

PASSIVE COOLING IN QUEENSLAND

Many of Queensland's older buildings were constructed with passive environmental devices to alleviate the hot, humid conditions of our sub-tropical and tropical environment. This has created buildings with a distinctive regional quality.

Background

Much of the early building stock in Queensland was timber framed and raised on stumps with ant caps to prevent insect attack. Airflow was unrestricted under and through the building. Subfloor areas in housing were enclosed by battens or lattice and used for secondary functions such as storage and laundry areas.

Wide verandahs encircled the rooms of the main floor protecting the walls and providing cool outdoor spaces for the summer months. Single room width buildings maximised cross ventilation. Battens, lattice or timber blinds were used for sun screening and privacy. Roofs were high pitched and often vented with fleches, ventilators or gable and eaves vents to release the heat trapped under the corrugated iron cladding.

These lightweight buildings, with effective cooling systems, were often very cold in winter and were supplemented with one or more fireplaces to provide heating in the colder months.

Later buildings have not always been so effective in providing environmental controls that respond effectively to the climate.

10 ways to improve an interior environment passively

Making changes to improve the cross ventilation in a building might be sufficient to make the interior comfortable in the hot, summer months. These tips may help to maximise cross ventilation and reduce heat transfer:

1. Reduce summer heat gains by installing insulation in ceiling spaces—blocking up to 35 per cent of the heat.
2. Provide shading for east, north and west-facing windows. External shading such as trees or bushes*, eaves, awnings and shutters are more efficient than internal blinds or curtains for preventing heat gains.

Limiting the amount of heat that enters a building may eliminate the need for a cooling appliance or at least reduce the energy bill.

* Do not plant trees too close to the building—this can damage its structural integrity.

3. Avoid retaining and re-radiating heat—maximise cross ventilation by opening all windows.
4. Conserve original passive environmental control features including verandahs, open sub-floor spaces, window hoods, timber blinds and screens, ventilated eaves and gables, roof ventilators and fleches.
5. Install a roof ventilator.
6. Open up enclosed verandahs.
7. Don't enclose sub-floor areas.
8. Use blinds or screens on verandahs to block sunlight but allow ventilation. Use heavy curtains or blinds to reduce heat transfer through windows particularly on western elevation.
9. Adapt measures that increase air flow through the building, in turn increasing the evaporation of perspiration, making occupants feel cooler.
10. Keep your windows shut and covered during the heat of the day and open them in the evening as it starts to cool down to reduce heat gains. Heat always moves from warmer to cool areas.

Disclaimer

While this document has been prepared with care, it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons should satisfy themselves independently by consulting their own professional advisors before embarking on any proposed course of action.