BCA LOGIC

Building Regulation, BCA,
Fire, Access and Energy Consultants

To:	Brookvale Property Investment Unit Trust C/- Barry Rush & Associates
Project:	638 Pittwater Road, Brookvale
Report:	BCA Assessment Report
Reference No:	110121-BCA-r1
Date:	15 November 2018
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DOCUMENT CONTROL

Revision	Date	Description		
110121-BCA-r1	15 Nov 2018	Development Application BCA Assessment Report		
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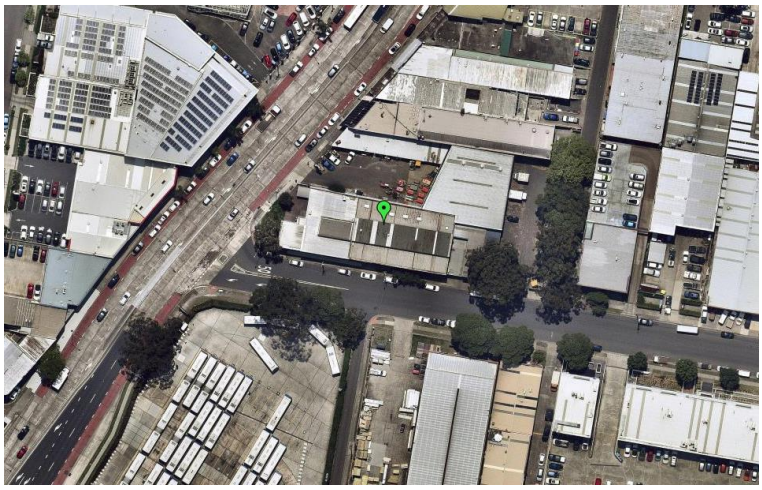
1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 638 Pittwater Road Brookvale. The building includes three (3) basement carparking levels, one (1) basement level commercial unit, one (1) ground floor commercial unit, two (2) ground floor commercial units associated with two (2) first floor residential units via common openings (residential units 9 & 10), eight (8) ground floor SOHO units (small office, home office) associated with eight (8) first floor residential units via common openings (residential units 9-17 & unit 19), ten (10) first floor residential sole-occupancy units (units 1-8, 18 & 20) and an additional twenty (20) second floor residential sole-occupancy units. Vehicular access is provided to the building from Orchard Road, Pittwater.



Photograph courtesy of NearMap

1.2 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA 2016, 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 2016. 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, 2016 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 D.3 and F2.4 of BCA2016 only);

(c) Demolition Standards not referred to by the BCA;

(d) Work Healthy and Safety Act 2011;

(e) 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

(f) 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.

2.1 Rise in Storeys (Clause C1.2)

The building has a rise in storeys of three (3).

2.2 Classification (Clause A3.2)

The buildings have been classified as follows.

Table 1. Building Classification

Class	Level	Description
2	First floor, second floor	Residential Sole Occupancy Units
5	Ground floor	SOHO Unit
6	Basement B1 and Ground Floor Portion	Commercial units proposed to be used for retail units. Basement commercial area, commercial units 1, 2, 3 (assumed to be future Class 5 or 6 tenancies)
7a	Basement level B1, B2, B3	Car parking and associated areas

2.3 Effective Height (Clause A1.1)

The building has an effective height of 11m.

2.4 Type of Construction Required (Table C1.1)

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

2.5 Climate Zone (Clause A1.1)

The building is located within Climate Zone 5.

3 ESSENTIAL FIRE SAFETY MEASURES

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

Table 2. 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)	**BCA2016 C3.13** (Openings in Shafts) **BCA2016 Spec C3.4** AS1905.1:2015 (Fire Resistant Doorsets) AS1905.2-2005 (Fire Resistant roller shutters)
2.	Construction Joints	**BCA2016 C1.1, Spec C1.1** **BCA2016 C3.16** AS1530.4:2014 & AS4072.1-2005
3.	Fire doors	**BCA2016 C2.12** (Separation of Equipment) **BCA2016 C2.13** (Electricity Supply Systems) **BCA2016 C3.4** (Methods of Protection) **BCA2016 C3.5** (Doors in Fire Walls) **BCA2016 C3.7 and D1.11** (Horizontal Exits) **BCA2016 C3.8** (Openings in Fire Isolated Exits) **BCA2016 C3.10** (Opening in Fire Isolated Lift Shafts) AS1735.11- 1986 **BCA2016 C3.11** (Bounding Construction) **BCA2016 C3.13** (Opening in Shafts) Spec C3.4 AS1905.1: 2015
4.	Fire seals protecting openings in fire resisting components of the building	**BCA2016 C3.15,** **BCA2016 C3.16,** **BCA2016 Spec C3.15**

Item	Essential Fire and Other Safety Measures	Standard of Performance
		AS1530.4:2014 & AS4072.1-2005
5.	Fire shutters (subject to design)	**BCA2016 C3.4** **BCA2016 Spec. C3.4** AS1905.2-2005
6.	Fire windows (subject to design)	**BCA2016 C3.2** (Protection of Openings) **BCA2016 C3.4** (Acceptable Methods of Protection) **BCA2016 Spec. C3.4** identical to tested porotype
7.	Lightweight construction	**BCA2016 C1.1, Spec. C1.1** **BCA2016 C1.8, Spec C1.8** AS1530.4:2014
General		
8.	Portable fire extinguishers	**BCA2016 E1.6** AS2444–2001
General - Egress		
9.	Operation of Door latches	**D2.21** (Operation of Latch) AS1670.1:2015
10.	Path of travel for stairways, passageway and ramps	EP&A Reg. 2000 Clauses 184-186
11.	Required Automatic Doors	**D2.19** (Doorways and Doors)
12.	Swing of Exit Doors	**D2.20** (Swinging Doors)
13.	Warning & operational signs	**BCA2016 D2.23** (Signs on Fire Doors) **BCA2016 D3.6** (Braille Exit Signs) (Note: E4.5 (Exit Signs)) **BCA2016 E3.3** (Lift Signs)
Electrical Services		
14.	Automatic fire detection & alarm:	**BCA2016 E2.2**, NSW Table E2.2a, **Spec E2.2a** AS3786:2014 (Amdt 1-4) AS1670.1:2015

Item	Essential Fire and Other Safety Measures	Standard of Performance
15.	Emergency lighting	**BCA2016 E4.2, E4.4** AS/NZS 2293.1 –2005
16.	Exit signs	**BCA2016 E4.5** (Exit Signs) **BCA2016 E4.6** (Direction Signs) **BCA2016 E4.7** (Residential Concession) **BCA2016 E4.8** (Design and Operation - Exits) AS/NZS 2293.1 –2005
Hydraulic Services		
17.	Automatic fire suppression systems (Carpark fire compartments with more than 40 vehicles)	**BCA2016 E1.5** AS2118.1–1999 (Sprinklers)
18.	Fire hydrant systems	**BCA2016 E1.3** **BCA2016 C2.12 (Separation of Equipment)** AS2419.1–2005 FRNSW Technical Sheet D15/45534.V6 issued 11.04.17, 'Compatible Hose Connections'
19.	Hose reel systems (Not required to residential parts of the building)	**BCA2016 E1.4** AS2441–2005
20.	Wall-wetting sprinkler (subject to design)	**BCA2016 C3.4**
Mechanical Services		
21.	Fire dampers	**BCA2016 E2.2, Spec E2.2a,** **BCA2016 C3.15, Spec C3.15** AS/NZS1668.1:2015, AS1682.1:2015 & AS1682.2:2015
22.	Mechanical air handling systems 1. Mechanical ventilation to carpark. 2. Fire Isolated Exit Pressurisation System (Fire isolated stairs serving Basements)	**BCA2016 E2.2, Table E2.2a,** **Spec E2.2a,** AS/NZS 1668.1:2015 **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.

Item	Essential Fire and Other Safety Measures	Standard of Performance
		Note: Signage should be located at the car park entry indicating the location of the control switches.

Notes:

(An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must—

(i) (be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; or

(ii)

(A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and

(B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1; and

for the purposes of this provision, each sole-occupancy unit in a Class 2 building is treated as a separate fire compartment.

Miscellaneous air-handling systems covered by Sections 5 and 6 of AS/NZS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with that Section of the Standard.

23.	**Alternative Solution** *Fire Engineering Report (FER) prepared by XXXX, report no. XXX, issue XXXX, dated XXX. Allowing for: 1. XXXXX FER Requirements 2. XXXXX

Performance Solutions

	Description of Performance Solution	DTS Provision	Performance Requirements	Method of meeting performance solutions
24.				

4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various structural elements of the building, 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 3. Type A Construction

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

Item	Class 2	Class 5 & 7a	Class 6
• Loadbearing • Non-loadbearing			
Ventilating, pipe, garbage and like shafts: • Loadbearing • Non-loadbearing	 90/90/90 -/90/90	 120/90/90 -/90/90	 180/120/120 -/120/120
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-	180/-/-
Floors	90/90/90	120/120/120	180/180/180
Roofs[1]	90/60/30	120/60/30	180/60/30

N.B. [1]The roof need not comply given that its construction would be non-combustible and covers a Class 2 part only.

5 MATTERS FOR FURTHER CONSIDERATION

5.1 General

A general assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2016 (BCA) has been undertaken to determine the development's ability to achieve compliance with the BCA 2016. A summary of the assessment is outlined in the following sections.

It is considered that the proposal can achieve compliance with the Building Code of Australia, 2016, for the purposes of a Development Application.

5.2 Section C – Fire Resistance

- The construction of the buildings will need to maintain the relevant type of fire resisting construction outlined within Part 4 of this Report. The different elements of the building will need to maintain the fire resistance levels outlined within Specification C1.1. It is expected that these can be readily achieved.
- The Class 5 SOHO and Class 6 (assumed) Commercial Units will need to be fire separated from the residential Class 2 portion of the units above in line with C1.1 and C2.9 and to achieve the minimum fire resistance levels outlined within Specification C1.1 between the different Classifications.
- Windows located within 3m of the adjoining allotment boundaries, must be protected in accordance with C3.4.
- Care will be needed with external wall material selection to ensure that it will comply with the requirements for non-combustibility and not reduce the fire resistance of the wall.
- The different materials and assemblies within the buildings will need to meet the fire hazard properties as outlined in Clause C1.10.
- Openings within the external walls of the main residential building will need to meet the requirements of the spandrel separation outlined in Clause C2.6. In general, suitable provision appears to be made.

5.3 Section D – Access and Egress

- The Ground, Levels 1 and 2must have access to at least one exit, which are suitably available. Each basement level must maintain two, which are also suitably available. Note that with ongoing design will need to ensure occupants are able to access exits without having to pass through another sole occupancy unit.
- For the main residential building the entry doors of the sole occupancy units must be within 6m of an exit, or a point from which travel to two exits is available, which has not been achieved in the proposed design for the second floor residential units. It is expected that this would form part of a later Performance Based design.
- Note that the Commercial Lift lobby stairway will need to be fire isolated, as it connects/passes by more than three storeys
- No point on the floor of the Car park area must be more than 20m to an exit, or a point from which travel in two different directions to an exit is available in which case this distance may be increased to 40m to one of these exits in accordance with Clause D1.4. Suitable exit travel distances have not been provided in the proposed design for the basement carpark levels.
- Minimum clear dimensions of 1m wide by 2m high must be maintained for paths of travel, reduced to 750mm in width and 1980mm at doorways in accordance with Clause D1.6. Minimum distances must be measured clear of all obstructions including handrails.
- The spaces below the stairways must not be enclosed to form cupboards or similar enclosed spaces.
- Stairway construction to meet the requirements of Clause D2.13 and D2.14.
- Balustrades to meet the requirements of Clause D2.17 and Stairway handrails to Clause D2.17. Note that stair flights with the fire stairs should be designed with a one tread offset between flights so that handrails can be continuous without having vertical or near vertical transition.

5.4 Section E – Services and Equipment

- Part 3 of this Report outlines the fire safety measures that will be required to be provided within the building.
- As the total floor area of the main residential building will exceed 500m^2, it will need to be serviced by a fire hydrant system in accordance with AS 2419.1. Care will be needed with fire hydrant booster placement. It needs to be located either 10m from the building or if less it is required to be shielded by construction having an FRL of at least 90/90/90 extending 2m either side and 3m above the upper most hose connection.

5.5 Section F – Health and Amenity

- All habitable rooms must be provided with natural lighting in accordance with F4.2 & F4.3.
- All rooms and spaces occupied by a person will need to be provided with ventilation by either natural means under Clause F4.6 or Mechanical means under AS 1668.2.
- The minimum habitable ceiling heights, Clause F3.1, must be 2.4m, whilst non-habitable rooms, corridors and car parks will need to be at least 2.1m. The minimum height measured above the nosing line of the stairs must be at least 2m.
- Sound Insulation between units, public corridors and shafts must be in accordance with the requirements of Part F5.
- Suitable sanitary and other facilities must be provided in accordance with Part F2.
- Note that as there are more than ten (10) residential units a sanitary facility must be provided at Ground floor. This will need to be a unisex accessible facility located in a common area.

5.6 Section J – Energy Efficiency

- The energy efficiency requirements of this section will be applicable to the development, noting that these are limited for the residential part due to the necessary BASIX commitments.

ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Table 4. Architectural Plans

Architectural Plans Prepared by Dickson Rothschild		
Drawing Number	**Version**	**Title**
A01-1802	DA	Location Plan
A02-1802	DA	Basement Level B3
A03-1802	DA	Basement Level B2
A04-1802	DA	Basement Level B1
A05-1802	DA	Ground Floor Level
A06-1802	DA	First Floor Level
A07-1802	DA	Second Floor Level
A08-1802	DA	Roof Plan
A09-1802	DA	Elevations
A10-1802	DA	Elevations
A11-1802	DA	Sections