

VENTILATION OF TILED ROOFS

[A STEP BY STEP GUIDE]



VENTILATION OF TILED ROOFS

How to comply with the NCC 2022

ARTA 

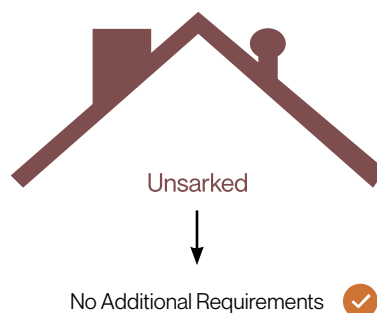
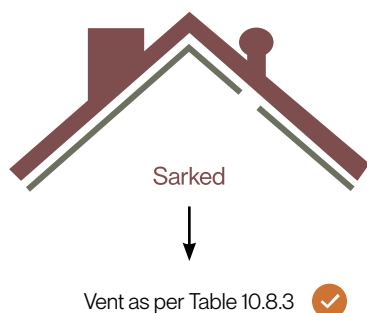
NCC 2022 REQUIREMENTS

In cool climates, condensation can occur in roof spaces due to temperature differentials between the interior and exterior environments. Adequate ventilation is crucial in these spaces to mitigate condensation by allowing moist air to escape, thereby preventing the buildup of moisture which can lead to mould growth and structural damage. The National Construction Code (NCC) 2022 has addressed this critical issue with new Condensation Management Provisions. These provisions apply to buildings in Climate Zones 6, 7 and 8 and are as follows:

- (1) In climate zones 6, 7 and 8, a roof must have a roof space that—
- (a) is located—
 - (i) immediately above the primary insulation layer; or
 - (ii) immediately above sarking with vapour permeance of not less than 1.14 ug/N.s, which is immediately above the primary insulation layer; or
 - (iii) immediately above ceiling insulation that meets the requirements of 13.2.3(3) and 13.2.3(4); and
 - (b) has a height of not less than 20 mm; and
 - (c) is either—
 - (i) ventilated to outdoor air through evenly distributed openings in accordance with Table 10.8.3; or
 - (ii) located immediately underneath the roof tiles of an unsarked tiled roof.
- (2) The requirements of (1) do not apply to a—
- (a) concrete roof*; or
 - (b) roof that is made of structural insulated panels; or
 - (c) roof that is subject to Bushfire Attack Level FZ requirements in accordance with AS 3959.

Note: A concrete roof does NOT include a tiled roof comprising of concrete roof tiles.

HOW TO COMPLY?



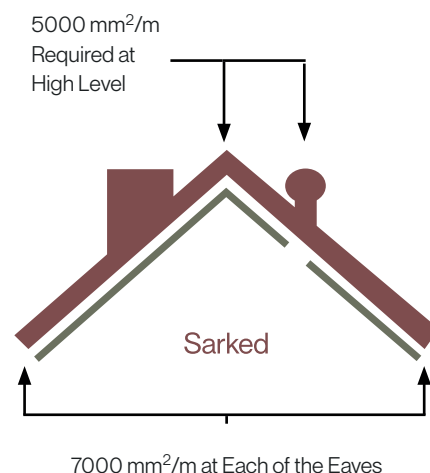
ABC Housing Provisions Table 10.8.3

Roof Pitch	Ventilation Openings
< 10°	25,000 mm ² /m provided at each of two opposing ends
≥ 10° & < 15°	25,000 mm ² /m provided at the eaves and 5,000 mm ² /m at high level
≥ 15° & < 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

Table Notes:

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

REQUIREMENTS FOR SARKED TILED ROOFS (≥ 15°)



Note: For mansard roofs with mixed pitches, the lowest pitch should be selected for compliance to Table 10.8.3.

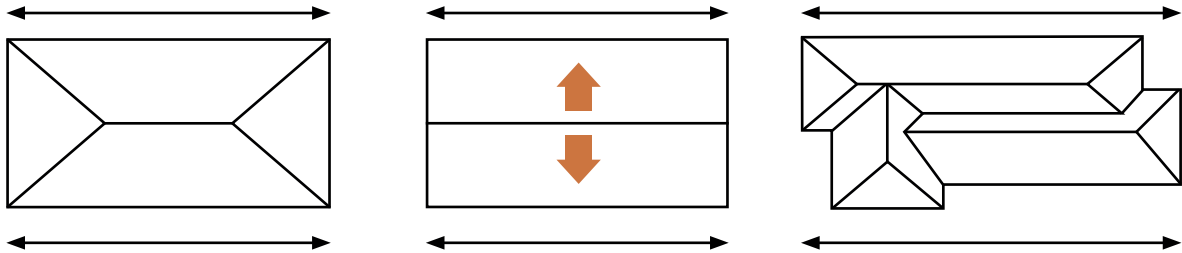
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LONGEST HORIZONTAL DIMENSION

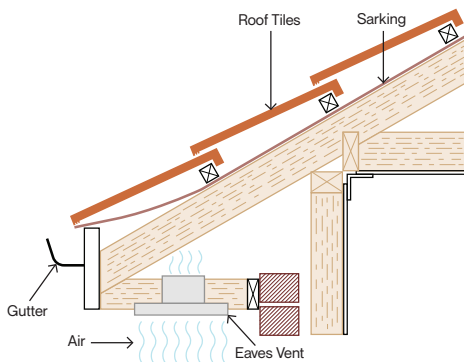
This is the longest distance from one edge of the roof to the other in one direction as below:



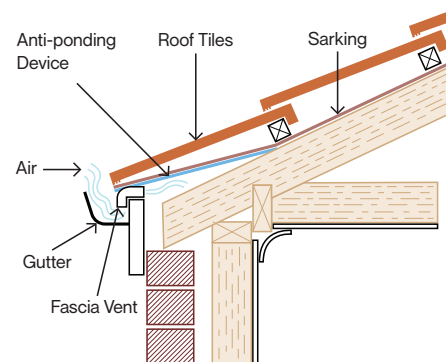
EAVES VENTILATION

This ventilation is provided at the eaves level. It can include any combination of:

Soffit Ventilation:



Fascia Ventilation:



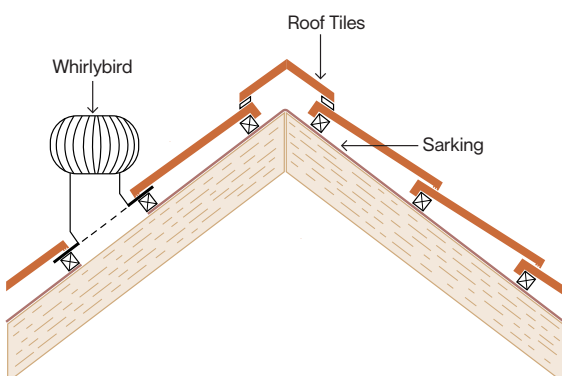
Fire Resistance of Roof Vents

A roof vent is exempt from the requirements for fire-resisting construction under Section 9.2.3 of the 2022 ABCB Housing Provisions. Therefore, all roof vents are compliant with H3D3 of NCC 2022, even if external walls are within 900 mm of an allotment boundary.

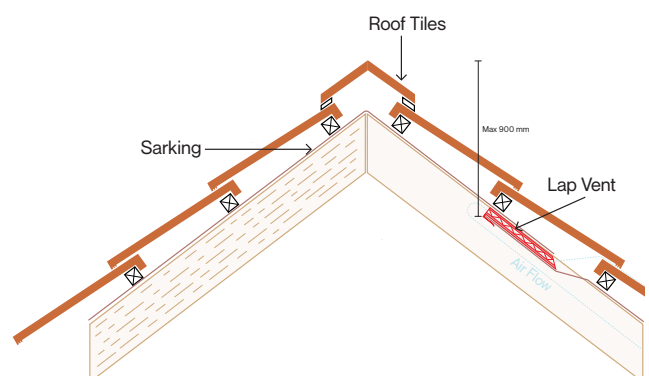
HIGH LEVEL VENTILATION

This is ventilation that is provided within 900 mm of the top-most part of the roof. This includes:

Ventilator Devices:

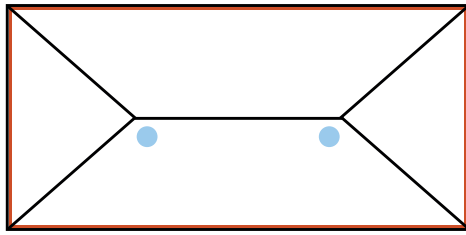


Lap Vents and Evenly Spread High Level Vents:

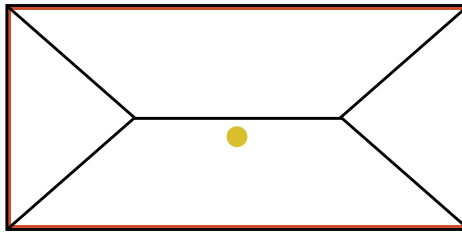


Note: Wind powered whirlybirds and powered ventilator devices should only be used for high level ventilation and do not count towards low level ventilation for the calculations in Table 10.8.3 above.

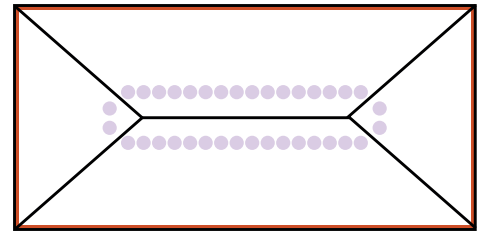
POSSIBLE SOLUTIONS FOR 25 M SARKED TILED ROOF (≥ 15° PITCH)



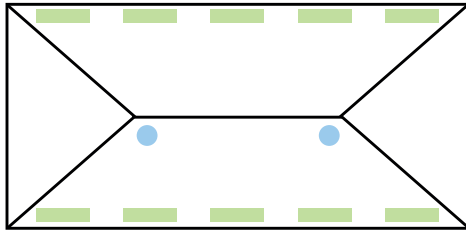
(1) + (A)



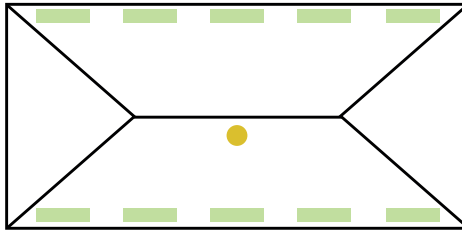
(1) + (B)



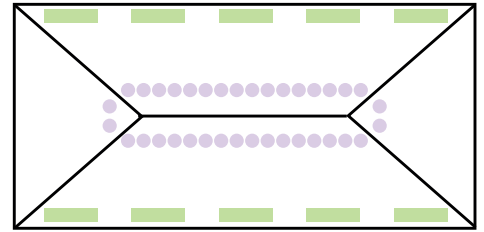
(1) + (C)



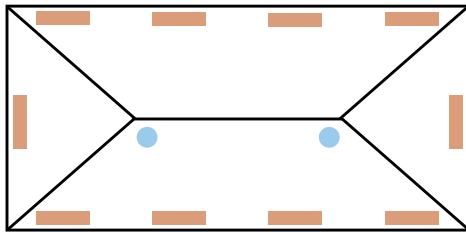
(2) + (A)



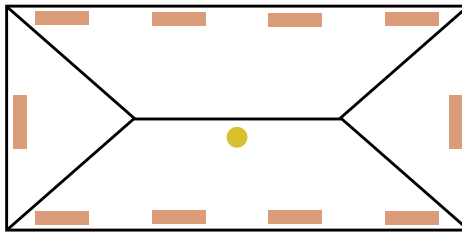
(2) + (B)



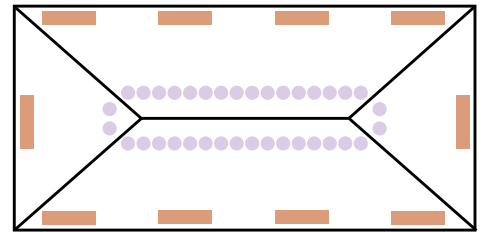
(2) + (C)



(3) + (A)



(3) + (B)



(3) + (C)

LOW LEVEL (EAVES LEVEL) VENTILATION

$25 \times 7000 \text{ mm}^2/\text{m} = 175,000 \text{ mm}^2$ of vent area per each long side of roof
= **350,000 mm² TOTAL**

(1) CONTINUOUS EAVES/FASCIA VENTS

Use a continuous eaves/fascia vent product [\(Vent Systems\)](#)
with an open area of $\geq 7000 \text{ mm}^2/\text{m}$ on all eaves*

(2) EVENLY SPACED LOW LEVEL VENTS (2 SIDES)

One vent opening = $35,000 \text{ mm}^2$ [\(Bradford\)](#)
Roof needs $350,000 / 35,000 = 10$ vents in total on 2 sides

(3) EVENLY SPACED LOW LEVEL VENTS (ALL SIDES)

One vent opening = $35,000 \text{ mm}^2$ [\(Bradford\)](#)
Roof needs $175,000 / 35,000 = 10$ vents in total on 4 sides

HIGH LEVEL (RIDGE) VENTILATION

$25 \times 5000 \text{ mm}^2/\text{m} = 125,000 \text{ mm}^2$ of vent area required
= **125,000 mm² TOTAL**

(A) WIND POWERED VENTILATOR†

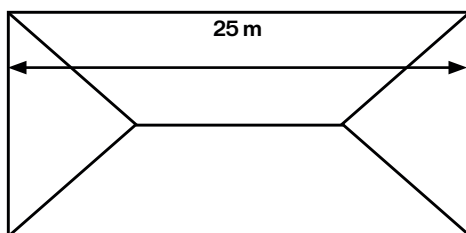
One WindMaster Ventilator = $62,500 \text{ mm}^2$ [\(Bradford\)](#)
Roof needs $125,000 / 62,500 = 2$ vents

(B) POWERED VENTILATOR†

One AiroMatic Ventilator can vent a roof up to 50 m [\(Bradford\)](#)
Roof is only 25 m long = 1 vent only

(C) Evenly Spaced High Level Spaced Vents

One high level Lap Vent = $3,000 \text{ mm}^2$ [\(Vent Systems\)](#)
Roof needs $125,000 / 3,000 = 42$ vents [\(Evenly Spaced\)](#)



*It is best practice to install continuous eaves vents on all eaves to avoid gaps below tiles.

†HIGH LEVEL VENTILATION FOR BAL AREAS (UP TO BAL 40)

Use One WindMaster BAL Ventilator for Every 7.1 m of Roof Length [\(Bradford\)](#)

For a 25 m Roof, 4 WindMaster BAL Ventilators are Required

OR

Use One Maestro BAL Ventilator Every 50 m of Roof Length [\(Bradford\)](#)

For a 25 m Roof, 1 Maestro BAL Ventilator is Required