

Waterproof systems installation to showers and bathrooms

This bulletin provides important information for those involved in the design, certification, and installation of bathroom waterproofing systems – including builders, building surveyors, designers, architects, suppliers, and applicators. It highlights common construction issues identified during Building and Energy’s general inspection of residential waterproofing, aiming to support improved practices and compliance across the industry

Background

Building and Energy’s general inspections assess how effectively building standards are being applied by the industry. Consistent with our audit priorities for 2022-2024, a general inspection of waterproofing of wet areas, with a focus on shower areas; was conducted, focusing on a selection of Class 1a and Class 2 buildings. These inspections evaluated compliance with the relevant provisions of the National Construction Code (NCC) 2019 Amendment 1 (Volumes 1 and 2).

This bulletin provides updated information to support compliance with NCC 2022 Amendment 1 and NCC 2025 (BCA 2025), ensuring relevance and applicability moving forward for all stakeholders involved in waterproofing wet areas in Class 1a and Class 2 buildings. For reference, clauses from NCC 2019 Amendment 1 are included in brackets.

Waterproofing systems are typically designed and specified by membrane manufacturers using a holistic approach, however this detailed system design information is often not contained within building permit approval documentation. The correct application of the waterproof membrane is fundamental to a system’s effectiveness as it forms the primary barrier against moisture transfer to unprotected areas.

Building and Energy’s general inspection identified deficiencies in the application of waterproofing systems. It also found that project documentation often lacked sufficient detail regarding waterproofing in shower areas and bathrooms.

Common non-compliance issues found in shower and bathroom waterproofing included poorly installed perimeter flashing waterstops and substandard application practices.

It is the builder’s responsibility to ensure that all components of the waterproofing system – including waterstops, bond breakers, and reinforcement tape – are installed correctly to maintain system integrity.

Waterproofing performance requirements

The NCC outlines specific performance requirements for waterproofing in showers and bathrooms:

- **Class 2 apartments (NCC Volume One):**
 - F2P1 – Wet area overflows [2019:FP1.6]
 - F2P2 – Wet areas [2019: FP1.7]
- **Class 1 houses (NCC Volume Two):**
 - H4P1 – Wet areas [2019: P2.4.1]

These performance requirements aim to protect the building structure and maintain occupant amenity by preventing water penetration:

- Behind fittings and linings
- Into concealed spaces within sanitary facilities, bathrooms, laundries, and similar areas

Additionally, for Class 2 to 9 buildings, the NCC requires that overflow water must not penetrate:

- Another sole-occupancy unit used for sleeping accommodation
- A public space located on a lower storey within the same building

Compliance pathway

It is essential that waterproofing work complies with the selected NCC compliance pathway – either a Deemed-to-Satisfy (DtS) Solution, a Performance Solution, or a combination of both, as outlined in NCC Part A2G1 [2019: A2.0, A2.1].

For wet area construction:

- **NCC Volume One (Class 2 buildings):**
 - DtS Clause F2D2 – Wet area construction [2019: F1.7(a) and (b)]
 - Compliance with AS 3740 satisfies performance requirements F2P1 and F2P2
- **NCC Volume Two (Class 1 buildings):**
 - DtS Clause H4D2 – Wet areas [2019: 3.8.1.1, 3.8.1.2]
 - Compliance with AS 3740 or Part 10.2 of the ABCB Housing Provisions (ABCB HP) satisfies performance requirement H4P1

When using the DtS pathway, the waterproofing solution must demonstrate compliance with either AS 3740 or the ABCB HP, but not a combination of both. A combination may only be used when developing a Performance Solution.

Compliance Focus Areas for Improvement

Substrate preparation

AS 3740:2021 Part 4.4 requires that surfaces prepared for membrane application must be smooth, free of protrusions and voids, clean, dry, and free from dust and contamination. Most membrane manufacturers specify similar substrate preparation requirements in their installation instructions.

As part of a waterproofing system, manufacturers typically require a primer to be applied to the substrate. It is essential to use the correct primer that is compatible with the membrane being installed. Installation instructions may also specify different primers for porous and non-porous substrates.

Failure to properly prepare and prime the substrate can lead to several issues, including:

- Membrane delamination
- Formation of pinholes
- Inadequate membrane coverage
- Damage during installation
- Latent failure of the membrane system

Proper preparation and priming are critical to ensuring the long-term performance and compliance of the waterproofing system.

Membrane corner bond breaker and reinforcement

Whether using AS 3740 or the ABCB HP as your chosen compliance pathway, the requirements for installing waterproof membranes and bond breakers are largely consistent.

Both ABCB HP Part 10.2.27 and AS 3740:2021 Clause 4.10 and Table 4.10 specify the minimum bond breaker or tape width for Class I, II, and III membranes. These standards require the use of a bond breaker at any change of direction, change of material, or movement joint for bonded membranes.

If tape is used as a bond breaker, it must either:

- Prevent the membrane from bonding to it, or
- Possess elastic properties similar to the membrane.

Additionally, ABCB HP Figure 10.2.27 Note (3) and AS 3740:2021 Table 4.10 Note (3) require that the bond breaker allows the membrane to maintain even thickness. Therefore, bond breakers and reinforcement tape must be applied smoothly and continuously, without lumps or voids. Lumps can hinder the membrane's ability to stretch evenly, while voids may increase the risk of puncture.



Figure 1: Poorly prepared wall/floor junction in shower and incorrectly applied bond breaker fillet.

Proper substrate surface preparation is essential to ensure a smooth and effective application of bond breakers and reinforcement tape. Thorough preparation helps minimise the risk of lumps and voids, which can compromise the integrity of the waterproofing membrane.

When installing bond breakers and reinforcement tape, it is critical to follow the manufacturer's installation instructions for the waterproofing system. Adhering to these guidelines ensures the system performs as intended and maintains compliance with the relevant standards.



Figure 2: Well prepared junction in shower and correctly applied bond breaker fillet.

Shower area waterstop

The DtS provisions in NCC Volumes One and Two require the installation of waterstops in shower areas. Both AS 3740:2021 and the ABCB HP provide similar guidance on the installation and positioning of waterstops.

- For enclosed showers (as defined in NCC 2022 ABCB HP Schedule 1 and AS 3740:2021 Part 1.3), the waterstop must be placed where the shower screen is to be installed.
- For unenclosed showers, requirements differ slightly:
 - ABCB HP mandates a waterstop at least 1500 mm from the shower rose outlet.

- AS 3740:2021 Clause 4.8.2 offers two options:
 - Type 1 unenclosed shower: Waterstop placed under the splash restriction device and at the shower opening.
 - Type 2 unenclosed shower: Waterstop placed a minimum of 1500 mm from the shower rose outlet.

In cases where a waterstop is installed at the door opening of the wet area, both ABCB HP and AS 3740:2021 allow the shower area waterstop to be omitted – but only if the entire bathroom is designed as an unenclosed shower. This requires:

- The entire floor area to be waterproofed
- Falls to the drain throughout
- The floor to be drained as per shower area requirements
- The door opening waterstop to be at least 1500 mm from the shower rose outlet

In some bathroom configurations, achieving this arrangement may not be feasible, which would prevent the classification of the entire bathroom as an unenclosed shower under the DtS provisions. Note: AS 3740:2021 and the ABCB HP do not identify aluminium as being a waterproof material. As a result, aluminium may not be appropriate for use as a waterstop unless suitably treated.

Shower hob waterstop

Both ABCB Housing Provisions (Part 10.2.16) and AS 3740:2021 Clause 4.6.2 allows for the installation of a shower screen in an enclosed area on top of a hob without a waterstop, provided the screen is positioned on the inside edge of the hob.

However, in Western Australian construction practices, shower screens are commonly placed on the outside edge of the hob. In this configuration, the top of the hob must be treated as part of the shower area floor. This means:

- The hob surface must have fall to the drain
- It must be drained in accordance with shower area requirements
- A waterstop must be installed on the hob, in line with the requirements of ABCB HP or AS 3740

Failure to meet these conditions may result in non-compliance with waterproofing standards and increase the risk of water ingress or membrane failure.

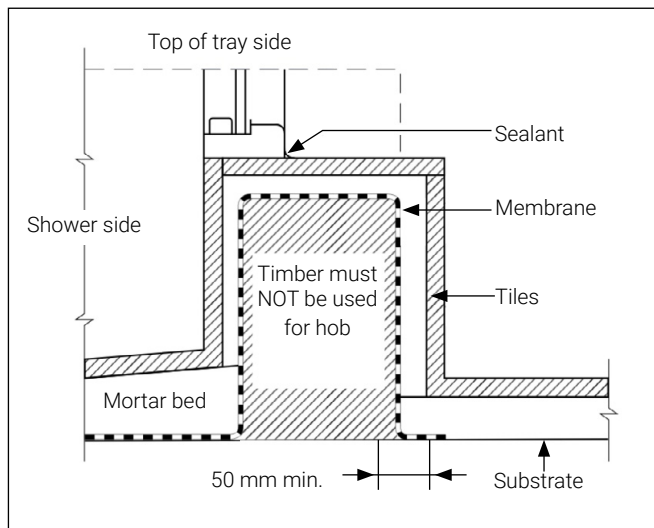


Figure 3: Typical hob construction – internal membrane – ABCB Housing provisions Figure 10.2.16 (see also AS3740:2021 Figure 4.6.2)

Vertical waterstop

The 2021 edition of AS 3740, referenced by NCC 2022 and NCC 2025 (BCA 2025), introduces a requirement for the installation of a vertical waterstop in specific shower area configurations.

Clause 4.8.5 of the standard requires that a vertical waterstop must be installed where the shower screen abuts the wall, when the shower area is located within 200 mm of the exit from a wet area. This requirement applies to enclosed showers, as defined in AS 3740:2021 and the ABCB Housing Provisions.

This provision ensures that water is effectively contained within the shower area, reducing the risk of water ingress into adjacent spaces and supporting compliance with NCC performance requirements.

Perimeter flashing waterstop

Both AS 3740:2021 Clause 4.9.1 and ABCB HP Part 10.2.24 require the installation of a perimeter flashing around bathroom floors. This flashing must include a waterstop at floor-level openings, such as doorways.

Key requirements include:

- The vertical leg of the waterstop must finish flush with the top of the finished floor level, ensuring a continuous barrier against water ingress.
- When a cavity sliding door is installed at the wet area entry, the waterstop must be returned across the cavity opening to maintain waterproofing integrity.

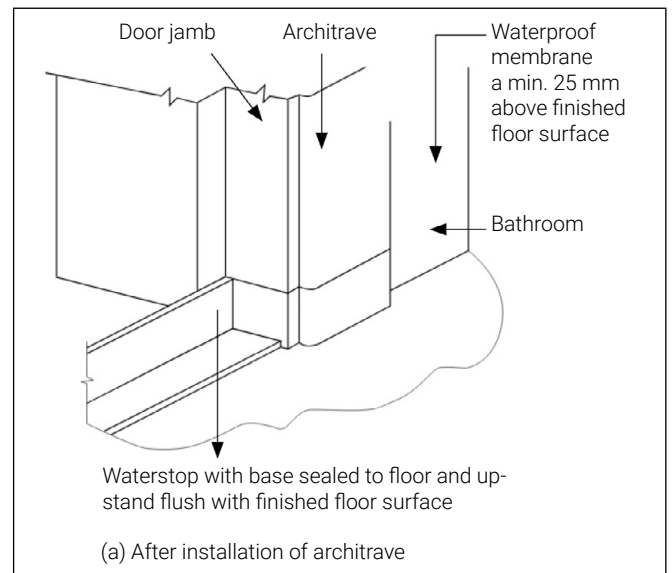


Figure 4: Typical bathroom door detail for bathroom perimeter flashing waterproofing – ABCB Housing Provisions Figure 10.2.24

These provisions are critical to preventing water migration beyond the wet area and ensuring long term performance of the waterproofing system.

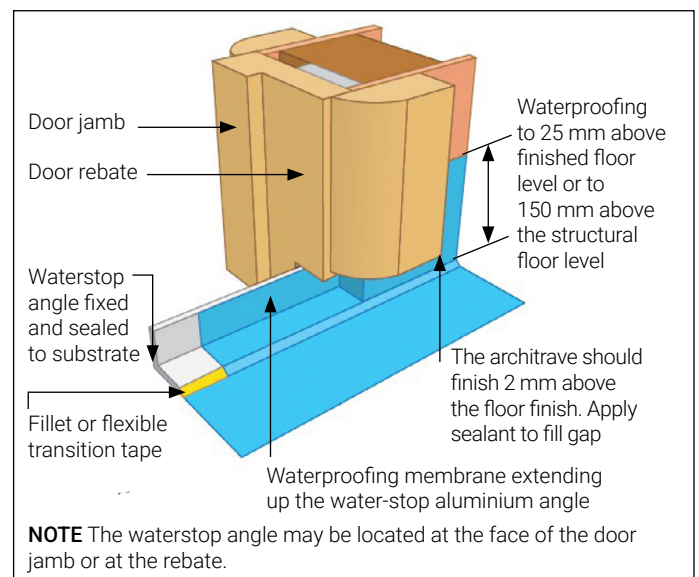


Figure 5: Typical bathroom cavity sliding door waterproofing detail - AS3740:2021 Figure 4.9.1(B)

Membrane film thickness

Both ABCB HP (2022) Part 10.2.2 and 10.2.5 and AS 3740:2021 specify which parts of domestic wet areas must be waterproofed or made water-resistant. However, they do not prescribe minimum membrane thickness requirements.

Membrane manufacturers typically develop systems tailored to specific applications. Their product data will identify the membrane class and specify installation requirements, including the required wet film and/or dry film thickness.

This information is usually available on the membrane container, with more detailed guidance found on the manufacturer's website or in published literature.

It is essential that applicators understand the specific membrane they are using and follow the manufacturer's installation instructions. These products are tested and warranted to perform according to those instructions. Applying the membrane at less than the specified thickness may result in failure under stress, such as breaking before reaching the required elongation.

To ensure compliance, applicators should test wet film thickness during installation as part of their quality assurance process.



Figure 6: Wet film thickness gauge used to measure film thickness of applied material.

General

Achieving suitable falls and installing compliant waterstops is essential for directing water to drainage outlets and meeting the performance requirements of the NCC.

During the design phase of wet areas, it is important to:

- Consider the intended compliance pathway (DtS or Performance Solution).
- Select and clearly specify the waterproofing system to be used.

Builders and designers are encouraged to nominate a specific membrane system for use by the applicator. Without a clearly specified system from a membrane manufacturer, there is a greater risk of:

- Incompatible products being used
- Elements not being installed in accordance with manufacturer instructions
- Membrane failure due to incorrect application

When installing waterproofing elements, it is also critical to assess:

- Which building elements require protection
- Where water needs to be directed to ensure effective drainage and long-term performance

Further resources

- [Industry Bulletin 134: Improving compliance of wet areas](#)
- [General Inspection Report 10 - Residential Class 1 and Class 2 shower areas 2023-24](#)

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