UNDERTAKE APPLICATION OF BUILDING CODES AND STANDARDS TO RESIDENTIAL BUILDINGS
CERTIFICATE II IN BUILDING AND CONSTRUCTION (PATHWAY – PARAPROFESSIONAL)
30012
LEARNER’S GUIDE
BUILDING AND CONSTRUCTION
Undertake application of building codes and standards to residential buildings

30012

Learner’s guide
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Undertake application of building codes and standards to residential buildings
Welcome

This guide will take you through the process of learning to apply the Building Code of Australia (BCA) and associated standards to the pre-construction stages of residential buildings and simple non-habitable buildings. Areas of explanation include:

• how the BCA applies to residential buildings
• what codes and standards apply to the pre-construction stages
• how to access and interpret the BCA.

Not all sections of the BCA are relevant to this unit, as you are only required to understand the pre-construction stage of residential buildings for Certificate II. The sequence in this guide is the same as that set out in the BCA, and each section of this guide also outlines the required associated standards to the level required at Certificate II.

Any pre-construction environmental issues are covered in the unit 30013 Apply principles of sustainability in residential building practices.

Qualification overview

This unit of competency, 30012 Undertake application of building codes and standards to residential buildings, forms part of Certificate II in Building and Construction (Pathway – Paraprofessional) and is aimed at those people who are considering a paraprofessional career in the residential building industry (as opposed to the trade sector).

The course consists of 12 units of study and a period of work placement. These two components, study and work, will provide you with an introductory background to the paraprofessional side of the residential building industry.

To progress further in the industry from this introductory level, you will then need to specialise in a particular field of study such as building, estimating, scheduling, drafting or building design. Courses for these careers usually commence at Certificate IV level and progress through to diploma or even advanced diploma levels with a registered training provider who delivers these programs.

Some areas of study, such as architecture, interior design and construction management, can then be studied further at degree level at a university.
Unit overview

This unit of competency specifies the skills required to understand and follow the housing provisions of the building codes and associated standards applicable to pre-construction phases of residential buildings and simple non-habitable buildings.

Competence in this unit will be demonstrated by completing two assessments. The assessments will require a set of working drawings of a house, which your lecturer will give you, and will involve checking for conformance against the BCA or relevant Australian Standards®.

Context of this unit

If you pursue higher-level study in residential building, you will need to have a deeper understanding of the BCA and associated standards. Because this is an introductory-level unit, the content in this guide is based only on the National Construction Code Series 2012, Volume Two, Building Code of Australia Class 1 and Class 10 Buildings, which is in keeping with the requirements of this unit for residential buildings and simple non-habitable buildings.

The ‘critical aspects of assessment’ and evidence required to demonstrate competency in this unit expect you to display a basic knowledge of the BCA, and therefore sections of the BCA requiring knowledge beyond the type of construction you will learn about in this unit haven’t been included. These are:

- bushfire zones
- alpine areas
- earthquake design
- high wind areas
- structural design manuals, as used by structural engineers.

Not all sections of the BCA are relevant to this unit, as you are only required to understand the pre-construction stage of residential buildings and simple non-habitable buildings. Sections of the BCA requiring knowledge beyond the types of construction you will learn about in this unit are not covered in this guide.

This unit also requires you to have an understanding of class 2 to 9 buildings. Only classes 2, 3 and 4 are residential and require the involvement of a structural engineer (and in some instances a BCA consultant at the outset of the design), so only these have been mentioned briefly when appropriate at Certificate II level.
Unit summary

Some basic information for this unit of competency is provided below. You can find the full unit details at Annex A at the back of this guide.

<table>
<thead>
<tr>
<th>Unit title</th>
<th>Undertake application of building codes and standards to residential buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptor</td>
<td>This unit of competency specifies the skills required to understand and follow the housing provisions of the building codes and standards applicable to pre-construction phases of residential buildings and associated simple non-habitable buildings.</td>
</tr>
<tr>
<td>Employability skills</td>
<td>The following employability skills are an integral part of the delivery of this unit. They include: communication; teamwork; problem solving; initiative and enterprise; planning and organising; self-management; learning; and technology.</td>
</tr>
<tr>
<td>Pre/co-requisite units</td>
<td>Nil</td>
</tr>
<tr>
<td>Application</td>
<td>This unit of competency supports workers, such as those in an office of a builder or estimator, who work under supervision. The unit is broadly related to the course for Introduction to Building Codes Australia by the Australian Building Codes Board.</td>
</tr>
</tbody>
</table>

Element 1 Locate and identify components of Building Codes of Australia

1.1 Access the Building Codes of Australia and locate the main sections

1.2 Clarify the broad classifications of buildings

1.3 Identify the relevance of Building Codes of Australia to residential building construction

Element 2 Research aspects of Building Codes of Australia related to residential buildings

2.1 Identify areas and tasks that are impacted by Building Codes of Australia

2.2 Research and confirm code and standard requirements
Element 3 Identify other standards and regulation related to residential building

3.1 Identify other standards relevant to residential building

3.2 List the general requirements of other standards and outline their basic importance

Element 4 Raise areas of concern

4.1 Seek clarification whenever possible non-conformance is perceived

Skills recognition and recognition of prior learning (RPL)

You are encouraged to discuss with your lecturer any previous courses or work experience in which you have participated so that it can be recognised. Evidence must be provided.
Resources

Required

Your lecturer will provide you with:

- a classroom with computers and internet access
- access to the National Construction Code Series 2012, Volume Two, *Building Code of Australia: Class 1 and Class 10 Buildings*
- access to any Australian Standards® required
- a set of drawings and/or plans to use for in-class activities and for Assessment 1.

You will need to provide the following materials for in-class work and activities:

- a USB thumb drive
- an A4 notepad
- pens, pencils, eraser and highlighters
- a calculator
- an A3 folder for drawings.

Recommended

The resources listed below provide additional information and plan reading practice. If your lecturer wants you to access these resources, or any others, they will make them available to you.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS 1170.4:2007 <em>Structural design actions – Earthquake actions in Australia</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 1288:2006 <em>Glass in buildings – Selection and installation</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 1397:2011 <em>Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 1530.1:1994 <em>Methods for fire tests on building materials, components and structures – Combustibility test for materials</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 1562.1:1991 <em>Design and installation of sheet roof and wall cladding – Metal</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>Resource</td>
<td>Publisher</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>AS 1668.2:2002 The use of ventilation and airconditioning in buildings – Ventilation design for indoor air contaminant control</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 1684:2006 Residential timber-framed construction</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 2047:1999 Windows in buildings – Selection and installation</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 2049:2002 Roof tiles</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 2870:2011 Residential slabs and footings</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3500:2003 National Plumbing and Drainage Code – Compendium</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3600:2009 Concrete structures</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3660.1:2000 (Set) Termite management</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3700:2011 Masonry structures</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3740:2010 Waterproofing of domestic wet areas</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 3999:1992 Thermal insulation of dwellings – Bulk insulation – Installation requirements</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 4100:1998 Steel structures</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 4600:2005 Cold-formed steel structures</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS 4773:2010 Masonry in small buildings</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS/NZS 1562.2:1999 Design and installation of sheet roof and wall cladding – Corrugated fibre-reinforced cement</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS/NZS 2269.0:2008 Plywood – Structural – Specifications</td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS/NZS 2908.2:2000 Cellulose-cement products – Flat sheet</td>
<td>SAI Global</td>
</tr>
<tr>
<td>Resource</td>
<td>Publisher</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>AS/NZS 2918:2001 <em>Domestic solid fuel burning appliances – Installation</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS/NZS 3000:2007 <em>Electrical installations (known as the Australian/New Zealand wiring rules)</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>AS/NZS 4859.1:2002 <em>Materials for the thermal insulation of buildings – General criteria and technical provisions</em></td>
<td>SAI Global</td>
</tr>
<tr>
<td>NASH standard <em>Residential and low-rise steel framing Part 1 – Design criteria</em></td>
<td>National Association of Steel-Framed Housing</td>
</tr>
</tbody>
</table>

**Websites**

The following websites can provide further information applicable to the construction and residential building industries.

- your local relevant authority
- Australian Building Codes Board (ABCB) <www.abcb.gov.au>

**Common abbreviations**

Throughout this guide you will come across some abbreviations. Below is a list of the most commonly used ones.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABCB</td>
<td>Australian Building Codes Board</td>
</tr>
<tr>
<td>AS</td>
<td>Australian Standard®</td>
</tr>
<tr>
<td>BCA</td>
<td>Building Code of Australia</td>
</tr>
<tr>
<td>FRL</td>
<td>Fire resistance level</td>
</tr>
</tbody>
</table>
## Self-checklist

As you work through this guide you are advised to return to this checklist and record your progress. Where you understand something and think that you can perform it ‘easily’, congratulations. Where your response is ‘with help’, revise the material in that section and review it or discuss it with your lecturer or other learners in your group.

<table>
<thead>
<tr>
<th>30012 Undertake application of building codes and standards to residential buildings</th>
<th>I understand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Element 1 Locate and identify components of Building Codes of Australia</strong></td>
<td>Easily</td>
</tr>
<tr>
<td>1.1 Access the Building Codes of Australia and locate the main sections</td>
<td></td>
</tr>
<tr>
<td>1.2 Clarify the broad classifications of buildings</td>
<td></td>
</tr>
<tr>
<td>1.3 Identify the relevance of Building Codes of Australia to residential building construction</td>
<td></td>
</tr>
<tr>
<td><strong>Element 2 Research aspects of Building Codes of Australia related to residential buildings</strong></td>
<td>Easily</td>
</tr>
<tr>
<td>2.1 Identify areas and tasks that are impacted by Building Codes of Australia</td>
<td></td>
</tr>
<tr>
<td>2.2 Research and confirm code and standard requirements</td>
<td></td>
</tr>
<tr>
<td><strong>Element 3 Identify other standards and regulation related to residential building</strong></td>
<td>Easily</td>
</tr>
<tr>
<td>3.1 Identify other standards relevant to residential building</td>
<td></td>
</tr>
<tr>
<td>3.2 List the general requirements of other standards and outline their basic importance</td>
<td></td>
</tr>
<tr>
<td><strong>Element 4 Raise areas of concern</strong></td>
<td>Easily</td>
</tr>
<tr>
<td>4.1 Seek clarification whenever possible non-conformance is perceived</td>
<td></td>
</tr>
</tbody>
</table>
About the icons

Note that not all icons may appear in this guide.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Performance criteria" /></td>
<td><strong>Performance criteria</strong>&lt;br&gt;This icon indicates the performance criteria covered in a section. The performance criteria contribute to the elements of competency that you must demonstrate in your assessment.</td>
</tr>
<tr>
<td><img src="image" alt="Activity" /></td>
<td><strong>Activity</strong>&lt;br&gt;This icon indicates that there is an activity for you to do.</td>
</tr>
<tr>
<td><img src="image" alt="Computer-based activity" /></td>
<td><strong>Computer-based activity</strong>&lt;br&gt;This icon indicates that there is an activity for you to do on the computer.</td>
</tr>
<tr>
<td><img src="image" alt="Discussion" /></td>
<td><strong>Discussion</strong>&lt;br&gt;This icon indicates that there will be a discussion, which could be with a partner, a group or the whole class.</td>
</tr>
<tr>
<td><img src="image" alt="Research" /></td>
<td><strong>Research</strong>&lt;br&gt;This icon indicates that you are to do a research activity using the internet, texts, journals or other relevant sources to find out about something.</td>
</tr>
<tr>
<td><img src="image" alt="Case study" /></td>
<td><strong>Case study</strong>&lt;br&gt;This icon indicates that there is a case study or scenario to read.</td>
</tr>
<tr>
<td><img src="image" alt="Think" /></td>
<td><strong>Think</strong>&lt;br&gt;This icon indicates that you should stop and think for a moment about the point being made or the question being asked.</td>
</tr>
<tr>
<td><img src="image" alt="Assessment task" /></td>
<td><strong>Assessment task</strong>&lt;br&gt;This icon indicates that an activity or task is part of your assessment.</td>
</tr>
</tbody>
</table>
Undertake application of building codes and standards to residential buildings
Section 1 – Building Code of Australia

Introduction

Before we look at specific regulations governing building, you’ll need some underpinning knowledge be able to interpret the Building Code of Australia (BCA) and associated standards.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction

The BCA

Before the BCA was written, each state and territory (and even some specific areas) in Australia had their own building laws. The BCA has incorporated all the design and construction requirements into one code, which consists of two volumes and is updated every year. (The two volumes of the BCA form part of the National Construction Code Series.)

Volume 1 deals with large residential and commercial buildings, and Volume 2 deals with residential buildings, carports, garages and miscellaneous items associated with housing, such as satellite dishes.

For this unit, our focus is on Volume 2, which sets out the minimum requirements in a residential building to ensure that:

• the building will withstand loads such as weight and wind (not including cyclonic winds)
• it’s waterproof
• there’s enough light and ventilation
• there’s a toilet and washing facilities
• it protects us long enough to escape from a fire in the house
• it protects us from a fire next door getting into our house before we have time to escape
• the stair design is safe and easy to use
• swimming pools are surrounded by child-proof fencing
• it’s energy efficient, so that we use as little ‘artificial’ power for heating and cooling as possible.
Although the BCA touches on bushfire, alpine, cyclonic and earthquake areas, these all have specific Australian Standards® that must be complied with when designing and building in these areas, and are outside the scope of this unit.

Codes and standards are a means of standardising materials, processes, equipment and outcomes to ensure that the owner of the building receives what was intended. A building will not be inferior if it has been made, built or processed in accordance with the appropriate standards. Non-conformance to the relevant standards can lead to prosecution.

The approval process

Before a house can be built, it must go through council and be approved in stages. The first approval is based on the planning requirements of the state or territory for housing. Each region has its own codes for housing.

In Western Australia, for example, the local council approves the drawings if they comply with the Residential Design Codes of Western Australia (known as R-Codes). These set out:

- how big the house can be on a site of a given area
- how far it must be set back from the site boundaries
- how high the house can be
- car parking allowances
- how much the house can overshadow its neighbours
- guidelines for respecting the neighbours’ privacy.

Once the council has approved this stage, the drawings can be prepared for building licence approval.
Types of drawings

It’s illegal to build without building licence approval, and this is where the BCA comes in. The drawings submitted for building licence approval must comply with the BCA, any additional codes the council may have, any relevant Australian Standards® and any Acts specific to the state or territory.

The drawings for building licence approval are very detailed, and include (without being limited to):

- architectural drawings
- structural drawings
- electrical drawings.

Once these drawings have been approved, a set of working drawings for the builder are prepared. These drawings are more detailed, and are supplemented with a specification.

Activity 1.1 Working drawings

Your lecturer will give you a set of working drawings, and explain the different types and content. You can make some brief notes about the drawings in the space below.

Keep the drawings in a folder, as they will form part of Assessment 1 and will be used in future sessions.
Codes and standards

What is the difference between a code and standard?

- A code is a set of rules that must be complied with.
- A standard is a guideline for how to follow these rules.

Example of a code

For example, the BCA defines eight climate zones in Australia, and specifies insulation requirements for each, to ensure that the right amount of insulation is put in houses to stop the heat or cold coming in.

Activity 1.2 Climate zones code

Open the back sleeve of the BCA, or log on to <www.abcb.gov.au>, and view the coloured map which defines all the climate zones in Australia.

Which climate zone do you live in?

When you apply for a building licence, the drawings have to say how much insulation you will put in – a very important consideration in a climate as diverse as Australia’s. If your drawings don’t include the required amount of insulation for that climate zone, you won’t get a building licence. The BCA therefore has rules for insulation requirements according to climate.
Example of a standard

Often the requirements in the BCA are supported by Australian Standards®, and this is the case with insulation.

The standard AS/NZS 4859.1:2002 Materials for the thermal insulation of buildings – General criteria and technical provisions specifies the materials insulation can be made from. To comply with this standard, the insulation product must have been tested by a recognised laboratory.

There is also a standard that sets out the guidelines for correct installation of insulation. It must be installed in accordance with AS 3999:1992 Thermal insulation of dwellings – Bulk insulation – Installation requirements, although some councils prefer the requirements in AS/NZS 3000:2007 Electrical installations for safe installation around electrical items.

During the pre-construction stage the designer has to ensure both the required performance (as per the BCA code for the climate zone) and material is correct (as per the standard) and tested for the insulation. The builder is responsible for ensuring the insulation is correctly installed.

Legislation

The BCA is the main set of rules for building in Australia. But each state and territory also has its own building legislation, which you will find listed at Appendix A to the BCA.

Figure 1.1 below shows the legislation hierarchy in Western Australia.

![Diagram of the hierarchy of building legislation in WA.](image)

Figure 1.1: The hierarchy of building legislation in WA.
Occupational health and safety requirements

These regulations are not referred to in the BCA or the Australian Standards®.

The occupational health and safety (OHS) requirements on a building site are the builder’s responsibility, but the designer should ensure that safe materials have been selected and that the builder can execute the design using safe workplace practices.

In WA, for example, all construction work must be carried out in accordance with the *Occupational Safety and Health Act 1984*, and WorkSafe is responsible for administering the Act. The Act is supported by regulations, Codes of Practice and Guidance Notes.

Safe Work Australia is an Australian Government statutory agency that regulates the manufacture of materials with regard to OHS issues.

Activity 1.3 Codes and standards across Australia

We have looked at examples of codes and standards that apply in Western Australia, but other states and territories may have different ones.

Use the space below to make notes about how things work in your region.
Section 2 – Sections of the BCA

Introduction

The BCA is divided into three sections:

- Section 1 General requirements
- Section 2 Performance provisions
- Section 3 Acceptable construction.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.2 Clarify the broad classifications of buildings
1.3 Identify the relevance of the Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia.
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance
4.1 Seek clarification whenever possible non-conformance is perceived

Structure of BCA sections

The sections of the BCA are split into parts, which contain subheadings, clauses, tables and figures. You can tell which is which by following the title, for example:

Section 3
Part 3.2
Subheading 3.2.5
Clause 3.2.5.1
Table 3.2.5.2
Figure 3.2.5.1
BCA Section 1 General requirements

If a designer receives a building licence, it means the general requirements in the BCA have been satisfied. What does that mean? There are two ways to comply with the general requirements:

1. comply with the provisions (known as ‘deemed-to-satisfy’)  
or  
2. come up with an alternative solution which also complies.

Deemed-to-satisfy provisions

The deemed-to-satisfy provisions are set out in BCA Section 3, Parts 1 to 12. If the drawings for a building licence comply with each of the relevant parts, then it is said to satisfy the performance requirements.

For example, in BCA Section 3, Part 3.1, Subheading 3.1.2, Figure 3.1.2.1 is a diagram of a drainage pipe beside the footing of a house. The drawings comply with the deemed-to-satisfy provisions if they are as per Figure 3.1.2.1.

If the drawings do not comply with Figure 3.1.2.1, an alternative solution must be found.
Activity 2.1 Parts of the BCA

Open the BCA to the Section 3 contents page and make a list of the parts and the number of each one. An example has been completed for you.

<table>
<thead>
<tr>
<th>Part title</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site preparation</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Alternative solutions

When using an alternative solution, it must be proven to still comply with all the deemed-to-satisfy provisions. To be allowed to use an alternative solution, it has to be supported by evidence from appropriate testing authorities and/or expert judgement from an appropriately qualified profession in the field in question.

For example, if the drainage shown on the drawings doesn't comply with Figure 3.1.2.1 in the deemed-to-satisfy provisions, an alternative solution must be found. This alternative solution would require the footings to be built below the drainage, and that would have to be shown on the drawings.
Non-conformance

*Non-conformance* is when the deemed-to-satisfy provisions are not achieved, through either acceptable construction practice, or an alternative solution.

Definitions

Section 1 of the BCA includes a useful list of definitions of terms used. This can be really helpful when you need to accurately interpret the explanations given in each of the parts.

### Activity 2.2 Terms in the BCA

Open the BCA to Section 1 and write out the meanings of the terms listed below.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaking surf</td>
<td></td>
</tr>
<tr>
<td>Outdoor air</td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td></td>
</tr>
<tr>
<td>Site work</td>
<td></td>
</tr>
</tbody>
</table>

Classifications

For the purpose of description in the BCA, each building type has what is called a *classification*. In Volume 2 of the BCA, which is specifically for housing, there are two classifications – class 1 and class 10.

### Activity 2.3 Assessment 1 – Question 1

Go to Annex D and answer Question 1 of Assessment 1.
In Volume 1 of the BCA, which is for commercial buildings, there are nine classifications. Their definitions are shown here.

<table>
<thead>
<tr>
<th>Class</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 2</td>
<td>Home units, apartments</td>
</tr>
<tr>
<td>Class 3</td>
<td>Buildings that house unrelated people, such as hotels, motels, dormitories, backpackers’ hostels, aged-care hostels, workers’ quarters.</td>
</tr>
<tr>
<td>Class 4</td>
<td>Unit located inside a building other than Class1, 2 or 3</td>
</tr>
<tr>
<td>Class 5</td>
<td>Offices</td>
</tr>
<tr>
<td>Class</td>
<td>Definition</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>Class 6</td>
<td>Shops</td>
</tr>
<tr>
<td>Class 7</td>
<td>Car parks, warehouses, wholesale stores</td>
</tr>
<tr>
<td>Class 8</td>
<td>Factories</td>
</tr>
<tr>
<td>Class 9a</td>
<td>Health care facilities</td>
</tr>
</tbody>
</table>
Class 9b
Buildings where a large number of people gather, such as cinemas, churches, schools

Associated standards
The last part in Section 1 of the BCA provides a list of all the standards referred to in the BCA, plus another list of codes, authorities and Acts used as variations to the BCA in particular states and territories.

Activity 2.4 Variations
Open the BCA to Part 1.4, and write the variations for your state or territory in the space provided below.

State

Title
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
BCA Section 2 Performance provisions

This section of the BCA sets out the objectives, functional statements and performance requirements for anyone seeking an alternative solution. It’s also a helpful guide if you’re having difficulty understanding any of the requirements of the deemed-to-satisfy provisions.

If we look at Part 2.2 Damp and weatherproofing as an example, the BCA outlines the objectives, gives a functional statement and the performance requirements.

---

Part 2.2 Damp and weatherproofing

Objectives

- Stop injury and/or illness to people.
- Stop building damage from water getting into the building from outside.

Functional statements

- People and other property must be protected from surface water during construction and when draining a swimming pool.
- People inside a building must be protected from water outside and any rising damp.

Performance requirements

- Drain water away as approved by council in your area including swimming pools.
- Weatherproof the walls and roof.
- Stop moisture rising up from the ground into the house.
Activity 2.5 BCA Part 2.4

Open the BCA to Part 2.4 Health and amenity, and fill in the objective, functional statement and performance requirements for room heights.

Objective: O2.4.2 Room heights

________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________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Congratulations! You have now successfully interpreted a section, a part, a subheading and an objective in the BCA, as shown in this diagram.

BCA Section 3 Acceptable construction

The term acceptable construction means that the building solution complies with the deemed-to-satisfy provisions and does not require an alternative solution. The provisions are described as ‘acceptable construction practices’ or ‘acceptable construction manuals’.

Activity 2.6 Structure of the BCA

Section 3 – BCA Part 3.1 Site preparation

Introduction

This section will look at earthworks, drainage and termite risk management within the context of the pre-construction phase of building a house. The BCA only gives the acceptable construction practices for a normal site, as defined in 3.1.1.0.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.2 Clarify the broad classifications of buildings
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.1.1 Earthworks

You have already learnt how to read a section, a part and a subheading. Now you’re going to learn how to read a clause and a table.
Activity 3.1 A normal site

Open the BCA and read 3.1.1.0 to find out the description of a normal site.

The BCA will often refer you to other sections and parts of the BCA, and it’s important that you read these references to ensure you have all the relevant information. For example, in BCA 3.1.1.0, the descriptions refer you to Part 3.2, which classifies the soil types in 3.2.4. Table 3.2.4.1 defines the classes of soils described in 3.1.1.0.

Activity 3.2 Finding information in the BCA

After reading BCA 3.2.4 and Table 3.2.4.1, write below which Australian Standard® you would refer to if the site you were working was not classified in the BCA.

BCA 3.1.1 also explains the procedure to excavate next to a vacant site and next to an existing building.

If a bank in the soil is required when cutting and filling, it can’t be too steep (to avoid it eroding and collapsing) and it also can’t be on another person’s land.

The designer and engineer have to investigate the site to ensure the drawings have the correct information on them for the builder. It’s also the builder’s responsibility to check out the site prior to giving the client a price.
BCA 3.1.2 Drainage

The designer has to ensure that all the water that will be collected on the site from the roof, paving and garden areas can be disposed of on the site. It must not fall onto another person’s property.

Each state/territory and local council will have codes, laws or regulations relating to the disposal of water on a site – this is because of the different soil types. Sandy soils do not necessarily require pipes in the ground to collect the water, as it seeps through the sand and into the groundwater table. Clay, however, will not absorb water, and therefore any water collected on the site will require a piping system installed. In some areas this will be taken to a pipe in the street and disposed of by the water authority.

Activity 3.3 Standards for plumbing

In the pre-construction stage the designer must ensure that the plumber can install any pipework required in accordance with the relevant Australian Standards®.

Which are the two Australian Standards® the designer has to refer to to ensure that the design gives the plumber enough room to lay any pipes around the house?

Australian Standard®

or

Australian Standard®
BCA 3.1.3 Termite risk management

Because some areas in Australia are not prone to termite attack, and therefore barriers are not required, this subheading of the BCA breaks the risk management requirements up into the various states and territories. In the BCA, these are called state or territory ‘variations’.

The designer must ensure that the correct termite protection has been specified on the drawings, so the builder can install the barriers during the construction phase. It can take as little as six months for termites to make a house unstable. AS 3660.1:2000 *Termite management – New building work* sets out the minimum requirements for materials to be used as barriers.

**Activity 3.4 Assessment 1 – Question 2**

Using the set of working drawings your lecturer gave you, neatly circle the notes or details that tell the builder what type of termite barriers are to be installed.

Then go to Annex D and answer Question 2 of Assessment 1.

If you live in Tasmania or the Northern Territory, copy BCA Figure 3.1.3.1 into the space in Assessment 1.

Keep these drawings in a folder.
Section 4 – BCA Part 3.2 Footings and slabs

Introduction

The relevant subheadings in BCA Part 3.2 are:

- 3.2.2 Preparation
- 3.2.3 Concrete and reinforcing
- 3.2.4 Site classification (covered in Section 3 of this guide)
- 3.2.5 Footing and slab construction.

Are you thinking ‘Why do I have to know this before the builder even starts on site?’ If you’re going to be working in the building industry in a role that is involved prior to construction starting, such as a:

- draftsman
- designer
- estimator
- building surveyor

then you will be required to know if the drawings comply with the BCA.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.2.2 Preparation

The relevant clauses for pre-construction that must be shown on the building licence drawings are as follows.
BCA 1.2.2.2 Filling under concrete slabs

If the site is on a slope, the land has to be made level to take the slab. The drawings must tell the builder to cut or fill the site to make it level.

Cut and/or fill is not allowed to extend beyond the boundary. If it can’t be contained on the site, a retaining wall must be built to hold the soil wholly within the boundaries.

BCA 1.2.2.4 Slab edge support on sloping sites

The edge of the slab has to be thicker than the slab itself, so that the slab is stable. It also can’t sit on the edge of a filled site, which means the slope of the land must start at least one metre away from the slab. The slope of the land is specified in Table 3.1.1.1 for each of the soil types.

Activity 4.1 Slab edge

Using the set of working drawings your lecturer gave you, neatly circle the slab edge detail. Keep these drawings in a folder, as they will form part of Assessment 1.

BCA 3.2.2.5 Stepped footings

In some instances the client may not want the site flattened, but the slab still has to be flat, so the slab edge becomes a stepped footing that steps down with the slope of the ground.
BCA 3.2.2.6 Vapour barriers

A vapour barrier is a plastic sheet laid under the slab to stop any water in the ground from rising up into the slab. This was part of the health and amenity requirements you looked at in Section 2 of the BCA.

The vapour barrier has to be 'medium impact resistant' and this is described in AS 2870:2011 Residential slabs and footings clause 5.3.3.2(c).

Activity 4.2 Medium impact resistance

Using AS 2870 clause 5.3.3.2(c), as a group discuss what ‘medium impact resistance’ means. Decide what the simplest description is, and write it below.

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

BCA 3.2.2.7 Edge rebates

Not all soil types and building types require a footing, but the slab edge has to have a rebate.

Activity 4.3 Assessment 1 – Question 3

Using the set of working drawings your lecturer gave you, and reading BCA Figure 3.2.2.3, go to Annex D and answer Question 3 of Assessment 1.

All site preparation must be done in accordance with AS 2870:2011.
BCA 3.2.3 Concrete and reinforcing

If you would like to become a structural engineer or structural draftsperson, you’ll be giving the concrete and reinforcing information to the designer so that it’s included on the architectural drawings as a note.

The structural drawings will show the strength of concrete and the size and type of reinforcement the builder will have to put in the slab and footings.

Concrete must be manufactured as specified in AS 3600:2009 Concrete structures, and the reinforcement must be as specified in AS 2870.

The concrete must cover the reinforcement so that it doesn’t touch the ground, get wet and rust. This is covered in more detail in the unit 30010 Apply knowledge of residential building processes and materials.

Figure 4.1: Pouring concrete over the reinforcing.

Activity 4.4 Assessment 1 – Question 4

Using the set of working drawings your lecturer gave you, neatly circle the note on the architectural drawings that refers to the concrete and reinforcing details in the engineer’s drawings.

Also neatly circle the note on the engineer’s drawings specifying the concrete and reinforcing details. Keep these drawings in a folder.

Go to Annex D and answer Question 4 of Assessment 1.
BCA 3.2.5 Footing and slab construction

The subheading ‘Footing and slab construction’ might make it sound as if this information is for the builder only, but the drawings must tell the builder what type of construction the house is. The designer and engineer will work together to provide the appropriate information on the drawings.

This subheading considers the soil type and construction type together, and is more specific about the size of the slab and footings and the reinforcement required to suit. It also describes the requirements for houses that are built on stumps and do not have a slab.

The Australian Standards® relevant to this subheading are:

• AS 2870:2011 Residential slabs and footings (for the footings)
• AS 3600:2009 Concrete structures (for the concrete)
• AS 4100:1998 Steel structures (for steel stumps)

Activity 4.5 Assessment 1 – Question 5

Using the set of working drawings your lecturer gave you, neatly circle the BCA figure number below that best describes the construction shown on your drawings.

• Figure 3.2.5.2
• Figure 3.2.5.3(a)
• Figure 3.2.5.3(b)
• Figure 3.2.5.4(a)
• Figure 3.2.5.4(b)
• Figure 3.2.5.5

Keep these drawings in a folder.

Go to Annex D and answer Question 5 of Assessment 1.
Undertake application of building codes and standards to residential buildings
Section 5 – BCA Part 3.3 Masonry

Introduction

Part 3.3 of the BCA includes four subheadings:

• 3.3.1 Unreinforced masonry
• 3.3.2 Reinforced masonry
• 3.3.3 Masonry accessories
• 3.3.4 Weatherproofing of masonry.


Subheading 3.3.5 Earthwall construction has been left blank, and at this stage there is no relevant Australian Standard® for it. This is dealt with at local council level.

If the house plans you’ve been given to use through this unit are not for a building constructed of masonry (brickwork), you’ll need to research and understand masonry so you can successfully complete this section.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections

1.3 Identify the relevance of Building Codes of Australia to residential building construction

2.1 Identify areas and tasks that are impacted by Building Codes of Australia

2.2 Research and confirm code and standard requirements

3.1 Identify other standards relevant to residential building

3.2 List the general requirements of other standards and outline their basic importance
BCA 3.3.1 Unreinforced masonry

Unreinforced masonry is used in residential design where the area doesn’t experience high winds or have a soil type that requires reinforced or articulated masonry.

There are several types of unreinforced masonry walls. The most common types are as follows.

Cavity walls

These are two walls of brickwork with a space between them, as pictured here. This space is called a cavity.

Brick veneer walls

In this type of construction, one wall is built of brickwork and the other is built of timber or steel frame, as pictured here. There is a space between the two walls.

Solid brick walls

This means two walls, both constructed of brick, without a cavity between them, as pictured here.

Single brick walls

Single brick wall construction means just one wall of bricks, as pictured here.
Not all bricks are suitable in all areas, such as in severe marine environments. AS 3700 defines the areas where some bricks are not suitable, and the brick manufacturer will also have a data sheet that specifies the suitability of the brick for each area.

AS 3700 also defines the required mix for the mortar, and again the mix must suit the area in which it is being used. Clause 5.3 of AS 3700 describes the environments, and Table 5.1 of AS 3700 sets out the requirements for the mortar mix in each area. Clause 4.7.4 of AS 3700 tells the designer what finishes have to be applied to solid or single brick walls if they are to be used in habitable rooms, as brickwork is not waterproof and without a cavity or waterproof finish, water will get into the house.

**Activity 5.1 Assessment 1 – Question 6**

Go to Annex D and answer Question 6 of Assessment 1.

**BCA 3.3.2 Reinforced masonry**

Reinforced masonry is used in high wind areas. It’s also used in soils such as highly reactive clay, which experiences dishing and doming as the clay shrinks and swells.

Reinforced masonry is generally single-leaf concrete hollow blockwork, and the cores are filled with reinforcement and mortar, as pictured here.

These walls are designed by an engineer and, because they’re solid walls, they must have a waterproof finish applied to them.
BCA 3.3.3 Masonry accessories

Roof connections

Roof connections are often referred to as ‘tie-downs’, and are used to stop the roof blowing off in the wind. A metal strap is built into the brickwork 600 mm below the top of the brickwork, then looped over and fixed to the wall plate.

Figure 6.3 in AS 4773.1 shows the detail that must be included on the drawings or in the specification.

Wall ties

In cavity and brick veneer walls, the two walls (or ‘leaves’) must be tied together. AS 3700 clause 4.10(d) states that the ties are not to be more than 600 mm apart in either direction.

Activity 5.2 Assessment 1 – Question 7

Go to Annex D and answer Question 7 of Assessment 1.

Lintels

The brickwork over windows and doors is supported on lintels, and the most common material for these is steel.

AS 4773.1 Figure 12.1 shows different types of construction. The size of the lintel will depend on the load it has to carry. Once the type of construction has been established, Table 12.1 A, B, C or D will give the size required.
The lintel also has to extend into the brickwork past the opening, and on each side of the opening. The amount it extends past the opening is called the bearing, and Table 12.2 tells the designer how long the bearing is to be.

**Activity 5.3 Assessment 1 – Question 8**

Go to Annex D and answer Question 8 of Assessment 1.

**BCA 3.3.4 Weatherproofing of masonry**

**Damp-proof courses and flashings**

Because brickwork is not waterproof, water has to be stopped from getting into the house. In BCA 3.3.1 it was stopped at the face of the wall by applying a waterproof finish.

Water will also be able to rise up from the ground into the wall, and at the sides of windows and doors. Damp-proof courses and flashings are installed at these points to stop the water getting to the inside leaf of the wall.

**Weep holes**

As well as water being able to get into the cavity at the sides of the windows and doors, the flashing sheds the water down the cavity. Therefore, at the bottom of the wall, mortar is left out of the vertical joints in the brickwork to enable the water to flow out.

**Activity 5.4 Assessment 1 – Question 9**

Go to Annex D and answer Question 9 of Assessment 1.
Undertake application of building codes and standards to residential buildings
Section 6 – BCA Part 3.4 Framing

Introduction

This part of the BCA deals with both timber and steel structures, and is divided into the following subheadings.

• 3.4.1 Subfloor ventilation
• 3.4.2 Steel framing
• 3.4.3 Timber framing
• 3.4.4 Structural steel members

Your house plans may be of masonry construction, but you should also know about and understand framing, as you may need this knowledge in your future employment.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.4.1 Subfloor ventilation

If the floor of a house is not going to be built on the ground, it’s raised up on stumps. If the space under the raised floor does not get any fresh air, it will get musty and damp. This foul air and damp will then get inside the house and can cause sickness.
For this reason, it’s important to get a cross-flow of air in the space under the floor – the BCA calls this subfloor ventilation.

There’s a minimum requirement for the size of the openings under the floor (in square millimetres), and also a minimum height from the ground up to the floor.

**Activity 6.1 Height requirements**

Using BCA Figure 3.4.1.2 and Table 3.4.1.2, establish the minimum height required for subfloor ventilation in your climatic zone, and note it here.

Assume that termite inspection is required.

**BCA 3.4.2 Steel framing**

Steel framing must be designed in accordance with the following standards.

- AS 4100:1998 Steel structures
- AS 4600:2005 Cold-formed steel structures
- NASH standard Residential and low-rise steel framing

All steel framing must be protected from rusting, in accordance with BCA 3.4.2.2.

The steel must have a coating of zinc or of a combination of zinc and aluminium, in accordance with AS 1397:2011 *Continuous hot-dip metallic coated steel sheet and strip – Coatings of zinc and zinc alloyed with aluminium and magnesium.*

Once rusting has started, it’s very difficult to stop. Because most of Australia’s population lives in coastal regions, where rusting is more common due to breaking surf (recall Activity 2.2), the protection of steel is extremely important.
**BCA 3.4.2.3 Steel floor framing**

Because the sizes of the steel members for flooring are shown in Tables 3.4.2.1 and 3.4.2.2, the designer and engineer can work together to decide what the most economical spans would be using a C-section. Figure 3.4.2.1 shows a typical steel floor structure.

**Activity 6.2 C15012**

Using the explanatory information provided with Table 3.4.2.1 in the BCA, describe below what C15012 means and, with the help of your lecturer, draw a diagram below the description.

**Description**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Diagram**
BCA 3.4.2.6 Installation of services

The plumbing pipes and electrical cables may have to run through the framing in the walls. To ensure that the holes for this don’t weaken the frame (which is holding up the roof), only a certain number of holes are allowed.

Although this is the builder’s and the subcontractor’s responsibility, the design must allow enough room for these holes.

The size and number of holes allowed are also shown in AS 3500 *National Plumbing and Drainage Code – Compendium* for plumbing pipes, and in AS/NZS 3000:2007 *Electrical installations* for electrical cables.

BCA 3.4.3 Timber framing

All timber framing must be designed and installed as per AS 1684:2006 *Residential timber-framed construction*. This standard provides what’s called the ‘span tables’, which are used to determine the sizes of the members required to support the floor, the walls and the roof.

Unless the design is very complex, most designers and engineers will simply include a note on the drawings telling the builder that the sizes must be in accordance with AS 1684.
Activity 6.3 Assessment 1 – Question 10

Using the set of working drawings your lecturer gave you, neatly circle the note on the architectural drawings that directs the builder to build the roof frame in accordance with:

• an Australian Standard®
• the BCA.

Alternatively, neatly circle the notes stating the sizes of the members. Then neatly circle the note (or notes) on the engineer’s drawings specifying the required roof framing. Keep these drawings in a folder.

Go to Annex D and answer Question 10 of Assessment 1.

BCA 3.4.4 Structural steel members

This subheading of the BCA defines the sizes of specific load-bearing members in the floor, wall and roof. The designer and engineer will then work together to determine which member sizes would be the best for the design they’re working on.

The BCA also states that this information must not be used in areas subject to cyclones, earthquakes or snow load, or in areas with a wind speed greater than N3. Most local councils will be able to tell you what the wind speed is for the area of the house being designed – if not, the engineer will know.

The other limitations are defined in AS 1170.4:2007 Structural design actions – Earthquake actions in Australia. These include the height of the building and the pitch of the roof.

Activity 6.4 Wind speed

BCA 3.10.1 includes Figure 3.10.1.4, which shows that areas C and D are defined as being cyclonic.

Which of the areas below do you live in?

A1     A2     A3     A4
A5     B      C      D

BCA 3.4.4 also reiterates the need to protect steel against rusting. The amount of protection is defined in Table 3.4.4.2.
Undertake application of building codes and standards to residential buildings
Section 7 – BCA Part 3.5 Roof and wall cladding

Introduction

Before the council and the builder get the drawings from the designer and the engineer, the roof finishes, type of gutters, number and type of downpipes and type of wall cladding must be determined and shown on the architectural drawings.

This part of the BCA includes the following subheadings.

- 3.5.1 Roof cladding
- 3.5.2 Gutters and downpipes
- 3.5.3 Wall cladding

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.5.1 Roof cladding

This subheading covers the two most common roofing materials used in Australia: roof tiles and metal sheet roofing.

Roof tiles must be manufactured as specified in AS 2049:2002 Roof tiles. In order for the tiles specified on the drawings to meet the standard, they must be a certified product.

Metal sheet roofing must be designed according to AS 1562.1:1991 Design and installation of sheet roof and wall cladding – Metal and AS/NZS 1562.2:1999 Design and installation of sheet roof and wall cladding – Corrugated fibre-reinforced cement, and must be treated with the correct protection against corrosion as defined in BCA Table 3.5.1.1a to suit the environment the house will be built in.
The ridges, hips, valleys and any penetrations (holes) in the roof for vent pipes and so on must be ‘flashed’. That means covering the opening so that water does not get into the house.

The builder must check how the above are to be flashed. With metal roofs the flashing must be compatible with the metal sheet used, as different metals are not compatible and some metals will cause others to corrode.
### Activity 7.1 Environment levels

List the four levels of environment, as described in BCA Table 3.5.1.1a, and then answer the questions below using BCA Table 3.5.1.2.

<table>
<thead>
<tr>
<th>Environment levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
</tbody>
</table>

In a low environment, can copper or copper alloys be put with stainless steel?

Can 300 series stainless steel be put with zinc-coated steel and zinc in a medium environment?

Can zinc/aluminium-coated steel be put with lead in a low environment?
BCA 3.5.2 Gutters and downpipes

Remember that in BCA 3.1.2 (see Section 3 of this guide), you learned that the drawings had to specify enough room for the plumber to put in the drainage pipes.

The water in the gutters drains into the downpipes, and this water must be disposed of. The local authority or water authority in your state or territory will stipulate how this water is to be collected or disposed of.

The BCA specifies what size gutters will be needed in your rainfall area, and how many and what size the downpipes need to be. This information is shown in BCA Tables 3.5.2.1 and 3.5.2.2.

To use the BCA tables, you'll have to know the rainfall intensity (the amount of water received in five minutes) in your area, and how many square metres the roof is.

You’ll also have to know whether your council requires you to determine the number and size of the downpipes for an average rainfall over 20 years or 100 years. This is called the 'average recurrence interval'.

The building licence drawing must also show how many downpipes are included, and where the collection or disposal point is.

Activity 7.2 Rainfall intensity

Using BCA Table 3.5.2.1 and an average recurrence interval of 20 years, what is the five-minute rainfall intensity (in mm) in your area?
BCA 3.5.3 Wall cladding

This subheading is for the builder to use when fixing the wall cladding, if it has been specified on the drawings. It covers timber weatherboard, fibre-cement weatherboard, flat sheeting and plywood.

The drawings must show the spacings of the stud frame the cladding will be fixed to, and what size the frame will be, which is covered in Part 3.4 of the BCA.

If the design uses plywood as the bracing on the frame, and not metal straps, the plywood specified must comply with AS/NZS 2269.0:2008 *Plywood – Structural – Specifications*. The BCA tells the designer what thickness plywood must be used when the studs are 450 mm, 600 mm or 900 mm apart.

BCA Part 3.5 also covers the eaves lining and the soffit linings, which are generally fibre-cement sheets and must be as per AS/NZS 2908.2:2000 *Cellulose-cement products – Flat sheet* or ISO 8336:2009 *Fibre-cement flat sheets – Product specification and test methods*.

**Activity 7.3 Assessment 1 – Question 11**

Using the set of working drawings your lecturer gave you, neatly circle the detail on the architectural drawings of the eaves. Keep these drawings in a folder.

Go to Annex D and answer Question 11 of Assessment 1.
Undertake application of building codes and standards to residential buildings
Section 8 – BCA Part 3.6 Glazing

Introduction

In terms of glazing (which relates to glass), the drawings must show the:

• size of the windows, glass doors and shower screens
• type of frames
• type of glass.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

Glass in buildings

All glass used must be in accordance with AS 1288:2006 Glass in buildings – Selection and installation, and all window systems must be in accordance with AS 2047:1999 Windows in buildings – Selection and installation.

The BCA's main focus regarding glazing is on the requirements of 'human impact safety'. If a large glass panel is not noticeable it can be accidentally walked into, so it must be:

• a certain thickness to avoid breaking
• a certain type of glass so that if it does break it will not form sharp shards
• marked with an opaque band not less than 20 mm wide to ensure that the glass is noticeable.
Activity 8.1 Assessment 1 – Question 12

Using the set of working drawings your lecturer gave you, neatly:

• number each window
• put a circle around all the windows on the elevations that are large enough to walk through.

Keep these drawings in a folder.

Go to Annex D and answer Question 12 of Assessment 1.
Section 9 – BCA Part 3.7 Fire safety

Introduction

This section is about being able to safely evacuate a residential building in the event of a fire. It also deals with how to avoid a fire, the spread of fire and warning the occupants of a fire.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.7.1 Fire separation

To prevent a fire spreading to the neighbour’s property, the BCA requires the external walls of a house to be built at least 900 mm from the boundary, and in some states or territories it has to be at least 3000 mm away from a brush fence. Refer to BCA Figures 3.7.1.1 and 3.7.1.2a.

If there are two class 1 buildings on a single property, they must be separated by at least 1800 mm.

It's important to understand the following terms when discussing fire separation and safety.

Fire-resisting

This term means that the materials the house is built from can resist the spread of fire for a certain length of time, allowing the occupants to escape without injury.

Materials are classified as having a fire resistance level (FRL), and are graded in terms of the number of minutes it would take for the wall to:

• collapse (called structural adequacy)
• crack (called integrity)
• heat up the wall on the other side of the fire to 220 degrees Celsius (called insulation).
If a wall is closer to the boundary, a brush fence or another building on the same property than specified in the BCA, it must have an FRL of 60/60/60. This means it will take:

- 60 minutes before it will collapse
- 60 minutes before it will crack
- 60 minutes before the heat on the other side of the wall from the fire will reach 220 degrees Celsius.

**Non-combustible**

Some materials will eventually burn, but will take some time before they:

- spread the flames
- ignite
- produce smoke
- get hot.

These materials are called *non-combustible*. AS 1530.1:1994 *Methods for fire tests on building materials, components and structures – Combustibility test for materials* provides manufacturers with the tests that materials are required to pass if they are to be called non-combustible.

The BCA lists some of the common non-combustible building materials used in houses in 3.7.1.2.

The external wall has to terminate at non-combustible materials, as shown in BCA Figure 3.7.1.3. The eaves, as long as they are constructed of non-combustible materials, are allowed to be inside the setback distance by 450 mm.
Activity 9.1 Assessment 1 – Question 13

Using the set of working drawings your lecturer gave you, neatly circle the dimensions that tell the builder how far the external walls are from the boundaries. Keep these drawings in a folder. Go to Annex D and answer Question 13 of Assessment 1.

If a wall that's required to be fire rated has an opening in it, the opening has to be protected from a fire getting in or out of the house. These requirements are set out in BCA 3.7.1.5(b), (c) and (d).

Carports and garages also require special consideration, and their requirements depend on whether they are attached to the house or detached. BCA Figures 3.7.1.3, 4 and 5 show the various options the design may have.

In some designs the separation may require what is called a ‘fire-separating wall’. This is a fire-rated wall between:

• a house and a garage where the garage does not have the same construction as the house
• two houses that have a common dividing wall.

The fire-separating wall must extend up to at least the underside side of the roof sheeting.

Any plumbing pipes and electrical cables in the wall that may interfere with the fire rating must be treated to maintain the integrity of the wall.
BCA 3.7.2 Smoke alarms

The purpose of smoke alarms is to wake any sleeping occupants in the event of a fire, so they have enough time to evacuate.

In class 1a buildings (a single house), they must be located in hallways that have any doors to bedrooms.

If the house has two storeys they must be installed on all storeys, even if the storey does not contain a bedroom.

In class 1b buildings (boarding house, guest house, hostel, etc, that is not bigger than 300 m² and has no more than 12 guests), there must be one in every bedroom, as well as a light in the smoke alarm or lighting in the path used to escape.

Activity 9.2 Assessment 1 – Question 14

Using the set of working drawings your lecturer gave you, neatly draw a small circle where smoke alarms would have to be installed. Keep these drawings in a folder.

Go to Annex D and answer Question 14 of Assessment 1.
BCA 3.7.3 Heating appliances

Open fireplaces and chimneys must be constructed of stone, concrete, brickwork or another material that has been deemed fire rated.

BCA Figures 3.7.3.1, 2 and 3 show the construction details that must be on the drawings to be approved for building licence.

Free-standing heating appliances must:

- be at least 1.2 m from any adjoining wall that is not masonry, or
- have a masonry shield between it and the wall, as per BCA Figure 3.7.3.4, or
- be installed as per AS/NZS 2918:2001 Domestic solid fuel burning appliances – Installation.

The flue or chimney to a free-standing heating appliance must also protect any flammable materials it passes through, such as the roof, from igniting.

Also refer to BCA Figure 3.7.3.5, which shows the details of a construction that would be approved by council.
Undertake application of building codes and standards to residential buildings
Section 10 – BCA Part 3.8 Health and amenity

Introduction

This part of the BCA provides requirements to ensure the health of the occupants of a building. It deals with:

• stopping water from wet areas (such as the shower) from getting into other rooms, where it may break materials down and/or encourage the growth of unhealthy bacteria
• making sure the ceilings are high enough for people to move around safely
• making sure all houses have washing and toilet facilities
• making sure there is enough natural light and ventilation
• making sure there is enough sound insulation between units that have a common wall.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance
BCA 3.8.1 Wet areas

The following are important terms to understand.

**Waterproof and water resistant**

Both of these terms are defined in AS 3740:2010 *Waterproofing of domestic wet areas*.

A shower is considered to have continuously running water, and therefore the floor and walls must be *waterproof* up to 1800 mm high. Because the corners of the walls and floor are weak spots where water may penetrate through the join, the waterproofing material must be continuous at these junctions.

Outside the shower area, where a small amount of water may fall, the floor only has to be *water resistant* if it is made of concrete or fibre cement. If the floor is timber, it will have to be waterproof.

BCA Table 3.8.1.1 gives a summary of the requirements of AS 3740.

**Vessel**

The term *vessel* means any open receptacle (container) to be used to hold water, such as a basin, sink, bath or laundry tub.

A vessel is required to be water resistant 150 mm above the rim if it’s closer than 75 mm to a wall.
Activity 10.1 AS 3740

Using the Australian Standard® 3740, discuss as a group the definitions of *waterproof* and *water-resistant*.

After you have decided on a short definition of each, write it down below.

**Waterproof**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Water-resistant**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
BCA 3.8.2 Room heights

It’s important in rooms where we spend a lot of time that the ceiling is high enough to feel comfortable. Also, the higher the ceiling, the greater the air circulation, and therefore the healthier the room is.

The rooms in a house are divided into two categories: habitable and non-habitable.

Activity 10.2 BCA Part 1.1

Go back to BCA Part 1.1, and in the space below list the rooms that are included and excluded under the definition of a habitable room.

Habitable rooms include …

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Habitable rooms exclude …

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
All habitable rooms require a minimum ceiling height of 2400 mm. The only exception is the kitchen, which along with other non-habitable rooms can have a ceiling height of 2100 mm.

The BCA allows exceptions to these requirements for rooms (both habitable and non-inhabitable) that have sloping ceilings.

BCA Figure 3.8.2.1 shows how to measure ceiling heights.

**BCA 3.8.3 Facilities**

Every class 1 building must have:

- a kitchen sink and food-preparation facilities
- a bath or shower
- clothes-washing facilities
- a toilet and a wash basin.
The BCA requires that, if the above are not part of the house, they must be for the exclusive use of the occupants of the house.

To ensure that germs from dirty clothes are not washed where teeth may also be cleaned, the basin and laundry tub cannot be one and the same vessel.

Because people may become trapped in small rooms such as toilets, the BCA requires that the door to a toilet must open outwards, slide or be able to be easily removed from the outside, unless there is a clear space of 1200 mm between the door and the toilet, as per BCA Figure 3.8.3.3.

Some local councils have a Health Act, which should also be checked by the designer before submitting the drawings for approval.

**Activity 10.3 Health Acts**

Does your local council have a Health Act that covers facilities in class 1 buildings? Use the internet to check, and make a note here of what you find out.

---

**BCA 3.8.4 Light**

Natural light is required within the house, as it helps kill germs and dust mites. A habitable room must receive natural light through a window that is the size of at least 10 per cent of the floor area, or through a roof light that is the size of at least 3 per cent of the floor area.

The external walls of the house have to be set back 900 mm from the boundary for fire safety, and any wall that has a window to a habitable room must also be set back 900 mm, to ensure enough natural lighting is able to get into the room.

Natural light in a habitable room can also come from an adjoining room through a glazed panel, with the exceptions described in BCA 3.8.4.2(c).

Non-habitable rooms may be artificially lit – they do not require natural lighting.
Activity 10.4 Natural lighting

The drawing below is of a living room, with the size of the room and of the window shown. Is the window large enough to let in enough natural lighting, as required in the BCA? Write your answer below.
BCA 3.8.5 Ventilation

All rooms in residential buildings must have enough ventilation, which can be either natural or provided by a mechanical ventilation system (such as an air conditioner or exhaust fan). Any mechanical ventilation system used in habitable rooms must be installed as per AS 1668.2:2002 *The use of ventilation and airconditioning in buildings – Ventilation design for indoor air contaminant control*. The exceptions are toilets, bathrooms and laundries, which are only required to have an exhaust fan.

Some councils have a Health Act that does not accept that toilets only have to have an exhaust fan, because if the exhaust fan stops working foul air is trapped and therefore becomes a health hazard. This is an example of why the designer must check all relevant Acts, codes and regulations before submitting the drawings for approval.

If natural ventilation is being used in a habitable room, it must have an opening size equivalent to no less than 5 per cent of the floor area of the room it is ventilating.

It’s actually healthier to have the ventilation directly open to fresh air, but it is acceptable in the BCA to ‘borrow’ ventilation from another room, as long as it’s not a room containing a toilet.

The exhaust fans from toilets, laundries and bathrooms must exhaust to either open air or a well-ventilated space.

BCA 3.8.5 also requires that a toilet is not to be located off a kitchen or pantry, unless it is separated by an airlock, which is a small room between the toilet and the other room.
Activity 10.5 Window openings

The drawing below is of a living room, with the size of the room and of the window shown. Is the size of the window large enough to let in enough natural ventilation, as required in the BCA? Write your answer below.

SLIDING WINDOW WHEN THE WINDOW IS OPEN THE OPENING SIZE IS 1500 mm WIDE AND 1200 mm HIGH

LIVING ROOM
BCA 3.8.6 Sound insulation

Any walls between houses with a common dividing wall must reduce the amount of noise that is transferred from one dwelling to another.

The amount of noise to be reduced depends on the use of the room on the other side of the wall. In some cases two walls are required.

BCA Figure 3.8.6.1 includes two diagrams.

• The first shows a bedroom in one dwelling adjoining a bathroom in another. In this case the wall between them is required to be discontinuous, which means it must be separated by a gap of at least 20 mm.

• The second diagram shows two adjoining bedrooms in two separate dwellings. In this case only one wall is required to separate the two bedrooms.

Service pipes must also be in the dwelling they are servicing, and are not allowed to be inside the separating wall.

BCA Table 3.8.6.2 shows the various construction types that comply with sound insulation between houses with a common dividing wall.
Section 11 – BCA Part 3.9 Safe movement and access

Introduction

Part 3.9 of the BCA covers being able to move around safely on a staircase, roof, path or platform above the ground, and the protection required around a swimming pool.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance

BCA 3.9.1 Stair construction

As shown in Figure 11.1 below, stairs have:

- risers – the height of each step
- goings or treads – the flat area your foot stands on.

![Figure 11.1: The components of a staircase.](image-url)
There are lots of different types of stairs. Some examples are pictured here.

Figure 11.2: A spiral staircase with open risers.

Figure 11.3: A straight flight of stairs with open risers.

Figure 11.4: A staircase with closed risers.

Figure 11.5: A staircase with half landings.
Any staircase to a habitable room must be designed in accordance with the BCA. The basic rules are as follows.

- A flight of stairs can’t have more than 18 risers or fewer than two.
- All treads and risers in the one staircase must be the same size (except for winders).
- If the staircase covers more than 10 metres or more than three storeys, all treads must be solid (ie you can’t see through them).
- A quarter landing can have no more than three winders.
- A half landing can have no more than six winders.
- A riser can’t have a gap higher than 125 mm.
- All treads have to be non-slip.
- All landings must not be less than 750 mm long, or slope more than 1:50.
- A landing must be provided if a door opens onto the stairway, and the difference between floor levels is greater than 570 mm or greater than three risers.

It’s also essential that the stairs are not too steep. The BCA gives minimum and maximum heights for risers and widths for treads.

Because there are so many different possible configurations for stairs, particularly in contemporary interiors, the designer must ensure that whatever design is used complies with not only the above basic rules but also the specific requirements for each type of stair design.

Stairs leading to non-habitable rooms have to comply with AS 1657:1992 *Fixed platforms, walkways, stairways and ladders – Design, construction and installation.*
Activity 11.1 Stair design

Below is the drawing of a staircase that you saw earlier. Using BCA Figure 3.9.1.2, answer the questions below.

How many risers are there?

What is the height of the risers?

List three different possible sizes for the treads.

1.

2.

3.
BCA 3.9.2 Balustrades

Balustrades and barriers

When access is available to a level above the ground, and that level doesn’t have a wall around the space, a balustrade or other barrier is required if:

• someone could fall through an open window that is four metres or more above the ground below, or
• it’s higher than one metre above the ground.

This rule doesn’t apply to stairs to non-habitable rooms, or to retaining walls if the top of the wall is not a path.

An open balustrade is made up of vertical or horizontal slats. The distance between the slats must not be greater than 125 mm, and the distance between the nosing line and the bottom rail must not be greater than 125 mm. Refer to BCA Figure 3.9.2.1.

A balustrade must be installed on any staircase not enclosed by a wall. Even if there is a wall on one side of the staircase, the open side must have a balustrade. A stair enclosed by walls must have a handrail attached to at least one wall.

Balustrades must be 865 mm high on the rise of the stair, and 1000 mm high on the landings. Refer to BCA Figures 3.9.2.1 and 3.9.2.2.
Activity 11.2 Handrails

Look at this drawing of a staircase, and answer the questions below.

What height is the handrail required to be at area 1?

What height is the handrail required to be at area 2?
BCA 3.9.3 Swimming pool access

NSW and Queensland each have their own Acts governing safe access to swimming pools. Other states and territories are governed either by Acts or by regulations from local councils. All regulations have been made to ensure that fences around swimming pools cannot be climbed, and that gates are self-closing and can’t be opened by children.

Activity 11.3 Pool regulations

Do some research into the regulations for swimming pools in your area, and answer the following questions.

In your state or territory, is swimming pool access regulated by an Act or by a regulation from the local council?


According to the relevant Act or regulation, what is the minimum height of the fence around an outdoor swimming pool?


According to the relevant Act or regulation, what are the requirements for the gate in the fence around an outdoor swimming pool?
Undertake application of building codes and standards to residential buildings
Section 12 – Non-conformance

Introduction

Non-conformance is when a design has not complied with the deemed-to-satisfy provisions of BCA Section 3, Parts 1 to 12.

Performance criteria

1.1 Access the Building Codes of Australia and locate the main sections
1.3 Identify the relevance of Building Codes of Australia to residential building construction
2.1 Identify areas and tasks that are impacted by Building Codes of Australia
2.2 Research and confirm code and standard requirements
3.1 Identify other standards relevant to residential building
3.2 List the general requirements of other standards and outline their basic importance
4.1 Seek clarification whenever possible non-conformance is perceived

Alternative solutions

As discussed in Section 2 of this guide, an alternative solution that has been tested and proven to give a result equal to the deemed-to-satisfy provisions will then be seen as conforming.

From the client’s point of view, alternative solutions can be costly, as they require testing and certification from a professional qualified in the area. Some alternative solutions also require modelling or simulating the proposal, and this could require specialised software as well as the professionals to run the software.

For example, when we looked at BCA Part 3.7 Fire safety, we saw that an external wall closer than 900 mm to the boundary had to have a fire-resistance level (FRL) of 60/60/60. Let’s assume the designer has found a new product for the external walls, and:

• it looks good
• it’s easier to build than masonry
• it’s quicker to build than masonry
• it’s cheaper than masonry.
However, it has not been tested, and the council will not issue a building licence until it has received evidence that the new material has an FRL of 60/60/60. The tests take time and money, which the client may not have much of.

To have the material tested, the manufacturer is required to use an accredited laboratory that has been approved by the National Australian Testing Authority (NATA). It will be tested, as required in AS 1530.1, for:

- spread of flame
- ignitability
- smoke developed
- heat evolved.

After this test, a wall then has to be built and tested for:

- how long it took to collapse
- how long it took to crack
- how long it took before the heat from the fire reached 220 degrees Celsius on the other side of the wall.

On completion of the tests, a certificate will be issued from the testing authority stating the FRL of the material, which can be given to the council. If council overlooked that the new material had not been tested, and it was discovered after construction, it would have to go through the same process then to be approved.

For example, if a handrail was installed on a staircase, and it was found to be too low after it had been put up, it would have to be raised. If it was instead ignored and someone fell over the edge of the stairs, the client would be entitled to sue the:

- designer, if it was installed at the height shown on the drawings
- builder, if it was correct on the drawings but installed at the wrong height.

If you're not sure whether something conforms with the relevant requirements, ask for advice from experts in the field or those with more experience.
Activity 12.1 Non-conformance

Look in another part of the BCA and choose an item that could be non-conforming on the drawings in the pre-construction stage, and write it below. Discuss the options for a solution, and make notes of your answers.

The problem

Steps you would take to fix the problem
Step 1

Step 2

Step 3
Undertake application of building codes and standards to residential buildings
Annex A – Unit details

<table>
<thead>
<tr>
<th>Unit title</th>
<th>Undertake application of building codes and standards to residential buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptor</td>
<td>This unit of competency specifies the skills required to understand and follow the housing provisions of the building codes and standards applicable to pre-construction phases of residential buildings and associated simple non-habitable buildings.</td>
</tr>
<tr>
<td>Employability skills</td>
<td>The following employability skills are an integral part of the delivery of this unit. They include: communication; teamwork; problem solving; initiative and enterprise; planning and organising; self-management; learning; and technology.</td>
</tr>
<tr>
<td>Pre/co-requisite units</td>
<td>Nil</td>
</tr>
<tr>
<td>Application</td>
<td>This unit of competency supports workers, such as those in an office of a builder or estimator, who work under supervision. The unit is broadly related to the course for Introduction to Building Codes Australia by the Australian Building Codes Board.</td>
</tr>
</tbody>
</table>

Element 1 Locate and identify components of Building Codes of Australia

1.1 Access the Building Codes of Australia and locate the main sections

1.2 Clarify the broad classifications of buildings

1.3 Identify the relevance of Building Codes of Australia to residential building construction

Element 2 Research aspects of Building Codes of Australia related to residential buildings

2.1 Identify areas and tasks that are impacted by Building Codes of Australia

2.2 Research and confirm code and standard requirements
Element 3 Identify other standards and regulation related to residential building

3.1 Identify other standards relevant to residential building

3.2 List the general requirements of other standards and outline their basic importance

Element 4 Raise areas of concern

4.1 Seek clarification whenever possible non-conformance is perceived

Required skills and knowledge

This describes the essential skills and knowledge and the level required for this unit.

Essential knowledge

Understanding of:

• the background to Building Codes of Australia to the:
  ◦ establishment
  ◦ maintenance
  ◦ format, structure, content
  ◦ purpose
  ◦ compliance
  ◦ Building Codes of Australia performance hierarchy
  ◦ definitions and common technical terms or usage specified under general provisions of Building Codes of Australia
  ◦ relevant Australian Standards®
  ◦ relevant legislative and OHS requirements, codes and practices
  ◦ types of working drawings and specifications.

• the operation of Building Codes of Australia to the:
  ◦ building regulatory system in Australia

• the application of Building Codes of Australia to the:
  ◦ Building Codes of Australia relating to class 1 and 10
  ◦ Building Codes of Australia classes 2 to 9 with a gross floor area not exceeding 2000 square metres, not including type A or type B construction

• other relevant standards in Australia
## Essential skills

Ability to:

- read and interpret codes and standards
- communicate effectively
- use language and concepts appropriate to cultural differences
- use and interpret non-verbal communication
- write documents in accordance with Building Codes of Australia requirements

## Range statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

| Relevance may include: | • scope of application  
|                       | • importance to the building sector  
|                       | • importance to the population  
|                       | • concepts of ‘deemed to comply’ and ‘deemed to satisfy’  
|                       | • consequences of non-compliance  

| Other standards may include: | • Standards other than those that are contained in Building Codes of Australia  
|                             | ◦ health requirements  
|                             | ◦ environmental requirements  

Evidence guide

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and Assessment Guidelines for this unit.

<table>
<thead>
<tr>
<th>Critical aspects of assessment and evidence required to demonstrate this competency unit:</th>
<th>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• display a basic knowledge of the Building Codes of Australia relevant to residential buildings</td>
</tr>
<tr>
<td></td>
<td>• research and document the basic requirements on a specific topic common to residential buildings</td>
</tr>
<tr>
<td></td>
<td>• list other regulations relevant to residential buildings</td>
</tr>
<tr>
<td></td>
<td>• list in broad terms the consequences of non-compliance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access and equity considerations:</th>
<th>Reasonable adjustment may be made to meet individual learner needs</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Context of and specific resources for assessment:</th>
<th>This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Assessment of essential underpinning knowledge will usually be conducted in an off-site context.</td>
</tr>
<tr>
<td></td>
<td>Assessment is to comply with relevant regulatory or Australian Standards’ requirements.</td>
</tr>
<tr>
<td></td>
<td>Resource implications for assessment include:</td>
</tr>
<tr>
<td></td>
<td>• realistic tasks or simulated tasks covering the mandatory task requirements</td>
</tr>
<tr>
<td></td>
<td>• relevant specifications and work instructions</td>
</tr>
<tr>
<td></td>
<td>• support materials appropriate to activity</td>
</tr>
<tr>
<td></td>
<td>• research resources, including industry related information</td>
</tr>
</tbody>
</table>

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.
### Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with work place tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice. A decision on competency should only be taken at the point when the assessor has complete confidence in the person’s demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.
Undertake application of building codes and standards to residential buildings
Annex B – Learning plan

The in-class activities for this unit are included in the guide column. The activities have been designed to enhance your learning through research, communication, teamwork, problem solving, initiative and enterprise, planning and organising, self-management and technology.

<table>
<thead>
<tr>
<th>Session</th>
<th>Elements</th>
<th>Guide</th>
<th>Resources</th>
</tr>
</thead>
</table>
| 1       | 1.1, 1.3 | Section 1 – Building Code of Australia  
The BCA  
Types of drawings  
  • Activity 1.1  
Codes and standards  
  • Activity 1.2  
Legislation  
OHS | Learner’s guide  
BCA  
Set of working drawings from lecturer |
| 2       | 1.1, 1.2, 1.3  
2.1, 2.2  
3.1, 3.2  
4.1 | Section 2 – Sections of the BCA  
BCA Section 1 General requirements  
Deemed-to-satisfy provisions  
  • Activity 2.1  
Alternative solutions  
Non-conformance  
  • Activity 2.2  
Classifications  
  • Activity 2.3  
Associated standards  
  • Activity 2.4  
BCA Section 2 Performance provisions  
  • Activity 2.5  
BCA Section 3 Acceptable construction  
  • Activity 2.6 | Learner’s guide  
BCA |
<table>
<thead>
<tr>
<th>Session</th>
<th>Elements</th>
<th>Guide</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1.1, 1.2, 1.3</td>
<td>Section 3 – BCA Part 3.1 Site</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>preparation</td>
<td>BCA</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 3.1</td>
<td>Set of working drawings from lecturer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 3.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 3.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 3.4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1.1, 1.3</td>
<td>Section 4 – BCA Part 3.2 Footings</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>and slabs</td>
<td>BCA</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 4.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 4.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 4.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 4.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 4.5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1.1, 1.3</td>
<td>Section 5 – BCA Part 3.3 Masonry</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>• Activity 5.1</td>
<td>AS 3700 and</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 5.2</td>
<td>AS 4773.1 from lecturer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 5.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 5.4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1.1, 1.3</td>
<td>Section 6 – BCA Part 3.4 Framing</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>• Activity 6.1</td>
<td>BCA</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 6.2</td>
<td>Set of working</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 6.3</td>
<td>drawings from lecturer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 6.4</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.1, 1.3</td>
<td>Section 7 – BCA Part 3.5 Roof and wall</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>cladding</td>
<td>BCA</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 7.1</td>
<td>Set of working</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 7.2</td>
<td>drawings from lecturer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 7.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Section 8 – BCA Part 3.6 Glazing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Activity 8.1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1.1, 1.3</td>
<td>Section 9 – BCA Part 3.7 Fire safety</td>
<td>Learner’s guide</td>
</tr>
<tr>
<td></td>
<td>2.1, 2.2</td>
<td>• Activity 9.1</td>
<td>BCA</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.2</td>
<td>• Activity 9.2</td>
<td>Set of working</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>drawings from lecturer</td>
</tr>
<tr>
<td>Session</td>
<td>Elements</td>
<td>Guide</td>
<td>Resources</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| 9       | 1.1, 1.3  
          2.1, 2.2  
          3.1, 3.2 | Section 10 – BCA Part 3.8 Health and amenity  
          • Activity 10.1  
          • Activity 10.2  
          • Activity 10.3  
          • Activity 10.4  
          • Activity 10.5  
          • Activity 10.6  
          • Activity 10.7 | Learner’s guide  
          BCA  
          Set of working drawings from lecturer |
| 10      | 1.1, 1.3  
          2.1, 2.2  
          3.1, 3.2  
          4.1 | Section 11 – BCA Part 3.9 Safe movement and access  
          • Activity 11.1  
          • Activity 11.2  
          • Activity 11.3 | Learner’s guide  
          BCA  
          Set of working drawings from lecturer |
| 11      | All | Assessment 1 due  
          Work on Assessment 2 | Learner’s guide  
          BCA |
| 12      | All | Work on Assessment 2 | Set of working drawings from lecturer |
| 13      | All | Work on Assessment 2 | |
| 14      | All | Work on Assessment 2 | |
| 15      | All | Assessment 2 due | |
Undertake application of building codes and standards to residential buildings

30012

Annex B
Annex C – Assessment plan

You are required to demonstrate your competence in 30012 *Undertake application of building codes and standards to residential buildings* by completing two assessments.

<table>
<thead>
<tr>
<th>Due</th>
<th>Assessment</th>
<th>Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 11</td>
<td><strong>Assessment 1 – Document basic knowledge of BCA and other regulations</strong>&lt;br&gt;You are required to complete the class activities nominated in this learner’s guide as being part of Assessment 1, by answering the questions at Annex D using the working drawings your lecturer gave you.</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Session 15</td>
<td><strong>Assessment 2 – Research and document a specific topic and identify non-conformance</strong>&lt;br&gt;You are required to answer the questions listed at Annex D relating to BCA Part 3.8, using the set of drawings your lecturer gave you.</td>
<td>1, 2, 3, 4</td>
</tr>
</tbody>
</table>

**Individual learning and assessment needs**

Everyone has different learning styles and needs. Please let your lecturer know if there is anything that may have an effect on your learning.

**Results and appeals**

There is a process to be followed should you wish to appeal the result of your assessment. Please ask your lecturer for more information about this.
Undertake application of building codes and standards to residential buildings
Annex D – Assessments
Undertake application of building codes and standards to residential buildings
Assessment 1 – Document basic knowledge of BCA and other regulations

Introduction

You are required to complete the class activities nominated in this learner’s guide as being part of Assessment 1, by answering the questions on the following pages using the working drawings your lecturer gave you.

Requirements and format

You are required to:

• photocopy and collate all the drawings
• answer the questions for Assessment 1
• complete the marking guide for Assessment 1 (see Annex E).

Staple all of the above together in the top left-hand corner and give to your lecturer.

Due date

Assessment 1 is due in class in Session 11.
Undertake application of building codes and standards to residential buildings
30012

Undertake application of building codes and standards to residential buildings

Assessment 1 – Document basic knowledge of BCA and other regulations

Name _______________________________ Date ______________

I have received feedback on this assessment.

Signature ____________________________ Date ______________

Assessor’s initials
Question 1 (refer to Activity 2.3 in this learner’s guide)

Open the BCA to Section 1.3, and write in the spaces provided below the definitions of the following classifications.

<table>
<thead>
<tr>
<th>Class</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1a</td>
<td>(i)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Class 1b

(i)  

(A)  

(B)  

(ii)  

### Class 10a

### Class 10b

### Class 10c
### Question 2 (refer to Activity 3.4 in this learner's guide)

What type of termite barrier has been specified?

---

If you live in Tasmania or the Northern Territory, cut out the drawing you did for Activity 3.3 and glue it into the space below.
**Question 3 (refer to Activity 4.3 in this learner’s guide)**

Is the slab edge detail:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td></td>
</tr>
</tbody>
</table>

**Question 4 (refer to activity 4.4 in this learner’s guide)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| a) | What is the size of the footing on the engineer’s drawing?  
| |   |
| b) | Is the footing larger or smaller than the size in the BCA?  
| |   |
| c) | What is the term used to describe a footing that is smaller than what is required in the BCA?  
| |   |

**Question 5 (refer to Activity 4.5 in this learner’s guide)**

Which figure in the BCA best describes the construction type for the house?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question 6 (refer to Activity 5.1 in this learner’s guide)

Using AS 3700, go to clause 4.7.4 and write down the three notes at the bottom of the clause with regard to finishes on single and solid walls.

a) 

b) 

c) 

Question 7 (refer to Activity 5.2 in this learner’s guide)

Using AS 4773.1 Table 7.1, what type of tie is required in wind category N1 for a wall height of 2700 mm when the ties are spaced horizontally at 600 mm centres?

Question 8 (refer to Activity 5.3 in this learner’s guide)

Using AS 4773.1 Table 12.2, what is the required length of the bearing for an opening less than 1.0 m wide?
**Question 9 (refer to Activity 5.4 in this learner’s guide)**

Using AS 3700 clause 4.7.2, at what centres is the mortar left out of the vertical joints in the brickwork?

<table>
<thead>
<tr>
<th>Centres 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Centres 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Question 10 (refer to Activity 6.3 in this learner’s guide)**

a) What does the note on the architectural drawings say about the roof framing members?

<table>
<thead>
<tr>
<th>Note 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Note 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

b) What does the note on the engineer’s drawings say about the roof framing members?

<table>
<thead>
<tr>
<th>Note 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Note 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

**Question 11 (refer to Activity 7.3 in this learner’s guide)**

What material has been used to line the eaves?

<table>
<thead>
<tr>
<th>Material 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Material 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>
Question 12 (refer to Activity 8.1 in this learner’s guide)

<table>
<thead>
<tr>
<th>a)</th>
<th>Using BCA 3.6.4.6(c), write down the numbers of the windows that will be required to have a ‘band’ or ‘marking’ on them.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b)</th>
<th>Do the drawings tell the builder to put bands or markings on the windows?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c)</th>
<th>Do the architectural drawings have a note to the builder saying all windows must comply with the Australian Standard® AS 1288 or with the BCA?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Question 13 (refer to Activity 9.1 in this learner’s guide)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a) What is the distance between each of the following on your drawings?</strong></td>
<td></td>
</tr>
<tr>
<td>House to street boundary:</td>
<td></td>
</tr>
<tr>
<td>House to one side boundary:</td>
<td></td>
</tr>
<tr>
<td>House to another side boundary:</td>
<td></td>
</tr>
<tr>
<td>House to rear boundary:</td>
<td></td>
</tr>
<tr>
<td><strong>b) Are any of the walls closer than 900 mm to the boundary?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>c) If a wall is closer than 900 mm, what is the wall made of?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>d) If a wall is closer than 900 mm, is the material it is made of fire resistant?</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Question 14 (refer to Activity 9.2 in this learner’s guide)

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) How many smoke alarms are required in your house?</td>
</tr>
<tr>
<td>b) Are the smoke alarms shown on the architectural drawings or the electrical drawings?</td>
</tr>
<tr>
<td>c) Does the note on the drawings tell the builder to refer to the relevant Australian Standard® or to the BCA?</td>
</tr>
<tr>
<td>d) If so, which standard, or which part of the BCA?</td>
</tr>
</tbody>
</table>

End of Assessment 1
Undertake application of building codes and standards to residential buildings

Annex D

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Assessment 2 – Research and document a specific topic and identify non-conformance

Introduction
You are required to answer the questions on the following pages which relate to BCA Part 3.8. You will be using the working drawings your lecturer gave you, and demonstrating your knowledge of the BCA and the relevant Australian Standards®, by researching.

Assessment 2 will be done in class in weeks 11, 12, 13, 14 and completed in week 15.

Requirements and format
You are required to:
• collate all drawings
• answer the questions for Assessment 2
• complete the marking guide for Assessment 2 (see Annex E).

Staple all of the above together in the top left-hand corner and give to your lecturer.

Due date
Assessment 2 is due in class in Session 15.
Undertake application of building codes and standards to residential buildings
30012

Undertake application of building codes and standards to residential buildings

Assessment 2 – Research and document a specific topic and identify non-conformance

Name ___________________________ Date ____________

I have received feedback on this assessment.

Signature ___________________________ Date ____________

Assessor’s initials
Undertake application of building codes and standards to residential buildings
Assessment 2 – Research and document a specific topic and identify non-conformance

The following questions relate to BCA Part 3.8 Health and amenity. To answer them, you will need to use the BCA, this learner’s guide or your lecturer’s help.

Using the architectural drawings your lecturer gave you, answer the following questions in the spaces provided below.

<table>
<thead>
<tr>
<th>Wet areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the plans, neatly circle the:</td>
</tr>
<tr>
<td>• shower(s)</td>
</tr>
<tr>
<td>• bath(s) and/or spa(s)</td>
</tr>
<tr>
<td>• vessels.</td>
</tr>
</tbody>
</table>

Then answer the following questions.

1. What is the difference between a waterproof material and a water-resistant material?

**Waterproof**

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</table>
Water resistant

2. What is the section, part and clause number in the BCA that gives the answer to question 1?

3. Are the walls to the shower required to be waterproof or water resistant?

4. Why?

5. How high does either of the above have to be on the walls in the shower?

6. Above the rim of the bath or spa, are the walls required to be waterproof or water resistant?
<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>How high does either of the above have to be on the walls above the rim of the bath or spa?</td>
</tr>
<tr>
<td>8.</td>
<td>The walls above a vessel only have to be water resistant if the vessel is less than 75 mm from a wall. Is the kitchen sink on the drawings attached to a wall?</td>
</tr>
<tr>
<td>9.</td>
<td>If the answer to question 8 is yes, how high does the water-resistant material have to be above the rim of the sink?</td>
</tr>
</tbody>
</table>

**Room heights**

On the plans, neatly write the height of the ceilings in each of the rooms. Then answer the following questions.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>10.</td>
<td>What are the room heights allowed to be in non-habitable rooms?</td>
</tr>
<tr>
<td>11.</td>
<td>What is the section, part and clause number in the BCA that gives the answer to question 10?</td>
</tr>
<tr>
<td>12.</td>
<td>What should the room heights be in habitable rooms?</td>
</tr>
<tr>
<td>13.</td>
<td>What is the section, part and clause number in the BCA that gives the answer to question 12?</td>
</tr>
</tbody>
</table>
### 14. Are there any rooms with a ceiling height lower than 2400 mm? If so, name them.

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### 15. Are any of the rooms in the answer to question 14 habitable? If so, name them.

__________________________
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### 16. The BCA allows one habitable room to have a ceiling height of 2100 mm. Which habitable room is this?

__________________________

### 17. What is the section, part and clause number in the BCA that gives the answer to question 16?

__________________________

### 18. Are any of the rooms in the answer to question 14 non-habitable? If so, name them.

__________________________
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### Facilities

19. Is there a kitchen sink in the house plans?

20. The BCA gives a purpose for having a kitchen sink.
   a) What is the purpose?

   b) What is the section, part and clause number in the BCA that gives the answer to question 20a?

21. Do the drawings your lecturer gave you tell the builder how the door to the toilet is to be constructed? (Refer to BCA Clause 3.8.3.3.)

### Natural light

On the plans, neatly number all the windows. Then answer the following questions.

22. What percentage of the area of a habitable room is the window required to be to receive natural light?

23. What is the section, part and clause number in the BCA that gives the answer to question 22?
24. Complete the table below by writing in:
   - window number (as you marked it on your plans)
   - name of the room the window is in
   - size of the window in square metres
   - percentage of the area of the floor that the BCA requires the window to be to receive natural light
   - a tick in the box if it complies with the BCA.

<table>
<thead>
<tr>
<th>Window number</th>
<th>Room window is in</th>
<th>Size of window in square metres</th>
<th>% of area of floor required for window</th>
<th>Complies with BCA</th>
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<tbody>
<tr>
<td>Natural ventilation</td>
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<tr>
<td>25. What percentage of the area of a habitable room is the opening required to be to receive natural ventilation?</td>
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<td>26. What is the section, part and clause number in the BCA that gives the answer to question 25?</td>
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</table>
27. Complete the table below by writing in:

- window number (as you marked it on your plans)
- name of the room the window is in
- size of the opening part of the window in square metres
- percentage of area of the floor that the BCA requires the opening to be to receive natural ventilation
- a tick in the box if it complies with the BCA.

<table>
<thead>
<tr>
<th>Window number</th>
<th>Room window is in</th>
<th>Size of window opening in square metres</th>
<th>% of area of floor required for window opening</th>
<th>Complies with BCA</th>
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</table>
Non-conformance

Identify an item on the drawings that is a mistake because it does not conform to BCA Part 3.8 Health and amenity.

You may select an item from below, or choose another one.

• No waterproofing is shown for the shower recess.
• A habitable room does not have the correct ceiling height.
• The correct construction for the toilet door is not shown on the drawings.
• There is not enough light into a habitable room.
• There is not enough ventilation into a habitable room.

28. What is the item you have identified as non-conforming?

29. Write a brief solution as to how you would resolve this non-conforming item, in consultation with your fellow learners and lecturer.

Your solution must include the relevant BCA section, part, clause, figure and table numbers, if applicable.

Use the space on the following page for this.
Undertake application of building codes and standards to residential buildings

Solution now complies with:
Assessment 2
Annex D

Essential knowledge

30. Find out why the BCA was established, by:
   • reading the introduction to the BCA
   • accessing the Australian Building Codes Board website.
   In your own words, describe your understanding of this.

31. The introduction to the BCA describes how the BCA is maintained. In your own words, describe your understanding of this.

32. Using the introduction to the BCA or the information provided in this learner’s guide, describe in your own words the format of the BCA.
33. Using the introduction to the BCA, describe in your own words the structure of the BCA.

34. Using the introduction to the BCA or the information provided in this learner’s guide, describe in your own words the content of the BCA.

35. Research and describe in your own words the purpose of the BCA.
36. Using the information provided in this learner’s guide, describe in your own words the meaning of the term ‘compliance’.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

37. Using the information provided in this learner’s guide, draw a diagram below of the BCA performance requirements hierarchy.
38. Using the BCA, select three definitions, terms or other usages that you have learnt doing this unit. Name and describe them below.

a) _____________________________________________________________________________
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b) ____________________________________________________________________________
_____________________________________________________________________________
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c) ____________________________________________________________________________
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39. Using the information provided in this learner's guide, list out three Australian Standards® and what they are used for.

<table>
<thead>
<tr>
<th>a) Standard number and name</th>
<th>Used for:</th>
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<table>
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<th>b) Standard number and name</th>
<th>Used for:</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>c) Standard number and name</th>
<th>Used for:</th>
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</table>
40. Using the information provided in this learner’s guide, and the website of the OHS requirements in your state or territory, write a short description on specification for materials safety.


41. Using the information provided in this learner’s guide, list the three different types of drawings involved in applying for a building licence.

a) 

b) 

c) 

42. With the help of your lecturer, draw a diagram below of the building regulatory system in your state or territory.
43. How would you change what you say and what you do when you communicate with people from different cultural backgrounds?

_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________
_______________________________________________________________________________

End of Assessment 2
Undertake application of building codes and standards to residential buildings
Annex E – Marking guides
Undertake application of building codes and standards to residential buildings
Assessment 1 – Document basic knowledge of BCA and other regulations – Marking guide

<table>
<thead>
<tr>
<th>Learner to complete</th>
<th>Assessor to complete</th>
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<td>Name:</td>
<td>Assessor:</td>
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<td>Assessment: (circle)</td>
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<td>Competent</td>
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<td>Resubmit</td>
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</table>

Instructions for learners

Tick the boxes on the left once you are happy with that aspect of your assessment and before you submit it.

Instructions for assessors

Place a cross in the boxes on the right only if the item is not acceptable or not competent.

This assessment will assess Elements 1, 2 and 3.

---

**Presentation**

- Overall neatness
- Assessment format correct
- Assessment submitted on time
- Assessment questions with answers attached
- Assessment marking key attached

**The questions have been correctly answered**

- Activity 2.3 Question 1
- Activity 3.4 Question 2
- Activity 4.3 Question 3a
- Activity 4.3 Question 3b
- Activity 4.3 Question 3c
- Activity 4.4 Question 4a
- Activity 4.4 Question 4b
- Activity 4.4 Question 4c
- Activity 4.5 Question 5
### Undertake application of building codes and standards to residential buildings

1. **Activity 5.1**
   - Question 6a
   - Question 6b
   - Question 6c

2. **Activity 5.2**
   - Question 7

3. **Activity 5.3**
   - Question 8

4. **Activity 5.4**
   - Question 9

5. **Activity 6.3**
   - Question 10a
   - Question 10b

6. **Activity 7.3**
   - Question 11

7. **Activity 8.1**
   - Question 12a
   - Question 12b
   - Question 12c

8. **Activity 9.1**
   - Question 13a
   - Question 13b
   - Question 13c
   - Question 13d

9. **Activity 9.2**
   - Question 14a
   - Question 14b
   - Question 14c
   - Question 14d

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**Note:** Your assessor may provide specific notes on your submission as an alternative to completing the feedback section below.

**Feedback:**

- ..........................................................................................................................
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**Assessment successfully completed:** Yes / No
# Assessment 2 – Research and document a specific topic and identify non-conformance – Marking guide

Learner to complete | Assessor to complete
--- | ---
**Name:** | **Assessor:**
**1st submission date:** | **Assessment:** (circle)
--- | ---
--- | **2nd submission due date:**
--- | (if required)
Competent | Resubmit

## Instructions for learners

Tick the boxes on the left once you are happy with that aspect of your assessment and before you submit it.

## Instructions for assessors

Place a cross in the boxes on the right only if the item is not acceptable or not competent.

This assignment will assess Elements 1, 2, 3 and 4.

## Presentation

- Overall neatness
- Assessment format correct
- Assessment submitted on time
- Assessment questions with answers attached
- Assessment marking key attached

## Wet areas

- Question 1
- Question 2
- Question 3
- Question 4
- Question 5
- Question 6
### Undertake application of building codes and standards to residential buildings

**Annex E**

<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td>7</td>
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</table>
Marking guide – Assessment 2

Question 32 ...............................................................................................................................

Question 33 ...............................................................................................................................

Question 34 ...............................................................................................................................

Question 35 ...............................................................................................................................

Question 36 ...............................................................................................................................

Question 37 ...............................................................................................................................

Question 38 ...............................................................................................................................

Question 39 ...............................................................................................................................

Question 40 ...............................................................................................................................

Question 41 ...............................................................................................................................

Question 42 ...............................................................................................................................

Question 43 ...............................................................................................................................

Note: Your assessor may provide specific notes on your submission as an alternative to completing the feedback section below.

Feedback: ......................................................................................................................................
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Assessment successfully completed: ................................................................. Yes / No

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Undertake application of building codes and standards to residential buildings
LEARNER’S GUIDE

DESCRIPTION
This learner’s guide will give you the skills and knowledge to apply the Building Code of Australia (BCA) and associated standards to the pre-construction stages of residential buildings and simple non-habitable buildings. It contains a mix of content and hands-on activities that support the unit 30012 Undertake application of building codes and standards to residential buildings from Certificate II in Building and Construction (Pathway – Paraprofessional). The course, and this guide, focus on the skills and knowledge required to get your career started as a paraprofessional in the residential building industry.

The topics covered in this guide include:
• how to access and use the BCA
• how to apply the BCA and associated standards and legislation to residential building construction
• how builders and other tradespeople use codes and standards
• specific sections of the BCA that are relevant to your work as a paraprofessional in the building industry.

You will also learn some basic terminology relevant to building codes and standards. Assessment activities are also included.

EDITION
Edition 1, 2012
Unit and course codes updated 2014

COURSE/QUALIFICATION
Certificate II in Building and Construction (Pathway – Paraprofessional)

UNIT
30012 Undertake application of building codes and standards to residential buildings

RELATED PRODUCTS
This resource is one of a series that covers all 12 units of the Certificate II in Building and Construction (Pathway – Paraprofessional) qualification. Please refer to our product catalogue for more information.