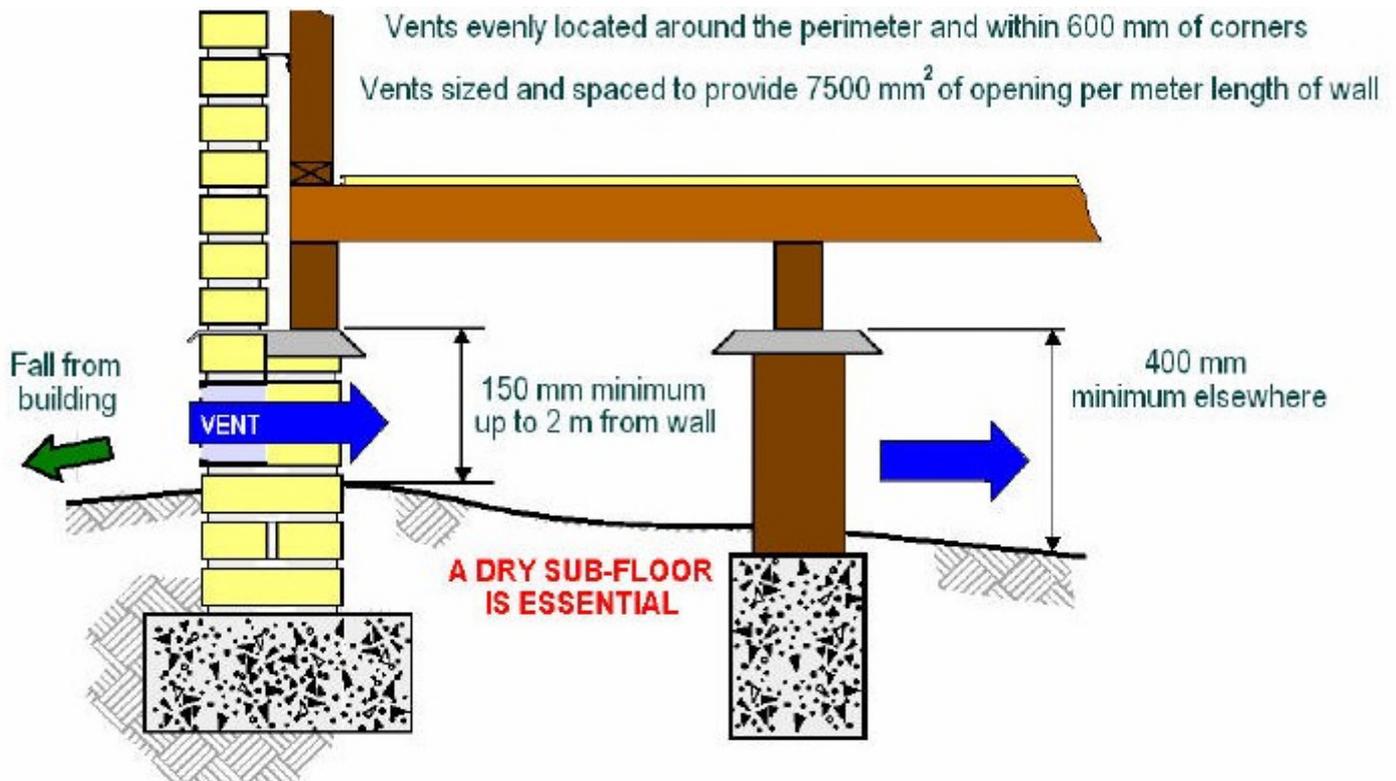


# SUB FLOOR VENTILATION



Sub-floor ventilation must be provided to enclosed sub-floor spaces. Moisture escapes from the soil and is absorbed by the air above, raising the relative humidity of the air. This in turn will raise the moisture content of the framing members and flooring. Ventilation is necessary to reduce the relative humidity of the cool air in the space, by replacing air with new warm drier air drawn from outside the space. The quantity, distribution and efficiency of the vents provided is extremely important for the stability and performance of timber floors. The MC between sub-floor and floor boards should be between **BCA humidity is between RH 60-70 %**

## Requirements for T & G Floors (Laid on joists or over structural sub-floors)

Timber floors should not be laid over moist sub-floor spaces as in many instances the floor will not perform satisfactorily and expansion related problems would result. Structural sub-floors, over which T & G floors may be laid, will provide some protection, however, they cannot be relied upon to prevent moisture uptake in the T & G flooring if humidity's in the sub-floor space remain high for extended periods. Timber T & G floors should therefore be provided with minimum sub-floor ventilation that exceeds BCA requirements.

## Vent Installation

The aim of the sub-floor ventilation system is to provide cross-flow of air in both directions, ie. From side to side and end to end of the dwelling. Vents shall be placed in all walls that enclose the sub-floor space. Corresponding openings shall also be placed in any internal walls in the sub-floor space. To prevent the formation of 'dead-air' pockets in the sub-floor space, vents are to be placed.

## Mechanical ventilation installation

The purpose of a sub-floor ventilation system for your home is to extract the damp humid air and to displace it with fresh air from and into the sub-floor area. A well implemented subfloor mechanical ventilation system will remove stale moisture-laden air by using specially designed pumps and subfloor fans to extract excessive moisture from the subfloor space.

## How much does the ducted system cost to run?

The same as a 75Watt light globe, so costs are very minimal. Estimated at approx \$30 - \$34 per year.

## How much air does the fan move?

In most situations 150mm fan, this has a maximum capacity of 550m<sup>3</sup> per hour or 150L/sec. There is a larger 200mm fan, which has a maximum capacity of 1060m<sup>3</sup> per hour or 294L/sec, but in most homes this is not necessary.

## Site drainage:

The drainage system provided to the dwelling site, should ensure that run-off water will drain away from the building perimeter (not towards it) and that run-off water is prevented from entering the sub-floor space. The ground beneath a suspended floor should also be graded so that no ponding is possible. Where springs or aquifers are present (e.g. exposed by earthworks on sloping sites) and cause water to enter the sub-floor space, a closed drainage system should be installed under the dwelling to remove this water. The ventilation system will not cope with this level of moisture in the space.

## ATFA INFORMATION ON SUB FLOOR VENTILATION:

### 1. Subfloor ventilation - Extract from a report from a report in the tropics

“With the above measures in place ventilation requirements become more ‘normal’ although with the need for a mechanical system to be installed. With regard to this there are some principals that need to be considered and these are from a report by I.S. Cole – Sub-floor ventilation requirements to prevent material degradation – 1997. It was from this and subsequent modelling studies that current BCA ventilation requirements were developed.

Points to be noted are:-

- There is only a loose relationship with ventilation and timber moisture content but problems are less common with higher ventilation rates
- The major factor with ventilation requirements is relative humidity
- Moisture levels should be kept below 18% moisture content in timber or about 80% relative humidity
- The effectiveness of the ventilation is reduced when exterior conditions are humid
- In humid localities with external relative humidity greater than 70% then approximate ventilation of 6000 mm<sup>2</sup> per m of wall is needed providing an air exchange rate greater than an 5. This is often referred to as ACH (Air changes per hour).

Although the sizing of fans and possible ductwork is beyond the scope of this report it is acknowledged that companies like Universal Fans offer a subfloor ventilation fan and ductwork design service and can quote off supplied plans.

<http://www.universalfans.com.au/undfloorvent.htm?qclid=CLK72suWyawCFYVMpgodgU6kqQ>

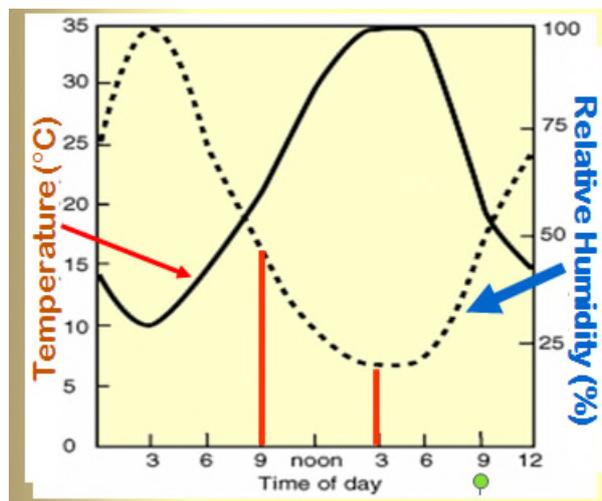
Similarly Fantech (<http://www.fantechplus.com/home.asp>) have subfloor ventilation as one of their categories. From a termite perspective subfloor ventilation is also important and some pest companies also include subfloor ventilation in their services, such as Exopest (<http://www.exopest.com.au/subfloor-ventilation.htm>).

Note that provided the moisture problem is attended to, the ventilation requirements are no longer out of the ordinary, other than needing a mechanical system. The moisture content of the timber may well remain at 15% to 18% due to the tropical locality however this is well below the current excessive 30%. Moisture contents below 18% in the timber subfloor components can also be expected to arrest any further mould growth.

**Please note that fan systems without doing something to dry the ground have been ineffective.**

**It is also suggested that fans running on a timer from say 9am to 4pm bring in the drier air beneath the floor, does not create noise at night band uses much less power. Solar fans provide a good option as they only go during daylight hours and there is no electricity cost. Electricity cost depends on a lot of factors and namely fan size, pressure and volume so it would be best to contact someone like Universal fans for this. Universal Fans Australia Pty Ltd, 156 Waverley Road, East Malvern, Vic 3145 Tel: (03) 9572 1237.**

The graph below is general and from the Bureau of Meteorology but you will that humidity is lowest from 9am to 9pm and it is when humidity is low and temperatures higher that we need to draw air in beneath the floor to gently dry out a subfloor space.



# NASH TIMBERS SUB-FLOOR CHECKLIST.

Building is over	Relation of lot to street	Relation of lot to neighbour	
<input type="checkbox"/> basement	<input type="checkbox"/> below	<input type="checkbox"/> below	
<input type="checkbox"/> crawl space	<input type="checkbox"/> level	<input type="checkbox"/> level	
<input type="checkbox"/> slab	<input type="checkbox"/> above	<input type="checkbox"/> above	
<input type="checkbox"/> existing			
<b>Drainage</b>			
<input type="checkbox"/> Lot drainage away from foundation			
<input type="checkbox"/> Shaded lot			
<input type="checkbox"/> Gutters/down spouts			
<input type="checkbox"/> Directed away			
<input type="checkbox"/> Roof overhang			
<b>Foundation Perimeter</b>			
<input type="checkbox"/> waterproof	<input type="checkbox"/> shrubs/flowers	<input type="checkbox"/> excess water	
<input type="checkbox"/> soil damp	<input type="checkbox"/> yard established		
<input type="checkbox"/> window wells dry	<input type="checkbox"/> recent		
<input type="checkbox"/> planter box	<input type="checkbox"/> sprinklers/irrigation		
<b>Entry level is</b>		<b>swimming pool</b>	
<input type="checkbox"/> step	<input type="checkbox"/> level	<input type="checkbox"/> down	<input type="radio"/> Yes
<b>drains position</b>		<b>pool type</b>	
<input type="radio"/> driveway	<input type="checkbox"/> Drains in pool deck and/or patio	<input type="radio"/> above ground	
<input type="radio"/> pool	<b>Distance from swimming pool to foundation</b>	<input type="radio"/> in ground	
<input type="radio"/> side of house		<input type="radio"/> Yes <input type="radio"/> No	
<input type="radio"/> front of house			
			<input type="text"/> ft/mts

**Nash Timbers insist that a thorough checklist is completed. The form above details issues that should always be checked before installing a timber floor.**

