Bradford Ventilation

Ventilation of Roof Spaces

NCC2022 Housing Provisions Standard – Part 10.8 Condensation Management

How to comply with **Section 10.8.3**

Bradford™ Ventilation

CSR

The National Construction Code 2022 Housing Provisions Standard, section 10.8 titled 'CONDENSATION MANAGEMENT' has amendments to the section: 10.8.3 Ventilation of Roof Spaces.

To assist in reducing condensation risk in homes, the National Construction Code prescribes a number of measures to reduce the build-up of internal moisture. Key to these measures is in the colder climate zones of 6/7/8, there is a requirement to ventilate the roof space to manage the accumulation of moisture.

This applies to residential detached (Class 1) homes and compliance with this requirement may be achieved with installation of roof ventilators in accordance with the recommendations in this brochure.

NCC2022 Housing Provision Standards Reference

10.8.3 Ventilation of Roof Spaces

NCC2022 Condensation Management section 10.8.3 provides the following options for ventilation of roof spaces in climate zones 6,7 and 8:

- Ventilated to outdoor air through distributed openings in accordance with table 10.8.3 as extracted below from NCC2022, or
- Located immediately underneath the roof tiles of an unsarked tiled roof.

For the purpose of this publication section 10.8.3 has not been reproduced in full, please refer to the NCC for the complete requirements concerning ventilation of roof spaces in climate zones 6, 7 and 8.

TABLE 10.8.3

Roof pitch	Ventilation openings
< 10°	25,000 mm^2/m provided at each of two opposing ends
≥ 10° and < 15°	25,000 mm^2/m provided at the eaves and 5,000 mm^2/m at high level
≥ 15° and < 75°	7,000 mm^2/m provided at the eaves and 5,000 mm^2/m at high level, plus an additional 18,000 mm^2/m at the eaves if the roof has a cathedral ceiling

1. Ventilation openings are specified as a minimum free open area per metre length of the longest horizontal dimension of the roof.
2. For the purposes of this Table, high level openings are openings provided at the ridge or not more than 900mm below the ridge or highest point of the roof space, measured vertically.

Section Interpretation

10.8.3 Ventilation of Roof Spaces

The intent of this section is to reduce the risk of condensation formation in the roof space by reducing the accumulation of moist air in the roof space.

+ **Longest horizontal dimension of the roof** does not refer to the ridge. In a hipped roof (which is a common type of roof), this would be the gutter.

+ **Climate Zones 6, 7 & 8** refer to Mild Temperate, Cool Temperate & Alpine respectively. The Southern parts of Australia (areas in NSW, SA, VIC, ACT, TAS & WA) fall into these zones.

+ **Evenly distributed openings** refer to an equal distance between the roof vents that are to be placed on top of the roof. It also refers to the spacing between eave vents that are attached to the eaves except in the case of roof pitches <10°, where the eave vents must be at two opposing ends.

+ **Table 10.8.3 explanation – Roof Pitch <10°**

  – One (1) Bradford Ventilation Metal eave vent provides 35,000mm² of openness factor. Therefore, 25,000mm²/m in this table can be met with 1 Metal eave vent.

  – Two opposing ends refers to the opposite ends of a roof.

+ **Table 10.8.3 explanation – Roof Pitch ≥10° and <15°**

  – For a 8m roof ridge line having the longest side being 10m, we need to multiply 25,000mm²/m by 10 to calculate the required openness of 250,000mm². As per the above explanation, each metal eave vent provides 35,000mm²/unit of openness factor, therefore 250,000mm² divided by 35,000mm²/unit, will equal 7.14 eave vents, and for practical reasons, this should be rounded up to 8 Metal eave vents to ensure that sufficient replacement air is supplied.

  - For the same roof, we require 5,000mm² of high-level openings per metre. Therefore, we calculate the requirement: 5,000mm²/m multiplied by 10m = 50,000mm².

  - 1 Bradford Ventilation WindMaster is equivalent to 62,500mm²/m of openness factor. 1 Bradford Ventilation SupaVent is equivalent to 46,000mm²/m.

  Therefore for the example above, a home roof with 10m longest roof edge requires an openness of 50,000mm² at upper roof and 250,000mm² at the eaves, which can be satisfied by using Bradford Ventilation:

  – 1x WindMaster, OR 2x SupaVent roof vents, and; 8x Metal eave vents at each of the opposing side evenly distributed.

Bradford Ventilation Solutions for NCC2022 Section 10.8.3

10.8.3 Ventilation of Roof Spaces

The following table provides roof space ventilation solutions for residential homes with roof pitches 45º^.

TABLE NVS – Natural Ventilator Solution Table for 10.8.3

	Bradford Ventilation Products		
Roof Pitch	**WindMaster Roof Ventilator**	**SupaVent Roof Ventilator**	**Eave Vent**
< 10º			1 eave vent for every 0.7m of horizontal roof length*
≥ 10º and < 15º	1 WindMaster for every 12.5m of horizontal roof length	1 SupaVent for every 9.2m of horizontal roof length	1 eave vent for every 1.4m of horizontal roof length
≥ 15º and < 75º			1 eave vent for every 5m of horizontal roof length
≥ 15º and < 75º Cathedral			1 eave vent for every 1.4m of horizontal roof length

* These must be equally divided between the two opposing ends of the roof.
Should the eave vents end up being an odd number, they must be rounded up.

^ Due to the product design of the varipitch, the maximum pitch for these products is 45º.

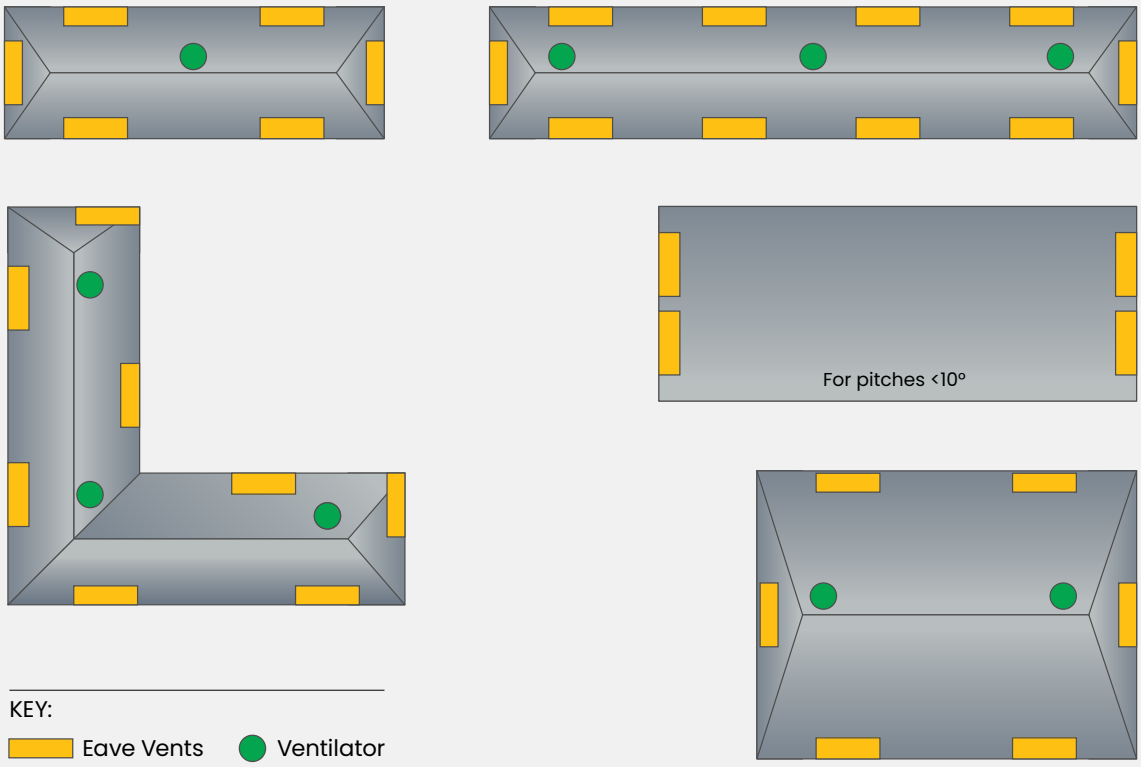
TABLE PVS – Powered Ventilator Solution Table for 10.8.3

Longest Horizontal Roof Dimension	Number of AiroMatic or Maestro BAL Ventilators Required[1]	Number of Bradford Metal Eave Vents Required
0 to <50m	1	4
50m to <100m	2	6

[1] At pre-fixed speed.
[2] The unobstructed area for air replacement is an alternate solution to replace Bradford Metal Eave Vents and assumes evenly distributed openings in accordance with the NCC requirement.

Table NVS and PVS have been extracted from Bradford Product Technical Statements.

Roof ventilators and eave vents must be installed through evenly distributed openings between each unit. Examples of this could be applied to a number of roof applications as demonstrated below:



Important Selection Considerations

+ The graphics above are examples of ventilation layouts for condensation management in NCC Climate Zones 6, 7 & 8.
+ The NCC gives an open area requirement per metre length of the longest horizontal dimension of the roof. Use the Solution Tables above to calculate the required number of vents to comply.
+ WindMaster & SupaVent ventilators should be installed not more than 900mm below the ridge or highest point of the roof space, measured vertically.

Benefits of using Bradford Ventilation Products to Comply with NCC2022 Housing Provisions Standard

- We offer BAL and Non-BAL ventilators for section 10.8.3.
- Provides extraction support systems that are ideal for homes with no eave space.
- We offer a range of ventilators that can comply with section 10.8.3.

Worked example of Section 10.8.3 in practice

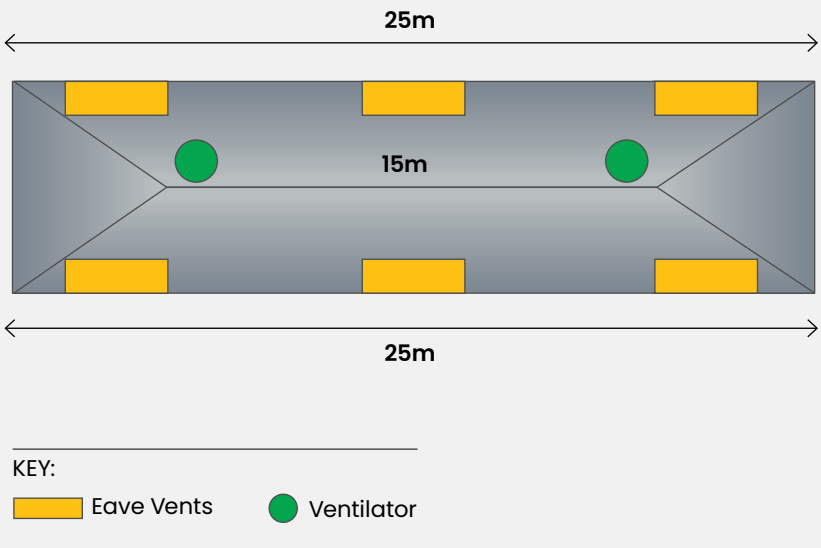
A Practical Example

Compliance with this clause using roof ventilation is achieved by calculating the longest horizontal dimension of the roof. In a hipped roof, this would be the gutter.

The following example is based upon a residential home with a roof ridgeline of 15m, a longest horizontal dimension length of 25m, and a pitch of 20°.

Practical Application of the Code

1. Based on the **longest horizontal dimension of the roof of 25m** and using table NVS : **1x WindMaster per 12.5m**, the calculation is as follows: 25/12.5 = **2x WindMasters**, spaced apart evenly.
2. Based on the table NVS, the number of eave vents required are **1 eave vent for every 4.9m of horizontal roof length.** The calculation is as follows:. 25/4.9 = 5.1, as it is required to have evenly distributed openings, it must be rounded up to 6 metal eave vents to ensure sufficient replacement air.
3. Products required to comply to this example: **2 WindMaster vents and 6 eave vents.** This is illustrated in the graphic below.



Bradford Product Deemed-to-satisfy Solutions

WindMaster™

The WindMaster is a wind driven natural ventilator designed to exhaust heat & moisture from the roof space of your home, without the use of electrical energy. It has a 300mm throat and is Australian made. It has a 15-year warranty for peace of mind and comes in 24 colours to match most roofs.

SupaVent™

The SupaVent is a natural ventilator designed to exhaust heat and moisture from the roof space, without the use of electrical energy. The SupaVent is ideal near coastal homes due to its stainless steel bearings and plastic componentry. It has a 250mm throat and is Australian made. It has a 15-year warranty for peace of mind and comes in 14 colours to match most roofs.

Metal Eave Vents

Eave vents are designed to work in conjunction with roof vents to allow external air to be drawn into the roof space to improve cross flow ventilation. This helps roof mounted vents to work more effectively and efficiently.

Metal Eave Vents: Made from metal and are suitable for homes in bushfire zones up to BAL40.

Bradford Product Performance Solutions

AiroMatic®

AiroMatic is factory-set to a powerful fixed speed for continuous, high-performance ventilation. It also includes a built-in Air iQ smart box that can alternatively be set to automatically detect heat and humidity to protect the home when it matters most. It is equivalent to 4 natural ventilators at pre-fixed speed settings. It has a 250mm throat and is Australian made for peace of mind.

Maestro BAL™

Maestro BAL is a high-performance, smart ventilator that automatically detects and removes heat & moisture from the roof space. It is ideal for homes in bushfire zones up to BAL40. It is equivalent to 4 natural ventilators at pre-fixed speed settings. It has a 300mm throat and is Australian made for peace of mind.