

## BUILDING CODE OF AUSTRALIA 2019 AMENDMENT 1 REPORT

### PROPOSED NEW LAHC RESIDENTIAL PROJECT

#### 1 WARATAH AVENUE & 50 FROST STREET, ORANGE NSW 2800

#### THIS REPORT RELATES TO THE CLASS 2 TWO STOREY BUILDING (A SEPARATE REPORT HAS BEEN PROVIDED FOR THE CLASS 1 SINGLE STOREY DWELLINGS)

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Report Ref: 020-014009\_1WaratahAve50FrostStOrange\_FinalBCA2019Amdt1(Class2)\_R02\_01112021

Job Number: 020-014009

Date: 01 November 2021

#### DOCUMENT ACCEPTANCE

	Name	Signed	Date
Verified by	Frank De Pasquale		11/11/21

#### REVISION HISTORY

Revision No.	Prepared by	Description	Date
R01	Rhoebee Clemente	Draft BCA 2019 Amdt 1 Capability Report	11/8/21
R02	Rhoebee Clemente	Final BCA 2019 Amdt 1 Report	29/10/21



## 1.0 Introduction and Documentation

At the request of NSW Land and Housing Corporation, we offer comments and recommendations in respect to Building Code of Australia 2019 Amendment 1 compliance for the proposed housing development located at 1 Waratah Avenue and 50 Frost Street, Orange NSW 2800.

We have made every attempt to cover the main issues under Parts A, B, C, D, E, F, G and J of Volume One of the Building Code of Australia. Areas of the design are still being refined so that resolution will be possible prior to the issue of a Crown Design Verification Certificate (S6.28 CDVC) in accordance with S6.28 of the Environmental Planning and Assessment Act 1979 for the works.

This report does not address the single storey dwelling located at the rear of the allotment (a separate report has been provided).

This report does not assess the impact of the Disability Discrimination Act (DDA) which is outside the scope of the BCA nor does it include compliance with Part D3 of the BCA. Refer relevant Accessibility Report. Any Access design amendments or additional information is to be addressed prior to the issue of a Crown Design Verification Certificate (S6.28 CDVC).

This report is for the exclusive use of the client and cannot be used for any other purpose without prior permission from Philip Chun Building Code Consulting. The report is valid only in its entire form. "Philip Chun Building Code Consulting accepts no responsibility for any loss suffered as a result of any reliance upon such assessment or report other than as being accurate at the date of issue of the report".

### Documentation available and assessed:

The drawings assessed are those issued by DTA Architects:

Drawing No.	Titled	Dated
A2/P7	Block Analysis Plan	29/10/21
A3/P7	Site Analysis Plan	29/10/21
A4/P7	Demolition Plan	29/10/21
A5/P7	Development Data	29/10/21
A6/P7	Site Plan	29/10/21
A7/P7	Ground Floor Plan	29/10/21
A8/P7	First Floor Plan	29/10/21
A9/P7	Roof Plan	29/10/21
A10/P7	Elevations	29/10/21
A11/P7	Elevations	29/10/21
A12/P7	Elevations – Street View	29/10/21
A13/P7	Sections	29/10/21
A14/P7	Solar Access – View From Sun	29/10/21
A15/P7	Solar Access – View From Sun	29/10/21
A16/P7	Shadow Diagrams	29/10/21
A17/P7	Perspectives	29/10/21



## 2.0 Building Code of Australia 2019 Amendment 1 Comments

### Section A – Governing Requirements

#### 1. Compliance with the NCC (BCA) is achieved by complying with –

1. The Governing Requirements of the NCC; and
2. The Performance Requirements.

This development will comply with the Governing Requirements and adopt Performance Solutions to satisfy the Performance Requirements of the NCC (BCA). Performance Solutions are identified in the body of this report.

#### 2. Building Assessment

<b>Building Classification(s)</b>	Class 2 – 2 storey residential sole-occupancy units (SOUs) Class 1a – single storey dwellings
<b>Rise in Storeys</b>	One and Two
<b>No. of Storeys Contained</b>	One and Two
<b>Type of Construction</b>	Type B – 2 storey N/A to single storey
<b>Effective Height (m)</b>	Less than 12m

#### 3. Building Classifications

The buildings are classified as follows:

##### **Class 1a building**

(1) Class 1a is one or more buildings, which together form a single dwelling including the following:

- (a) A detached house.
- (b) One of a group of two or more attached dwellings, each being a building, separated by a fire-resisting wall, including a row house, terrace house, town house or villa unit.

##### **Class 2 building**

(1) A Class 2 building is a building containing two or more sole-occupancy units.

(2) Each sole-occupancy unit in a Class 2 building is a separate dwelling.

**Refer to the separate report provided for Class 1a building.**

### Section B – Structure

#### 4. Structural Provisions

The structural design engineers will need to complete the design for the proposed works in accordance with the Building Code of Australia including but not limited to:

- Compliance with the requirements of BCA B1.2, B1.4 & Specification B1.2;
- All adopted Australian Standards relevant to the design;
- Individual actions including permanent actions, imposed actions and wind, snow, ice and earthquake actions i.e. the following standards AS1170.1, AS1170.2 and AS1170.4;
- BCA Table 4 and 5 of Specification C1.1;

Structural Engineer to provide structural drawings and design statement for further assessment prior to issue of **S6.28** CDVC.



## Section C – Fire Resistance / Compartmentation / Separation

### 5. Type of Construction

**Type B Construction:** The two-storey building is required to be of not less than Type B construction. The building needs to comply with BCA Table 4 for Type B Construction (See Appendix A). Structural engineer will need to confirm and provide structural drawings and design certification prior to issue of S109R DVC confirming the FRL's of the columns, and load bearing walls against Table 4 of Spec C1.1 i.e. - **Class 2 – 90 mins**

Relevant concession available for Type B Construction:

4.3 Class 2 and 3 buildings: Concession

- (a) In a Class 2 or 3 building with a rise in storeys of not more than 2—
  - (i) notwithstanding C1.9(a) and (b), timber framing may be used for—
    - (A) external walls; and
    - (B) common walls; and
    - (C) the floor framing of lift pits; and
    - (D) non-loadbearing internal walls which are required to be fire-resisting; and
    - (E) non-loadbearing shafts, except shafts used for the discharge of hot products of combustion; and
  - (ii) notwithstanding Clause 4.1(e) of Specification C1.1, for loadbearing internal walls and loadbearing fire walls—
    - (A) timber framing may be used; and
    - (B) non-combustible materials may be used.
- (b) A Class 2 or 3 building having a rise in storeys of not more than 2 may have the top storey constructed in accordance with (a) provided—
  - (i) the lowest storey is used solely for the purpose of parking motor vehicles or for some other ancillary purpose; and
  - (ii) the lowest storey is constructed of concrete or masonry including the floor between it and the Class 2 or 3 part of the building above; and
  - (iii) the lowest storey and the storey above are separated by construction having an FRL of not less than 90/90/90 with no openings or penetrations that would reduce the fire-resisting performance of that construction except that a doorway in that construction may be protected by a –/60/30 self-closing fire door.

***The reduction of the 'Type of Construction' to Type C construction in lieu of Type B Construction for the two-storey building will require a Performance Solution from an accredited fire safety engineer addressing Performance Requirements CP1, CP2 and EP2.2. Details to be provided prior to the issue of S6.28 CDVC.***

### 6. Fire Compartmentation – Not applicable to (SOU) buildings.

### 7. Lightweight construction (C1.8) –

- (a) Lightweight construction must comply with Specification C1.8 if it is used in a wall system—
  - (i) that is required to have an FRL; or
  - (ii) for a lift shaft, stair shaft or service shaft or an external wall bounding a public corridor including a non fire-isolated passageway or non fire-isolated ramp, in a spectator stand, sports stadium, cinema or theatre, railway station, bus station or airport terminal.
- (b) If lightweight construction is used for the fire-resisting covering of a steel column or the like, and if—
  - (i) the covering is not in continuous contact with the column, then the void must be filled solid, to a height of not less than 1.2 m above the floor to prevent indenting; and



- (ii) the column is liable to be damaged from the movement of vehicles, materials or equipment, then the covering must be protected by steel or other suitable material.

**Details to be provided prior to issue of S6.28 CDVC should lightweight construction be utilised for the internal bounding walls.**

**8. Non-Combustible materials (C1.9) –**

(a) In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible:

- (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.
- (ii) The flooring and floor framing of lift pits.
- (iii) Non-loadbearing internal walls where they are required to be fire-resisting.

(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of non-combustible construction in—

- (i) a building required to be of Type A construction; and
- (ii) a building required to be of Type B construction, subject to C2.10, in—
  - (A) a Class 2, 3 or 9 building; and
  - (B) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys.

(c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.

(d) The requirements of (a) and (b) do not apply to the following:

- (i) Gaskets.
- (ii) Caulking.
- (iii) Sealants.
- (iv) Termite management systems.
- (v) Glass, including laminated glass.
- (vi) Thermal breaks associated with glazing systems.
- (vii) Damp-proof courses.

(e) The following materials may be used wherever a non-combustible material is required:

- (i) Plasterboard.
- (ii) Perforated gypsum lath with a normal paper finish.
- (iii) Fibrous-plaster sheet.
- (iv) Fibre-reinforced cement sheeting.

(v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.

(vi) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5.

(vii) Bonded laminated materials where—

- (A) each lamina, including any core, is non-combustible; and
- (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
- (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

**Architect and structural engineer to note. This is applicable to the two-storey building. However, not applicable if the building is deemed Type C Construction under a Performance Solution – fire safety engineer to also note. Details to be provided at S6.28 CDVC stage.**

**9. Fire Hazard Properties (C1.10) – All new surface finishes, assemblies and linings are to comply with BCA Clause C1.10 (Specification C1.10) with regard to Fire Hazard Properties - **Compliance achievable. Test data sheets are to be provided prior to issue of an Occupation Verification Certificate (OVC).****

**10. Ancillary Elements (C1.14) – An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following;**

- An ancillary element that is non-combustible.
- A gutter, downpipe or other plumbing fixture or fitting.
- A flashing.



- A grate or grille not more than 2m<sup>2</sup> in area associated with building service.
- An electrical switch, socket-outlet, cover plate or the like.
- A light fitting.
- A required sign etc.

**Architect and structural engineer to note. This is applicable to the two-storey building. However, not applicable if the building is deemed Type C Construction under a Performance Solution – fire safety engineer to also note. Details to be provided at S6.28 CDVC stage.**

- 11. Separation of equipment (C2.12)** – Equipment comprising of lift motors, lift control panels, emergency generators, central smoke control plant, boilers or ant battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours must be constructed with an FRL in accordance with Table 4 and Specification C1.1 BCA. **Services engineer to provide further details prior to the issue of a S6.28 CDVC.**
- 12. Electricity supply system (C2.13)** – Where emergency equipment is required in a building, all switchboards in the electrical distribution system, which sustain the electricity supply to the emergency equipment, must provide full segregation by way of enclosed metal partitions designed to prevent the spread of any fault from non-emergency equipment switchgear to the emergency equipment switchgear. **Compliance achievable. Further details required prior to the issuance of a S6.28 CDVC.**
- 13. Public corridors in Class 2 and 3 buildings (C2.14)** – In a Class 2 or 3 building, a public corridor, if more than 40m in length, must be divided at intervals of not more than 40 m with smoke-proof walls complying with Clause 2 of Specification C2.5. – **Complies.**
- 14. Protection of openings in external walls (C3.2)** – Openings within 3m of a side and rear boundary or 6m of the far boundary or from another building on the same allotment must be protected in accordance with Part C3.4 and if used, wall-wetting sprinklers are to be externally fitted. – **Current plans appear to comply.**
- 15. Bounding construction: Class 2 and 3 buildings (C3.11)** - SOU doors to be self-closing, tight fitting, solid core door, not less than 35mm thick. The bounding walls between residential sole occupancy units to be not less than 60/60/60 Fire Resistance Level (FRL) or -/60/60 if non-loadbearing. – **Details of wall and door schedule to be provided prior to S6.28 CDVC.**
- 16. Openings in floors and ceilings for services (C3.12)** –
  - Where a service passes through—
    - a floor that is required to have an FRL with respect to integrity and insulation; or
    - a ceiling required to have a resistance to the incipient spread of fire, the service must be installed in accordance with (b)
  - A service must be protected—
    - in a building of Type A construction, by a shaft complying with Specification C1.1; or
    - in a building of Type B or C construction, by a shaft that will not reduce the fire performance of the building elements it penetrates; or
    - in accordance with C3.15.
  - Where a service passes through a floor which is required to be protected by a fire-protective covering, the penetration must not reduce the fire performance of the covering.**Compliance achievable. Details to be provided prior to issue of S6.28 CDVC.**
- 17. Openings for service installations (C3.15)** – Electrical, electronic, plumbing, mechanical ventilation, air-conditioning or other service penetrations that are required to have an FRL with respect to integrity or insulation or a resistance to the incipient spread of fire, must be fire sealed, fire rated or otherwise comply with listed standards. **Compliance achievable. Details to be provided prior to issue of S6.28 CDVC.**

## **Section D – Access and Egress**

### **18. Access and Egress - Residential Apartments (Class 2)**



- Every building must have at least one exit from each storey. (D1.2) – **Complies.**
- The entrance doorway of any sole-occupancy unit must be not more than 6m from an exit or from a point from which travel in different directions to 2 exits is available or 20m from a single exit serving the storey at the level of egress to a road or open space (D1.4) – **Complies.**
- Exits that are required as alternative means of egress must be located so that alternative paths of travel do not converge such that they become less than 6m apart or more than 45 apart. (D1.5) – **Not applicable.**
- Widths of exits and corridors must be sufficient to provide safe passage for occupant egress. The unobstructed width of each exit or path of travel to an exit, except for doorways, must be not less than 1m (D1.6) – **Complies.**
- The distance between the doorway of a SOU and the point of egress to a road or open space by a way of a non-fire-isolated stairway must not exceed 60m (D1.9) – **Complies.**
- Electrical Distribution Boards (EDBs) must be enclosed by non-combustible construction or a fire protective covering with doorways and openings to be suitably smoke sealed (D2.7) – **Architect to note. Details to be provided prior to issue of S6.28 CDVC.**
- The space below a required non-fire-isolated stairway must not be enclosed to form a cupboard or similar enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and access doorway is a self-closing -/60/30 fire door (D2.8) – **Architect to note.**
- The construction of stairs, landings, thresholds, barriers, balustrades and handrails must meet the requirements of the BCA. **Detailed plans and elevations to be provided prior to issue of S6.28 CDVC.**
- Signage should be provided to ground floor exits. The signage should be in accordance with D3.6 of the BCA. **Architect to show on plans. Details to be provided prior to issue of S6.28 CDVC.**
- Fall protection needed to unit bedroom window openings located less than 1.7m high required in accordance with Clause D2.24 - **Compliance readily achievable. Details to be provided prior to issue of S6.28 CDVC.**

19. **Access for people with disabilities** – to be provided by Access Consultant.

#### **Section E – Services and Equipment**

20. **Fire Hydrants (E1.3)** – Not required.

21. **Fire Hose-reels (E1.4)** – Not required.

22. **Smoke Detection and Alarm (Spec E2.2a)** – An automatic smoke detection and alarm system complying with Specification E2.2a must be provided throughout the building. Note Spec E2.2a also requires a Building Occupant Warning System in accordance with Clause 7 of Spec E2.2a. **Fire services consultant to provide details prior to issue of S6.28 CDVC.**

23. **Extinguishers (E1.6)** – Fire extinguishers are required to be installed to the class 2 buildings parts in lieu of fire hose reels. Extinguishers are to be of an ABE type and distributed throughout the floors so that the travel distance from the entrance doorway of any sole occupancy unit is not more than 10m from a fire extinguisher. Fire extinguishers must be provided to all locations which are deemed a potential risk to the occupants of the building, i.e. areas such as main switchboards – **Fire services consultant to provide details prior to issue of S6.28 CDVC.**





24. **Exit and emergency lighting** – Emergency lighting must be installed in every passageway corridor, hallway or the like having a length of more than 6m from the entrance doorway of any sole-occupancy unit to the doorway opening directly to a road or open space. **Electrical consultant to provide details prior to issue of S6.28 CDVC.**

## Section F – Health and Amenity

25. **Damp and Weatherproofing (FP1.4)** - The roofing and external wall systems shall be designed using materials and methods to prevent unhealthy or dangerous conditions or loss of amenity for occupants and undue dampness or deterioration of building element – **Performance solution to be provided for the wall construction and weatherproofing to ensure compliance. Assessment by the architects and designers is required to validate that the walls will meet the performance requirements of the BCA. Details to be provided prior to issue of S6.28 CDVC.**
26. **Condensation and water vapour management (FP6.1)** - Condensation must be managed to help deal with potential health risks and amenity issues – **Details to be provided prior to issue of S6.28 CDVC.**
27. **Stormwater drainage (F1.1)** - Stormwater drainage must comply with AS/NZS 3500.3. **Compliance achievable. Details to be provided prior to issue of S6.28 CDVC.**
28. **Waterproofing of wet areas in buildings (F1.7)** - (a) In a Class 2 building, building elements in wet areas must— (i) be water resistant or waterproof in accordance with Table F1.7; and (ii) comply with AS 3740. **Compliance achievable. Details to be provided prior to issue of S6.28 CDVC.**
29. **Provision of floor wastes (F1.11)** In a Class 2 building, a bathroom or laundry located at any level above a sole-occupancy unit or public space must have—(a) a floor waste; and (b) the floor graded to the floor waste to permit drainage of water. **Compliance achievable. Details to be provided prior to issue of S6.28 CDVC.**
30. **Sanitary Facilities (F2.1)** – Sanitary and other facilities for Class 2 building and a must be provided in accordance with Table F2.1.  
Within each sole-occupancy unit, provide—
- a) a kitchen sink and facilities for the preparation and cooking of food; and
  - b) a bath or shower; and
  - c) a closet pan and washbasin.
- Laundry facilities, provide either—
- a) in each sole-occupancy unit—
    - (i) clothes washing facilities, comprising at least one washtub and space for a washing machine; and
    - (ii) clothes drying facilities comprising—
      - A. clothes line or hoist with not less than 7.5 m of line; or
      - B. space for one heat-operated drying cabinet or appliance in the same room as the clothes washing facilities; or
- Note: A kitchen sink or washbasin must not be counted as a laundry washtub.  
**Compliance achievable.**
31. **Construction for sanitary facilities (F2.5)** - Doors to fully enclosed sanitary compartments are to open outwards, or slide or have 1.2 metres clear space between door and closet plan or be readily removable from the outside of the sanitary compartment. **Details to be provided prior to issue of S6.28 CDVC.**
32. **Room Sizes** - The minimum ceiling height of 2.4m is required to all habitable rooms excluding kitchens. All other rooms are required to have a minimum height of 2.1m. Note that SEPP 65 will require 2.7m minimum ceiling height to habitable rooms. – **Complies.**





33. **Light** - Natural light must be provided to all habitable rooms within each SOU in accordance with Clause F4.2 of the BCA. The windows should have an aggregate light transmitting area of not less than 10% of the floor area of the room. Window schedule required for compliance. **Window schedule to include % calculations for assessment. Details to be provided prior to issue of S6.28 CDVC.**

Artificial lighting must comply with Clause F4.4 of the BCA and AS/NZS 1680.0-2009.

34. **Ventilation** - Natural ventilation be provided to all habitable rooms, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose in accordance with Clause F4.6 of the BCA. The openings must consist of windows, doors or other devices which can be opened with a ventilating area not less than 5% of the floor area of the room required to be ventilated. Mechanical ventilation to AS1668.2 must be provided where natural ventilation cannot be provided. **Window schedule to include % calculations for assessment. Details to be provided prior to issue of S6.28 CDVC.**
35. **Sound Insulation** - The proposal will need to meet the sound insulation requirements of Part F5 of the BCA – Compliance readily achievable. **Acoustic Consultant to provide a detailed report for compliance prior to issue of S6.28 CDVC.**

### Section G - Ancillary Provisions

36. **Occupiable Outdoor Areas – Fire Hazard Properties (G6.2) –**
- (a) Subject to (b), a lining, material or assembly in an occupiable outdoor area must comply with C1.10 as for an internal element.
  - (b) The following fire hazard properties of a lining, material or assembly in an occupiable outdoor area are not required to comply with C1.10:
    - (i) Average specific extinction area.
    - (ii) Smoke-Developed Index.
    - (iii) Smoke development rate.
    - (iv) Smoke growth rate index (SMOGR<sub>RC</sub>).

**Applies to balconies with floor area of more than 10m<sup>2</sup>, Architect to note – test data sheets to be provided prior to issue of an OVC.**

### Section J – Energy Efficiency

37. **Energy Efficiency (Part J) –** Not required to Class 2 buildings.
38. **BASIX –** A BASIX certificate is to accompany the Development Application hence, BASIX certificate to be submitted by others.

### Conclusion

We have assessed the drawings with respect to the Building Code of Australia 2019 Amendment 1. We are confident that the design is generally capable of meeting the Deemed-to-Satisfy and Performance Requirements of the Building Code of Australia 2019 Amendment 1. Areas of the design are still being developed but are unlikely to impact on the DA submission, these areas of the design will be addressed prior to issue of S6.28 CDVC.