

Climate and comfort checklist

To be effective in reducing users' exposure to ultraviolet radiation (UVR), shade must offer thermal comfort.

Queensland climate zones

There are 8 climate zones in Australia (as defined by the Australian Building Codes Board).

Four occur in Queensland.

The boundaries align to local government areas.

Download a [Queensland climate zone map](#) (PDF 1.8 MB)

<http://www.abcb.gov.au/-/media/Files/Resources/Tools-and-Calculators/ClimateZoneMapQLD.pdf>

Climate Zone	Climate Zone description / name	characteristics	Location examples
zone 1	Tropical humid	Warm humid summer, mild winter	Townsville, Cairns
zone 2	Sub-tropical humid	High humidity summer, warm winter	Brisbane, Rockhampton
zone 3	Hot arid	Hot dry summer, warm winter	Cloncurry, Charleville
zone 5	Temperate	Warm temperate	Toowoomba

General shade design principles for Queensland climate zones

Zone 1: Tropical climate

Your design should feature:

- Year round shade
- Wide overhangs/eaves for deep shade in built structures or tree canopies
- Air movement—to counteract humidity
- Large openings that face prevailing north east breezes
- Vegetation that cools the air and shades surfaces
- Heat-reflective surfaces and materials / adequate insulation—to discourage heat build-up and minimise heat gain. Ventilation via mechanical means may be necessary.
- Minimisation of expanses of paving or hard surfaces that encourage heat build-up in surrounding areas.
- Minimal glare
- Cyclone proof structure and canopy
- Easy to operate portable/demountable structures, especially if they are to be used in storm season
- Broad awnings to allow windows to remain open during heavy rainfall and limit 'blow in' rain.

Zone 2: Subtropical climate

Winter design considerations include:

- Provision of well-lit and warm areas
- Activity areas that are orientated to the north to take advantage of light and warmth
- Shielding from cold winds.

Summer design considerations include:

- Provision of cross ventilation to encourage air movement
- Orientation to admit cool summer breezes
- Minimising heat build-up
- Limiting glare
- Capacity to cope with heavy rain.

Zone 3: Hot arid climate

Your design should feature:

- Substantial overhangs
- Consolidation of shade—use one larger shade area for a number of purposes rather than several smaller structures
- Careful orientation:
 - Longer sides facing north and south
 - Roof slope that orientates towards prevailing breeze
 - Shaded western walls, minimal western orientation, and use of ancillary spaces as thermal barriers.
- Adequate roof ventilation
- Limited areas of exposed surfaces (such as solid pavements and bare earth) in surrounding areas
- Exploitation of vegetation to cool air and promote cooling pathways for air entering
- Use of 'shelter belts' to reduce the effect of undesirable winds
- Wind-resistant structures.

Zone 5: Temperate climate

Your design should feature:

- A flexible design for all year use—cooling shade in summer and warm sunlit shade in winter
- Windbreaks to south/southwest and west to limit entry of winter wind
- Darker colours for mass surface materials to encourage passive solar heat gain for comfort in winter
- Passive materials that are fully shaded in summer to avoid heat build-up in covered spaces
- Longer sides facing to the north
- Deciduous trees that admit winter warmth and light (but additional UVR protective shade must be provided to compensate)
- Exploitation of summer breezes
- Adjustable overhangs to create broad awnings for summer, which can be retracted to let in light and heat in winter.

Source: Queensland Health (1997) *Shade for Sports Fields - Planning Sun-safe Outdoor Environments in Queensland*, p 67-100.