# NATIONAL CONSTRUCTION CODE REPORT 2019

## Construction of a Seniors Living Development 34-36 Bardo Road, Newport NSW 2106

Dated: 20 April 2020

Prepared for: PopovBass

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## Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by (refer appendix A) for compliance with the Nation Construction Code 2019.

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

| DTS Clause | Description of Non- Compliance | Performance Requirement |
|---|---|---|
| D1.4 | Exit travel distances for the rear two units. | DP4 EP2.2 |
| E1.3 | Hydrant Booster located less than 10m from the external wall. | EP1.3 |

The documentation will need further detailing such as door hardware, specifications, service design, as outlined in Appendix D of this report.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

Assessed By

Max Gelder
Building Certifier

# 1.0 Introduction

The proposed development comprises of a basement with two level residential dwellings at the front portion and single level at the rear portion.

The site is located on 34-36 Bardo Rd, Newport and is within close proximity to local shops, amenities, parks, restaurants and public transport.

# 2.0 Building Assessment Data

Summary of Construction Determination: -

| | |
|---|---|
| Classification | 2 & 7a |
| Number of Storeys Contained | 3 |
| Rise In Storeys | 2 |
| Type of Construction | B |
| Effective Height (m) | Less than 12m |

## 3.0 Structural Provisions

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided.

## 4.0 Fire Resistance

The buildings should be constructed generally in accordance with Table 4 specification C1.1 of the National Construction Code 2019.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;

- Bounding construction to the sole occupancy units of 90 minutes,
- Separation between the carpark levels and the residential portions of 120 minutes,
- Fire compartmentation of the building at each floor level, between residential levels of 90 minutes.

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia.

## 5.0 Egress

The egress provisions form the proposed building are provided via non-fire isolated stairways.

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction

### Exit Travel Distances

The locations of the proposed exits would appear to indicate that distance comply with the deemed to satisfy requirements in terms of distances between alternative exits and egress widths

The travel distances to exits should not exceed:

Class 7a

- 20m to a single exit

Class 2 (Residential)

- 6m from an exit or from a point of choice

The following travel distances exceed the above DTS requirements:

Ground Floor Units 5 to 8:

- To have a maximum extended travel distance of up to 35m in lieu of 6m. Note. They are served by an open exit route.

These distances are to be verified as part of the alternate solution to the NCC performance requirements by a suitably qualified fire safety engineer.

## Dimensions of Exits

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required).

The exit width provided is sufficient for the proposed populations.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors).

## Balustrading and Handrail

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the finished floor below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing.

Any windows with a sill height of less than 1.7m in bedrooms or 865mm in all other cases with a fall of more than 2m for windows, 4m for all other cases, openings are to be restricted or a protective barrier that does not allow a 125mm sphere to pass through.

Walls adjacent to windows and balustrades which are required to be not climbable are to be clear of climbable elements for a distance of 1m from the balustrade. This includes GPO's, gas outlets, climbable window and doors sills and the like.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The main public stairs and ramps should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

# 6.0 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the NCC 2019. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

The design would generally comply with the prescriptive provisions of the NCC with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

General
Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- All areas used by the public.

# 7.0 Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1-2018

## Fire Hydrants

A system of Fire Hydrants is required to be provided to BCA Clause E1.3 and AS 2419.1-2005.

A booster assembly is required as part of the fire hydrant requirements. The booster is required to be located attached to the building within sight of the main entrance lobby and adjacent to the vehicular access. Due to the layout of the building, the location of the booster assembly is to be included in the alternate solution to BCA Performance Requirement EP1.3.

Fire hydrants are to be provided within 4.0m of required exits.

## Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441 to all non-residential portions.

To be located within 4m of exits and provide coverage within the building based on a 36m hose length.

Please note that fire hose reel coverage cannot pass through fire or smoke doors.

### Portable Fire Extinguishers

Portable fire extinguishers are required to be installed in accordance with Table E1.6 of the BCA and AS 2444-2001. In addition, extinguishers are to be provided to the class 2 portions of the building in accordance with the below:

- an ABE type fire extinguisher is to be installed with a minimum size of 2.5 kg; and
- extinguishers are to be distributed outside a sole-occupancy unit
    - to serve only the storey at which they are located; and
    - so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10 m.

## 8.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of the following systems:

**Carpark Portions:**

- Mechanical ventilation system in accordance with AS 1668.2 must comply with clause 5.5 of AS/NZS 1668.1 except that fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated.

**Residential Portions:**

- Smoke detection and alarm system complying with AS 3786 to be provided within each sole occupancy unit.
- Smoke detection and alarm system complying with AS 1670.1 to be provided to the public areas in residential portions of the building.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

## 9.0 Lift Services

The passenger lifts to be installed are to be: -

- Fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA
- Be provided with the following: -
    - A handrail in accordance with AS 1735.12
    - Minimum internal floor dimensions as specified in AS 1735.12,
    - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
    - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.

## 10.0 Sanitary Facilities

Residential Apartment - Each sole occupancy unit is to be provided with:

- A kitchen sink and facilities for preparation and cooking of food; and
- A bath or shower; and
- A closet pan and wash basin; and
- Clothes washing facilities (tub and space for washing machine); and
  Clothes drying facilities (either 7.5m of clothes line or space for a dryer).

## 11.0 Sound Transmission & Insulation

The sound transmission and insulation requirements for the Class 2 portions shall be provided in accordance with Part F5 of the NCC 2015 for the following elements:

Floors
A floor separating sole-occupancy units or a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification:

- Rw + Ctr (airborne) not less than 50
- Ln,w+CI (impact) not more than 62

Walls
A wall separating sole-occupancy units:

- Rw + Ctr (airborne) not less than 50,

A wall separating a sole-occupancy unit from a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification:

- Rw (airborne) not less than 50,

A wall separating a bathroom, sanitary compartment, laundry or kitchen in one sole-occupancy unit from a habitable room (other than a kitchen) in an adjoining unit; or a sole-occupancy unit from a plant room or lift shaft:

- Rw (airborne) not less than 50
- Discontinuous Construction

A door assembly separating a sole-occupancy unit from a stairway, public corridor, public lobby or the like:

- Rw not less than 30

All walls required to have an impact sound insulation rating are to be of discontinuous construction.

## 12.0 Energy Efficiency

The proposed development shall be provided insulation Building sealing and services in accordance with NSW Part J of the NCC 2019.

The deemed-to-satisfy provisions of the NCC only apply to thermal insulation in a class 2 building or class 4 part where a development consent or a Complying Development certificate specifies that the insulation is to be provided as part of the development.

The Class 7a (carpark) portions of the proposed development shall be provided with insulation, building sealing and services in accordance with NSW Part J of the BCA where conditioned.

The deemed-to-satisfy provisions of the BCA only apply to thermal insulation in a class 2 building where development consent or a Complying Development certificate specifies that the insulation is to be provided as part of the development.

The residential (Class 2) portions of the building are subject to BASIX, and a BASIX Certificate will be required prior to the issuance of the Construction Certificate for the works.

The Class 7a (carpark) portion of the proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

Option 1.

The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:

- Building Fabric
- Glazing
- Building Sealing
- Air Conditioning & Ventilation Systems
- Artificial Lighting & Power
- Hot Water Supply

Option 2.

The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

**Appendix A - Design Documentation**

The following documentation was used in the assessment and preparation of this report: -

| Drawing No. | Revision | Title | Prepared By | Date |
|---|---|---|---|---|
| 0565-DA104 | 01 | Basement Plan | Popov Bass | 30/04/2020 |
| 0565-DA105 | 01 | Ground Floor Plan | Popov Bass | 30/04/2020 |
| 0565-DA106 | 01 | Level 01 Plan | Popov Bass | 30/04/2020 |
| 0565-DA109 | 01 | Roof Plan | Popov Bass | 30/04/2020 |
| 0565-DA110 | 01 | North & West Elevations | Popov Bass | 30/04/2020 |
| 0565-DA111 | 01 | South & East Elevations | Popov Bass | 30/04/2020 |
| 0565-DA112 | 01 | Section AA & BB | Popov Bass | 30/04/2020 |
| 0565-DA113 | 01 | Section CC & DD | Popov Bass | 30/04/2020 |

## Appendix B - Draft Fire Safety Schedule

| | Essential Fire Safety Measures | Standard of Performance |
|---|---|---|
| 1. | Automatic Fire Detection and Alarm System | BCA Clause E2.2 & Spec. E2.2a, AS1670.1 – 2018 & AS1670.3 – 2018 |
| 2. | Emergency Lighting | BCA Clause E4.2, E4.4 & AS/NZS2293.1 – 2018 |
| 3. | Exit Signs | BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS2293.1 – 2018 |
| 4. | Fire Hose Reels (Carpark) | BCA Clause E1.4 & AS2441 – 2005 |
| 5. | Fire Hydrant System | Clause E1.3 & AS2419.1 – 2005 & Fire Engineering Report |
| 6. | Mechanical Air Handling System (Carpark) | BCA Clause E2.2, AS/NZS1668.1 – 2015 & AS1668.2 – 2012 |
| 7. | Paths of Travel | EP&A Reg 2000 Clause 186 |
| 8. | Portable Fire Extinguishers | BCA Clause E1.6 & AS2444 – 2001 |
| 9. | Smoke Alarm System | BCA Spec. E2.2a & AS3786 –2014 |
| 10. | Solid Core Doors (Type B) | BCA Clause C3.11 |
| 11. | Warning and Operational Signs | Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2015, BCA Clause C3.6, D2.23, E3.3 |

**Appendix C – Fire Resistance Levels**

**Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS**

| Building element | Class of building—FRL: (in minutes) | | | |
|---|---|---|---|---|
| | ***Structural adequacy/ Integrity/ Insulation*** | | | |
| | **2, 3 or 4 part** | **5, 7a or 9** | **6** | **7b or 8** |
| **EXTERNAL WALL** (including any column and other building element incorporated therein) or other external building element, where the distance from any *fire-source feature* to which it is exposed is— | | | | |
| For *loadbearing* parts— | | | | |
| less than 1.5 m | 90/ 90/ 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| 1.5 to less than 3 m | 90/ 60/ 30 | 120/ 90/ 60 | 180/120/ 90 | 240/180/120 |
| 3 to less than 9 m | 90/ 30/ 30 | 120/ 30/ 30 | 180/ 90/ 60 | 240/ 90/ 60 |
| 9 to less than 18 m | 90/ 30/– | 120/ 30/– | 180/ 60/– | 240/ 60/– |
| 18 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| For non-*loadbearing* parts— | | | | |
| less than 1.5 m | –/ 90/ 90 | –/120/120 | –/180/180 | –/240/240 |
| 1.5 to less than 3 m | –/ 60/ 30 | –/ 90/ 60 | –/120/ 90 | –/180/120 |
| 3 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| **EXTERNAL COLUMN** not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is— | | | | |
| less than 3 m | 90/–/– | 120/–/– | 180/–/– | 240/–/– |
| 3 m or more | –/–/– | –/–/– | –/–/– | –/–/– |
| **COMMON WALLS and FIRE WALLS—** | 90/ 90 / 90 | 120/120/120 | 180/180/180 | 240/240/240 |
| **INTERNAL WALLS—** | | | | |
| *Fire-resisting* lift and stair *shafts*— | | | | |
| *Loadbearing* | 90/ 90/ 90 | 120/120/120 | 180/120/120 | 240/120/120 |
| *Fire-resisting* stair *shafts* | | | | |
| Non-*loadbearing* | –/ 90/ 90 | –/120/120 | –/120/120 | –/120/120 |
| Bounding *public corridors*, public lobbies and the like— | | | | |
| *Loadbearing* | 60/ 60/ 60 | 120/–/– | 180/–/– | 240/–/– |
| Non-*loadbearing* | –/ 60/ 60 | –/–/– | –/–/– | –/–/– |
| Between or bounding *sole-occupancy units*— | | | | |
| *Loadbearing* | 60/ 60/ 60 | 120/–/– | 180/–/– | 240/–/– |
| Non-*loadbearing* | –/ 60/ 60 | –/–/– | –/–/– | –/–/– |
| **OTHER LOADBEARING INTERNAL WALLS and COLUMNS—** | 60/–/– | 120/–/– | 180/–/– | 240/–/– |
| **ROOFS** | –/–/– | –/–/– | –/–/– | –/–/– |

**Table 4.2 REQUIREMENTS FOR CARPARKS**

| **Building element** | | | **FRL (not less than) *Structural adequacy/ Integrity/ Insulation*** |
|---|---|---|---|
| | | | **ESA/M (not greater than)** |
| **Wall** | | | |
| (a) | *external wall* | | |
| | (i) | less than 3 m from a *fire-source feature* to which it is exposed: | |
| | | *Loadbearing* | 60/60/60 |
| | | Non-*loadbearing* | –/60/60 |
| | (ii) | 3 m or more from a *fire-source feature* to which it is exposed | –/–/– |
| (b) | *internal wall* | | |
| | (i) | *loadbearing*, other than one supporting only the roof (not used for carparking) | 60/–/– |
| | (ii) | supporting only the roof (not used for carparking) | –/–/– |
| | (iii) | non-*loadbearing* | –/–/– |
| (c) | *fire wall* | | |
| | (i) | from the direction used as a *carpark* | 60/60/60 |
| | (ii) | from the direction not used as a *carpark* | as *required* by Table 4 |
| **Column** | | | |
| (a) | supporting only the roof (not used for carparking) and 3 m or more from a *fire-source feature* to which it is exposed | | –/–/– |
| (b) | steel column, other than one covered by (a) | | 60/–/– or 26 $m^2$/tonne |
| (c) | any other column not covered by (a) or (b) | | 60/–/– |
| **Beam** | | | |
| (a) | less than 3 m from a *fire-source feature*: | | |
| | (i) | steel floor beam in continuous contact with a concrete floor slab | 60/–/– or 30 $m^2$/tonne |
| | (ii) | any other beam | 60/–/– |
| (b) | 3 m or more from a *fire-source feature* | | –/–/– |
| **Lift shaft** | | | –/–/– |
| **Fire-resisting stair shaft (within the *carpark* only)** | | | 60/60/60 |
| **Roof, floor slab and vehicle ramp** | | | –/–/– |
| Note: ESA/M means the ratio of exposed surface area to mass per unit length. | | | |