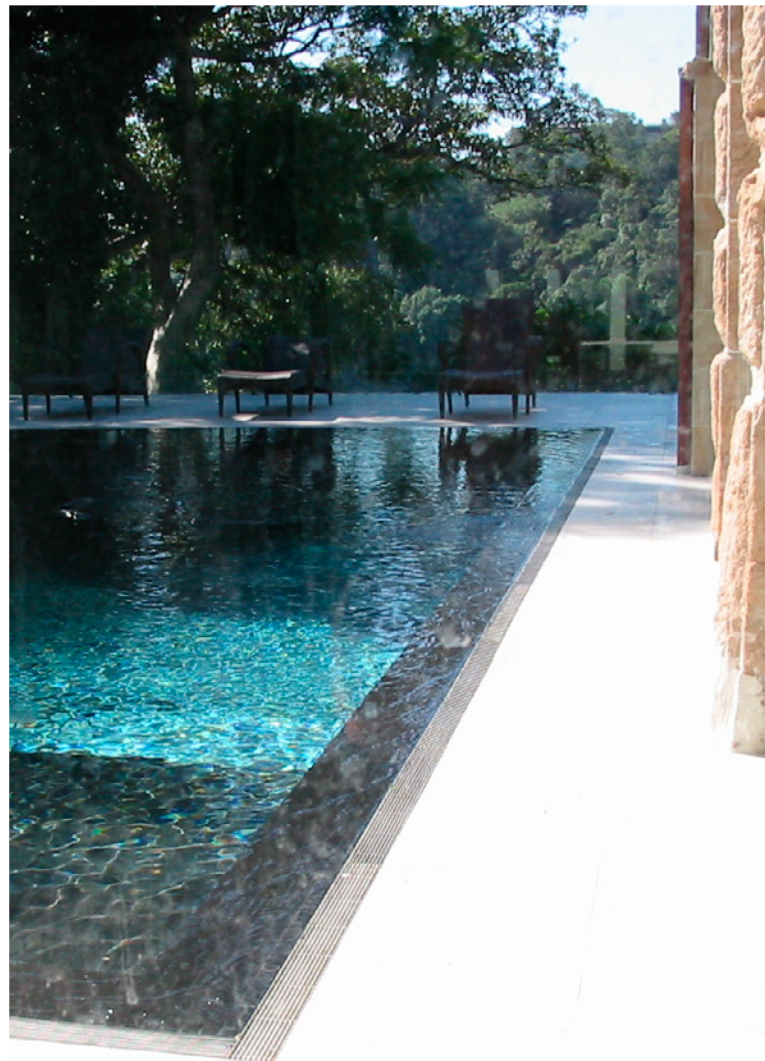
All Stormtech grates are made of quality stainless steel manufactured in Australia

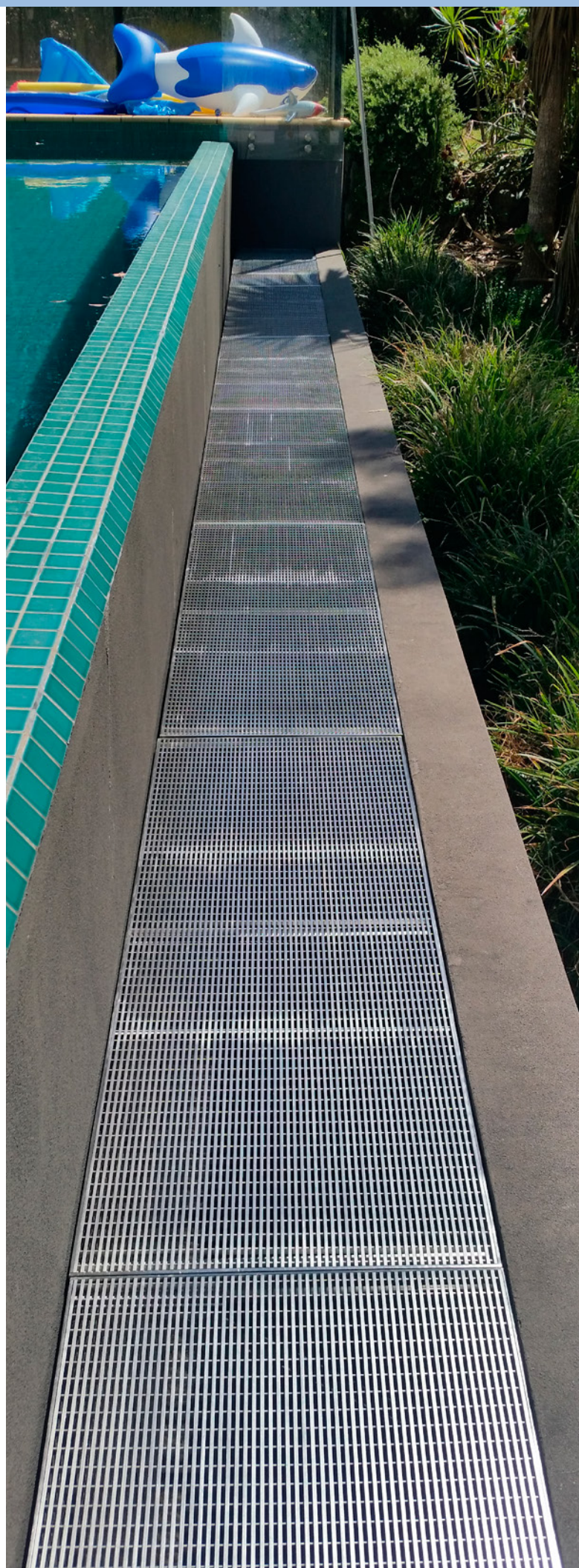
Stormtech Slimline Drainage Grates

Stormtech Slimline range provides the perfect drainage solution for pool surrounds. The product is also used as accessory drainage within or around the coping to help protect garden and grass areas from contamination by pool water or to reduce the impact of stormwater on the pool water system.

This advance in plumbing has enabled Stormtech to carve out a niche for itself at the high end of the architectural design market, for residential as well as commercial projects. In recognition of this innovative product, Stormtech was awarded a DesignMark at the 2004 Australian Design Awards.

All Stormtech grates are made of quality stainless steel manufactured in Australia. They are available in various designs, in stock widths of 38 mm, 65 mm or 100 mm. The grate fits into a shallow PVC channel or stainless steel channel that is supplied as part of a ready-to-use installation kit. Alternatively, custom fabrications to specific requirements are also available. The system connects directly with all standard plumbing fittings and has a Watermark Standards Australia certification.





The Australian Code of Practice for the design, construction, operation, management and maintenance of aquatic facilities

The Australian Code of Practice for the design, construction, operation, management and maintenance of aquatic facilities published by the Executive Director, Public Health under the provisions of section 344A(2) of the Health Act 1911, read in conjunction with the Health (Aquatic Facilities) Regulations 2007 states that the

“...Improper design, maintenance or operation can result in aquatic facilities becoming a source of infection and injury. Aquatic facilities may be used by people who are of varying ages, states of health and standards of hygiene.”

Premises classed as aquatic facilities under the Health (Aquatic Facilities) Regulations 2007 have to comply with the following:

2.21 Backwash Water

“The onsite discharge of backwash water from an aquatic facility water body shall be disposed of in a manner that has been approved by the local government.”

9.15 Wastewater disposal

“9.15.1 AS 2610.1:2007 Section 2.18 - where filter backwash is required approval of the backwash disposal method is required from the regulating authority (eg. Local government or Water Corporation).”

“9.15.2 Code Section 3.34 - where cartridge filters are used a nominated onsite wash down point is required and such must be acceptable/approved of by the local government.”

“9.15.3 AS2610.1:2007 Section 2.18 - spas require a means for the disposal of 100% water contained within them & each week they are required to dump/dispose not less than 25% of their total water volume. Approval of the spa-dump disposal method is required from the regulating authority (e.g. Local Government if onsite or Water Corporation if to sewer).”

9.7 Surface Finishes

“9.7.1 Code Section 2.5 – if surface area >10m² must have compliant colour finish except when maximum depth < 0.8m & exclusively for adult use.”

“9.7.2 Code Section 2.5 - must have smooth, impervious, durable, easily cleanable & non-slip surface and without protrusions.”

“9.7.3 AS2610.1:2007 Section 2.19.3 - all parts that may be contacted by users are to be finished so as to not provide any physical injury or entanglement hazard.”

EPA 181/04 Disposal of Swimming Pool Backwash Water

The 2004 Environment Protection Agency document EPA 181/04 Disposal of Swimming Pool Backwash Water describes a pool or spa owners obligation to ensure backwash water does not enter natural waterways.



REFERENCES

¹ http://publicecodes.cyberregs.com/st/ca/st/b200v10/st_ca_st_b200v10_31b_par064.htm

