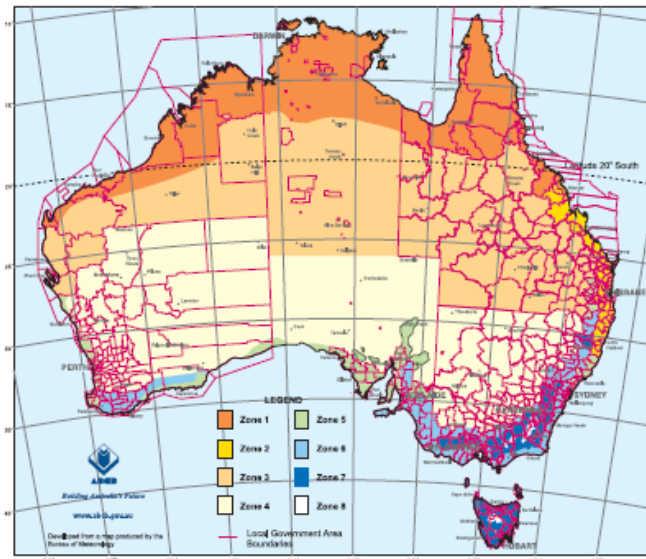


Specific areas targeted by the BCA for improvement are:



1. Building fabric
The building fabric – the basic components of a building, including the roof, ceilings, walls and floors should have sufficient thermal resistance to ensure that energy is not lost by heat transmission. Roof, ceiling, walls and floors must achieve a specified Total R-value (which is the total sum of the insulating performance of all individual component layers, including any

building material, insulating material, airspace and associated surface resistances).

2. External glazing
There are regulations to ensure that the amount of heat gain through windows is not excessive and that air conditioning needed to counteract the heat losses through windows is not excessive. Shading of the building and glazing orientation are also factors that can affect heat loss or gain.

3. Building sealing
Building sealing effectiveness can not only influence the size of air conditioning HVAC in building design, it can also influence longer term energy operating consumption. The BCA requires sealing around chimneys, flues, windows doors and other projections. The building fabric around roofs, walls and floors also needs to be constructed to minimise air leakage.

4. Air movement
Air movement within a building offers a form of cooling, so that air conditioning requirements can be reduced. Ventilation requirements vary by building class and climate zone. There are also restrictions on the fixing method and size for ceiling fans or evaporative coolers.

5. Air conditioning and ventilation systems
Air conditioning must be able to operate at different

temperatures and times to meet the intended use of the building. The design of the HVAC system in terms of motor power and ventilation/exhaust must prevent excessive energy consumption.

6. Artificial lighting and power
The number of lights and power consumption are to be regulated to within acceptable maximum levels.

7. Hot water supply
Hot water systems must be designed and installed in accordance with Section 8 of AS/ANZ 3500.4 – plumbing and drainage – heated water services.

8. Access for maintenance
There are maintenance measures that must be provided to all plant, equipment and components that require maintenance, to ensure that they operate at efficient levels.

Summary

'Part J' energy efficiency measures are implemented through the local standard building approvals process, involving building inspectors and surveyors, and often independent building certifiers and assessors.

Building designers and builders themselves need to be aware of these new requirements. The Part J implications for

building construction are complex, and vary according to the class of building and also with the climate zone.

From Kingspan's experience worldwide where similar regulations have been introduced, it has been the signal/catalyst for further regulations to be developed. Likely further developments include mandatory air leakage testing, regulations

being extended across all classes of buildings, the requirement for thicker insulation, the implementation of elemental calculations and the anticipation of change of tenancy.

For further information contact your state based ABCB office. Additional information can also be obtained from their website at www.abcb.gov.au

Typical insulation requirements for the building envelope under Part J

Roofs and ceilings

Climate zone	1	2a	2b	3	4	5	6	7	8	
Class 2 or 3 building, Class 4 part of building or Class 9c aged care building										
Total R	2.2	2.5	2.2	3.0	2.7	3.2	3.8	4.3		
Class 5, 6, 7, 8, 9a or 9b building										
Total R	3.2								4.3	

Walls

Climate zone	1	2a	2b	3	4	5	6	7	8	
Class 2 or 3 building, Class 4 part of building or Class 9c aged care building										
Total R	1.4			1.7	1.4	1.7	1.9	2.8		
Class 5, 6, 7, 8, 9a or 9b building										
Total R	1.8								2.8	

Where do current methods of construction sit under Part J?

Typical R values achieved with current roof construction

Construction method and materials	Typical R value**
Metal deck, cavity, reflective foil, cavity, bulk insulation*, plasterboard	1.14
Metal deck, bulk insulation* with reflective foil laminate, cavity, plasterboard	0.77

These figures assume best practice installation and the absence of insulation voids

* The value of the bulk insulation to be added to the typical R value. A typical R value for bulk insulation of 50mm would be R1.0-1.2 and may vary depending on the product selected

** Different levels of thermal performance can be achieved, based on summer or winter climatic conditions and the use of reflective foils. The minimum value (or winter condition) is the one that in general needs to meet the minimum BCA level of performance and is the value given here

Typical R values achieved with current wall construction

Construction method and materials	Typical R value**
Concrete tilt-up panel (100mm), bulk insulation*, with furring channel and plasterboard finish	0.28
110mm brick wall with internal stud frame and plaster lining	0.53
Cement clad wall, reflective foil laminate, reflective cavity, bulk insulation*, plasterboard	0.84
Double brick cavity wall, with furring channels and plasterboard	0.73