



CPCCBC4001A

APPLY BUILDING CODES AND STANDARDS TO THE CONSTRUCTION PROCESS FOR LOW RISE BUILDING PROJECTS

THEORY EXAM INSTRUCTIONS

1. This exam will occur under standard assessment conditions.
 1. An oral examination may be allowed under certain circumstances. Answers will be documented and FT003 (Oral examination declaration form) must be completed.
2. Participants must provide enough detail in their responses to demonstrate their knowledge and skills.
3. Please fill in the details below, providing your name, signature and date of assessment.
 1. Your signature acknowledges that this is your own work.
4. If a participant initially answers a question incorrectly but modifies their response, they must follow the instructions below:
 1. If a participant changes their response in writing, they must put their initials next to the written change.
 2. If a participant changes their response verbally, this must be noted on the exam paper by the assessor.

Participant name Cia Dermanakis

Participant signature

Assessor name

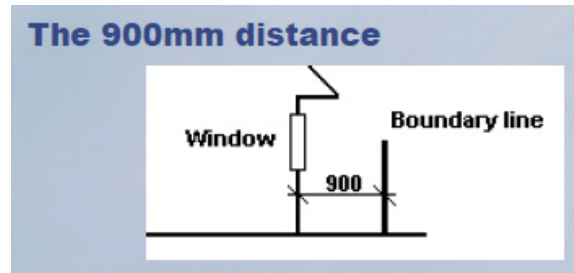
Assessor signature

Date 6/04/2017

Number of questions	Number of questions answered correctly	Satisfactory?	
		Yes	No
35		☐	☐



- Q1. The diagram below represents an external house wall, shows part of roof and eave and a window in the wall and the vertical boundary line fence is shown a prescribed measurement of 900mm from the house wall to allow light from the sun to reach the window.



What type of regulation could allow a lesser distance to be used if appropriate justification was provided?

In what document/s might you find the appropriate information?

Answer A performance-based regulation could allow a lesser distance with an appropriate justification. ☐

Given this is a house this building would be considered a Class 1 structure and therefore the appropriate information could be found in Volume One of the Building Code of Australia (BCA).

- Q2. In regard to the above 900mm distance from house wall to boundary fence and in using or referencing performance-based regulations in the BCA what else should you be aware of and consider?

Answer When considering the dimensions between external walls and boundaries in relation performance-based regulations we should be aware of: ☐

- other relevant performance requirements in the BCA, and
- local government planning laws

Q3. **Who has responsibility for producing and maintaining The Building Code of Australia (BCA) and who is it done on behalf of?**

Answer

The BCA is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Commonwealth Government and each State and Territory Government.

☐

Q4. **Fill in the missing words to complete the following two sentences.**

1. The BCA is a uniform set of Technical provisions for the design and construction of buildings and other structures throughout Australia.
2. It is a Performance-based document that is referenced so that your building system or material can demonstrate that it meets certain performance requirements in order to meet legislative requirements.

Answer

☐

Q5. **What is the principal goal of the Building Code of Australia (BCA)?**

Answer

BCA's goal is to enable the achievement of nationally consistent, minimum necessary standards of safety, health, amenity and sustainability objectives.

☐

Q6. **How many volumes are there in the BCA and to what do the volumes refer?**

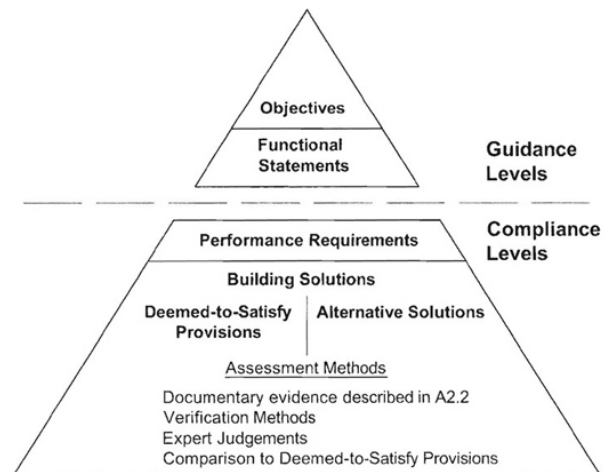
Answer

There are three volumes of the current BCA (2016) and they refer to:

1. **Volume One**
 - contains the requirements for Class 2 to 9 (multi-residential, commercial, industrial and public) buildings and structures.
2. **Volume Two**
 - contains the requirements for Class 1 (residential) and Class 10 (non-habitable) buildings and structures.
3. **Volume Three**
 - contains the requirements for plumbing and drainage for all classes of buildings.

☐

Q7. Explain the BCA performance requirements for low rise projects from the diagram below.



Answer The BCA structure is a top-down approach to specifying performance requirements for a building or structure. The requirements become more granular the lower the level on the pyramid. □

The Guidance Levels articulate high-level **Objectives** or outcomes for regulating and safeguarding people, which are then broken down into **Functional Statements** to explain how that objective is to be met.

Compliance Levels define the specific requirements that must be met in order for the Guidance Levels to hold true on a build.

Performance requirements outline a suitable level of performance for building materials, components, design factors, and construction methods in order for a building (the outcome required). Building solutions describe how the Performance Requirements are specifically to be met on a build through the use of design, materials, structures etc – either by using the recommended ‘recipe’ provided by the BCA (pre-approved as having **Deemed-to-Satisfy** status), or if deviating from the ‘recipe’ then submitting an **Alternative Solution** (with justification) for Assessment which is equivalent or better than the Deemed-to-Satisfy solution and meets performance requirements.

Q8. What is the intent of the 'Relevant Performance Requirements' in the BCA?

Answer The intent of the 'Relevant Performance Requirements' is to provide a method of determining which are the appropriate Performance Requirements to be considered when an Alternative Solution is proposed in order to prove that a Building Solution complies with the BCA.



Q9. Building solutions set out the means of achieving compliance with the performance requirements. The BCA provides for two methods that can be followed to develop a building solution. Explain these two methods.

Answer Compliance with the Performance Requirements can be achieved by:

1. Complying with the **Deemed-to-Satisfy** provisions, which are a 'recipe' of example materials, components, design factors, and construction methods which, if used, will result in compliance with the performance requirements of the BCA.
2. Formulation of an **Alternative Solutions** which comply with the Performance Requirements and are demonstrated to be equivalent to the Deemed-to-Satisfy provisions. An approval authority may still issue an approval if a proposal differs from deemed-to-satisfy provisions described in the BCA if it can be demonstrated that the design complies with the relevant performance requirements



Q10. The deemed-to-satisfy building solution establishes a clear and concise process for compliance for a builder, building surveyor or the like (building certifier) who does not want to develop a new means of achieving performance requirements; what does 'deemed-to-satisfy' mean?

Answer Deemed-to-Satisfy is interpreted as compliance with Australia's peak Standards body, which is recognised as such through a Memorandum of Understanding with the Commonwealth Government.





Q11. Write an example of a 'deemed-to-satisfy' provision for a class 1 building including deemed-to-satisfy requirements for kitchen, bathroom, laundry and sanitary facilities.

Nominate where you found the information in the BCA.

Answer

Example Deemed-to-Satisfy Requirements:



Kitchen

C2.5 Class 9a and 9c buildings

(a)(vi)(A) A **kitchen** and related food preparation areas having a combined floor area of more than 30 m².

Bathroom

F1.7 Waterproofing of Wet Areas in Buildings

(e) (ii) Table F.17 - Water resistant walls in shower area to not less than 1800 mm above finished floor level of the **shower**.

Laundry

F1.7 Waterproofing of wet areas in buildings

(b) In a Class 5, 6, 7, 8 or 9 building, building elements in the bathroom or shower room, a slop hopper or sink compartment, a **laundry** or sanitary compartment must—

- (i) be water resistant or waterproof in accordance with Table F1.7; and
- (ii) comply with AS 3740 as if they were in a Class 2 or 3 building or a Class 4 part of a building.

Sanitary Facilities

D1.7 Travel via fire-isolated exits

(a) A doorway from a room must not open directly into a stairway, passageway or ramp that is required to be fire-isolated unless it is from—

- (i) a public corridor, public lobby or the like; or
- (ii) a sole-occupancy unit occupying all of a storey; or
- (iii) a **sanitary compartment**, airlock or the like.

Q12. Who and what is Standards Australia?**Answer**

Standards Australia is an independent, non-government, not-for-profit organisation. It works in consultation with government, business, industry, community, academia and consumers, to develop internationally aligned Australian Standards and related publications to help ensure the safety, reliability and performance of a range of products, services and systems. the performance requirements of the BCA.

**Q13. What are Australian Standards?****Answer**

According to Standards Australia, Australian Standards are defined as "...published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to. They establish a common language which defines quality and safety criteria."





Q14. The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used. Please summarise the 10 building classifications below.

Answer

Class	Summary
1	Class 1 buildings are houses, typically standalone single residential dwellings. They can also be horizontally attached to other Class 1 buildings such as terrace houses, row houses, or townhouses. A Class 1a building is a single dwelling. A Class 1b building is a boarding house, guest house or hostel that has a floor area less than 300 m ² , and less than 12 people living in it.
2	Class 2 buildings are apartment buildings. They are typically multi-unit residential buildings where people live above and below each other.
3	Class 3 buildings are residential buildings other than a Class 1 or Class 2 building. They are a common place of long term or transient living for a number of unrelated people. Eg boarding house, guest house, hostel or backpackers. Class 3 buildings could also include dormitory style accommodation, or workers' quarters.
4	A Class 4 part of a building is a dwelling or residence within a building of a non-residential nature (ie can only be located in a Class 5 to 9 building). An example of a Class 4 part of a building would be a caretaker's residence in a storage facility.
5	Class 5 buildings are of office buildings that are used for professional or commercial purposes, excluding Class 6, 7, 8 or 9 buildings. Eg of offices for lawyers, accountants, general medical practitioners, government agencies and architects.
6	Class 6 buildings are typically shops, restaurants and cafés. They are a place for the sale of retail goods or the supply of services direct to the public.
7	Class 7a buildings are car parks. Class 7b buildings are typically warehouses, storage buildings or buildings for the display of goods (or produce) that is for wholesale.
8	A Class 8 building is effectively a factory. It's a building in which a process (or handicraft) is carried out for trade, sale, or gain. The building can be used for production, assembling, altering, repairing, finishing, packing, or cleaning of goods or produce.
9	Class 9 buildings are buildings of a public nature. Class 9a buildings are generally hospitals (health-care buildings) in which occupants or patients are undergoing medical treatment. Class 9b buildings are assembly buildings in which people may gather for social, theatrical, political, religious or civil purposes. eg schools, universities. Class 9c buildings are aged care buildings. Aged care buildings are deemed as residential accommodation for elderly people who are provided with personal care services and 24 hour staff assistance.



10	Class 10 buildings are non-habitable buildings or structures. Class 10a buildings are non-habitable buildings including sheds, carports, and private garages. Class 10b is a structure being a fence, mast, antenna, retaining wall, swimming pool etc. Class 10c building is a private bushfire shelter associated with, but not attached to, a Class 1a building.
----	--

Q15. Other than the 10 BCA building classifications (A3.2), there are also multiple classifications (A3.3) where each part of a building is classified separately.

Where would you find a full list of Part A3 classification of Buildings and Structures?

Answer The full list of Part A3 classification of Buildings and Structures can be found within the Building Codes Australia. ☐

Q16. True or False (Tick your response): If a building or part of a building has more than one classification applying to the whole building or part in accordance with, that building or part must comply with all the relevant provisions of the BCA for each classification.

Answer

☒	True
☐	False

☐

Q17. Familiarity with plans and specifications for a project when interpreting a building solution and therefore trying to interpret clauses and other referenced documents in the BCA is important.

What do plans and specifications include?

Answer Plans and specifications include:

- Floor level plans
- Elevation plans
- Sectional drawings
- Specifications.

☐

Q18. You must have a clear picture of the building to be constructed and be able to identify the criteria that you will need to compare to the Deemed-To-Satisfy (DTS). What is it you must also consider when constructing complex buildings?

Answer When constructing a complex building it's important to note that one BCA clause may have an impact on the requirements of another, and compliance must be considered holistically.



Q19. Complete the missing words from the sentence below and explain the difference between these points.

BCA Performance Requirements are mandatory **and Deemed-to-Satisfy provisions are** optional.

Answer Legally a build must meet BCA Performance requirements, whether it be by via a deemed-to-satisfy or an Alternative Solution. A Deemed-to-Satisfy provision may not necessarily be used to meet a Performance Requirement and is therefore optional.



Q20. What is a Building Solution?

Answer A Building Solution is a solution which complies with Performance Requirements and:
(a) complies with the Deemed-to-Satisfy Provisions; or
(b) is an approved Alternative Solution; or
(c) is a combination of both.



Q21. Referring to the BCA, what are the objectives of Section C Fire Resistance?

Answer

The objective of Section C (Fire Resistance) of the BCA provisions is to ensure that during a fire:

- people are safeguarded (risk minimised)
- occupants are safeguarded while evacuating (routes are provided)
- emergency services personnel are facilitated in the undertaking of search and rescue operations
- the risk of fire spreading to other structures is avoided
- structural failures (buildings, allotment, road) do not occur.



Q22. Why is it necessary to identify and document performance-based solutions?

Answer

It is necessary to identify and document performance-based solutions in order to:

- comply with organisational quality procedures and processes
- apply and interpret relevant documentation and codes
- accurately apply construction workplace OHS requirements
- identify faults and problems impacting on OHS and proposing appropriate action to rectify said faults.



Q23. In the context of the Building Code of Australia what are Assessment Methods used to determine?



Answer Assessment Methods are used to determine whether a Building Solution complies with the relevant BCA Performance Requirements.



Q24. Explain the importance of maintaining detailed documentation for a building project.

Answer It is important to maintain a detailed level of documentation to:

- ensure that the building is compliant and can pass assessment,
- possess a vital reference tool required for inspections to ensure key elements are not overlooked.



Q25. With regard to detailed documentation what are some of the documents that must be provided and maintained by contractors?

Answer Documents that must be provided and maintained by contractors are: ☐

- a) **Plans** with clear and complete calculations of building areas, site areas, site coverage, floor areas, building heights, habitable rooms, windows and secluded private open space,
- b) **Plans or drawings** that contain all necessary notes, specifications and analysis to enable the relevant authority to determine compliance with the Act, Regulations and the BCA.
- c) A full outline of **Alternative Solution(s) proposed** with procedures and pointers to further detailed reference documentation.
- d) **All submissions** in support of the exercising of discretionary powers under either National, State or Territory regulations.

Q26. Other than the Builder maintaining detailed documentation, who will also have responsibility to resolve and correct errors for any ambiguity identified in the plans?

Answer As determined in *Toomey v Scolaro's Concrete Constructions Pty Ltd*, a building certifier is deemed legally responsible for resolving and correcting errors or ambiguity in plans and documents for compliance with building legislation, codes and standards. ☐

Q27. The threat of an accidental fire in a building and to prevent it are important to understanding fire and taking all steps to prevent or confine fire and to prevent fire spreading within the structure as well as to adjoining or adjacent buildings.

In this regard Fire Protection Systems are paramount and are subject to?

- Answer**
- Fire protection systems are subject to:
- Building regulations
 - Fire regulations
 - Insurance company requirements
 - Local government requirements
 - Other regulatory authorities



Q28. Briefly explain the following fire definitions:

Answer

Term	Explanation
Fire	The rapid oxidation of a gas, liquid or solid substance accompanied by the release of heat and light. Fire is an exothermic or heat-producing reaction.
Passive Fire Protection	Passive fire protection seeks to contain fires, or slow their spread, by using fire resistant walls, floors and doors.
Active Fire Protection	Active Fire Protection uses items and systems which require motion and/or response to be effective (eg fire sprinkler or smoke alarm)



- Q29. The purpose of fire protection is to:**
- 1. Prevent/reduce the possibility of fire and**
 - 2. Reduce the spread of fire within and around a building**

Name the two categories or systems that provide measurement and arrangements for fire protection.

Answer The two categories that provide measurement and arrangements for fire protection are a) active systems, and b) passive systems.



Q30. With respect to the general level of fire protection explain separately the terms 'Fire Load' and 'Fire Load Density'?

Answer **Fire load** (kJ/kg or MJ/kg) is the amount of potential heat that can be released during the fire of combustible contents within an enclosure.



Fire load density (fire load per unit area) is the fire load of a given enclosure divided by floor area. The greater the fire load the more severe the fire.

Q31. Using Volume 2 of the BCA respond to the following:

- 1. Where in the BCA would you look to find requirements for building in bushfire prone areas for Class 1 and 10 buildings?**



2. Where in the BCA would you look to find requirements for building in bushfire prone areas for Class 2-9 buildings?
3. What Australian Standard must be complied with to satisfy the Deemed to Satisfy Provisions for construction of Class 2 and 3 buildings in bushfire prone areas?

Answer

a)	Part 2.3
b)	Volume One, GP5.1
c)	AS 3959 - Construction of buildings in bushfire-prone areas

☐

- Q32. What is a **Fire Safety Schedule** and its relationship to the approval of development of a class 2 – 9 building?

Answer

A Fire Safety Schedule lists all the essential fire safety measures that should be installed in the building, and their respective performance standards.

The Schedule is issued upon approval of development of a class 2 – 9 building.

☐

- Q33. What are building certifiers responsible for?

Answer

Building certifiers are responsible for ensuring specific compliance is achieved. They perform visual inspections to ensure the details in the documentation reflect the actual on-site construction.

☐

- Q34. What are building certifiers not responsible for?

Answer Building certifiers are not responsible for the quality of workmanship on a build.



Q35. Where in the BCA would you determine the level of fire resistance required for the construction of buildings?

Answer Section C of BCA Volume One outlines the level of fire resistance required for construction of a building.

