

The Experts' Guide to Waterproofing

For Linear Drainage Installations



Introduction

A marvel of practical efficacy and chic ultra-modern design, linear drains have emerged as the preferred choice for construction professionals seeking a streamlined, adaptable and elegant drainage solution.

However, a drainage solution is only as good as the quality and rigour invested in its installation.

In an industry riven by inconsistent – sometimes contradictory – construction standards, it seems too many ill-fated homeowners are left to confront the ruinous consequences of substandard lineal drainage installations and resultant water incursions.

Despite its critical role in ensuring failsafe, leak-resistant drainage, waterproofing rates among the most commonly reoccurring building defect.¹ According to recent surveys by the QBCC, complaints regarding defective waterproofing rank third highest overall of building work grievances.²

Fixing waterproofing failures – more often than not – requires drastic and costly remediation: from mechanical removal of floor and wall tiles to the complete reapplication of waterproofing membranes. Unless immediate action is taken to reseal wet areas, rising damp and rot can rapidly spread throughout building interiors, not only undermining the building structure, but creating a serious health hazard for occupants.

A last line of defence against seepage and damaging water ingress, the importance of quality waterproofing cannot be overstated.

This paper will thus seek to address the critical importance of quality waterproofing (and the consequences of its failure), and offer a host of expert tips to ensure failsafe waterproofing provisions for your next lineal drainage installation.



Dry Matters: The Importance of Quality Waterproofing

Drainage is entrusted with a singular, though vital, building function: to convey wastewater safely and efficiently from the building interior.

Failure to effectively discharge water could prove an unmitigated disaster for the built area. Indeed, a potential water breach will not only ruin permeable wall and floor materials, and provide fertile ground for toxic mould, but could very well threaten the building's structural integrity.

As the last defensive bulwark against damaging water incursions, a quality waterproofing treatment is indispensable to your drainage installation. Yet the susceptibility of waterproofing solutions to failure remains a fundamental concern for many builders and home/building owners alike.

As Kubal affirms, “[the presence of water] below-grade makes interior spaces uninhabitable not only by leakage, but also by damage to structural components as exhibited by reinforcing steel corrosion, concrete

spalling, settlement cracks, and structural cracking.”³

The success of any waterproofing solution is contingent on meeting two basic conditions. According to the BCA Performance Requirement for Wet Areas (Part 2.4.1), “water must be prevented from penetrating:

- behind fittings and linings; or
- into concealed spaces, of sanitary facilities, bathrooms, laundries and the like⁴

The Australian waterproofing standards AS3740 (for internal waterproofing), and the recently amended AS4654 (Waterproofing for exterior use above ground) and AS4858 (Wet Area membranes) regulate waterproofing installation practices for Australia's building industry. Strict adherence to these standards will ensure your waterproofing system can effectively resist water leaks across any high risk wet areas and maintain mandated BCA compliance.

Watertight Planning: Waterproofing for Linear Drainage

Simply defined, waterproofing is the process of applying a hydrophobic membrane to render a floor or wall surface impenetrable to water.

According to Australian Building Inspection Services (ABIS), a successful waterproofing system must be designed to resist:

- 1) Differential movement/distortion (i.e. natural movement of masonry over time)
- 2) Exposure to cleaning materials, ultraviolet light, heat ageing, water immersion & alkalis from cement mortar
- 3) Movement along the substrate joints⁵

While waterproofing techniques and materials have undergone marked improvement over the last 50 years, the process by which these projects are developed and managed has evolved little.⁶

As Abendroth and McElvogue argue, the pressure on builders to ensure waterproofing solutions are cost-effective, simple-to-apply and environmentally friendly has increased the susceptibility of below-grade systems to failure.⁷

For linear drainage, still a relatively novel drainage option, this burden is compounded by a general misunderstanding of key installation requirements.

It is important to note that while key differences do exist (particularly above-grade), linear and centralised drainage waterproofing installations are overwhelmingly alike. Indeed, like their standard centralised counterparts, lineal drains must be installed above and separate to the waterproofing layer – a consideration overlooked by many.



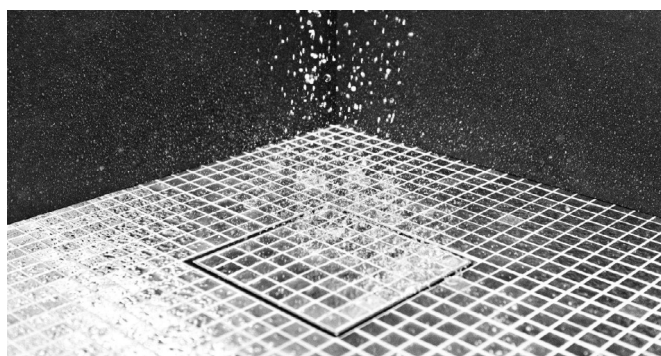
9 Tips for Failsafe Waterproofing of Your Linear Drainage System

1) Exposure to outside elements (UV radiation, significant temperature shifts and traffic abrasions etc.) places undue stress on exterior waterproofing membranes. It is critical to ensure correct waterproofing provisions for internal (AS3740) or external wet areas (AS4654/AS4858) are met. Please consult relevant waterproofing standards.

2) Linear drains expand the area of drainage to ensure greater flow, but in turn expose more surface areas to potential water ingress. It is imperative that waterproofing membranes are applied across the entire wet area surface; full floor waterproofing is mandated for particle board and plywood sub-bases. Be mindful of substrate materials (timber or concrete), as this will determine the correct positioning of waterproofing layer. Refer to AS3750 for sub-base waterproofing requirements.

3) Waterproofing materials have evolved markedly over the last decade. Two modern waterproofing methods are recommended for *leak control* or *bonded flange* installations (most common for linear drainage): **roll-on liquid membranes** or **fabric membrane sheets**. While each have unique advantages depending on installation requirements, both systems are designed to bond directly to the drainage flange, providing seamless coverage across the entire drainage wet area.

4) A quality drainage flange will arrest leaks into mortar screen beds. Avoid the temptation to modify the leak control flange to fit a particular setting (such as cutting the flange to fit drain against a wall), as this could promote leakage around the mortar bed. Consider purchasing an adjustable leak control flange which allows the flange to adhere directly to the waterproofing membrane.



Adjustable leak control flange



5) The drain flange **must** sit flush with the floor surface and **never** proud of the substrate.

6) Waterstops provide a vital secondary barrier to the passage of water across construction joints. All hobless showers must be fitted with waterstop angles to buttress against water ingress. For unenclosed (or curbless/hobless) showers, the waterstop termination should be set at a minimum distance of 1500mm from the shower rose.⁸

7) For shower spaces and other high-flow areas (particularly outdoors), falls must be graded between 1:60 and 1:80. For bathroom floors, falls must not exceed 1:100. Unlike central point drains, linear drains require only a single slope to the water outlet.

8) Avoid placing excess pressure between wall/floor and the waterproofing joints (where wall and floor tiles meet), as this could induce water ingress.

9) Unenclosed shower walls must be waterproofed to a **minimum** 150mm above the floor substrate and 25mm above the maximum retained water level.

Expert Advice from Australia's Premier Linear Drainage Manufacturer

Australia's leading linear drainage manufacturer and supplier, Stormtech is committed to providing the highest quality, expertly tailored drainage solutions for today's building projects.

Boasting an unrivalled depth of experience in linear drainage solutions, Stormtech welcomes questions on product selection, code compliance and fault-free installation. To ensure proper installation, Stormtech will gladly advise clients on appropriate waterproofing provisions for your linear drainage project.

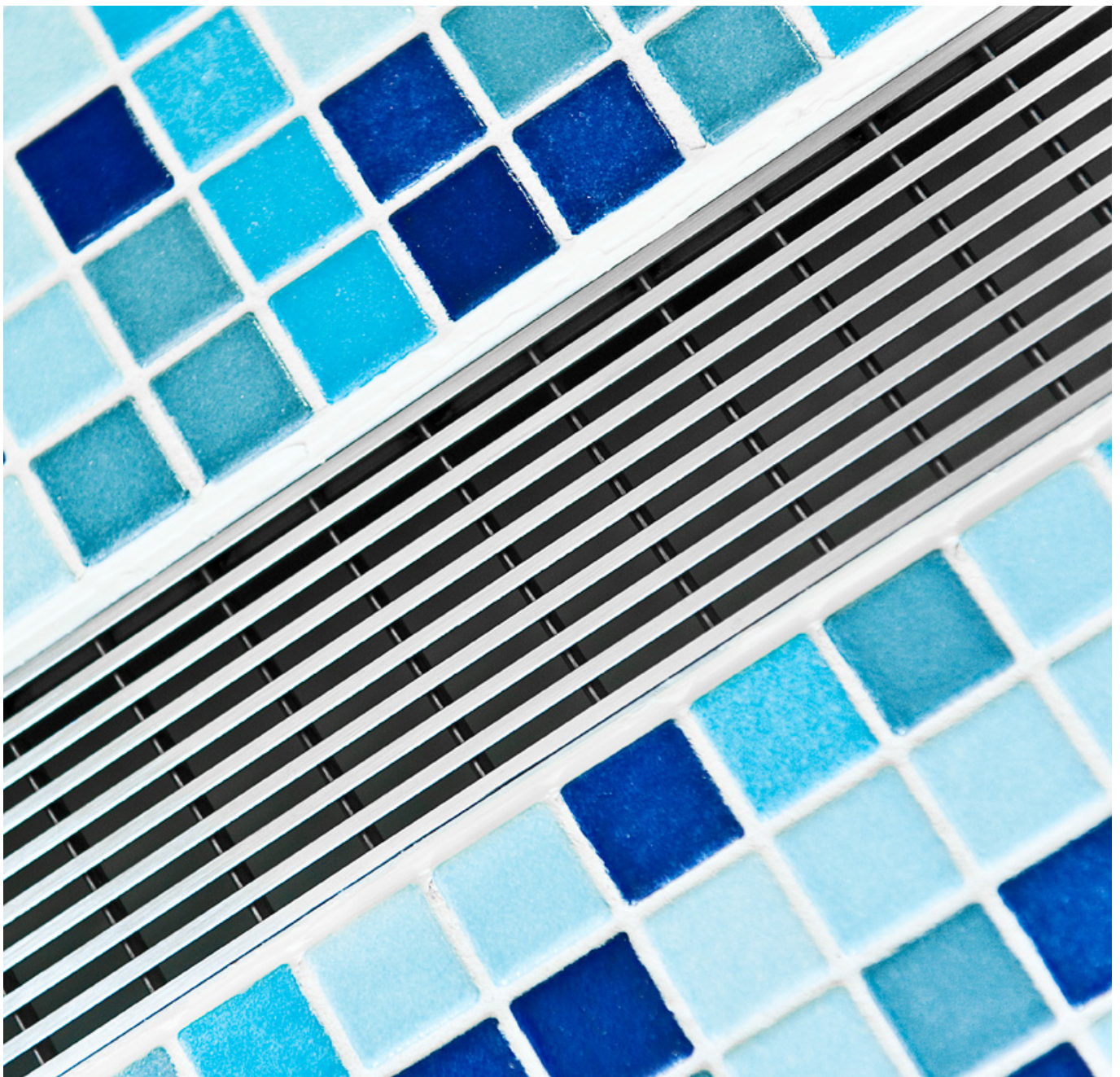
Stormtech works proactively with plumbing advisory services to ensure drainage is not only fit for purpose, but

remains fully compliant with Building Code of Australia (BCA) regulations and Australian waterproofing standards AS-3740 (2010), AS-4654 (2012) and AS-4858 (2004).

All Stormtech products are WaterMark™ certified (Australia) and are fully approved by US UPC and the Canadian Standards Association (CSA).

For expert advice on your next linear drainage installation, call us on (02) 4423 1989, or visit us at

www.stormtech.com.au





[1] Australian Building Inspection Services (ABIS), 'Waterproofing', 2014. Accessed 22/10/14: <http://www.abis.com.au/waterproofing>

[2] Queensland Building and Construction Commission (QBCC), 'QBCC Connections – February, 2014 Issue', Accessed 22/10/14: <http://www.qbcc.qld.gov.au/qbcc-connections-february-2014-issue>

[3] Kubal, M.T., 'Construction Waterproofing Handbook: Second Edition', The McGraw-Hill Companies, Inc., 2008.

[4] Cited in: Schafer, B., 'Waterproofing Showers and the Building Code of Australia', *TileToday*, Issue 56, p. 112

[5] ABIS, 'Waterproofing', 2014.

[6] Abendroth, J.L. & McElvogue, M.R., 'Waterproofing Design and Construction Coordinating and Sequencing', *28th RCI International Convention and Trade Show*, p. 177.

[7] *Ibid.* p. 177.

[8] Schafer, B., 'Shower Splash and How to Drain It', *TileToday*, Issue 82, p.68.

