Bathroom ventilation for residential and accommodation premises

Bathroom ventilation is simple, but are we doing it right?

Adequate ventilation is an important, but often underrated feature for bathrooms in residential homes, and even more so in accommodation premises, such as hotels, motels and care homes.

This article provides some simple guidelines that if followed will ensure Building Code of Australia (BCA) requirements are satisfied, and of equal significance, that condensation and odour build-up are prevented from causing inconvenience, unhealthy conditions and damage.

Building regulations and ventilation

Firstly, the BCA Volume 2, 2008 requires that; A toilet / bath / shower room in domestic premises, apartments, hotels or care homes should be adequately ventilated for the following reasons:

- To reduce or eliminate odours emanating from the space.
- To reduce or eliminate condensation caused by steam from a shower or bath.

Where a bathroom or toilet cannot be naturally ventilated to outside, the BCA requires mechanical ventilation and refers to the Standard AS1668.2: 1991, Page 37, Table B1 – Minimum Ventilation Flow Rates.

The table states: "Bathroom / Toilet – Private dwellings and attached to bedroom of hotels, motels, private hospital rooms and the like – 25L/s per room. May include bath, shower, WC and hand basin in one compartment. Rate independent of room size."

Air flow rate requirements

It is generally acknowledged in the HVAC industry that 25L/s air flow may be adequate for toilet ventilation and odour control. However, experience will tell that this air flow rate is often insufficient to adequately ventilate a bathroom when a shower is running, particularly in cool or humid climates. For a bathroom with shower to be free of condensation (and its inconvenient and harmful effects) an exhaust rate of between 50 to 100 L/s is recommended.

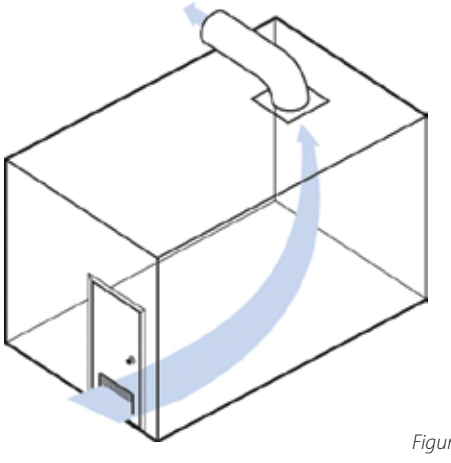

Figure 1

Design and installation of a ventilation system

Exhaust and air intake positions

Exhaust fans, or in the case of a ducted system; the exhaust grille, should be mounted as high as possible and be opposite the air intake into the room (which is typically at the bottom of the door).

Figure 1 illustrates recommended practice for the positioning of an air intake and exhaust points to ensure adequate cross ventilation. If possible the air entry should be on the opposite surface to the air exit to prevent short-circuiting and stagnant areas.

Make up air

Allowance must be made for replenishment of exhaust air. The entry door having suitable clearance above the floor, or to have an air intake grille in the door can achieve this.

Exhaust discharge to atmosphere

An often ignored or misunderstood compliance issue with toilet and bathroom ventilation for residential and accommodation premises is the BCA requirement relating to discharge of exhaust air to atmosphere.

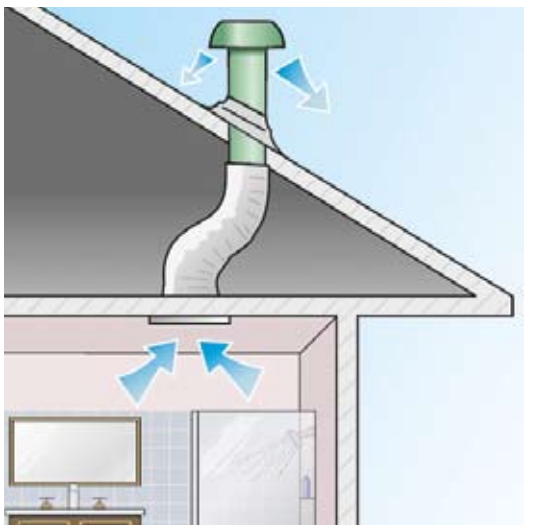

Figure 2

Specifically, the Building Code of Australia (BCA) stipulates:

a. If the roof is not lined with sarking material (silver paper insulation) and is clad with roofing tiles or decking with adequate air leakage to the outside, fans can be mounted in the ceiling exhausting into the roof space.

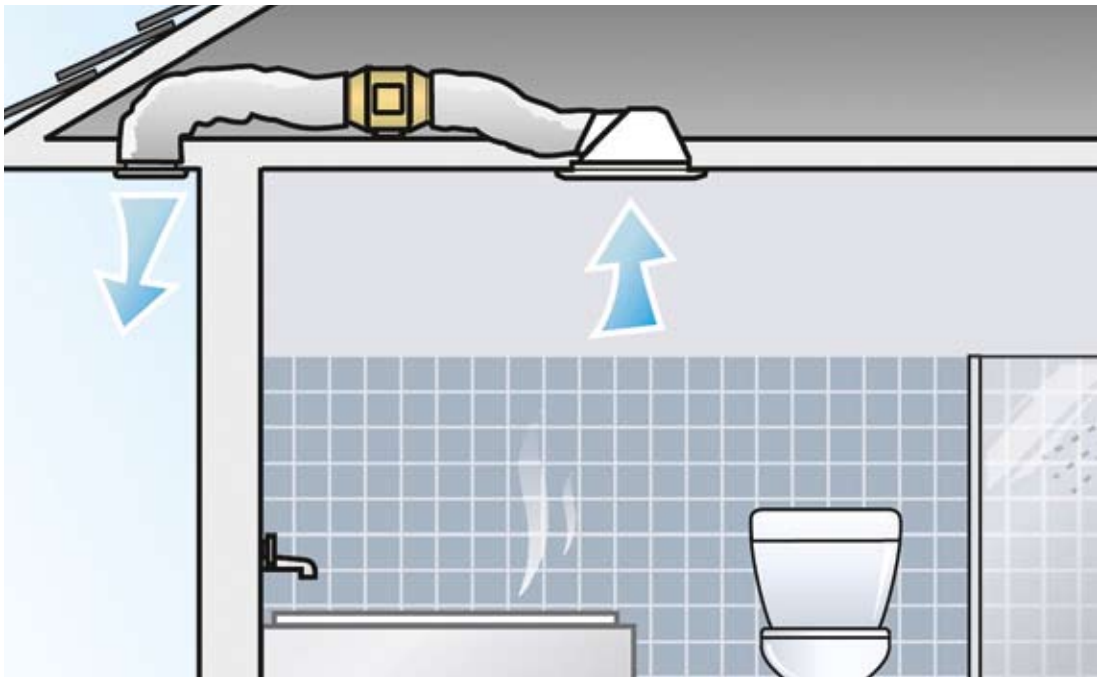

Figure 3

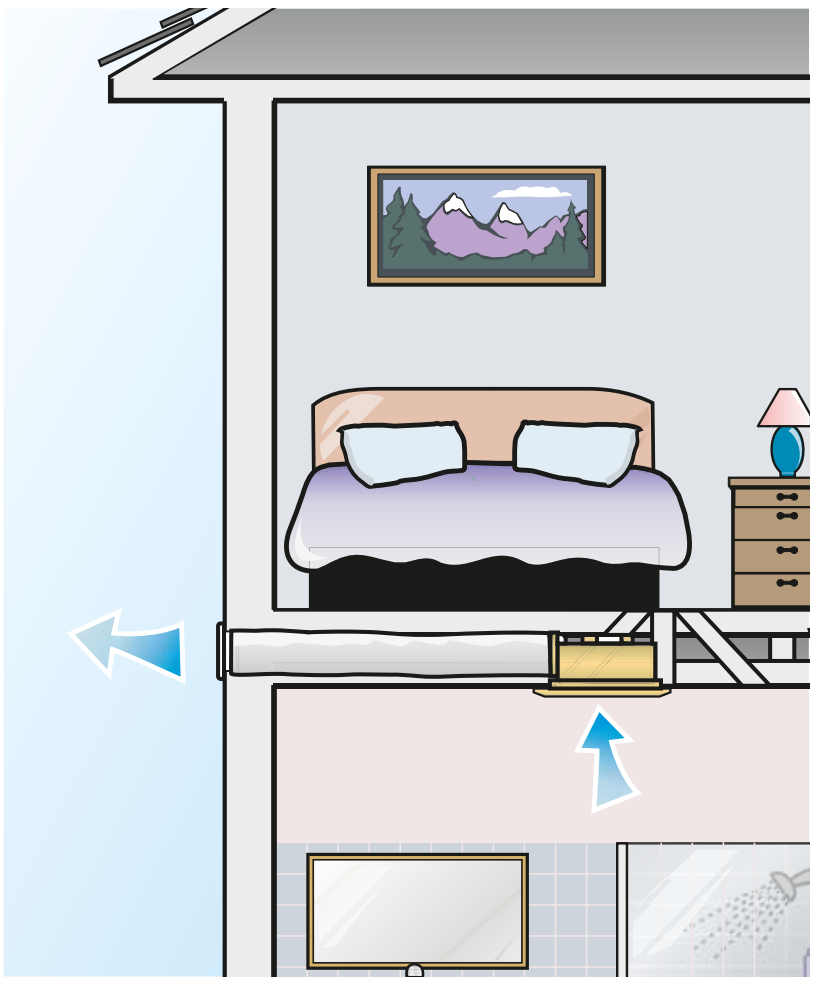

Figure 4

b. If the roof is lined with sarking material then the air needs to be ducted to the outside atmosphere through the roof or eaves.

Comment 'b' is now more the rule than the exception, as energy efficiency regulations require full insulation of building roof spaces. This means that most roofs are now sealed from the atmosphere and thus require exhaust ventilation to be discharged to the outside.

Available solutions to achieve outside discharge are:

a). If the bathroom/toilet has walls that are external, then a wall or window-mounted fan can be used to exhaust air directly to the outside.

b). If the room is below a roof that is exposed to the atmosphere, then a roof-mounted fan can be used to exhaust air directly to the outside.

c). If the room has neither a). or b)., and is enclosed within a building, then it will be necessary to exhaust the air through a ducted system to the outside atmosphere.

Figures 2, 3 and 4 provide illustrations of recommended practice for bathrooms and toilets with ventilation discharges to outside, i.e. wall-mounted, ducted through-roof and ducted through-eave exhaust systems.

Conclusion

It makes good economic sense to install a bathroom exhaust system that is sized to achieve a good level of ventilation, as condensation and excessive humidity can cause extensive damage to internal construction and finishes, causing the need for expensive re-decorating.

It can also cause discomfort and pose health risks to the occupants of the bathroom by encouraging mould growth that can harbour germs.

Steam from a shower can cause considerable frustration and inconvenience by having to constantly wipe down fixtures such as mirrors and bench tops so they can be functional. ▲

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