



MONDAN
CONSULTING

Our Ref: M200023

4 September 2020

SHED Architects
Ground Floor, 113-115 Oxford Street
DARLINGHURST NSW 2010

Attention: Chris Haughton

Dear Chris,

**Re: 27 Bellevue Avenue, Avalon Beach
Development Application Submission
BCA Capability Statement**

Please find enclosed our BCA Capability Report for inclusion with the Development Application submission.

Should you require any further information please do not hesitate to contact the undersigned.

Yours faithfully,

Vic Lilli
for **Mondan Consulting**

Encl.

MONDAN CONSULTING PTY LTD

T 02 9715 2555
F 02 9715 2333

Locked Bag 3013 Burwood NSW 1805
Suite 7, Level 2, 1-17 Elsie Street, Burwood NSW 2134

BCA CAPABILITY REPORT

FOR

CONSTRUCT BY DESIGN

PREMISES

27 BELLEVUE AVENUE, AVALON BEACH

DATE: 4 September 2020

TABLE OF CONTENTS

CONTENTS	Page No.
1.0 – EXECUTIVE SUMMARY	1
2.0 – PROPERTY DESCRIPTION	2
2.1 – LOCATION.....	2
2.2 - BUILDING DESCRIPTION.....	3
3.0 – BCA ASSESSMENT	4
3.1 – FIRE RESISTANCE AND STABILITY (SECTION C, BCA)	4
3.2 – ACCESS & EGRESS (SECTION D, BCA)	7
3.3 – SERVICES AND EQUIPMENT (SECTION E, BCA)	10
3.4 – HEALTH AND AMENITY (SECTION F, BCA).....	12
3.5 – ANCILLARY PROVISIONS (SECTION G, BCA)	14
3.6 – ENERGY EFFICIENCY (SECTION J, BCA 2019)	15
4.0 – FIRE SAFETY AND OTHER MEASURES.....	17
5.0 – CONCLUSION	18
6.0 – REFERENCES	19

1.0 – EXECUTIVE SUMMARY

1.0 – Executive Summary

The following BCA compliance assessment report has been prepared at the request of Shed Architects for the purpose of DA lodgment of the proposed Seniors or People with Disabilities Housing Development at 27 Bellevue Avenue, Avalon Beach.

This preliminary design for DA purposes, includes construction of three (3) self-contained dwellings with associated carparks and landscaping for Seniors or People with Disabilities.

This report has been prepared to identify the extent of compliance achieved by the architectural documentation against the relevant provisions of the Building Code of Australia (BCA) 2019 and adopted standards.

This report will provide the consent authority with a BCA preliminary analysis to assist in the determination of the DA Application.

2.0 - PROPERTY DESCRIPTION

2.0 – Property Description

2.1 – Location

The site is rectangular in shape and has North-Western street frontage to Bellevue Avenue of 20.115m, a South-Eastern street frontage to Wickham Lane, a South-Western street frontage to Sanders Lane.

The site falls by approximately 9m from the North-West to South-East. It is characterised by dense tree coverage.

Currently, a single storey rendered detached dwelling house is located on the North-Western side of the site with vehicular access via Sanders Lane. A further vehicular access from Sanders Lane is located towards the Southern corner of the site, close to the intersection with Wickham Lane.

The site is zoned R2 Low Density Residential and the surrounding area is characterised by residential lots containing detached dwelling houses. Avalon Public School is located to the South of the site. Mixed use lots containing medium density residential housing and commercial premises are located to the east. There are no Heritage Items or Heritage Conservation Area on or in the immediate vicinity of the site (Source: Town Planners Report, Planning Ingenuity, Miranda, Dated: 6 September 2019)

2.2 - Building Description

Classification	The building contains the following: <ul style="list-style-type: none">• Class 1a – Dwelling• Class 3 – Apartments for Seniors or People with Disabilities• Class 7a – Garage carparking• Class 10b – Swimming Pool												
Effective Height	Less than 12m												
Rise in Stories	Buildings have a rise in stories of two (2)												
Number of Stories Contained	Buildings have three (3) stories contained												
Type of Construction	The Class 2 building is required to adopt Type B construction												
Area & Volume Limitations	<p>Area & Volume Limitations are not applicable to Class 3 and 10 parts.</p> <p>Class 7 limitations are listed in the below table.</p> <p>Table C2.2 Maximum size of fire compartments or atria</p> <table><tr><th>Classification</th><th>Type A construction</th><th>Type B construction</th><th>Type C construction</th></tr><tr><td>5, 9b or 9c</td><td>Max <i>floor area</i>—8 000 m² Max volume—48 000 m³</td><td>Max <i>floor area</i>—5 500 m² Max volume—33 000 m³</td><td>Max <i>floor area</i>—3 000 m² max volume—18 000 m³</td></tr><tr><td>6, 7, 8 or 9a (except for <i>patient care areas</i>)</td><td>Max <i>floor area</i>—5 000 m² Max volume—30 000 m³</td><td>Max <i>floor area</i>—3 500 m² Max volume—21 000 m³</td><td>Max <i>floor area</i>—2 000 m² Max volume—12 000 m³</td></tr></table> <p>Note to Table C2.2: See C2.5 for maximum size of compartments in <i>patient care areas</i> in Class 9a <i>health-care buildings</i>.</p>	Classification	Type A construction	Type B construction	Type C construction	5, 9b or 9c	Max <i>floor area</i> —8 000 m ² Max volume—48 000 m ³	Max <i>floor area</i> —5 500 m ² Max volume—33 000 m ³	Max <i>floor area</i> —3 000 m ² max volume—18 000 m ³	6, 7, 8 or 9a (except for <i>patient care areas</i>)	Max <i>floor area</i> —5 000 m ² Max volume—30 000 m ³	Max <i>floor area</i> —3 500 m ² Max volume—21 000 m ³	Max <i>floor area</i> —2 000 m ² Max volume—12 000 m ³
Classification	Type A construction	Type B construction	Type C construction										
5, 9b or 9c	Max <i>floor area</i> —8 000 m ² Max volume—48 000 m ³	Max <i>floor area</i> —5 500 m ² Max volume—33 000 m ³	Max <i>floor area</i> —3 000 m ² max volume—18 000 m ³										
6, 7, 8 or 9a (except for <i>patient care areas</i>)	Max <i>floor area</i> —5 000 m ² Max volume—30 000 m ³	Max <i>floor area</i> —3 500 m ² Max volume—21 000 m ³	Max <i>floor area</i> —2 000 m ² Max volume—12 000 m ³										
Climate Zone	Zone 5												

3.0 – BCA Assessment

3.1 – Fire Resistance and Stability (Section C, BCA)

Item	Comment				
<i>Fire Resistance</i>	<p>The proposed building structure, being reinforced concrete floors, columns and the various shafts and cores, are to comply with the required fire resistance levels as specified in Clause C1.1 and Clause 2 & 3 of Specification C1.1 for Type B construction. Refer to Table 4 of Specification C1.1 for the specific FRL's.</p> <p>Structural: the ability to maintain stability and adequate load-bearing capacity as determined by AS 1530.4.</p> <p>Integrity: the ability to resist the passage of flames and hot gases specified in AS 1530.4.</p> <p>Insulation: The ability to maintain a temperature on the surface not exposed to the furnace below the limits specified in AS 1530.4.</p> <p>FRLs are generally as follows;</p> <table border="1"> <tr> <th>Class</th><th>FRL</th></tr> <tr> <td>Class 3 and 7a</td><td>90/90/90</td></tr> </table> <p>Where lightweight fire rated construction is proposed for walls, the system must comply with Specification C1.8 of BCA and the manufactures tested specification. Furthermore, the system proposed must be consistent with sound and energy efficiency requirements with Part F5 and Part J of BCA.</p> <p>Columns protected with lightweight fire rated construction that are subject to mechanical damage must be protected and/or internally filled in accordance with Clause C1.8(b) of BCA.</p> <p>The fire hazard properties of floor, wall and ceiling linings are to comply with Part C1.10, and Specification C1.10 of BCA.</p> <p>The client has advised that a fire engineer will be engaged prior to the issue of a construction certificate to address any potential performance requirements of CP1 and Spec C1.1 of the BCA.</p>	Class	FRL	Class 3 and 7a	90/90/90
Class	FRL				
Class 3 and 7a	90/90/90				

3.0 – BCA ASSESSMENT

Item	Comment
<i>Non-combustible building elements</i>	<p>In a building required to be of Type B construction, the following building elements and their components must be non-combustible:</p> <ul style="list-style-type: none">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.
<i>Ancillary items</i>	<p>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 exempted as identified in Clause C1.14 of the BCA.</p>
<i>Fire hazard properties</i>	<p>The fire hazard properties of all materials, assemblies, fixtures and linings are to comply with Specification C1.10 of the BCA, as applicable.</p> <p>Full documentation (including fire test certification) is to be provided for assessment at the Construction Certificate stage.</p>
<i>Protection of Openings</i>	<p>Assessment of the design confirm there are no openings exposed to a fire source feature which require protection in accordance with Clause C3.4 of the BCA.</p>
<i>Vertical separation of openings</i>	<p>Spandrel separation is not applicable for Type B buildings</p>

3.0 – BCA ASSESSMENT



MONDAN
CONSULTING

Item	Comment
Protection of equipment.	<p>The following equipment is to be fire separated with construction complying with Clause C2.12 (d) of the BCA.</p> <ul style="list-style-type: none">• lift motors and lift control panels; or• a battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours.
<i>Fire sealing of penetrations</i>	<p>Penetrations to all floors and walls are required to achieve the FRL required for the respective classification as detailed in Specification C1.1 below. Protection shall be achieved by either by a fire rated shaft or in accordance with C3.15 of the BCA.</p> <p>Further details relating to the proposed service and/or shaft location and type of passive protection shall be provided for compliance assessment in accordance with BCA Clause C3.12 and C3.15 of the BCA during the Construction Certificate design phase.</p>

3.2 – Access & Egress (Section D, BCA)

Item	Comment
<i>Number of exits required</i>	<p>Not less than one exit must be provided to each storey throughout the building based on the Prescriptive requirements of Clause D1.2. For a building, less than 25m in effective height, one exit is required from every storey, and two exits are required from any basement storey.</p> <p>The number of exits provided is such that it complies with the provisions of D1.2 of the BCA</p>
Exit travel distances	<p>Class 3 buildings—</p> <p>(i) The entrance doorway of any sole-occupancy unit must be not more than—</p> <p>(A) 6 m from an exit or from a point from which travel in different directions to 2 exits is available; or</p> <p>(B) 20 m from a single exit serving the storey at the level of egress to a road or open space; and</p> <p>(ii) no point on the floor of a room which is not in a sole-occupancy unit must be more than 20 m from an exit or from a point at which travel in different directions to 2 exits is available.</p> <p>Assessment of the design confirm that compliance is readily achievable.</p>
Dimensions of exits	<p>A minimum clear width of 1m and head height clearance of not less than 2m must be maintained to all exit stairways. The overall width of the stairways must be such that the clear width can be achieved between handrails in accordance with Clause D1.6 of the BCA.</p> <p>Assessment of the design confirm that compliance is readily achievable.</p>

3.0 – BCA ASSESSMENT

Item	Comment
<i>Construction of Stairways.</i>	<p>Goings and risers are to be designed to comply with the provisions of Clause D2.13 of the BCA.</p> <p>Riser (R) dimensions shall be between 115mm-190mm and going (G) dimensions between 250mm -355mm. The quantity (2R+G) shall be between 550mm-700mm.</p> <p>Stairway design and construction shall comply with the requirements specified within the provisions of Clause D2.13 of the BCA.</p> <p>Stairway landing design (if applicable) and construction shall strictly comply with the requirements specified in Clause D2.14 of the BCA.</p> <p>Generally, landings shall be not less than 750mm long and a maximum gradient of 1:50.</p> <p>Threshold design (if applicable) and construction shall comply with the requirements specified in Clause D2.15 of the BCA. Generally, the threshold of a doorway must not incorporate a step or ramp at any point closer than the width of the door leaf.</p>
<i>Balustrades</i>	<p>Balustrades must be provided for all areas where it is possible to fall more than 1m. Balustrades are to be designed in accordance with Clauses D2.16 of the BCA.</p> <p>Balustrades protecting a difference in levels of over 4m above finished ground level must not have horizontal elements between 150mm and 760mm of the floor that facilitate climbing.</p>
<i>Handrails</i>	<p>Handrail design and construction shall comply with the requirements specified in Clause D2.17 of the BCA and AS1428.1-2009, as applicable.</p> <p>Generally, handrails must be provided to all stairways at a height not less than 865mm measured above the nosings of the stair treads.</p>

3.0 – BCA ASSESSMENT

Item	Comment
<i>Protection of openable windows</i>	<p>For an openable window in a bedroom, 2m or more above the surface beneath, openable windows are required to restrict the passage of a 125mm sphere. If 4m above ground level then all openings shall be restricted at 125mm in accordance with Clause D2.24 of the BCA.</p>
<i>Access for people with disabilities.</i>	<p>The building is to comply with:</p> <ul style="list-style-type: none">▪ The Disability Discrimination Act 1992);▪ The Disability (Access to Premises — Buildings), Standards 2010;▪ Part D3 of the BCA;▪ Australian Standard AS 1428.1-2009. <p>Buildings and parts of buildings must be accessible as required by Table D3.1 of the BCA.</p> <p>Assessment of the design confirms the building is capable of complying with the relevant provisions. An accredited access consultant to prepare an accessibility report be ensure all requirements are addressed at the Construction Certificate stage.</p>

3.3 – Services and Equipment (Section E, BCA)

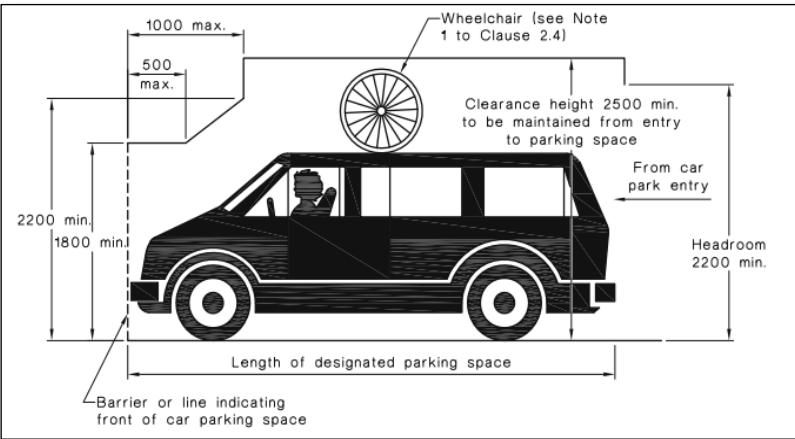
Item	Comment
<i>Hydrant Systems.</i>	Having a total floor area of less than 500 m ² , the building is not required to be provided with a hydrant system in accordance with the provisions of Clause E1.3 of the BCA and AS 2419.1-2005.
<i>Hose Reel Systems.</i>	As the building is of Class 2 classification and not protected by an internal hydrant the building will not be required to be protected with a fire hose reel system in accordance with the provisions of the Clause E1.4 of the BCA and AS 2441 - 2005.
<i>Portable Fire Extinguishers.</i>	As the building is not provided with internal fire hydrant portable fire extinguishers the building will not be required to be protected with fire extinguishers in accordance with the provisions of Clause E1.6 of the BCA and AS 2444 - 2001.
<i>Sprinkler System</i>	Mandatory sprinkler system is required for a Class 3 building not more than 25 m in effective height with rise in storeys of 4 or more. Given the development has a rise in two (2) storeys the building will not be required to be protected with a sprinkler system according to Specification E1.5a of the BCA.
<i>Smoke Hazard Management.</i>	The building is required to be provided with: <ul style="list-style-type: none"> • A smoke detection and alarm system complying with Clause 3 of Specification E2.2a of the BCA. • Class 7a car park is required to be provided with a mechanical ventilation system in accordance with AS 1668.2-2012 and Clause 5.5 of AS/NZS 1668.1-2015.

3.0 – BCA ASSESSMENT

Item	Comment
<i>Lift Services.</i>	<p>The proposed lifts shall comply with all requirements nominated by AS1735.12 and Clause E3.6 of the BCA, with regards to facilities for people with disabilities, lift floor dimension of not less than 1100mm in width and 1400mm in depth.</p> <p>A sign must be provided in accordance with Clause E3.3 of the BCA warning against the use of lifts in a fire.</p>
<i>Emergency Lighting.</i>	<p>Given the development contains does not contain any common areas there is no requirement for emergency lighting to be provided throughout the building in accordance with Clauses E4.2 & E4.4 of the BCA and AS/NZS 2293.1-2018.</p>
<i>Exit Signs.</i>	<p>Given the development contains does not contain any common areas there is no requirement for exit signs to be provided throughout the building in accordance with Clauses E4.5, E4.6 & E4.8 of the BCA and AS2293.1-2018.</p>

3.0 – BCA ASSESSMENT

3.4 – Health and Amenity (Section F, BCA)

Item	Comment
<i>Damp & Weatherproofing</i>	Adequate measures must be employed to ensure compliance with Part F1 of the BCA is achieved in terms of weatherproofing.
<i>Sanitary & Other Facilities</i>	Sanitary facilities are to be provided within each residential apartment in accordance with the provisions of Clause/Table F2.3 of the BCA.
<i>Ceiling height</i>	<p>The following minimum building ceiling heights must be maintained in accordance with Clause F3.2 of the BCA.</p> <ul style="list-style-type: none"> ▪ Common kitchen, laundry or the like – 2.1m ▪ Corridor, passageway or the like – 2.1m ▪ Bathroom, shower, sanitary compartment or the like – 2.1m ▪ Habitable rooms excluding a kitchen – 2.4m ▪ Stairways – 2.0m ▪ Car parking areas – 2.2m ▪ Disabled car parks – 2.5m including a 2.2m path of travel height. 

Item	Comment
<i>Ventilation</i>	<p>The building is required to be provided with ventilation in accordance with the provisions of Clause F4.5 of the BCA.</p> <p>Ventilation may be provided by natural means or a mechanical system complying with AS 1668.2-2012.</p> <p>The residential areas of the building must be provided with natural or mechanical ventilation as required by Part F4 of the BCA.</p> <p>A review of the design confirms compliance with the BCA is readily achievable.</p>
<i>Lighting</i>	<p>Artificial lighting must be provided throughout the building in accordance with the provisions of Clause F4.4 of the BCA and AS/NZS1680.0-2009.</p> <p>Natural lighting must be provided to the habitable areas of the residential apartments to the requirements of Part F4 of the BCA, being by way of openings of not less than 10% of the floor area of the space they serve.</p> <p>The current design provides for adequate natural light to habitable rooms.</p>
<i>Sound insulation</i>	<p>The floor separating the residential units and separating the sole occupancy units from garage must achieve minimum sound insulation rating of R_w+C_{tr} (airborne) of not less than 50 and an $L_{n,w}+C_i$ (impact) not more than 62.</p> <p>Walls separating units must achieve a sound insulation rating of R_w+C_{tr} (airborne) of not less than 50.</p> <p>Walls separating units from lift shaft, stairway corridor must have an insulation rating of R_w (airborne) not less than 50.</p> <p>Walls separating a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit from a habitable room in another or separating a unit from a lift shaft must be of discontinuous construction (if applicable at CC stage).</p>

3.0 – BCA ASSESSMENT

	<p>The doorway separating to sole occupancy unit from the public area must have an Rw not less than 30.</p> <p>Soil, waste & stormwater services must be separated by construction having an Rw+Ctr (airborne) not less than</p> <ul style="list-style-type: none"> ▪ 40 if the room is a habitable room ▪ 25 if the room is a non-habitable room <p>Detailed Acoustic Report and Design will need to form part of the Construction Certificate documentation.</p>
<i>Condensation Management</i>	<p>Adequate measures must be employed to ensure compliance with Part F6 of the BCA is achieved in terms of weatherproofing:</p> <ul style="list-style-type: none"> • Where a pliable building membrane is installed in the external wall it complies with all the requirements of Clause F6.2 • The minimum flow rates, discharge locations, connections of all exhaust shall comply with the requirements of Clause F6.3 • Discharge of exhaust systems on roof spaces are ventilated to outdoor air through evenly distributed openings.

3.5 – Ancillary Provisions (Section G, BCA)

Item	Comment
<i>Swimming pool fencing</i>	<p>The proposed swimming pool is to be fenced in accordance with the requirements of AS1926.1-2007 & AS1926.2-2007, Swimming Pools Act 1992 and Swimming Pools Regulation 2018</p>

3.0 – BCA ASSESSMENT

3.6 – Energy Efficiency (Section J, BCA 2019)

Residential portions of the building are required to comply with BASIX requirements and relevant provisions of Part J of the BCA.

A BASIX assessment and a BASIX certificate will be required to be lodged with the development application.

In addition to the BASIX certificate compliance with NSW J (A) is required for the Class 3 part. The applicable sections of NSW Section J (A) are to be complied with, these clauses are:

- NSW J(A) 1.0 – Building Fabric,
- NSW J(A) 2.0 – Building Sealing
- NSW J(A) 3.0 – Air Conditioning and ventilating systems
- NSW J(A) 4.0 – Hot Water Supply
- NSW J(A) 5.0 – Access For Maintenance

NB: The following Section J of the BCA National provisions will be applicable to the car parking portion.

Item	Comment
Ventilation System	Any ventilation system for the car park of the development will be designed to comply with Part J5 of the BCA.
Artificial Lighting and Power	<p>The buildings are to maintain maximum lighting power levels and control systems as applicable. The design of lighting systems must comply with Part J6 of the BCA.</p> <p>The following maximum lighting power loads (W/m²) are applicable to the building:</p> <ul style="list-style-type: none"> ▪ Car park - 6 ▪ Car park entry zone (20m) - 25 ▪ Control room, switch room - 9 ▪ Plant room - 5 ▪ Service areas & store rooms – 5 <p>These rates are able to be adjusted as detailed in Table J6.2 of the BCA where daylight or motion sensors or dimming systems are provided or in particularly small rooms.</p>

3.0 – BCA ASSESSMENT



MONDAN
CONSULTING

Item	Comment
Hot Water Supply	Amy hot water supply system to serve the common area will be required to be installed in accordance with Part J7 of the BCA and AS/NZS 3500.4.
Energy Monitoring	As the building has a floor area of less than 500m ² there is no requirements to provide facilities and energy monitoring in accordance with Part J8 of the BCA.

4.0 – FIRE SAFETY

4.0 – Fire Safety and Other Measures

4.1 – Proposed Fire Safety Measures

Fire Safety Measure	Standard of Performance
Automatic fire detection and alarm system	BCA 2019 Clause E2.2, Spec. E2.2a, AS 3786-2014
Fire seals (protecting openings and service penetrations in fire resisting components of the building)	BCA 2019 Clause C3.15, Spec C3.15, Spec E1.5a and Manufacturer's specifications

5.0 – Conclusion

It is the opinion of this office that, the proposed buildings are capable of achieving compliance with the requirements of the Building Code of Australia (BCA) 2019 and relevant adopted standards without undue modification to the design or appearance of the building.

Whilst the building is capable of achieving compliance with the provisions of the Performance Requirements of the BCA 2019 their acceptability has not been verified at this time. It will be necessary for the design to be reviewed by an appropriately qualified person, if performance solutions proposed, prior to the issue of a Construction Certificate for the building works.

This report does not imply, nor make reference to structural design or operating capability or design of any electrical, fire, hydraulic and mechanical services.

Signed,



Vic Lilli

for **Mondan Consulting Pty Ltd**

6.0 – REFERENCES

6.0 – References

6.1 – Basis of Report

This BCA Capability report has been prepared on the basis of the following-

- (i) Architectural Plans as prepared by Shed Architects

Drawing No.	Title	Revision
1901 - DA 100	Lower Parking Level Plan	A
1901 - DA 100 A	Lower Ground Floor Plan	A
1901 - DA 120	Ground Floor Plan	A
1901 - DA 130	First Floor Plan	A
1901 - DA 200	Longitudinal Section	A
1901 - DA 210 A	Cross Section	A

- (ii) Building Code of Australia (BCA) 2019
- (iii) Environmental Planning and Assessment Act, 1979, and Regulations.