

BCA Assessment Report

Thornton Central Village – DA02



Project:	Thornton Central Village – DA02
Reference No:	113686-BCADA02-r3
Date:	22 November 2021
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Document Control

Revision	Date	Description
113686-BCADA-r1	15 Sep 2021	Draft BCA Compliance Capability Report
113686-BCADA-r2	27 Oct 2021	BCA Compliance Capability Report
113686-BCADA02-r3	22 Nov 2021	BCA Compliance Capability Report – DA02
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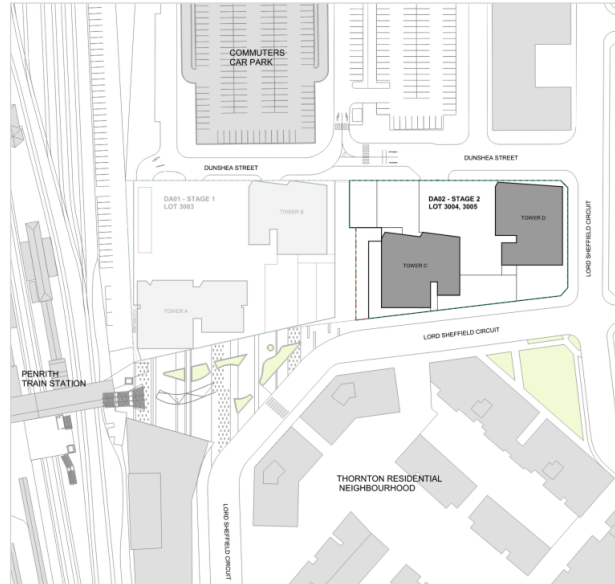
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1 BASIS OF ASSESSMENT

1.1. Location and Description

The building development, the subject of this report, is located on Lot 3003, Lot 3004 and Lot 3005 within the North Penrith Thornton Precinct and is known as the Thornton Central Village – DA02. The development contains a mixture of uses including carparking, retail tenancies, commercial tenancies, child care and residential apartments. The overall building will contain a basement level carpark, five level podium and two separate residential towers extending above.



Courtesy of Crone Architects

1.2. Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2019 Amndt 1, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA 2019 Amndt 1. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover.

1.3. Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2019 Amendment 1 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2016.

1.4. Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

- (a) the structural adequacy or design of the building;
- (b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

- (c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

- (a) the National Construction Code – Plumbing Code of Australia Volume 3
- (b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provision of Part D3 and F2.4 of BCA2019 only);
- (c) Demolition Standards not referred to by the BCA;
- (d) Work Health and Safety Act 2011;
- (e) Requirements of Australian Standards unless specifically referred to;
- (f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and
- (g) Conditions of Development Consent issued by the Local Consent Authority.

1.5. Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

Whilst the development is staged, it has been considered to be one overall building for the purposes of the BCA. It will be carried out in a manner that ensures that the completion and occupation of Stage 1 can occur without it being reliant upon Stage 2.

2.1. Rise in Storeys (Clause C1.2)

The building has a rise in storeys, above ground, of thirty one (31).

2.2. Classification (Clause A6.0)

The building has been classified as follows.

Table 1. Building Classification

Class	Level	Use
2	Ground to Level 30	Residential sole occupancy units and associated areas
5	Level 01	Commercial and Medical tenancy
6	Ground	Retail tenancies
7a	Basement 1 to Level 04	Carparking and Loading Dock Area
7b	Ground & Basement	Storage areas associated with the Loading Docks and various storage within the Basement Level
9b	Level 01	Early childhood centre

2.3. Effective Height (Clause A1.0)

The building has an *effective height* of more than 50 metres.

2.4. Type of Construction Required (Table C1.1)

The building is required to be of Type A Fire Resisting Construction.

2.5. Floor Area and Volume Limitations (Table C2.2)

The building's fire compartments are subject to maximum floor area and volume limits of:-

Class 2	N/A	
Class 5 & 9b	Maximum Floor Area	8 000m ²
	Maximum Volume	48 000m ³
Class 6 & 7b	Maximum Floor Area	5 000m ²
	Maximum Volume	30 000m ³
Class 7a	N/A	

2.6. Fire Compartments

The following *fire compartments* have been assumed:

- (a) The interconnected car parking levels.
- (b) The separated retail and residential car park areas.
- (c) Compartments containing retail areas such that the retail component is not more than 2 000m².
- (d) The early childhood centre.
- (e) Residential areas separated from the non-residential.

2.7. Exits

The following points in the building have been considered as the exits:

- (a) The fire isolated stairways.
- (b) Doors on ground level providing direct egress to the open space.
- (c) Internal non-fire isolated stairway serving the Level 01.
- (d) The external stairways serving the early childhood centre.

2.8. Climate Zone (Clause A1.0)

The building is located within Climate Zone 6.

2.9. Location of Fire-source features

The fire source features for the subject development are:

North: The far boundary of the adjoining road.

South: The adjoining allotment boundary.

East: The far boundary of the adjoining road.

West: The far boundary of the adjoining road.

In accordance with Clause 2.1 of Specification C1.1, a part of a building element is exposed to a *fire-source feature* if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that–

- (a) has an FRL of not less than 30/–/–; and
- (b) is neither transparent nor translucent.

3 MATTERS FOR FURTHER CONSIDERATION

3.1. General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2019 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) *Performance Solutions*. Any *Performance Solutions* will be required to clearly indicate methodologies for achieving compliance with the relevant *Performance Requirements*.

3.2. Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical matters such as access for people with disabilities, stair and corridor widths and balustrade heights.

3.3. Performance Based Design – Performance Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be addressed in detailed Performance Solution Reports to be prepared for this development under separate cover. These matters will be addressed during design development prior to the issue of Construction Certificates.

Table 2. Performance Solutions

Item	Description of Performance Solution	DTS Provision
1.	The various fire resistance levels required throughout the building are expected to be further rationalised based on compartmentation and other protective measures.	C1.1 Spec C1.1
2.	The garbage chute system cannot have its shaft sealed at the base, therefore separation is to be provided around the waste rooms.	C1.1 Spec C1.1 Cl 2.7
3.	The fire separation around the escalators, within the basement level, will be subject to methods of protection such as the used of drenching sprinkler systems.	C2.7
4.	There will be openings within the Southern side external walls that are less than 3m from the allotment boundary. The manner of their required protection will likely use various methods requiring assessment.	C3.2, C3.4
5.	There are various areas within the development where travel distances to exits and between them that will exceed the maximum permitted by the DTS provisions. This primarily occurs within the car parking and residential open space areas.	D1.4, D1.5
6.	Egress from the early childhood centre will need to be assessed as the centre is proposed to be above ground.	D1.18
Non-fire related		
7.	The construction of the external walls is such that they will prevent the penetration of water that could cause unhealthy or dangerous	No DTS provisions FP1.4

Item	Description of Performance Solution	DTS Provision
	conditions or loss of amenity to occupants and undue dampness or deterioration of building elements.	
8.	A living room, on the Southern Elevation of block A, is reliant upon a setback for natural lighting that is less than required by a DTS arrangement.	F4.2

3.4. Section B – Structural Provisions

The resistance of the building will need to be greater than the most critical action effects resulting from the different actions or combination of actions in accordance with this Section. It is expected that the building's design can meet the required structural provisions of this part.

3.5. Section C – Fire Resistance

The building is required to be constructed in accordance with fire resistance levels of Type A fire resisting construction, which is the most fire resistant type of the BCA. Annexure C of this report outlines the minimum fire resistance levels, it is expected that the construction of the building will readily meet the required fire resistance and stability criteria of this Section.

Where necessary suitable allowance has been made for appropriate fire compartments to be achieved and the necessary separation of the various elements in the different classifications.

Suitable materials will be selected to ensure that appropriate non-combustible building elements are used where required. Detailed material assessment will be carried out prior to the issue of a Construction Certificate.

3.6. Section D – Access and Egress

The building makes suitable allowance for exits and egress from the different areas of the building in accordance with this Section. Where necessary fire engineering has been allowed for to accommodate any travel distances that exceed the deemed to satisfy requirements or where specialised egress is required such as the Early Childhood Centre.

Access for persons with a disability has been separately assessed and forms part of a separate report.

3.7. Section E – Services and Equipment

Annexure B of this Report outlines the various fire safety measures that are required to be installed within the building. Allowance has been made for the various systems to be incorporated into the building.

3.8. Section F – Health and Amenity

Suitable provision is made for the required sanitary facilities for base building purposes for the non-residential parts. The residential units will each contain the required sanitary and cooking facilities. Suitable ceiling heights throughout the building will be achieved in accordance with this Section.

All the required residential areas have suitable for access to the required natural lighting to be achieved. All spaces occupied by a person, within the development, will be either naturally or mechanically ventilated as required.

Acoustic insulation between residential units and from units and the public corridors or non-residential areas can be suitably achieved.

3.9. Section J – Energy Efficiency

The building will need to meet the energy efficiency provisions of this Section and will be achieved in conjunction with the required NSW BASIX commitments.

4 STATEMENT OF COMPLIANCE

The architectural design documentation as referred to in report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying (as outlined in Part 3) with that Code, for the purposes of a Development Application for Stage 02.

ANNEXURE A DESIGN DOCUMENTATION

Annexure A – Design Documentation

This report has been based on the following design documentation.

Table 3. Architectural Plans

DA02 – Stage 2 Architectural Documentations Prepared by Crone Architects		
Drawing Number	Revision	Title
DA-02-00001	A	COVER SHEET
DA-02-10000	A	SURVEY PLAN
DA-02-10001	A	LOCATION AND SITE PLAN
DA-02-10509	A	PROPOSED FLOOR PLAN – LEVEL B1
DA-02-10510	A	PROPOSED FLOOR PLAN – GROUND FLOOR
DA-02-10511	A	PROPOSED FLOOR PLAN – LEVEL 01
DA-02-10512	A	PROPOSED FLOOR PLAN – LEVEL 02
DA-02-10513	A	PROPOSED FLOOR PLAN – LEVEL 03
DA-02-10514	A	PROPOSED FLOOR PLAN – LEVEL 04
DA-02-10515	A	PROPOSED FLOOR PLAN – LEVEL 05
DA-02-10516	A	PROPOSED FLOOR PLAN – LEVEL 06
DA-02-10517	A	PROPOSED FLOOR PLAN – LEVEL 07
DA-02-10518	A	PROPOSED FLOOR PLAN – LEVEL 08
DA-02-10519	A	PROPOSED FLOOR PLAN – LEVEL 09
DA-02-10520	A	PROPOSED FLOOR PLAN – LEVEL 10
DA-02-10521	A	PROPOSED FLOOR PLAN – LEVEL 11
DA-02-10522	A	PROPOSED FLOOR PLAN – LEVEL 12
DA-02-10523	A	PROPOSED FLOOR PLAN – LEVEL 13
DA-02-10524	A	PROPOSED FLOOR PLAN – LEVEL 14
DA-02-10525	A	PROPOSED FLOOR PLAN – LEVEL 15
DA-02-10526	A	PROPOSED FLOOR PLAN – LEVEL 16
DA-02-10527	A	PROPOSED FLOOR PLAN – LEVEL 17
DA-02-10528	A	PROPOSED FLOOR PLAN – LEVEL 18
DA-02-10529	A	PROPOSED FLOOR PLAN – LEVEL 19
DA-02-10530	A	PROPOSED FLOOR PLAN – LEVEL 20
DA-02-10531	A	PROPOSED FLOOR PLAN – LEVEL 21
DA-02-10532	A	PROPOSED FLOOR PLAN – LEVEL 22
DA-02-10533	A	PROPOSED FLOOR PLAN – LEVEL 23

DA02 – Stage 2 Architectural Documentations Prepared by Crone Architects

Drawing Number	Revision	Title
DA-02-10534	A	PROPOSED FLOOR PLAN – LEVEL 24
DA-02-10535	A	PROPOSED FLOOR PLAN – LEVEL 25
DA-02-10536	A	PROPOSED FLOOR PLAN – ROOF
DA-02-31501	A	SECTION A
DA-02-31502	A	SECTION B
DA-02-31503	A	SECTION C
DA-02-31504	A	SECTION D
DA-02-70561	A	ADAPTABLE APARTMENTS – TD
DA-02-70562	A	ADAPTABLE APARTMENTS – TD
DA-02-70563	A	ADAPTABLE APARTMENTS – TD
DA-02-70564	A	ADAPTABLE APARTMENTS – TD
DA-02-70565	A	SILVER APARTMENTS – TD
DA-02-70566	A	SILVER APARTMENTS – TD
DA-02-70567	A	SCHEDULES SHEET 1
DA-02-70568	A	SCHEDULES SHEET 2

ANNEXURE B ESSENTIAL SERVICES

Annexure B - Essential Services

The following fire safety measures are required to be installed in the building. The following table may be required to be updated as the design develops and options for compliance are confirmed.

Table 4. Essential Fire Safety Measures

Item	Essential Fire and Other Safety Measures	Standard of Performance
Fire Resistance (Floors – Walls – Doors – Shafts)		
1.	Access Panels & doors/hoppers (fire rated)	BCA2019 C3.13 (Openings in Shafts) BCA2019 Spec C3.4 AS 1905.1:2015 (Fire Resistant Doorsets)
2.	Fire doors	BCA2019 C2.12 (Separation of Equipment) BCA2019 C2.13 (Electricity Supply Systems) BCA2019 C3.5 (Doors in Fire Walls) BCA2019 C3.7 and D1.11 (Horizontal Exits) BCA2019 C3.8 (Openings in Fire Isolated Exits) BCA2019 C3.10 (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 BCA2019 C3.11 (Bounding Construction) Spec E1.8 (Fire Control Centres) Spec C3.4 AS1905.1: 2015
3.	Fire seals protecting openings in fire resisting components of the building	BCA2019 C3.15 (Openings for service installations) BCA2019 C3.16 (Construction joints) BCA2019 Spec C3.15 AS1530.4:2014 & AS4072.1-2005
4.	Lightweight construction	BCA2019 C1.1, Spec. C1.1 BCA2019 C1.8, Spec C1.8 AS1530.4:2014
General		
5.	Fire control centres & rooms	BCA2019 E1.8, Spec E1.8 (Fire Control Centres)

Item	Essential Fire and Other Safety Measures	Standard of Performance
6.	Portable fire extinguishers	BCA2019 E1.6 AS 2444–2001
7.	Automatic fail safe devices	BCA2019 D2.21 (Operation of Latches) BCA2019 D2.22 (Re-entry from fire-isolated stairs) AS 1670.1:2018 (Fire)
8.	Warning & operational signs	BCA2019 D2.23 (Signs on Fire Doors) BCA2019 D3.6 (Braille Exit Signs) (Note: E4.5 (Exit Signs)) BCA2019 E3.3 (Lift Signs) BCA2019 Spec E1.8 (Fire Control Room) BCA2019 Spec E1.8 (Fire Control Centres)
Lifts		
9.	Emergency lifts	BCA2019 E3.4 AS 1735.1:2003 (Appendix A) or AS 1735.2:2001
Electrical Services		
10.	Automatic fire detection & alarm	BCA2019 E2.2 , NSW Table E2.2a, Table 2.2b, Spec E2.2a AS 3786:2014 (Amdt 1-4) AS 1670.1:2018
11.	Emergency lighting	BCA2019 E4.2, E4.4 AS/NZS 2293.1:2018
12.	Exit signs	BCA2019 E4.5 (Exit Signs) BCA2019 E4.6 (Direction Signs) BCA2019 E4.8 (Design and Operation - Exits) AS/NZS 2293.1:2018
13.	Emergency warning and intercom systems for Emergency Purposes (EWIS)	BCA2019 E4.9 AS 1670.4:2018 (EWIS)
Hydraulic Services		

Item	Essential Fire and Other Safety Measures	Standard of Performance
14.	Automatic fire suppression systems	BCA2019 E1.5 AS 2118.1:2017 (Sprinklers) AS 2118.6:2012 (Combined Sprinklers/Hydrant)
15.	Fire hydrant systems	BCA2019 E1.3 BCA2019 C2.12 (Separation of Equipment) AS 2419.1:2005 FRNSW Technical Sheet D15/45534.V9 issued 10.01.19, 'Compatible Hose Connections'
16.	Fire hose reel systems (not required to service the class 2 parts)	BCA2019 E1.4 AS 2441:2005
Mechanical Services		
17.	Fire dampers	BCA2019 E2.2, Spec E2.2a, Spec E2.2b BCA2019 C3.15 AS 1668.1:2015 (Amdt 1) AS 1682.1:2015 & AS 1682.2:2015
18.	Mechanical air handling systems - Smoke Control System/Smoke Exhaust System - Mechanical ventilation to carpark. - Auto-shutdown of Air-handling System. > (NSW Table E2.2b) - Any system in a Class 9b assembly building which does not form part of a smoke hazard management system, other than: - non-ducted individual room units with a capacity of not more than 1000 L/s; or - miscellaneous exhaust are systems installed as per Section 5 and 6 of AS 1668.1:2015. - Zone Pressurisation System (vertically separated fire compartments) - Fire Isolated Exit Pressurisation System	BCA2019 E2.2, Table E2.2a, Table E2.2b Spec E2.2a, Spec E2.2b AS 1668.1:2015 (Amdt 1) Note: 5.5.3 Override control To enable manual control by attending emergency services personnel, fans that are not required to shut down on initiation of fire mode in the car park shall be provided with a control switch at the designated building entry point. Note: Signage should be located at the car park entry indicating the location of the control switches.

ANNEXURE C FIRE RESISTANCE LEVELS

Annexure C - Fire Resistance Levels

The following fire resistance levels (FRL's) are required for the various building elements, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction

Table 5. Type A Construction

Item	Class 2	Class 5, 7a or 9b	Class 6	Class 7b or 8
Loadbearing External Walls (including columns and other building elements incorporated therein)				
- Less than 1.5m to a <i>fire-source feature</i>	90/90/90	120/120/120	180/180/180	240/240/240
- 1.5 – less than 3m from a <i>fire-source feature</i>	90/60/60	120/90/90	180/180/120	240/240/180
- 3m or more from a <i>fire source feature</i>	90/60/30	120/60/30	180/120/90	240/180/90
Non-Loadbearing External Walls				
- Less than 1.5m to a <i>fire-source feature</i>	-/90/90	-/120/120	-/180/180	-/240/240
- 1.5 – less than 3m from a <i>fire-source feature</i>	-/60/60	-/90/90	-/180/120	-/240/180
- 3m or more from a <i>fire-source feature</i>	-/-/-	-/-/-	-/-/-	-/-/-
External Columns				
- Loadbearing	90/-/-	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/-/-	-/-/-	-/-/-	-/-/-
Common Walls & Fire Walls	90/90/90	120/120/120	180/180/180	240/240/240
Stair and Lift Shafts required to be fire-resisting				
- Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
- Non-loadbearing	-/90/90	-/120/120	-/120/120	-/120/120
Internal walls bounding sole occupancy units				
- Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-
Internal walls bounding public corridors, public lobbies and the like:				
- Loadbearing	90/90/90	120/-/-	180/-/-	240/-/-
- Non-loadbearing	-/60/60	-/-/-	-/-/-	-/-/-

Item	Class 2	Class 5, 7a or 9b	Class 6	Class 7b or 8
Ventilating, pipe, garbage and like shafts:				
- Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
- Non-loadbearing	-/90/90	-/90/90	-/120/120	-/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	180/-/-	240/-/-
Floors	90/90/90	120/120/120	180/180/180	240/240/240
Roofs ¹	-	-	-	-

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the carpark FRL's down from 120/120/120 to 60/60/60.

¹ The roof need not comply with any FRL's due to the sprinkler protection of the entire building.