
Building Services Information Sheet

ENERGY EFFICIENCY (CLASS 1 BUILDINGS)



Introduction

All countries have an obligation to make our planet sustainable for future generations. Sustainability is a way of living that looks at allowing development and lifestyles to continue to develop at a steady level, without exhausting our natural resources or causing ecological damage.

One of the measures that the state government has introduced, to achieve sustainable development, is to require new buildings to be designed to incorporate energy efficient principles. These measures have been introduced to reduce the pressure on our resources, such as water consumption, electrical and gas use.

The Building Code of Australia (BCA) Volume 2 has energy efficiency provisions that need to be met for new dwellings and additions/alterations to existing dwellings. This information sheet deals with how to achieve these requirements in new dwellings and extensions/alterations to existing dwellings.

Definitions

Deemed-to-Satisfy (now referred to as Elemental Provisions) is the phrase used in the BCA, Volume 2, to describe a provision that meets with the 'Performance Requirements' of the BCA.

R Value means the thermal resistance of a component.

Information and Advice

The WA Building Regulations 2012 require that all new dwellings and dwelling additions will need to comply with the current energy efficiency provisions of the BCA relative to the particular climate zone that you live in.

The Shire of Broome is situated in Climate Zone 1. This means that for proposed new dwellings and dwelling additions/alterations the current version of the BCA (BCA 2015) will apply.

Regardless of which type of project is proposed the requirement to comply with the WA Water Efficiency provisions (where applicable).

The BCA gives applicants the option of either meeting the 'Elemental provisions or achieving a minimum 6 star rating when an assessment is undertaken using an approved energy rating tool (computer modelling).

In regard to proposed dwelling additions/alterations a WA Alterations & Additions Protocol has been developed to assist on achieving a suitable Energy Efficiency outcome. This protocol has been developed in recognition of the fact that some additions/alteration projects may not be able to reasonable achieve the required energy efficiency requirements either via software modelling or the elemental provisions of the BCA.

The protocol information is available on the WA Building Commission Web Site www.buildingcommission.wa.gov.au

To comply with the Elemental Provisions, the following items need to be addressed for this climate zone:

External Walls

Regardless of the type of wall material proposed, the BCA requires additional insulation that achieves a minimum Total R Value **of between 2.4 to 2.8** depending on whether wall shading is being provided. There are a number of other options available so reference to the relevant parts of the BCA will provide additional information regarding these. (refer Part 3.12.1.14)

Note: - If the option of using insulation is used then a "Thermal Break" will be required to be incorporated into the construction.

Roof

The BCA requires additional insulation that achieves a minimum Total R Value ranging from 4.1 to 5.1 depending on the colour of the roof cladding material to be used.

The BCA provides concessions for the use of light colour roof sheeting and the use of vented roof spaces, however, care should be taken when choosing this method to avoid any chance of water ingress during cyclones, which could cause extensive damage. An allowance of R0.5 is given for this. (refer Part 3.12.1.2)

NOTE in situations such as raking ceilings where the ceiling is fixed directly to the underside of the structural element, which is steel, a "Thermal Break" will be required to be incorporated into the construction.

External Glazing

The BCA sets the maximum amount of external glazing permitted. (refer Part 3.12.2.1)

You can download a software program for use in MS Excel that can carry out all the required calculations to gain compliance with this section of the BCA. It can be downloaded at the Australian Building Codes Board (ABCB) web page http://www.abcb.gov.au/go/eegeneral_p1

With regard to the required U-Value and SHGC value inputs required for this calculator we recommend that you obtain these values from the following website:

<http://www.efficientwindows.org/> (Then select window technologies / glazing types).

The glazing requirements are just one of the areas now regulated by the BCA regarding Energy Efficiency the other main one being ventilation requirements. It is suggested as the these requirements are quite complex that you engage the services of a Designer or Architect to assist you in this area of the Elemental requirements.

The alternative to meeting the Elemental provisions of part 3.12 of the BCA is to submit an 'Accurate' report from an accredited assessor deeming the building envelope to achieve a minimum six star rating. This will still meet the 'Performance' requirements of the BCA part 3.12. A list of accredited assessor can be gained from the Sustainable Energy Development Office of Western Australia (SEDO) ph: 9420 5642. <http://www.absa.net.au/>

Building Sealing

If the building is provided with a heating or cooling system, other than an evaporative air conditioner, the external walls and roof need to be sealed to minimize air leakage.

Examples of how to seal materials are listed below:

- External doors and windows – Foam or rubber compressed strip, fibrous seal or the like can be used;
- Exhaust fans – A self closing damper, filter or the like can be installed;
- Windows – Windows designed for cyclonic conditions, in accordance with AS 2047, will comply with the sealing requirements.

Air Movement

- Habitable rooms need to be provided with natural ventilation of no less than 10% of the floor area of the room where the room has no ceiling fan and 7.5% where the room has a ceiling fan. This can be achieved through openable windows or doors, leading to the external air;
- Cross ventilation is to be provided with the use of breeze paths. Breeze paths must not pass through more than two openings in internal walls and have a maximum distance of 20 metres between the external openings. The Building Surveyor will check this requirement upon lodgement of the Building Licence Application.

Services

Certain external services need to be insulated under the provisions of the Building Code of Australia. These include heating and cooling ductwork. For more information on the insulation required, please contact a Shire Building Surveyor.

What Information Do I Need To Submit To The Shire With My Building Permit Application, In Relation To The Energy Efficiency Requirements?

Apart from the standard architectural plans required for a house, the following information should also be provided:

- The north point should be shown on the site plan;
- The type and R value of the proposed insulation should be provided;
- The type and thickness of the proposed glazing should be nominated;
- The overall size and ventilating size of each opening could be provided (optional)
- A completed detailed specification together with calculations to prove that compliance with the separate DTS elements will be met.
- Where chosen a certified alternative solution in the form of an “Accurate Assessment”

Where Do I Find Out What ‘R’ Value My Insulation Will Achieve?

The manufacturer of the insulation can provide you with the ‘R’ value applicable to the insulation that you choose.

What Happens If I Can’t Meet Elemental Provisions Of The Building Code Of Australia?

If you cannot comply with the above requirements, you may have your plans assessed by an accredited energy assessor to see if they can obtain a minimum 6 star rating using alternative methods. These assessors are listed on the SEDO website (www1.sedo.energy.wa.gov.au).

Additional Information

If you would like additional information on energy efficiency, please contact a Building Surveyor at the Shire of Broome or visit the Sustainability Energy Development Office website: www1.sedo.energy.wa.gov.au.

Requirement Checklist Notes

- New dwellings and additions to dwellings are required to incorporate energy efficiency measures;
- The Building Surveyor will check the above measures are met, once an application for Building Licence is submitted;

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- The plans and specifications should include a north point, type and thickness of glazing and the type and R-value of the proposed insulation and an electrical layout showing any proposed ceiling fans;
 - Completed Detailed Specification and Calculations to prove compliance with the Elemental Provisions will be met OR Certified alternative Solution in the form of an "Accurate Assessment".

Water Efficiency in Class 1 Buildings

In May 2006, Western Australia adopted the minimum 5 Star energy efficiency provisions of the Building Code of Australia for all new homes (now minimum of 6 star). Now the Government has gone further and introduced 5 Star plus introduced Water Efficiency requirements – that builds on the energy efficiencies from 5 Star with the added benefits of water reduction measures for all homes right across the State.

5 Star Plus is based around two new Codes:

These new codes apply to **Class 1** and **Class 10** buildings only.

The Energy Use In Houses Code - confirms the existing 5 Star provisions for house design and construction and adds requirements for the energy efficient water heating.

The Water Use In Houses Code - aims to reduce the consumption of water in residential homes by requiring water efficient fittings, minimising the wastage of water and facilitating the appropriate use of alternative sources of water such as grey water and rain water.

5 Star Plus, Stage 1 will be applicable to new homes approved for construction after 1 September 2007, however, existing home owners can also use these Codes to improve energy and water efficiency in their homes.

The Energy Use in Houses Code and Water Use in Houses Code are written to supplement the Building Code of Australia (BCA) and adopt BCA definitions and format for consistency. The Codes are published together for the convenience of builders, plumbers and certifiers who may need a convenient reference on site.

"The codes were referenced under the Building Regulations 1989 to apply to all new residential Class 1 and 10 buildings from 1 September 2007".

For more information regarding the new requirements visit:-

http://www.5starplus.wa.gov.au/uploads/5_Star_Codes_Brochure.pdf

To assist you in your application the following check sheet should be used and submitted with your application.

<http://www.5starplus.wa.gov.au/uploads/EnergyWaterEfficiency%20Conformance%20Sheet.pdf>

Please note that 6 star Energy Efficiency provisions now apply to new Dwellings and Dwelling additions/alterations.

Disclaimer

This information sheet is provided as generalised information. While we aim to keep the content of this document current and accurate, we accept no responsibility or warranties for actions based on the information provided. The Shire of Broome encourages you to seek professional advice before acting on any information contained within this document. Please contact the Shire of Broome if you wish to comment on the forms provided and information contained within. Any reported errors will be amended.