

# **BCA CAPABILITY REPORT**

**FOR**

**Payce Consolidated Pty Ltd**

**PREMISES**

**1 Burroway Road,  
Wentworth Point**

**Date: 12 May 2014**

**Our Ref: J140058**

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# 1.0 Executive Summary

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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) 2014 and adopted standards.

The building the subject of this report comprises the construction of a new 9 storey residential building with retail/child care use on the ground floor and three basement storeys of car parking.

This report will provide a BCA analysis to assist in the process of design development and to assist the consent authority in the determination of the Development Application relating to the works.

It is recommended that the following matters be given further design consideration to comply with the BCA utilising either the 'deemed to satisfy' provisions or via an alternative solution under the performance requirements:

- (i) The distance of travel to exits is excessive for the units noted in the table in Part 3.2 of this report. In that regard, the maximum distance of travel from the sole occupancy units exceeds the maximum permissible distance of 6m.
- (ii) The distance of travel to an exit is excessive within the basement car parking levels as noted in Part 3.2 of this report. In that regard, the maximum distance of travel exceeds the maximum permissible distance of 40m.
- (iii) The building is to be served by the services nominated under Section 4.0.
- (iv) Provision must be made in the design for lightweight fire rated construction, sound insulation & energy efficiency as appropriate.

## **2.0 Report Summary**

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### **2.1 – Location**

The subject building works comprise the construction of a new residential apartment /retail building at 1 Burroway Road, Wentworth Point. The site is bounded by Burroway Road to all sides. The site is within the Auburn City Council area for the purposes of development approvals.

### **2.2 –Description of works**

The works proposed incorporate the construction of a 9 storey mixed use building consisting of the following:

- Car parking on basement levels 1, 2 & 3,
- Retail and child care on level 1,
- Residential apartments (256) on levels 2 - 9

### **2.3 – Report purpose**

This report has been prepared to identify aspects of the proposed design that require further consideration and to identify aspects of the design that may be altered subsequent to the issue of a Development Consent.

This report has been prepared on the basis of an assessment of compliance only and should not be construed as being design advice.

### **2.4 – Basis of report**

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

- (i) Architectural Plans as prepared by Rice Daubney as detailed in Section 6.
- (ii) Building Code of Australia (BCA) 2014, including NSW Variations and relevant Australian Standards;
- (iii) Environmental Planning and Assessment Act, 1979, and Regulations.

## 2.5 – Building Description

<b>Use/Classification</b>	Proposed classification being- <ul style="list-style-type: none"> <li>• Class 2 – sole occupancy units (levels 2 – 9)</li> <li>• Class 6 – retail (level 1)</li> <li>• Class 9b – childcare (level 1)</li> <li>• Class 7a – car parking (basement levels 0, 1, 2)</li> </ul>
<b>Rise in Storeys</b>	The building has a rise in nine (9) storeys.
<b>Number of Storeys</b>	The building contains twelve (12) storeys.
<b>Effective Height</b>	The building will have an effective height of greater than 25m (27.36m).
<b>Type of Construction (BCA)</b>	The building is to achieve Type A construction
<b>Population</b>	By way of application of clause D1.13 of the BCA, it is considered that the following approximate populations are likely to the building:  Car park    585 persons Retail/loading    1142 persons Childcare    130 persons  Accommodation levels are not populated via D1.13
<b>Climate Zone</b>	6

## 3.0 – Building Code of Australia 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 &amp; columns, is capable of achieving the necessary Fire Resistance Levels as detailed in Table 3 of BCA Specification C1.1 for Type A construction.</p> <p>Structure up to and including the level 1 floor slab must have a FRL of 120/120/120, level 1 up to and including the level 2 floor slab must have a FRL of 180/180/180 and the structure above must have a FRL of 90/90/90.</p>
<i>Compartmentation and fire separation</i>	<p>Each sole occupancy unit within the building, being each individual room or suite of rooms, must be separated by construction achieving an FRL not less than -/60/60 (non-loadbearing) or 90/90/90 (loadbearing).</p> <p>Each room that is not within a sole occupancy unit must be separated from the common areas by construction having an FRL not less than -/60/60 (non-loadbearing) or 90/90/90 (loadbearing).</p> <p>The car parking areas must be separated from the remainder of the building by construction having an FRL not less than 120/120/120.</p> <p>The lift shaft must be constructed with an FRL not less than 180/120/120 on level 1, 120/120/120 in basement levels and 90/90/90 in residential levels.</p>
<i>Roof lights and sky lights</i>	<p>Roof light location and protection of walls within 3.0m of roof lights is to be in compliance with BCA Specification Clause C3.6.</p>
<i>Protection of Openings</i>	<p>The openings in the external walls of the building are in excess of 6m from a fire source feature.</p> <p>The doorway to each sole occupancy unit must be protected with a self closing -/60/30 fire door.</p> <p>Lift landing doors must achieve an FRL not less than -/60/-.</p>

<i>Fire hazard properties</i>	The wall and floor linings must achieve the fire hazard properties stipulated in BCA Specification C1.10.
<i>Vertical separation of openings</i>	Not applicable as the building is protected by sprinklers.
<i>Public corridors in class 2 buildings</i>	The corridor is required to be divided by a smoke-proof wall and doors at intervals of not more than 40m. The proposed open walkway arrangement will comply.
<i>Fire sealing of penetrations</i>	All service penetrations must be sealed to the requirements of BCA Clause/Spec C3.15.

### 3.2 – Access & Egress (Section D, BCA)

Item	Comment														
<i>Number of exits required</i>	Two exits are required from each storey. The number exits to the retail tenancies do not comply with the provisions of Clause D1.2 of the BCA.														
<i>Exit travel distances and distance between exits</i>	<p>The distance of travel from the apartments to the egress stairway or point of choice between alternative exits exceeds the maximum of 6m permitted by BCA Clause D1.4 for the following units:</p> <table border="1"> <thead> <tr> <th>Units</th><th>Distance</th></tr> </thead> <tbody> <tr> <td><u>Building A</u> 206, 207, 208, (same for L2 – L5)</td><td>Up to 14.0m</td></tr> <tr> <td><u>Building B</u> 228, 229, 230, (same for L2 – L5) 630, 730,</td><td>Up to 11.5m 10.5m</td></tr> <tr> <td><u>Building C</u> 241, 246, 247, 248, 250, 251, 252, 253, (same for L2 – L5)</td><td>Up to 13.2m</td></tr> <tr> <td>641, 646, 647, 648, 650, 653, (same for L6 – L7)</td><td>Up to 12.0m</td></tr> <tr> <td>641, 646, 647, 648, 650, 653, (same for L6 – L7)</td><td>Up to 12.0m</td></tr> <tr> <td>841, 846, 847, 848 (same for L8 – L9)</td><td>Up to 12.0m</td></tr> </tbody> </table> <p>The travel distance in the retail and car parking levels to a point of choice to alternate exits complies with the maximum of 20m permitted by BCA Clause D 1.4.</p> <p>The travel distance within the basement level 1, 2 &amp; 3 car parking areas is up to 50m which exceeds the maximum of 40m permitted by BCA Clause D 1.4.</p> <p>The distance between alternative exits within the car parking and retail levels complies with the maximum of 60m between alternative exits permitted by BCA Clause D1.5.</p>	Units	Distance	<u>Building A</u> 206, 207, 208, (same for L2 – L5)	Up to 14.0m	<u>Building B</u> 228, 229, 230, (same for L2 – L5) 630, 730,	Up to 11.5m 10.5m	<u>Building C</u> 241, 246, 247, 248, 250, 251, 252, 253, (same for L2 – L5)	Up to 13.2m	641, 646, 647, 648, 650, 653, (same for L6 – L7)	Up to 12.0m	641, 646, 647, 648, 650, 653, (same for L6 – L7)	Up to 12.0m	841, 846, 847, 848 (same for L8 – L9)	Up to 12.0m
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<i>Dimensions of exits.</i>	<p>The proposed aggregate egress width is adequate to serve the anticipated building population.</p> <p>A minimum clear width of 1m 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.</p>														



<i>Travel via fire isolated exits</i>	The fire isolated stairs A1 discharge within 6m of the glazed wall at foyer A1 on level 1. The fire isolated stairs C1 discharge within 6m of the wall to the childcare tenancy on level 1. These walls require protection in accordance with BCA Clause D1.7 (c)
<i>Exit discharge</i>	Exit discharge will comply.
<i>Construction of exits</i>	<p>All exits must be constructed as fire isolated exits to the requirements of BCA Part D2.</p> <p>The exit stairways must comply with requirements for treads, risers, landings and thresholds in accordance with clauses D2.13, D2.14 &amp; D2.15 of the BCA respectively.</p>
<i>Electrical distribution boards</i>	Electrical distribution boards located in the path of travel to an exit must be enclosed in a non-combustible enclosure and sealed to prevent the escape of smoke.
<i>Egress Doors.</i>	<p>All doors acting as exits are required to swing in the direction of egress and are required to be provided with the appropriate hardware in accordance with Clauses D2.20 &amp; D2.21 of the BCA.</p> <p>The smoke doors in corridors are required to swing in both directions.</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 must not have horizontal elements between 150mm and 760mm of the floor that facilitate climbing. Balustrades within fire isolated stairways may be constructed with three horizontal rails with gaps up to 460mm.</p> <p>Under the glazing code it is not permissible to have frameless glass balustrades. Any glass balustrade is to incorporate a structural barrier as required by AS 1288.</p>
<i>Handrails</i>	Handrails must be provided to all stairways and ramps as required by Clause D2.17 of the BCA.

<i>Signage</i>	Signage must be provided to all fire and smoke doors (except those doorways providing access to sole occupancy units) and to doors leading from enclosed stairways as required by BCA Clause D2.23.
<i>Protection of openable windows</i>	Window openings where the floor is more than 2m above the surface beneath must be protected in accordance with BCA Clause D2.24 in a bedroom in the class 2 part or the childcare centre.
<i>Access for people with disabilities</i>	Access for people with disabilities must be provided to and within all areas other than sole occupancy units within the building. The building is capable of compliance.

### 3.3 – Services and Equipment (Section E, BCA)

Item	Comment
Hydrant System	The building is required to be provided with a hydrant system in accordance with the provisions of Clause E1. 3 of the BCA and AS 2419.1. Coverage can be readily achieved and is subject to design from a suitably qualified person.
Hose Reel System	The building is required to be provided with a fire hose reel system in accordance with the provisions of Clause E1. 4 of the BCA and AS 2441. Coverage can be readily achieved and is subject to design from a suitably qualified person.
<i>Portable Fire Extinguishers</i>	Fire extinguishers must be provided throughout the building in accordance with Clause E1.6 of the BCA and AS 2444.
<i>Sprinklers</i>	The building is required to be provided with a sprinkler system throughout in accordance with the provisions of Clause E1. 5 of the BCA and AS 2118.1.
<i>Fire control centres</i>	A fire control centre is required in accordance with the provisions of Specification E1. 8 of the BCA.
<i>Smoke Hazard Management</i>	The building will require: <ul style="list-style-type: none"> <li>▪ An automatic smoke detection and alarm system complying with BCA Specification E2.2a. and AS 1670.1,</li> <li>▪ Zone smoke control to the retail and childcare areas in accordance with AS 1668.1</li> <li>▪ An automatic air pressurisation system complying with AS 1668.1 to stairs serving storeys above an effective height of 25m,</li> <li>▪ Car park ventilation in accordance with AS 1668.1 and AS 1668.2</li> </ul>
<i>Lifts</i>	Emergency lifts are required in accordance with BCA Clause E3.4. A sign must be provided in accordance with BCA Clause E3.3 warning against the use of lifts in a fire.
<i>Emergency Lighting.</i>	Emergency lighting is required throughout the building in accordance with Clauses E4.2 and E4.4 of the BCA and AS 2293.1.

<i>Exit Signs.</i>	Exit signs are required throughout the building in accordance with BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1.
<i>Sound systems and intercom systems for emergency purposes</i>	A sound system and intercom system for emergency purposes must be provided to the requirements of AS 1670.4.

### 3.4 – Health and Amenity (Section F, BCA)

Item	Comment
<i>Damp &amp; Weatherproofing</i>	Adequate measures must be employed to ensure compliance Part F1 of the BCA is achieved in terms of weatherproofing.
<i>Sanitary &amp; Other Facilities</i>	The proposed sanitary facilities are adequate.
<i>Ceiling height</i>	<p>The following minimum building ceiling heights must be maintained.</p> <ul style="list-style-type: none"> <li>• Common kitchen, laundry or the like – 2.1m</li> <li>• Corridor, passageway or the like – 2.1m</li> <li>• Bathroom, shower, sanitary compartment or the like – 2.1m</li> <li>• Habitable rooms including common areas – 2.4m</li> <li>• Stairways – 2.0m</li> <li>• Car parking areas – 2.2m</li> <li>• Disabled car parks – 2.5m</li> </ul>
<i>Ventilation</i>	<p>The building is required to be provided with ventilation in accordance with the provisions of Clause F4.5 and F4.11 of the BCA.</p> <p>Ventilation may be provided by natural means or a mechanical system complying with AS 1668.2.</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/NZS1680.0-1998.</p> <p>Natural lighting must be provided to the habitable areas of the residential apartments to the requirements of BCA Part F4, 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 public areas must achieve a sound insulation rating of <math>R_w+C_{tr}</math> (airborne) of not less than 50 and an <math>L_{n,w}+C_i</math> (impact) not more than 62.</p> <p>Walls separating units must achieve a sound insulation rating of <math>R_w+C_{tr}</math> (airborne) of not less than 50.</p> <p>Walls separating units from plant rooms, lift shafts, stairways corridors or other public areas must have an insulation rating of <math>R_w</math> (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.</p> <p>The doorway separating to sole occupancy unit from the public area must have an <math>R_w</math> not less than 30</p> <p>Soil, waste &amp; stormwater services must be separated by construction having an <math>R_w+C_{tr}</math> (airborne) not less than</p> <ul style="list-style-type: none"> <li>▪ 40 if the room is a habitable room</li> <li>▪ 25 if the room is a non-habitable room</li> </ul>
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### **3.5 – Ancillary provisions (Section G, BCA)**

<b>Item</b>	<b>Comment</b>
<i>Cleaning of windows</i>	<p>Provision must be made for the cleaning of windows located 3 or more storeys above ground level to the requirements of the Occupational Health &amp; Safety Act 2000.</p>

### 3.6 – Energy Efficiency (Section J, BCA)

**NOTE:**

The class 2 portions of the building are to comply with the BASIX Certificate referenced with the Development Consent for the project.

The retail, childcare and class 7a car park portions of the building must comply with the Part J provisions noted below.

Item	Comment
<i>Building Fabric</i>	The external fabric to the retail portion of the development with a conditioned space will be insulated in accordance with Part J1 of the BCA.
<i>Glazing</i>	The external glazing to the retail and childcare portions of the development with a conditioned space will have the appropriate U value and solar heat gain co efficiency in accordance with Part J2 of the BCA.
<i>Building Sealing</i>	The external fabric to the retail and childcare portions of the development with a conditioned space will be appropriately sealed in accordance with Part J3 of the BCA.
<i>Air-Conditioning and Ventilation System</i>	The air-conditioning and ventilation system to the retail and childcare portions of the development with a conditioned space will be designed to comply with Part J5 of the BCA.
<i>Artificial Lighting and Power</i>	The building is to maintain maximum lighting power levels and control systems as applicable. The design of lighting systems must comply with BCA Part J6.
<i>Hot Water Supply</i>	Hot water supply systems will be installed in accordance with Part J7 of the BCA and AS/NZS 3500.4.
<i>Access for Maintenance</i>	The building is to have facilities for maintenance and energy monitoring in compliance with BCA Part J8 and the NSW variations.

## 4.0 Fire safety and other measures

### 4.1 – Proposed Fire Safety Measures

In terms of the proposed building the following fire safety measures may be required:

Fire Safety Measure	Standard of Performance
Access panels, Doors and Hoppers to Fire-resisting shaft	BCA Clause C3.13
Automatic fail safe devices	BCA Clause C3.4, D2.21, AS 1670.1-2004
Automatic fire detection and alarm system	BCA Spec E2.2a, AS 1670.1-2004,
Automatic fire suppression system (sprinkler)	BCA Spec E1.5, AS 2118.1-1999
Emergency lighting	BCA Clause E4.2 & E4.4, AS 2293.1-2005
Emergency lifts	BCA Clause E3.4,
Exit signs	BCA Clause E4.5 & E4.8, AS 2293.1-2005
Fire control centres and rooms	BCA Clause E1.8, BCA Spec E1.8
Fire dampers	AS 1668.1-1998
Fire doors	BCA Spec C3.4, AS 1905.1-2005
Fire hydrant systems	BCA Clause E1.3, AS 2419.1-2005
Fire Safety Engineering	Report prepared by
Fire seals (protecting openings in fire resisting components of the building)	BCA Clause C3.15
Fire hose reel system	BCA Clause E1.4, AS 2441-2005
Lightweight construction	BCA Clause C1.8, BCA Spec C1.8
Mechanical air handling systems	AS 1668.1-1998 and AS1668.2-1991
Paths of travel, stairways, passageways or ramps	Part D1 & D2 of the BCA
Portable fire extinguishers	BCA Clause E1.6, AS 2444-2001
Pressurising system	BCA Clause E2.3, AS 1668.1-1999
Smoke control system	AS 1668.1-1998
Smoke dampers	AS 1668.1-1998
Smoke doors	AS 1905.1-2005
Sound systems and intercom systems for emergency purposes	BCA Clause E4.9, AS 1670.4-2004
Warning and operational signage (eg stairway notices)	BCA Clause D2.23 & E3.3, EP&A Act Form 15B



## 5.0 Recommendations and Conclusion

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### 5.1 – Recommendations

Subsequent to our assessment of the proposed mixed use building at 1 Burroway Road, Wentworth Point it is recommended that the following matters comply with the BCA utilising either the 'deemed to satisfy' or via an alternate solution under the performance requirements:

- (i) The distance of travel to exits is excessive for the units noted in the table in Part 3.2 of this report. In that regard, the maximum distance of travel from the sole occupancy units exceeds the maximum permissible distance of 6m.
- (ii) The distance of travel to an exit is excessive within the basement car parking levels as noted in Part 3.2 of this report. In that regard, the maximum distance of travel exceeds the maximum permissible distance of 40m.
- (iii) The building is to be served by the services nominated under Section 4.0.
- (iv) Provision must be made in the design for lightweight fire rated construction, sound insulation & energy efficiency as appropriate.

### 5.2 – Conclusion

It is the opinion of this office that, on satisfaction of the above recommendations, the proposed building is capable of achieving compliance with the requirements of the Building Code of Australia (BCA) 2014 and relevant adopted standards without undue modification to the design or appearance of the building.

Whilst the above recommendations have been made as a means of achieving compliance with the various provisions of BCA Performance Requirements their acceptability has not been verified at this time. It will be necessary for the design to be reviewed by an appropriately qualified person prior to the issue of a Construction Certificate for the works.

Author,



Geoff Smith  
A1 – Accredited Certifier - BPB No. 1997  
For **Vic Lilli & Partners**

## 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 **Rice Daubney**

Drawing No.	Title	Revision
DA-1001	Basement Level 3 Plan	F
DA-1002	Basement Level 2 Plan	F
DA-1003	Basement Level 1 Plan	F
DA-1201	Level 1 Plan	H
DA-1301	Level 2 Plan	I
DA-1302	Level 3 Plan	H
DA-1303	Level 4 Plan	G
DA-1304	Level 5 Plan	G
DA-1305	Level 6 Plan	H
DA-1306	Level 7 Plan	G
DA-1307	Level 8 Plan	H
DA-1308	Level 9 Plan	G
DA-1401	Level 10 Plan	E
DA-1500	Site Elevations	G
DA-1501	Elevation North & South	G
DA-1502	Elevation Building A East & West	G
DA-1503	Elevation Building B East & West	G
DA-1504	Elevation Building C East & West	G
DA-1550	Elevation Building A West & North	G
DA-1551	Elevation Building A East & South	G
DA-1552	Elevation Building B West & North	G
DA-1553	Elevation Building B East & South	G
DA-1554	Elevation Building C West & North	G
DA-1555	Elevation Building C East & South	G
DA-1556	Elevation Building C Cuts	G
DA-1601	Section	B
DA-13101	Accessible Units	C

- (iii) Building Code of Australia (BCA) 2013;

- (iv) Environmental Planning and Assessment Act, 1979, and Regulations