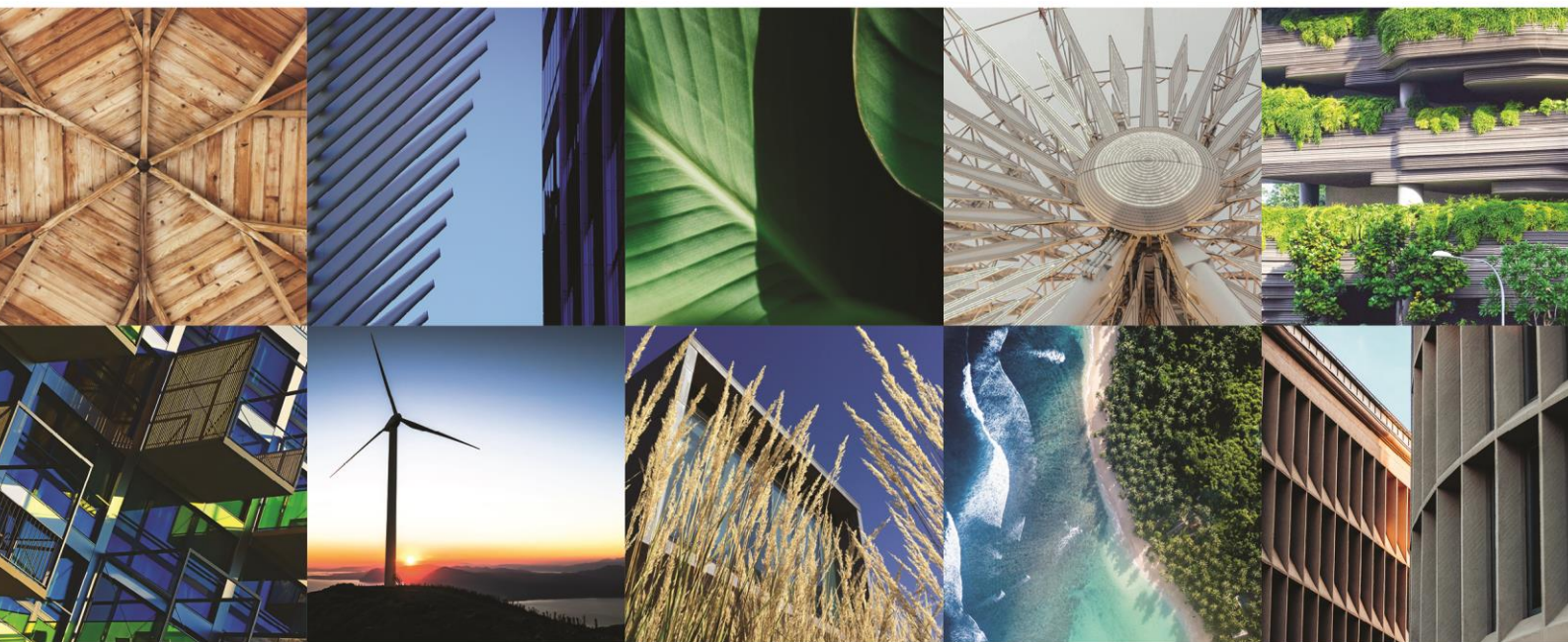




Condensation and Energy Efficiency Class 1 - NCC 2022 NSW



Condensation and Energy Efficiency – Class 1 – NCC 2022 NSW Climate Zone 5

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Part 10.8– Condensation management

10.8.1 External wall construction

- 1) Where a pliable building membrane is installed in an external wall it must:
 - Comply with AS 4200.1
 - Be installed in accordance with AS 4200.2
 - Be located on the external side of the primary insulation layer in an external wall.
- 2) Minimum Class 3 vapor permeance to membranes / sarking / insulation layer to external walls in climate zone 5
- 3) The primary water control layer must be separated from water sensitive materials by a drained cavity, except for single skin masonry and single skin concrete where a building membrane is not installed.

10.8.2 Exhaust Systems

Exhaust system requirements:

- 1) Minimum air flow rate for exhaust systems of:
 - a. 25 L/s for a bathroom or sanitary compartment; and
 - b. 40 L/s for a kitchen or laundry
- 2) Kitchen, kitchen rangehood, bathroom, sanitary compartment and laundry exhaust systems must be discharged directly or via a shaft or duct to outdoor air.
- 3) If a traditional vented clothes dryer is installed, then it must be discharged directly or via a shaft or duct to outdoor air.
- 4) If a condenser dryer is installed, then ventilation ducting to outside air is not required.
- 5) Exhaust systems installed in bathrooms or sanitary compartments, which are not run continuously or are not naturally ventilated; must be controlled to turn on when the lights in the room are turned on. They also require a timer to continue to operate for 10 minutes after the lights are turned off.
- 6) Except for rooms that are naturally ventilated, a room must be provided with make-up air via openings to and adjacent room with a free area of 14,000 mm² or in accordance with AS 1668.2

10.8.3 Ventilation of roof spaces

This clause does not apply to climate zone 5.

Part 13.2 – Building Fabric

13.2.2 Building fabric thermal insulation

- (1) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—
 - (a) abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and
 - (b) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
 - (c) does not affect the safe or effective operation of a domestic service or fitting.

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- (2) Where required, reflective insulation must be installed with—
- (a) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
 - (b) the reflective insulation closely fitted against any penetration, door or window opening; and
 - (c) the reflective insulation adequately supported by framing members; and
 - (d) each adjoining sheet of roll membrane being—
 - (i) overlapped greater than or equal to 150 mm; or
 - (ii) taped together.
- (3) Where required, bulk insulation must be installed so that—
- (a) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
 - (b) in a ceiling, where there is no bulk insulation or reflective insulation in the external wall beneath, it overlaps the external wall by greater than or equal to 50 mm.
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NSW 13.2.3 Roofs and ceilings

- (1) A roof that has metal sheet roofing fixed to metal purlins and metal rafters or metal battens does not have a ceiling lining fixed directly, must have a thermal break of at least R0.2 installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.

This does not apply to roofs constructed using insulated sandwich panels.

NSW 13.2.5 External walls

- (1) External walls that have lightweight cladding fixed to a metal frame and have a wall lining fixed directly to the same metal frame must have a thermal break of at least R0.2 installed between the external cladding and supporting construction.

This does not apply to roofs constructed using insulated sandwich panels.

NSW 13.2.6 Floors and subfloor walls

- (1) A concrete slab-on-ground with an in-slab or in-screed heating or cooling system must have insulation with an R-Value of at least 1.0 installed around the vertical edge of its perimeter.
- (2) The insulation must be:
- (a) Water resistant; and
 - (b) be continuous from the adjacent finished ground level –
 - (i) to a depth of at least 300mm; or
 - (ii) for at least the full depth of the vertical edge of the concrete slab-on-ground
- (3) The requirements of (1) do not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like.

Part 13.4 - Building Sealing

NSW 13.4.1 Application of Part

The requirements that follow in this Part do not apply to:

- (a) Existing buildings are being relocated.
- (b) Parts of buildings that cannot be fully enclosed.
- (c) A building where the only means of air-conditioning is by using an evaporative cooler.
- (d) A permanent building ventilation opening that is necessary for the safe operation of a gas appliance.

13.4.2 Chimneys and flues

The chimney or flue of an open solid fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.

13.4.3 Roof lights

- 1) A roof light must be sealed, or capable of being sealed, when serving:
 - a) A conditioned space; or
 - b) A habitable room in climate zones 4, 5, 6, 7 and 8
- 2) A roof light required to be sealed, or capable of being sealed, must be constructed with –
 - a) An imperforate ceiling diffuser or the like installed at the ceiling of internal lining level; or
 - b) A weatherproof seal; or
 - c) A shutter system readily operated either manually, mechanically or electronically by the occupant.

13.4.4 Windows and doors

- 1) An external door, internal door between a Class 1 building and an unconditioned Class 10a building, openable window and other such opening must be sealed when serving—
 - a) a conditioned space; or
 - b) a habitable room in climate zones 4, 5, 6, 7 and 8
- 2) A seal to restrict air infiltration—
 - a) for the bottom edge of a door, must be a draft protection device; and
 - b) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compressible strip, fibrous seal or the like.
 - c) A window complying with the maximum air infiltration rates specified in AS 2047 need not comply with (2)(b).

13.4.5 Exhaust fans

All exhaust fans must be fitted with a sealing device such as a self-closing damper or the like when serving:

- a) A conditioned space
- b) A habitable room in climate zones 4, 5, 6, 7 and 8

13.4.6 Construction of ceilings, walls & floors

- 1) Ceilings, walls, floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with (2) when forming part of the external fabric of—
 - a) a conditioned space; or
 - b) a habitable room in climate zones 4,5, 6,7, and 8.
- 2) Construction required by (1) must be—
 - a) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
 - b) sealed at junctions and penetrations with—
 - i) close-fitting architrave, skirting or cornice; or
 - ii) expanding foam, rubber compressive strip, caulking or the like.

13.4.7 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like:

- a) When serving a heated space; or
- b) In climate zones 4,5, 6, 7 or 8.

Part 13.7 Services

13.7.2 Insulation of services

Thermal insulation for central heating water piping and heating and cooling ductwork must—

- 1) be protected against the effects of weather and sunlight; and
- 2) be able to withstand the temperatures within the piping or ductwork; and
- 3) use thermal insulation material in accordance with AS/NZS 4859.1.

13.7.3 Central heating water piping

- 1) Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Values as set out in (2) to (6).
- 2) Internal piping including—
 - a) flow and return piping that is—
 - i) within an unventilated wall space; or
 - ii) within an internal floor between storeys; or
 - iii) between ceiling insulation and a ceiling; and
 - b) heated water piping encased within a concrete floor slab (except that which is part of a floor heating system), must, in all climate zones, have a minimum material R-Value of 0.4.
- 3) Piping located within a ventilated wall space, an enclosed building subfloor or a roof space, including—
 - a) flow and return piping; and
 - b) cold water supply piping within 500 mm of the connection to the central water heating system; and
 - c) relief valve piping within 500 mm of the connection to the central water heating system, must have a minimum material R-Value in accordance with (5).

- 4) Piping located outside the building or in an unenclosed building subfloor or roof space, including—
 - a) flow and return piping; and
 - b) cold water supply piping within 500 mm of the connection to the central water heating system; and
 - c) relief valve piping within 500 mm of the connection to the central water heating system, must have a minimum material R-Value in accordance with (6).
- 5) Piping referred to in (3) must have a minimum material R-Value of—
 - a) in climate zone 1,2,3 and 5, — 0.60
- 6) Piping referred to in (4) must have a minimum material R-Value of—
 - a) in climate zone 1,2,3 and 5, — 0.60

13.7.4 Heating and cooling ductwork

- 1) Heating and cooling ductwork and fittings must—
 - a) achieve the material R-Value in (4); and
 - b) be sealed against air loss—
 - i) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254.1 and AS 4254.2 for a Class C seal; or
 - ii) for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.
- 2) Duct insulation must—
 - a) abut adjoining duct insulation to form a continuous barrier; and
 - b) be installed so that it maintains its position and thickness, other than at flanges and supports; and
 - c) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space—
 - i) be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp; and
 - ii) have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.
- 3) The requirements of (1) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.
- 4) The material R-Value required by (1)(a) must be determined in accordance with the following:
 - a) In a heating-only system or cooling-only system including an evaporative cooling system—
 - i) ductwork must have a minimum material R-Value of 1.0 in climate zones 1 To 7, and
 - ii) fittings must have a minimum material R-Value of 0.4.
 - b) In a combined heating and refrigerated cooling system—
 - i) ductwork must have a minimum material R-Value of—
 - (A) in climate zone 2 and 5 — 1.0; and
 - ii) fittings must have a minimum material R-Value of 0.4.