WET AREA PERFORMANCE REQUIREMENTS

Wet area designs must comply with Building Code Clause E3 *Internal moisture*, the key Building Code reference for wet area design and construction. So what do E3 and E3/AS1 contain, and what is missing?

By Trevor Pringle, ANZIA, BRANZ Principal Writer

As with all Building Code clauses, Clause E3 has objectives, functional requirements and performance requirements. For this clause, the objectives are to:

- safeguard against illness, injury or loss of amenity from accumulation of internal moisture
- protect adjacent household units from damage caused by free water.

Design requirements

The functional requirements stated in Clause E3 are that buildings must be constructed to avoid:

- fungal growth
- free water overflow into an adjoining household unit
- damage to building elements caused by moisture.

The performance requirements in Clause E3 are:

- to provide an adequate combination of thermal resistance, ventilation and indoor temperature to all habitable spaces
- to prevent overflow water from sanitary fixtures and appliances in order to avoid damage or loss of amenity
- that floor surfaces in spaces containing sanitary fixtures and appliances must be impervious and easily cleaned
- that all surfaces adjacent to sanitary fixtures and appliances must be impervious and easily cleaned
- that surfaces of building elements that may be splashed must be impervious and easily cleaned and must be constructed to prevent water penetrating behind linings or into concealed spaces.

If a design meets these functional and performance requirements, it is deemed to meet the requirements of Clause E3.

Sections in Acceptable Solution

E3/AS1, the Acceptable Solution to Clause E3, provides a deemed to comply solution for wet area design, but following it is not mandatory. The sections of the Acceptable Solution are based on the functional requirements of E3.

The first section is about preventing fungal growth by insulating, heating, ventilating and ensuring condensation can be removed from metal windows. A minimum level of insulation is required to restrict condensation, and spaces must be ventilated in accordance with Clause G4/AS1.

Second is preventing water overflow from sanitary fixtures by draining with a floor waste that follows G13/AS1 and using impervious floor coverings coved or sealed at the floor to wall junction to prevent migration to other tenancies.

Further restrictions on showers

The final section is about accommodating water splash by using impervious finishes – those suitable for use in splash zones are listed in the Acceptable Solution. For showers, further restrictions on material use are applied, and tiles must be installed over a membrane or an impervious substrate (such as steel-trowelled concrete).

Other design guidance

While neither is cited in Acceptable Solution E3/AS1, AS 3740:2004 *Waterproofing of wet areas within residential buildings* and AS/NZS 4858:2004 *Wet area membranes* provide additional design guidance.

Issues with E3/AS1

However, there are some issues with the information in E3/AS1. It has not been significantly altered or updated since it was first issued in 1992 and is inconsistent in the level of detail it gives. E3/AS1:

- does not clearly define what a wet area is – it talks of splash zones and showers and does not differentiate the levels of risk present
- does not specifically exclude the use of timber linings in showers (while other materials such as vinyl wallpaper and cork are specifically excluded)
- does not recognise the higher levels of risk from modern open bathroom (shower) design and high-flow showerheads
- does not cover removable shower heads on a flexible hose connection
- does not adequately define or deal with other wet areas such as the toilet, laundry, kitchen or spa.

E3/AS1 does require:

- waterproof grout to tiles in splash areas. (The only grout that is waterproof is an epoxy, which is seldom used in practice –

cement-based grouts are not waterproof. In showers, it specifically asks for a waterproof membrane over absorbent substrates or lining materials.)

- floor drains only in multi-unit dwellings
- specific finishes for the walls around urinals but not the floor
- only 50 mm clearance between the bottom of a sheet impervious lining and a shower tray.

It allows:

- the use of timber boarding with an applied coating in splash zones – the problem for designers is ensuring the integrity of the coating and therefore the protection when the timber moves (as it will)
- a single seal to a round-edged bath which will leak when the sealant degrades or debonds
- a shower curtain to 'enclose' a shower.

E3/AS1 provides no guidance on:

- the extent of an impervious finish around the perimeter of a bath or a bath with shower over – although guidance is provided for basins, sinks and tubs (AS 3740 *Waterproofing of wet areas* does give guidance for baths)
- the junction between glazed screens and the adjacent wall or floor
- the protection of absorbent materials in concealed spaces, for example, under a built-in bath, behind kitchen units or under a shower tray
- tap and other fitting penetrations through the impervious surface
- junctions between floors and a plasterboard or fibre-cement wall substrate.