BCA CAPABILITY REPORT

FOR

ATCHISON ST
PROPERTY DEVELOPMENTS PTY LTD

PREMISES

6-16 ATCHISON STREET, ST LEONARDS

Date: 9 May 2014

Our Ref: J120522

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1.0 – Executive Summary

This report has been prepared so as to assess the architectural documentation as detailed in Part 6 in accordance with the Building Code of Australia (BCA) 2012 and adopted standards.

The proposed development is the construction of mixed use development containing a total 36 storeys. The storeys are generally separated as follows:

- Basement carpark: basements 1-6.
- Retail: ground and upper ground levels.
- Serviced apartments: levels 1 - 4.
- Residential: level 5 to level 28.

The assessment has revealed that the proposed development will be capable of achieving compliance with BCA 2012.

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:

1. Deletion of fire hose reels on all residential levels (BCA E1.4),

2. Fire hydrant booster not within sight of main building entry (AS 2419.1-2005),

3. Increased distance (21m) to a point of choice to alternative exits from the gymnasium on level 3 (BCA D1.4(a)(ii)),

4. Deletion of zone smoke control to retail levels (BCA E2.2),

5. Travel from the point of discharge from the fire isolated stairs on the ground floor passes within 6m of unprotected openings (BCA D1.7(c)).

2.0 – Property Description

2.1 - Location

The subject building is located at 6-16 Atchison Street, St Leonard's, and bounded by Atchison Street to the south, and Atchison Lane to the North. Mixed use developments adjoin the eastern and western boundaries respectively.

2.2 - Building Description

Use/Classifications	Class 2: Residential (Lower Ground Lobby, & Level 5 to Level 28). Class 3: serviced apartments (LG Lobby, & Level 1 to Level 4). Class 6: Café / Shop (Lower & Upper Ground Level). Class 7a: Carpark (Basement Levels 1 to 6).
Rise in Storeys	The development will have a rise of 30 *storeys*.
Floor Area	The maximum floor areas of *fire compartments* are not applicable to the Class 2, 3 and 7a parts. The proposed floor area of *fire compartments* of the Class 6 part is less than the maximum permitted.
Volume	The maximum volume provisions for *fire compartments* are not applicable to the Class 2, 3 and 7a parts. The maximum volumes of the *fire compartments* of the Class 6 part is less than the maximum permitted.
Effective Height	The building will have an effective height greater than. 50 metres (88.6m).
Type of Construction (BCA)	The building requires Type **A** Construction.
Climate Zone	5

3.0 - Building Code of Australia Assessment

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

<table>
<tr><th>Item</th><th>Comment</th></tr>
<tr><td>Fire Resistance</td><td>The building is to comply with Clause C1.1 and Clause 2 & 3 of Specification C1.1, for a Type A building. Refer to Table 3 of Specification C1.1 for the specific FRL’s.

Generally FRL’s are as follows:
<table><tr><td>Class 2:</td><td>90 minutes</td></tr><tr><td>Class 3:</td><td>90 minutes</td></tr><tr><td>Class 6</td><td>180 minutes</td></tr><tr><td>Class 7a:</td><td>120 minutes</td></tr></table>
Notwithstanding the table above, on floors with multiple classifications, Clause C2.8 and C2.9 will apply, which will require the higher FRL of the applicable classifications on that storey.

The fire hazard properties of floor, wall and ceiling linings are to comply with Part C1.10, and Specification C1.10 of BCA 2012.</td></tr>
<tr><td>Compartmentation</td><td>The maximum floor areas of fire compartments are not applicable to the Class 2, 3 and 7a parts. The proposed floor areas of fire compartments of the Class 6 parts are less than the maximum permitted.

The maximum volume provisions for fire compartments are not applicable to the Class 2, 3 and 7a parts. The maximum volumes of the fire compartments of the Class 6 parts are less than the maximum permitted.

As the building is sprinkler protected, spandrel separation is not required as per Clause C2.6 of the BCA 2012.

The FRL’s of the separating slabs, from lower ground floor to level 5, will be affected by Clause C2.9 of BCA 2012. Consideration is to be given to a potential increase in FRL of the intervening floors.

With respect to the above requirements, the proposed development can achieve the required FRL’s which will be confirmed at the construction certificate phase.</td></tr>
</table>

Protection of equipment.	The following equipment is to be fire separated with construction complying with Clause C2.12 (d) of BCA 2012. (i) lift motors and lift control panels; or (ii) emergency generators used to sustain emergency equipment operating in the emergency mode; or (iii) central smoke control plant; or (iv) boilers; or (v) a battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005.
Electricity supply	Electrical equipment is to be separated from the building in accordance with Clause C2.13 of BCA 2012.
Protection of Openings	Any openings in the external wall exposed to a fire source feature require protection in accordance with Clause C3.4 of BCA 2012: Bounding construction between residential sole occupant units (SOU) is to comply with the provisions of Specification C1.1, and Clause C3.11 of BCA 2012. Consideration is to be given to achieving the fire and sound rating simultaneously.
Fire hazard properties	The wall and floor linings must achieve the fire hazard properties stipulated in BCA Specification C1.10.
Fire sealing of penetrations	All service penetrations must be sealed to the requirements of Clause C3.12 and C3.15 of BCA 2012.

3.2 – Access & Egress (Section D, BCA)

Item	Comment
Number of exits required	The number exits in the building will achieve compliance with the provisions of Clause D1.2 of the BCA.
Exit travel distances.	The exit travel distances within the building comply with Clause D1.4 of BCA 2012 except for the following areas: - The distance to a point of choice to alternative exits exceeds 20m (21m) from the gymnasium on level 3 (BCA D1.4(a)(ii)).
Distance between alternative exits	Distances between alternative exits comply with Clause D1.5 of BCA 2012.
Travel via fire isolated exits	The basement stairs and main central stairs are indicated to be fire isolated as required by Clause D1.7 of BCA 2012. The paths of travel from the point of discharge of the fire isolated stairs on ground level necessitate passing within 6m of the external wall of the building. The wall is to have a FRL of not less than 60/60/60 and any openings protected internally in accordance with BCA Clause C3.4.
Dimensions of exits.	Exits and paths of travel to exits are to comply with D1.6 of BCA 2012. Generally exits widths are 1m in width clear of any obstruction including hand rails or other fixtures. Aggregate egress widths are considered to comply.
Discharge from exits	The path of travel from the discharge point of the fire isolated exits on the lower ground floor, must be by— (i) a ramp or other incline having a gradient not steeper than 1:8 at any part, or not steeper than 1:14 if required by the Deemed-to-Satisfy Provisions of Part D3; or (ii) except if the exit is from a Class 9a building, a stairway complying with the Deemed-to-Satisfy Provisions of the BCA
Construction of exits	All exits serving the building must be constructed as fire-isolated exits. The exit stairways must comply with requirements for treads, risers, landings and thresholds in accordance with clauses D2.13, D2.14 & D2.15 of the BCA respectively.

Handrails	Hand rails are to comply with Clause D2.17 of BCA 2012.
Balustrades	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. 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 stairways used only for egress may be constructed with three horizontal rails with gaps up to 460mm. Under the current provisions of the glazing code it is not permissible to have frameless glass balustrades. Any new glass balustrade must be provided with a structural barrier as required by AS 1288.
Egress Doors.	All exit doors 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 & D2.21 of the BCA.
Electrical distribution boards	Electrical distribution boards located in the path of travel to an exit must be enclosed in a non-combustible enclosure and smoke sealed.
Signage	Signage must be provided to all fire safety doors (except those doorways providing access to sole occupancy units) and to doors leading from enclosed stairways as required by BCA Clause D2.23.
Access for people with a disability.	Access for people with disabilities must be provided to and within all areas other than sole occupancy units within the building. Access must be provided from the property boundary and any accessible parking space to the requirements of AS 1428.1-2009. Access for people with disabilities is generally compliant.

3.3 – Services and Equipment (Section E, BCA)

Item	Comment
Hydrant Systems.	The building is required to be provided with a system of hydrant coverage 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. Please note the following special design considerations: - • A ring main with isolation valves is required. • A relay pump is required to be installed. • The booster assembly is proposed to be located greater than 10m from the building. The hydrant booster location does not comply with AS2419.1-2005 as it is not within sight of the main building entry.
Hose Reel Systems.	The building will be provided with a fire hose reel system in accordance with the provisions of Clause E1. 4 of the BCA and AS 2441. This system must cover the whole development. The design of the service will be subject to review by a hydraulic consultant. It is proposed to delete fire hose reels from the residential levels
Portable Fire Extinguishers.	Fire extinguishers will be provided in accordance the provisions of Clause E1.6 of the BCA and AS2444.
Smoke Hazard Management.	The building will require: - Class 2: An automatic smoke detection and alarm system in accordance with Clause 3 of Specification E2.2a and AS 3786-1993. - Class 3: An automatic smoke detection and alarm system in accordance with Clause 4 of Specification E2.2a and AS 1670.1-2004. - Class 6: A zone a zone smoke control system in accordance with Clause 5 of Specification E2.2a and AS/NZS 1668.1. - Class 7a: Compliance with BCA Specification E2.2a and AS/NZS 1668.1. All fire isolated exits and associated passageways will require stair pressurization. The design of the service will be subject to review by a fire services consultant. It is proposed to delete zone smoke control from the retail levels in the building.

Emergency Lighting.	Emergency lighting will be provided throughout the building in accordance with Clauses E4.2 & E4.4 of the BCA and AS/NZS 2293.1.
Exit Signs.	Exit signs will be provided throughout the building in accordance with Clauses E4.5, E4.6 & E4.8 of the BCA and AS/NZS 2293.1.
Lifts	An emergency lift in accordance with Clause E3.4 of the BCA will be required as the building has an effective height of greater than 25m. A sign must be provided in accordance with BCA Clause E3.3 warning against the use of lifts in a fire. The proposed lifts shall also comply with all requirements nominated by AS1735.12 and Clause E3.6 of the BCA, with regards to facilities for people with disabilities.
Sprinklers	A sprinkler system in accordance with the provisions of Clause E1. 5 of the BCA and AS 2118.1 is required throughout the building. Note that a grade 1 water supply is required for the development. The design of the service will be subject to review by a hydraulic consultant.
Fire Control Room	The location of the fire control room appears compliant with the requirements of Specification E1.8 of the BCA.

3.4 – Health and Amenity (Section F, BCA)

Item	**Comment**
Damp & Weatherproofing.	Adequate measures will be employed to ensure compliance Part F1 of the BCA is achieved in terms of weatherproofing.
Sanitary & Other Facilities.	Facilities are to be provided in accordance with the provisions of Clause/Table F2.3 of the BCA for the building population noted previously.

Ceiling height	The following minimum building ceiling heights must be maintained. • 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 including common areas – 2.4m • Stairways – 2.0m • Car parking areas – 2.2m • Disabled car parks – 2.5m
Sanitary Facilities for People with Disabilities.	Facilities will be provided in accordance with the provisions of AS1428.1 – 2009.
Light and Ventilation.	The building is required to be provided with ventilation in accordance with the provisions of Clause F4.5 of the BCA. Ventilation may be provided by natural means or a mechanical system complying with AS 1668.2-1991. 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.
Sound transmission and insulation	The development will be designed to achieve compliance with Part F5 of the BCA with respect to sound insulation between sole-occupancy units, public spaces and services.

3.5 – Ancillary provisions (Section G, BCA)

Item	**Comment**
Cleaning of windows	Provision must be made for the cleaning of windows located 3 or more storeys above ground level to the requirements of the Occupational Health & Safety Act 2000.

3.6 – Energy Efficiency Construction (Section J, BCA)

The class 2 sole occupancy units are subject to BASIX requirements and the relevant NSW J(A)variations to BCA Part J. All other parts of the building are to comply with the requirements noted below.

The following BCA Section J provisions are applicable to the car parking levels and the Class 3 and 6 portions of the development.

Item	**Comment**
Building Fabric	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.
Glazing	The external glazing to the retail portion 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.
Building Sealing	The external fabric to the retail portion of the development with a conditioned space will be appropriately sealed in accordance with Part J3 of the BCA.
Air-Conditioning and Ventilation System	The air-conditioning and ventilation system to the retail portion of the development with a conditioned space will be designed to comply with Part J5 of the BCA.
Artificial Lighting and Power	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.
Hot Water Supply	Hot water supply systems will be installed in accordance with Part J7 of the BCA and AS/NZS 3500.4.
Access for Maintenance	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 works the following fire safety measures are proposed to be installed: -

Fire Safety Measure	Standard of performance
Access panels, Doors and Hoppers to Fire-resisting shafts	BCA 2012 Clause C3.13
Automatic fail safe devices	BCA 2012 Clause C3.4, C3.6, D2.19, D2.21, D2.22, Spec C3.4, AS 1670.1-2004
Automatic fire detection and alarm system	BCA 2012 Clause C3.5, C3.6, C3.7, C3.8, C3.11, E2.2, Spec. C3.4, Spec. E2.2a, AS 1670.1-2004,
Automatic fire suppression system (sprinkler)	BCA 2012 Clause C2.3, E1.5, E2.2, Spec. E1.5, Spec. E2.2, AS 2118.1-1999,
Emergency lighting	BCA 2012 Clause E4.2 & E4.4, AS 2293.1-2005
Emergency lifts	BCA 2012 Clause E3.4, AS 1735.2-2001
Exit and directional signage	BCA 2012 Clause E4.4, E4.5, (NSW E4.6) & E4.8, AS 2293.1-2005
Fire alarm monitoring system	BCA 2012 Spec E2.2a, AS 1670.3-2004
Fire control room	BCA 2012 Clause E1.8, BCA Spec E1.8
Fire dampers	BCA 2012 Clause E2.2, AS/NZS 1668.1-1998, AS 1682.2-1990
Fire doorsets	BCA 2012 Clause C2.12, C2.13, C3.4, C3.6, C3.8, C3.11, Spec C3.4, AS 1905.1-2005
Fire Engineering Report	Fire Engineering Report by:
Fire hose reel systems	BCA 2012 Clause E1.4, AS 2441-2005
Fire hydrant systems	BCA 2012 Clause C2.12, E1.3, AS 2419.1-2005
Fire seals (protecting openings and service penetrations in fire resisting components of the building)	BCA 2012 Clause C3.15, Spec C3.15, Manufacturer's specifications
Lightweight construction	BCA 2012 Clause C1.8, Spec A2.3, Spec C1.8, Manufacturer's specifications
Mechanical air handling systems	BCA 2012 Clause E2.2, Spec. E1.8 (fire control rooms), Table E2.2a, AS/NZS 1668.1-1998, AS 1668.2-2012 (clause 5.5 car park exhaust operation)
Openings in fire-isolated lift shafts	BCA 2012 Clause C3.10, AS 1735.11-1986
Occupant warning system	BCA 2012 Clause E2.2, Spec E2.2a (clause 6), AS 1670.1-2004
Portable fire extinguishers	BCA 2012 Clause E1.6, AS 2444-2001
Power operated exit doors	BCA 2012 Clause D2.19, D2.21
Pressurising system	BCA 2012 Clause E2.2, Table E2.2a,

	Spec E2.2a, AS/NZS 1668.1-1998
Smoke dampers	BCA 2012 Clause E2.2, C2.5, Spec C2.5, AS/NZS 1668.1-1998
Sound systems and intercom systems for emergency purposes	BCA 2012 Clause E4.9, G3.8, AS 1670.4-2004
Wall wetting sprinkler and drencher systems	BCA 2012 Clause C3.4, Spec G3.8, AS 2118.2-1995
Warning and operational signage (eg stairway notices)	BCA 2012 Clause C3.6, D2.23, D3.6, E3.3, Spec E1.8, Clause 183 of the Environmental Planning and Assessment Regulation 2000

5.0 – CONCLUSION

5.1 – Conclusion

Following an assessment of the proposed building it is considered that the proposed building, can achieve compliance with the provisions of BCA 2012, without alteration that would necessitate an amendment to the development consent.

Prepared by:

Geoff Smith
A1 – Accredited Certifier - BPB No. 1997
VIC LILLI & PARTNERS **Date:** 9 May 2014.

6.0 - References

Document	Revision	Date
PA-100-01 - PROPOSED SITE PLAN	6	22/01/2014
PA-100-02 - GROUND LEVEL RESIDENTIAL ENTRY LOWER	6	22/01/2014
PA-100-03 - GROUND LEVEL UPPER	8	22/01/2014
PA-100-04 - LEVEL 1 SERVICED APARTMENTS	4	8/08/2014
PA-100-05 - LEVEL 2 SERVICED APARTMENTS	4	8/08/2014
PA-100-06 - LEVEL 3	6	22/01/2014
PA-100-07 - LEVEL4	6	14/04/2014
PA-100-08 - LEVEL 5	5	22/01/2014
PA-100-09 - LEVEL 6	5	06/05/2014
PA-100-10 – LEVEL 7 to 19 & 22 to 27	4	08/05/2014
PA-100-23 – LEVEL 20	4	08/05/2014
PA-100-24 – LEVEL 21	4	08/05/2014
PA-100-31 – LEVEL 28	1	14/04/2014
PA-100-32 - ROOF PLAN	1	14/04/2014
PA-200-01 - NORTH SOUTH SECTION	5	14/04/2014
PA-200-02 - EAST WEST SECTION	4	14/04/2014
PA-200-15 - BASEMENT LEVEL 1	5	14/04/2014
PA-200-16 - BASEMENT LEVEL 2	6	09/05/2014
PA-200-17 - BASEMENT LEVEL 3	6	09/05/2014
PA-200-18 - BASEMENT LEVEL 4	6	09/05/2014
PA-200-18A - BASEMENT LEVEL 5	6	09/05/2014
PA-200-19 - BASEMENT LEVEL 6	6	09/05/2014
PA-300-01 - NORTH ELEVATION	8	14/04/2014
PA-300-02 - EAST ELEVATION	4	14/04/2014
PA-300-03 - SOUTH ELEVATION	5	14/04/2014
PA-300-04 - WEST ELEVATION	5	14/04/2014