



NSW Building Regulation Advisory Note BRAN No. 239

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To: All councils
All accreditation bodies
Various government agencies
Various industry groups

Our ref: bran_239.doc
File: S/9036751

1 March 2005

Building Code of Australia 2005 amendment (BCA 2005)

The purpose of this BRAN is to provide information regarding the changes to the Building Code of Australia (BCA) with the **BCA 2005** Amendment, which commences in NSW on **1 May 2005**.

The BRAN provides a general overview of the amendment, which contains minor editorial and technical changes, changes to referenced documents and significant changes to some BCA provisions and NSW Appendices. Summaries are provided below, of the changes to referenced documents, significant changes to the BCA and changes to the NSW Variations.

For details of **all** changes in a clause by clause description, please refer to the 'List of Amendments' for each volume, which can be found as the last chapter at the back of each volume of BCA 2005.

BACKGROUND

The BCA is amended on an annual cycle with each new amendment beginning on 1 May of the relevant year, after being available to the community for examination for some time prior to the commencement date. Each new amendment is a new publication of the whole BCA, named for the year of the amendment. The upcoming BCA 2005 will thus replace the current BCA 2004.

The two volumes of the BCA cover building classes as follows:

- **Volume One** – Class 2 to 9 Buildings, with examples from each class being:
2 – apartments; 3 – accommodation–hotels, motels, etc; 4 – single flat in commercial/ industrial building; 5 – office; 6 – shops; 7a – car park; 7b – warehouse, storage; 8 – factory; 9a – health care (hospital, nursing home, etc); 9b – assembly building, theatre etc, church, library, gymnasium; 9c – aged care building
- **Volume Two** – Class 1 and 10 buildings and structures with examples from each class being:
1 – residential buildings being single dwellings or small guesthouses, hostels etc; and 10 – garages, sheds, retaining walls etc.

SUMMARY OF CHANGES

Minor Technical and Editorial Changes

Typographic corrections, realignment of paragraphs, changes to tabular set out and clarifications have been made in **both volumes**.

BCA Referenced Documents

Many standards and other documents are referenced in the BCA to provide the technical method of compliance with BCA provisions and thus become part of building legislation in NSW via referencing of the BCA in the Environmental Planning and Assessment Act and Regulation. Standards are reviewed, amended and re-issued on a regular basis by Standards Australia and are reviewed and approved for the purposes of the BCA, prior to them becoming a BCA referenced document.

Referenced documents listed below are available from the relevant following sources:

- Australian Standards (AS), Australian/New Zealand Standards (AS/NZS) and British Standards (BS) are available through Standards Australia's website — www.standards.com.au
- Standards of the Air-Conditioning and Refrigeration Institute (ARI) are available through their website — www.ari.org
- ABCB Protocol for House Energy Rating Software is available on the Australian Building Code Board's website — www.abcb.gov.au.

In **Volume One (Spec. A1.3)** of the BCA (Class 2 to 9 buildings) there are **ten** changes in the BCA 2005 Amendment in relation to referenced documents. They are summarised as follows:

- ARI 460 (*Condensers for mechanical air-cooled refrigerant*) and ARI 550/590 (*water chilling packages using vapour compression cycles*) — the BCA 2005 Amendment adopts these American Standards for measuring, firstly, the efficiency of air cooled condenser fan motors and, secondly, the 'energy efficiency ratio' (a method of rating the efficiency of different systems) for refrigerant chillers.
- AS 2419.1 (*Fire hydrants-system design, installation and commissioning*) — the BCA 2005 Amendment adopts Amendment 2 to the Standard, which now specifies the required thickness of galvanized steel pipe used below ground level.
- AS/NZS 3500.4 (*National plumbing and drainage-heated water services*) — the BCA 2005 Amendment adopts Section 8 of the Standard in Volume One, as per the current reference in Volume Two to address the energy efficiency of water system piping.
- AS 3600 (*Concrete structures*) — the BCA 2005 Amendment adopts Amendment 2 to the Standard that addresses industry concerns with specific reinforcement and provides reinforcement requirements for controlling cracking.
- AS/NZS 3823.1.2 (*Performance of electrical air conditioners and heat pumps – test methods, testing and performance rating*) — the BCA 2005 Amendment adopts this Standard for measuring the 'energy efficiency ratio' (a method of rating the efficiency of different systems) for package heating and cooling plants.
- AS 4428.1 (*Fire detection systems – control and indicating equipment*) — the BCA 2005 Amendment adopts Amendment 1 to the Standard, which introduces an optional alarm acknowledgement facility to reduce the incidence of false alarms.
- AS/NZS 4859.1 (*Thermal insulation – general and technical provisions*) — the BCA 2005 Amendment adopts the Standard in Volume One, as per the current reference in Volume Two as a product manufacturing and thermal insulation testing standard.
- BS 7190 (*Assessing thermal performance of low temperature hot water boilers*) — the BCA 2005 Amendment adopts this British Standard for measuring the thermal efficiency of hot water boilers.
- ABCB Protocol for House Energy Rating Software — the BCA 2005 Amendment adopts the 2005.1 version of this document in Volume One, as per Volume Two. The Protocol provides a neutral framework for acceptance of existing, new and amended software able to be used in demonstrating compliance with the BCA Performance Requirements for energy efficiency.

In **Volume Two (Part 1.4)** of the BCA (Class 1 and 10 buildings) there are **five** changes in the BCA 2005 Amendment in relation to referenced documents. They are summarised as follows:

- AS/NZS 2269 (*Structural plywood*) — the BCA 2005 Amendment adopts the 2004 edition of this Standard that is updated to include current forest practices for timber used to produce plywood and associated changes to testing and grading.
- AS 2464 (*Thermal insulation tests*) Part 3 (*low density loose fill*), Part 5 (*properties by heat flow meter*) and Part 6 (*properties by guarded hot plate*) — the BCA 2005 amendment **deletes** reference to these standards that are **superseded** by AS/NZS 4859.1, which was referenced in parallel in BCA 2004.

- AS 3600 (*Concrete structures*) — as for Volume One.
- AS/NZS 4858 (*Wet area membranes*) — the BCA 2005 amendment adds reference to the Standard such that membranes meeting its requirements are deemed waterproof for the purposes of Part 3.8.1.
- ABCB Protocol for House Energy Rating Software — the BCA 2005 Amendment adopts the updated 2005.1 version of this document, applied as per Volume One.

Significant Changes in the BCA 2005 Amendment

Changes to Both Volumes

- **Energy efficiency – Class 1, 2 and 3 buildings and Class 4 parts** — (*National provisions*)
 - BCA 2005 (national provisions) introduces energy efficiency into Volume One and updates the provisions of Volume Two.

NSW Variations for energy efficiency are made in **both volumes** of BCA 2005 to facilitate the alignment of the Building Sustainability Index (BASIX) and the BCA in NSW. See '*NSW Variations*' and '*Appendix B – NSW Energy Efficiency Requirements*' below.
 - **Class 1 buildings** — (*Volume Two Part 3.12*)

BCA 2005 updates the **national** requirements for energy efficiency of Class 1 buildings, with the incorporation of ongoing research and development.

One such update is the removal of reference to the AS 2464 series of Standards for insulation that are superseded by AS/NZS 4859.1. The current BCA (2004) references both the new (AS/NZS 4859.1) and the old standards (AS 2464 series) in order to provide industry with time to adjust to the new standard.

From the commencement of BCA 2005 on 1 May 2005, **all** insulation subject to this requirement must be tested and labelled in accordance with AS/NZS 4859.1.
 - **Class 2 and 3 buildings and Class 4 parts** — (*Volume One Section J*)

BCA 2005 **introduces national** energy efficiency requirements into Volume One for Class 2 and 3 buildings and Class 4 parts of buildings, with the inclusion of a **new Section J**, as the second stage of the energy efficiency reforms. (The first stage was the package introduced into Volume Two for Class 1 buildings with BCA 2004).

Among other things, the application of energy efficiency requirements for these buildings, includes a requirement for insulation. In addition to its thermal properties, insulation may be subject to **other properties** under the BCA regarding its ability to perform in a fire, such as non-combustibility, fire hazard properties, etc.

Products used primarily for houses (not required to meet such criteria) may require test certificates for compliance with these other properties, to demonstrate suitability for use in buildings of Class 2, 3 and 4.
- **Wire balustrades** — (*Volume One D2.16 and Volume Two Part 3.9.2*)

BCA 2005 introduces technical construction standards for balustrades incorporating wire elements. Wire balustrades are becoming more common in all classes of buildings, however until now, the BCA has not specifically addressed these types of balustrades. The new provisions are based on research undertaken by the ABCB and provide design and construction details, requirements for wire diameter, tension and deflection.
- **Waterproofing of wet areas** — (*Volume One F1.7 and Volume Two Part 3.8.1*)

BCA 2005 makes no technical changes regarding the waterproofing of wet areas, however, in **Volume One**, instead of the BCA containing the specific requirements for which parts of buildings must be waterproof (as per the current BCA), BCA 2005 introduces a direct requirement for buildings

to be waterproofed in accordance with AS 3740. The Standard then specifies which parts of a building must be waterproof, as well as providing the methods for achieving that.

In **Volume Two**, BCA 2005 maintains the current direct reference to AS 3740 as the Acceptable Construction Manual; and re-introduces the Acceptable Construction Practice (removed in BCA 2004), that has been amended to be consistent with the Standard.

- **Classification – description of Class 1** — (*Volume One A3.2 and Volume Two 1.3.2*)

The 2005 amendment clarifies the description of Class 1 buildings, as follows:

- attached Class 1a buildings are now referred to as 'one of a group of two or more attached dwellings'
- reference to Class 1b buildings, now includes the instruction that the **floor area** is to be measured over the walls **enclosing the Class 1b building**. This change is to exclude any attached or associated Class 10 buildings from the calculation of the floor area of the Class 1b building.

Changes to Volume One only

- **Non-required escalators/ramps in Class 9a and 9c buildings** — (*Clause D1.12*)

The 2005 amendment clarifies that in a Class 9a and 9c building, non-required stairs/escalators/ramps **may not be used** to connect storeys. They may, however, be used to connect different levels on the same storey.

- **Lifts – access for maintenance** — (*Part D1*)

The amendments for BCA 2005 were made to align the requirements for access and egress of the BCA and Occupational Health and Safety (OH&S) legislation. The changes include:

- **D1.16(a)** — prevents the use of ladders as the only means of egress from, (and hence access to), small lift machine rooms. (Egress from a plant room is unchanged)
- **D1.17** — regulates the means of access to lift pits by specifying the provision of access doorways consistent with OH&S legislation.

- **Re-entry from fire-isolated exits** — (*Clause D2.22*)

The 2005 amendment **clarifies** in (a)(iii) that in a building greater than 25 m in effective height, any fire-isolated stairway serving a storey above that height, must not have **any** of its doors locked from the inside, including those below 25 m.

- **When sprinklers are required** — (*Clause E1.5 and Table E1.5*)

These provisions are the primary BCA sources for determining when sprinkler systems are required in a building. The BCA 2005 amendment clarifies when sprinklers are required in buildings and parts of buildings and includes the following:

- Changes to Table E1.5 create specific indication of the extent of the required sprinkler protection in a building, for each type of building mentioned in the table. For example, in a building greater than 25m in effective height, the BCA 2005 table clarifies that the entire building must be sprinkler protected
- One of the changes relates to when a sprinkler system is required in a car park. The current wording allows different interpretations, which are being inconsistently applied.

The amendment clarifies that a car park accommodating more than 40 vehicles may be divided into fire compartments each accommodating 40 vehicles or less and not require a sprinkler system in that car park.

- **Stretcher facility in lifts** — (Clause E3.2)

The 2005 amendment clarifies that when an emergency lift is not required, a stretcher facility is only required in a passenger lift that serves storeys above an effective height of 12m.

- **Fire service controls in passenger lifts** — (Clause E3.7)

Due to an increased use of specialised lifts in buildings, the 2005 amendment provides limitations on the requirement for fire service controls. The requirement is applicable only to passenger lift cars designed in accordance with AS 1735 Parts 1 and 2 that serve any storey greater than 12m in effective height.

NSW Variations

- **Energy Efficiency Provisions – Class 1, 2 and 3 buildings and Class 4 parts**

In the current BCA (BCA 2004), the **NSW Appendices for both volumes** of the BCA contain variations that regulate the energy efficiency of buildings - Class 1 buildings in Volume Two and Class 2 buildings and Class 4 parts in Volume One.

In both cases, the current variations provide BCA requirements for NSW that complement and support the provisions of the *Building Sustainability Index* (BASIX), which provides the predominant control mechanism for the regulation of energy efficiency matters for residential buildings in NSW

With **BCA 2005**, the **NSW Appendices for both volumes** make no major technical changes to the current provision for Class 1 and 2 buildings and Class 4 parts, which continue to complement and support BASIX. New requirements are introduced to regulate the energy efficiency of Class 3 buildings that are controlled by the BCA alone via the NSW Appendix to Volume One.

NSW Variations for energy efficiency consist of 3 packages, as follows:

- **Class 1 buildings** — (Volume Two NSW Part 2.6 and Part 3.12)
This package continues to provide provisions to complement and support BASIX and continues to contain its own Performance Provisions, which are different from the national provisions. The Deemed-to-Satisfy provisions (DTS) are presented in a manner different from the current NSW Variations, making **direct reference** to the relevant national BCA 2005 clauses. Amendments to the national provisions have been incorporated in the new direct referencing system.
- **Class 2 buildings and Class 4 parts** — (Volume One NSW Subsection J[A])
As per the changes to the provisions for Class 1 buildings, this package continues to provide provisions to complement and support BASIX and the presentation of the requirements for Class 2 and 4 has been changed to make **direct reference** to the relevant national BCA 2005 clauses, which expand the scope of requirements for services.
- **Class 3 buildings** — (Volume One NSW Subsection J[B])
These are newly included in the NSW Appendix to Volume One. BASIX does **not cover** such buildings, therefore the NSW BCA provisions regulate **all** design and construction aspects of energy efficiency for Class 3 buildings, also by way of **direct reference** to the relevant BCA 2005 clauses.

Appendix A provides details of **information sessions** regarding 'Energy Efficiency in NSW' to be held in Sydney metropolitan areas and regional centres during March 2005.

Appendix B – NSW Energy Efficiency Requirements contains detailed descriptions of the NSW variation packages.

- **Energy Efficiency Installations (*maintenance*)** — (*NSW Part I2*)

This new variation is added to the NSW Appendix under Section I Maintenance to delete Part I2 of the BCA from having application in NSW.

The current maintenance regime in NSW under the EP&A Regulation is limited to essential fire safety measures, which does not provide appropriate administrative regulations to support the new BCA Part I2. Consideration is currently being given to whether the EP&A Regulation should be expanded to include maintenance of energy efficiency and other such measures.

- **Provision for cleaning windows** — (*NSW G1.101*)

Subclause (b)(ii) is amended to refer to the Occupational Health and Safety legislation that replaced the previously referenced Construction Safety Act in 2000.

- **Projection suites** — (*NSW H101.17*)

Subclause (b) is added to clarify that a projection suite is required in a place of public entertainment in which films (as defined) are to be shown.

- **Rooms to be provided [*in a projection suite*]** — (*NSW H101.17.1*)

The lead-in is amended to refer to the Local Government (Approvals) Regulation 1999, (replacing the 1993 Regulation) and the changed Schedule referring to staffing requirements.



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Attachments

Appendix A – Energy Efficiency in NSW – Information Sessions Details

Appendix B – NSW Energy Efficiency Requirements

APPENDIX A

Energy Efficiency in NSW — Information Sessions

Major City sessions:

Newcastle	Mon 14 March 2005
Wollongong	Tue 15 March 2005
Blacktown	Wed 16 March 2005
Sydney	Thu 17 March 2005

For city sessions, please email the ABCB at energyseminars@abcb.gov.au for details and a registration form.

Regional Centre sessions:

Wagga Wagga	Fri 18 March 2005
Ballina	Mon, 21 March 2005
Port Macquarie	Tue 22 March 2005
Dubbo	Wed 23 March 2005
Queanbeyan	Thu 24 March 2005

For regional centre sessions, please register with DIPNR using the registration form provided in BRAN No. 238, issued 24 December 2004.

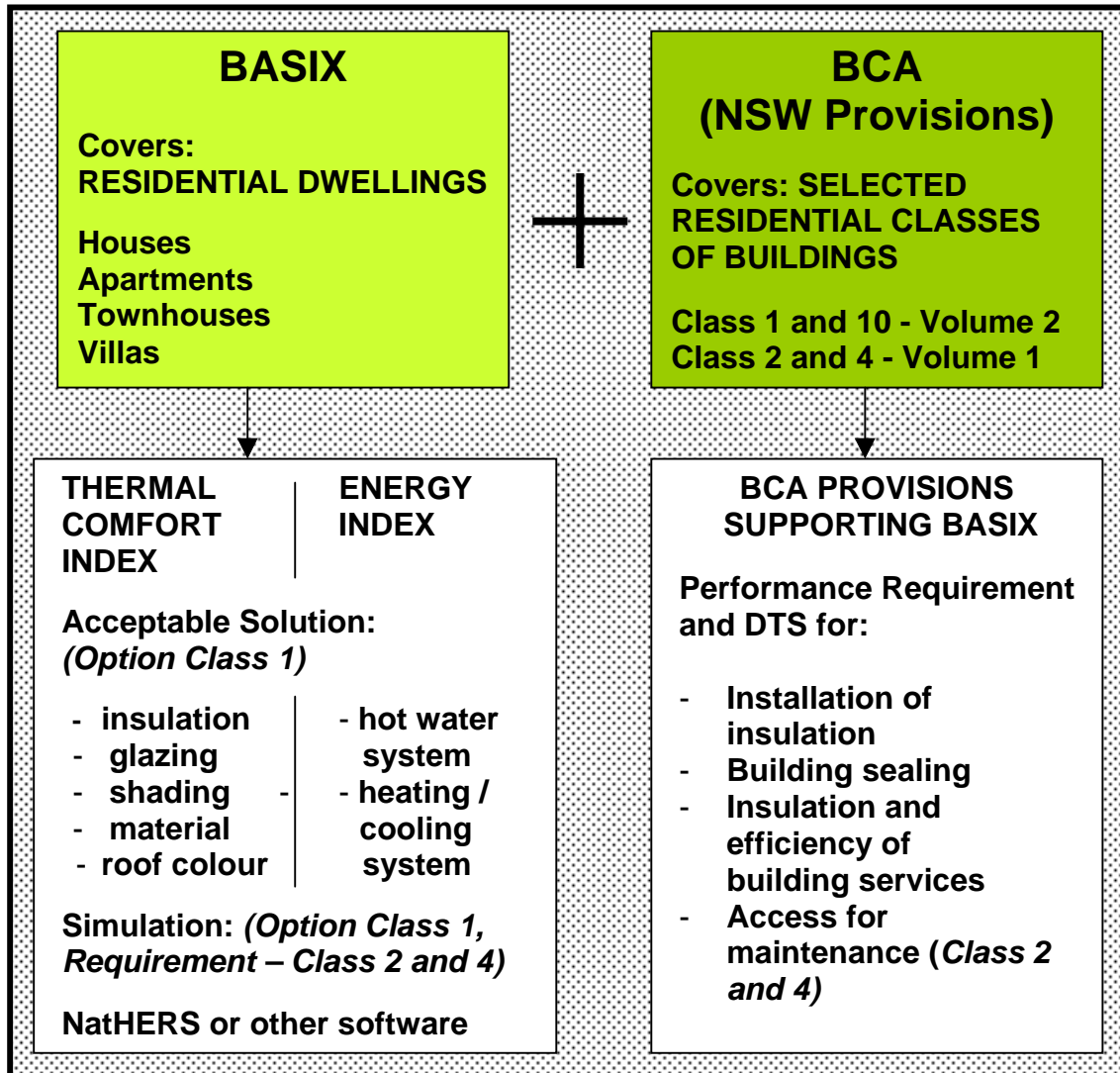
NSW Energy Efficiency Requirements

NSW Appendices

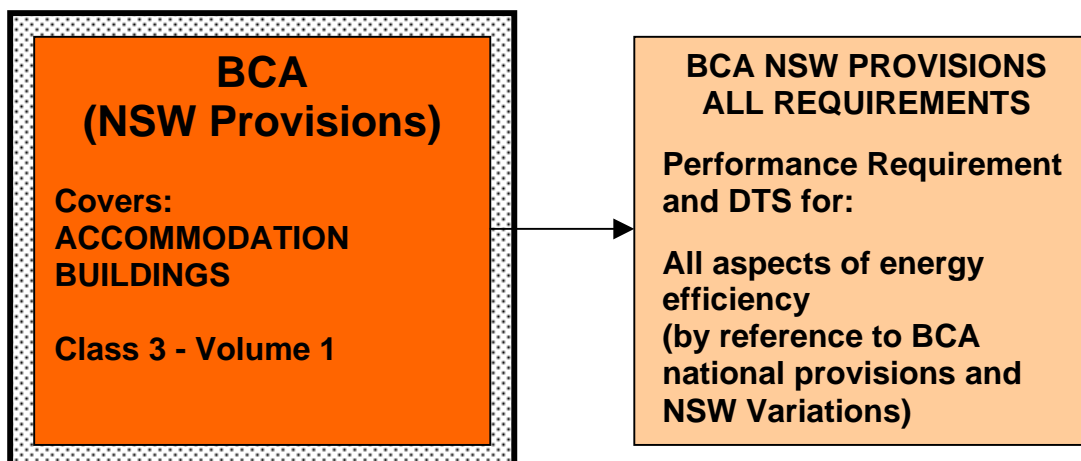
NOTE: This information needs to be read in conjunction with the relevant NSW Variation packages to Volume One and Volume Two of BCA 2005.

OVERVIEW OF ENERGY EFFICIENCY IN NSW

Classes 1, 2 and 4 – BASIX + BCA



Class 3 – BCA only



OVERVIEW OF ENERGY EFFICIENCY IN NSW

Energy efficiency in NSW is regulated by a combination of 2 different control mechanisms that, between them, regulate and control the design and construction of Class 1, 2 and 3 buildings and Class 4 parts.

The 2 control mechanisms are:

- Building Sustainability Index (BASIX)
- Building Code of Australia (BCA).

BASIX

- BASIX is a web-based planning tool designed to assess the water and energy efficiency of new residential developments. From 1 July 2005 all new residential dwellings anywhere in NSW will need to submit a BASIX certificate with an application for development consent (DA) or a Complying Development Certificate (CDC).
- BASIX applies only to 'dwellings' and associated facilities (Classes 1, 2 and 4 in BCA terminology) at this point in time and is the predominant control mechanism that drives the control of energy efficiency of these buildings in NSW. It needs to be noted that BASIX provisions do not stand alone – they rely upon provisions contained in the BCA via the NSW Variations, to complete the package of controls for energy efficiency in NSW.

BCA (via NSW Appendices)

- For Class 1 and 2 buildings and Class 4 parts, the BCA provides (via the NSW Appendices) provisions that complement and support BASIX in achieving energy efficiency in the design and construction of these buildings. These NSW BCA provisions **must be** complied with.
- Class 3 buildings have the BCA as the control mechanism driving the regulation of their energy efficiency - as BASIX is **not applicable** to them, at this point in time. All energy efficiency requirements for Class 3 buildings are contained in BCA 2005, via reference through the NSW Appendix.

Summary of application of the 2 control mechanisms

- **BASIX + BCA combination** — applies to Class 1 buildings; and Class 2 buildings and Class 4 parts
- **BCA only** — applies to Class 3 buildings

BCA 2005 NSW Variations

Due to BASIX applying only to 'dwellings', combined with the two-volume format of the BCA, the **NSW Variations** for energy efficiency comprise **three separate packages**, as follows:

- Class 1 buildings in BCA Volume Two — provisions complementing and supporting BASIX
- Class 2 buildings and Class 4 parts — provisions complementing and supporting BASIX in BCA Volume One
- Class 3 buildings in BCA Volume One — providing **all** energy efficiency provisions.

Generally, the NSW Variations packages refer to the relevant national provisions. Each package was developed as a 'road map' to direct the user to the relevant provisions and aid understanding of the requirements.

BASIX + BCA combination: Classes 1, 2 and 4 General Information

- The current BCA (BCA 2004) contains in each Volume a package of energy efficiency provisions that form the **NSW variations**. These provide BCA requirements to complement the thermal comfort and energy requirements of the Building Sustainability Index (BASIX) or, where BASIX is not yet applicable, other policies applied by councils to reduce greenhouse gas emissions and/or energy consumption.

This combination of BASIX (or other greenhouse gas/energy policy) plus NSW BCA provisions, will continue with BCA 2005 when it takes effect on 1 May 2005.

- From 1 July 2005, BASIX will apply to all single dwellings (Class 1 buildings) and all multi-residential buildings and apartments (Class 2 buildings and Class 4 parts) in **all** regions of NSW, including country areas and will override any other greenhouse gas/energy policies applied by councils. From that date, the BASIX/NSW BCA combination will continue to be the method of regulating the design and construction of Class 1, 2 and 4 buildings and parts, in terms of energy efficiency.

BASIX will be the predominant control mechanism that drives the control of energy efficiency of these buildings in NSW. The BCA provides additional provisions (in the NSW Appendices to BCA 2005), which must be applied in order to complement and support the provisions applied through BASIX and to complete the application of energy efficiency controls to the building.

- An assessment under BASIX will determine the principal thermal performance and energy saving characteristics a building must possess. These will be reflected in the BASIX Certificate and the commitments made by the applicant will form part of any development consent or complying development certificate issued.

Those aspects of building design and construction that are covered by BASIX have been varied out of **national** BCA 2005 for the purposes of NSW. Therefore, the national BCA Performance Provisions, Verification Methods, and a major part of the national DTS Provisions **are not relevant for NSW** and do not form part of the NSW Variations for buildings and parts of **Class 1, 2 and 4**.

- **Only** those national BCA provisions that are complementary to and support BASIX have been retained **and must be complied with** in NSW via the NSW Variations. Those provisions relate to:
 - the installation and characteristics of thermal insulation
 - building sealing
 - insulation and efficiency of certain services

and for Class 2 buildings and Class 4 parts:

- **access** for maintenance, is also retained and must be complied with.

Three NSW BCA packages

Each of the three packages referred to in the 'Overview' above is described below.

Class 1 buildings – BASIX + BCA 2005

BCA 2005 Volume Two NSW Additions – Energy Efficiency

(BCA provisions to complement and support BASIX)

- NSW Additions to Volume Two contain the provisions for energy efficiency for NSW that are presented as a stand alone part of the BCA with its own set of performance provisions to reflect the NSW Variations. These provide a 'road map' for determining the relevant national provisions so that the package remains as user-friendly as possible to the end user.

The content of **NSW Additions 'NSW 2 Energy Efficiency' in BCA 2005** is described below.

Performance Provisions

- The **Objective** NSW O2.6 and the **Functional Statement** NSW F2.6, are as per the national Part 2.6 Objective and Functional Statement, regarding the reduction of greenhouse gases by the efficient use of energy.
- **Performance Requirements** NSW P2.6.1(a), NSW P2.6.1(b) and NSW P2.6.2 have been developed to specifically address those aspects of energy efficiency which are regulated by the BCA in NSW as complementary to and supporting of BASIX. Their application clauses differ from each other, to indicate different triggers, as follows:
 - **NSW P2.6.1(a)** for the **installation** and characteristics of insulation, is triggered only when an approval for a development (DA or CDC) specifies the provision of thermal insulation (eg as a BASIX commitment).
 - **NSW P2.6.1(b)** for the sealing of a building against air leakage, is applicable to Class 1 and 10 buildings with exemptions for:
 - existing buildings being relocated
 - Class 10a buildings without a conditioned space or for the accommodation of motor vehicles
 - parts of a building that cannot be fully enclosed
 - ventilation openings required for safe operation of a gas appliance.

Note: Explanatory information to NSW P2.6.1(b) in BCA 2005 describes what is meant by the term 'cannot be fully enclosed'.

- **NSW P2.6.2** for the energy efficiency of services is applicable to any Class 1 building except for existing services in an existing building being relocated.

Deemed-To-Satisfy (DTS) Provisions

- The NSW DTS provisions are contained in NSW Part 3.12 Energy Efficiency, Acceptable Construction, which is divided into five Parts as per the national provisions:
 - Building Fabric Thermal Insulation – (installation and characteristics only)
 - External Glazing (*Noted as not applicable in NSW*)
 - Building Sealing
 - Air Movement (*Noted as not applicable in NSW*)
 - Services.

The Acceptable Construction requirements are limited to those three specific areas covered by the Performance Provisions, with the sections on **external glazing** and **air movement** being noted as **not applicable in NSW**, as these issues are controlled by BASIX.

- **NSW Part 3.12.1 Building Fabric Thermal Insulation**

- **NSW 3.12.1** – references the NSW DTS provision necessary for satisfying the NSW Performance Requirement for **insulation**; and states the application of the Part (as per the Performance Requirement) to only those Class 1 or Class 10 buildings where thermal insulation has been specified as part of the development (eg under BASIX).
- **NSW 3.12.1.1** – requires Class 1 and 10 buildings to comply with the building fabric thermal insulation requirements of national BCA 2005 Clause 3.12.1.1. The national clause requires compliance with AS/NZS 4859.1, makes general installation requirements applicable to all insulation and specific requirements for both reflective insulation and bulk insulation.

The requirement to comply with AS/NZS 4859.1 **only**, reflects the removal of reference to the AS 2464 series of Standards for insulation that are superseded by AS/NZS 4859.1. The current BCA (BCA 2004) references both the new and the old Standards in order to provide industry with time to adjust to the new Standard.

From the commencement of BCA 2005 on 1 May 2005, **all** insulation subject to this requirement must be tested and labelled in accordance with AS/NZS 4859.1.

- **NSW Part 3.12.2 External Glazing**

A note states that the national Part 3.12.2 **does not apply in NSW**, as the subject matter is dealt with by BASIX.

- **NSW Part 3.12.3 Building Sealing**

- **NSW 3.12.3** – references the NSW DTS provision necessary for satisfying the NSW Performance Requirement; and states the application of the Part, as per the Performance Requirement, to Class 1 and 10 buildings with exemptions for specific conditions of a building and parts of a building. (See NSW P2.6.1(b) above).
- **NSW 3.12.3.1** – requires Class 1 and 10 buildings to comply with the Acceptable Construction Manual (ACM) and Acceptable Construction Practice requirements of national BCA 2005 Clauses 3.12.3.0 to 3.12.3.5. The national clauses reference AS 2047 as the ACM for the sealing of windows and make specific requirements for the sealing of the building at chimneys and flues, roof lights, external windows and doors, exhaust fans, and construction of roofs, walls and floors.

- **NSW Part 3.12.4 Air-Movement**

A note states that the national Part 3.12.2 **does not apply in NSW** as the subject matter is dealt with by BASIX.

- **NSW Part 3.12.5 Building Services**

- **NSW 3.12.5** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements, and states the application of the Part, as per the Performance Requirement, to any Class 1 building except for existing services in an existing building being relocated.
- **NSW 3.12.5.1** – requires Class 1 and 10 buildings to comply with the Acceptable Construction Manual (ACM) and Acceptable Construction Practice requirements of national BCA 2005 Clauses 3.12.5.0 to 3.12.5.3. The national clauses reference Australian/New Zealand Standards as ACMs and make specific requirements for the insulation of services; central heating water piping; and heating and cooling ductwork.

Class 2 buildings and Class 4 parts – BASIX + BCA 2005

BCA 2005 Volume One NSW Appendix – NSW Subsection J(A)

(BCA provisions to complement and support BASIX)

- Similar to the package in Volume Two for Class 1 buildings, NSW Subsection J(A) is presented as a self contained part of the BCA with its own set of performance provisions to reflect the NSW Variations, to provide a 'road map' for determining the relevant national provisions so that the package remains as user-friendly as possible to the end user.

The content of '**NSW Subsection J(A)**' in **BCA 2005**, is described below.

Performance Provisions

- The **Objective** NSW J(A)O1 and the **Functional Statement** NSW J(A)F1, are as per the national Section J Objective and Functional Statement, however their **application** is limited to Class 2 buildings and Class 4 parts.
- **Performance Requirements** NSW J(A)P1, NSW J(A)P2 and NSW J(A)P3 have been developed to specifically address those aspects of energy efficiency which are regulated by the BCA in NSW as complementary to and supportive of BASIX. Their application clauses differ from each other, to indicate different triggers, as follows:
 - **NSW J(A)P1** for the **installation** and characteristics of insulation, is triggered only when an approval for a development (DA or CDC) specifies the provision of thermal insulation (eg as a BASIX commitment).
 - **NSW J(A)P2** for the sealing of a building against air leakage, is applicable to any Class 2 building or Class 4 part, with specific parts of those buildings excepted.
 - **NSW J(A)P3** for the energy efficiency of services, is applicable to any Class 2 building or Class 4 part.
 - **NSW J(A)P4** is as per the national Performance Requirement JP2 for access for maintenance, with its application limited to Class 2 buildings, except within a sole-occupancy unit.

Deemed-To-Satisfy (DTS) Provisions

- The NSW DTS provisions of NSW Subsection J(A) for Class 2 Buildings and Class 4 Parts, are limited to those specific areas covered by the Performance Provisions, divided into 5 parts:
 - Building Fabric (insulation) – (installation and characteristics only)
 - Building Sealing (air leakage)
 - Air-Conditioning and Ventilation Systems (services)
 - Hot Water Supply (services)
 - Access for Maintenance.
- **NSW Part J(A)1 Building Fabric**
 - **NSW J(A)1.0** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements; and refers to the relevant national provision for the determination of appropriate Performance Requirements if an Alternative Solution is proposed.
 - **NSW J(A)1.1** – states the application of the Part, as per the Performance Requirement, to only those Class 2 buildings or Class 4 parts where thermal insulation has been specified as part of the development (eg under BASIX).

- **NSW J(A)1.2** – requires Class 2 buildings and Class 4 parts to comply with the general thermal construction requirements of **national BCA 2005** Clause J1.2 and deems the term ‘where required’ in that clause to mean ‘specified to be provided’ by the same controls as per the limitation of Performance Requirement NSW J(A)P1. The national clause requires compliance with AS/NZS 4859.1, makes general installation requirements applicable to all insulation and specific requirements for both reflective insulation and bulk insulation.
 - For information regarding the referencing of AS/NZS 4859.1 **only**, see comments regarding Class 1 buildings – building fabric thermal insulation under Clause NSW 3.12.1.1 above.
 - **Important Note:** Volume One of the BCA applies a range of properties and criteria to materials used in a building. Therefore, in addition to its thermal properties, insulation may be subject to **other properties** under the BCA regarding its ability to perform in a fire, such as non-combustibility and fire hazard properties.

Products used primarily for houses (not required to meet such criteria) may require test certificates for compliance with these other properties, to demonstrate suitability for use in buildings and parts of Class 2 and 4.

- **NSW Part J(A)2 Building Sealing**

- **NSW J(A)2.0** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements; and refers to the relevant national provision for the determination of appropriate Performance Requirements if an Alternative Solution is proposed.
- **NSW J(A)2.1** – states the application of the Part, as per the Performance Requirement, to any Class 2 building or Class 4 part, with exceptions for:
 - buildings in climate zones 2 and 5, where the only means of air conditioning is by use of an evaporative cooler (which needs a certain flow rate through the building in order to operate)
 - ventilation openings necessary for safe operation of a gas appliance
 - parts of buildings that cannot be fully enclosed.

Note: The term ‘cannot be fully enclosed’ is intended to apply to parts of buildings with permanent openings such as balconies, shade rooms, rooms with fixed louvres, mesh or other material that allows air flow. Adjustable louvres are considered to provide full enclosure to the opening they accommodate.

Such rooms are unlikely to be conditioned given the high air flow rates, therefore application of the provisions to these parts of buildings would not result in reduction in energy use.

- **NSW J(A)2.2** – requires Class 2 buildings and Class 4 parts to comply with the requirements of **national BCA 2005** Part J3, Clauses J3.2 to J3.6. The national clauses make specific requirements for the sealing of the building at chimneys and flues; roof lights; external windows and doors; exhaust fans; and construction of roofs, walls and floors.

- **NSW Part J(A)3 Air-Conditioning and Ventilation Systems**

- **NSW J(A)3.0** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements; and refers to the relevant national provision for the determination of appropriate Performance Requirements if an Alternative Solution is proposed.
- **NSW J(A)3.1** – states the application of the Part, as per the Performance Requirement, to any Class 2 building or Class 4 part.
- **NSW J(A)3.2** – requires Class 2 buildings and Class 4 parts to comply with the requirements of **national BCA 2005** Part J5, Clauses J5.2 to J5.5, being technical requirements for air conditioning and ventilation systems; control of specified equipment using time switches; heating and cooling systems; and ancillary exhaust systems having variable demand, such as those serving a commercial kitchen.

- **NSW Part J(A)4 Hot Water Supply**

- **NSW J(A)4.0** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements; and refers to the relevant national provision for the determination of appropriate Performance Requirements if an Alternative Solution is proposed.
- **NSW J(A)4.1** – states the application of the Part, as per the Performance Requirement, to any Class 2 building or Class 4 part.
- **NSW J(A)4.2** – requires Class 2 buildings and Class 4 parts to comply with the specific hot water requirements of **national BCA 2005 J7.2**, which requires a hot water system to be designed and installed in accordance with Section 8 of AS/NZS 3500.4.

- **NSW Part J(A)5 Access for Maintenance**

- **NSW J(A)5.0** – references the NSW DTS provisions necessary for satisfying the NSW Performance Requirements; and refers to the relevant national provision for the determination of appropriate Performance Requirements if an Alternative Solution is proposed.
- **NSW J(A)5.1** – states the application of the Part, as per the Performance Requirement, to any Class 2 building, except within a sole-occupancy unit.
- **NSW J(A)5.2** – requires **access** for maintenance to be provided to a list of services, components and devices in those areas of a Class 2 building that are not within a sole-occupancy unit. This variation is necessary as the national clause refers to services etc that are required to be maintained by Part I2, which has no effect in NSW due to its deletion for the purposes of the NSW maintenance regime. (See comment under 'NSW Variations' above.)

BCA 2005 – stand alone package providing all energy efficiency provisions

Class 3 buildings – BCA 2005 only

BCA 2005 Volume One NSW Appendix – NSW Subsection J(B)

(BCA provisions regulate energy efficiency)

As BASIX **does not apply** to Class 3 buildings, at this point in time, NSW has **generally** adopted the national BCA energy efficiency requirements that apply to this class of building.

- NSW Subsection J(B) simply refers the reader to **National energy efficiency requirements applicable to Class 3 buildings**. This requires the user of the document to identify the individual national BCA 2005 provisions that are applicable to Class 3 buildings and to apply them to Class 3 buildings (or parts) **only** in NSW. (Refer to NSW J(B)1 in BCA 2005).
- The application of a range of fire hazard properties and other criteria under Volume One to materials used in a building may affect the required properties of insulation materials. For further information, see Class 2 and 4 buildings and parts – building fabric under Clause NSW J(A)1.2 above.
- **Three minor NSW variations** are made to the national provisions, which are identified in the national Section J by reference to a NSW clause number. The three variations are contained in the NSW Appendix NSW Subsection J(B) Energy Efficiency Class 3 Buildings and are explained below.

- **NSW J1.6 Floors**

This variation is to **subclause (a)** only of Clause J1.6, addressing the thermal performance of suspended floors forming part of the building's envelope, as follows:

- **NSW (a)(i)** for an unenclosed perimeter — the application of the requirement is extended to include Climate Zone 4 to ensure an adequate level of thermal performance in that zone and requires a Total R-value of 0.9, to permit a range of complying floor construction methods.
- **NSW (a)(ii)** for an enclosed perimeter — a new provision inserted to require a Total R-value of 0.9 in Climate Zones 4 and 6 and a Total R-value of 1.5 in Climate Zones 7 and 8.
- **NSW (a)(iii)** — re-numbers the requirement of national (a)(ii).

The variation also provides Class 3 buildings with a level of floor insulation more consistent with that required for Class 1 and 2 buildings and Class 4 parts under BASIX.

- **NSW J3.1 Application of Part**

This variation adds subclause (c) in order to extend the exemption from the requirements for sealing of a building to those parts that **cannot be fully enclosed**. (See the note regarding this term under reference to Clause NSW J(A)2.1 above.)

- **NSW J8.2 Access for maintenance**

This variation requires **access** for maintenance to be provided to a list of services, components and devices in a Class 3 building. The variation is necessary as the national clause refers to services etc that are required to be maintained by Part I2, which has no effect in NSW due to its deletion for the purposes of the NSW maintenance regime. (See comment under 'NSW Variations' above.)