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BCA COMPLIANCE ASSESSMENT REPORT Class 1a and 10a Townhouses

25-27 Warriewood Road, Warriewood

Proposed Residential Development



DATE ► 21 Aug 2017

PREPARED FOR ► VIA Architects

REPORT No. ► 7733

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CONTENTS

1.0	EXECUTIVE SUMMARY AND RECOMMENDATIONS.....	3
1.1	RECOMMENDATIONS.....	3
2.0	INTRODUCTION	4
2.1	BASIS OF REPORT.....	4
2.2	PURPOSE OF THE REPORT	4
2.3	LIMITATIONS OF THE REPORT	4
3.0	BCA ASSESSMENT DATA	6
3.1	LOCATION OF FIRE SOURCE FEATURES.....	6
4.0	BCA ASSESSMENT SUMMARY.....	7
5.0	CONCLUSION	23

REVISION STATUS				
REVISION	DATE	STATUS	WRITTEN	CHECKED
7733 – Rev 00.	22.8.17	ISSUED TO CLIENT	AW	TJ

COMMERCIAL IN CONFIDENCE

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1.0 EXECUTIVE SUMMARY AND RECOMMENDATIONS

This report provides a Building Code of Australia 2016 (BCA) preliminary compliance assessment of the proposed residential development to be constructed at 25-27 Warriewood Road, Warriewood.

The development comprises 12 detached 3 storey townhouses and a 3 storey residential flat building comprising 32 apartments and two basement level carparks.

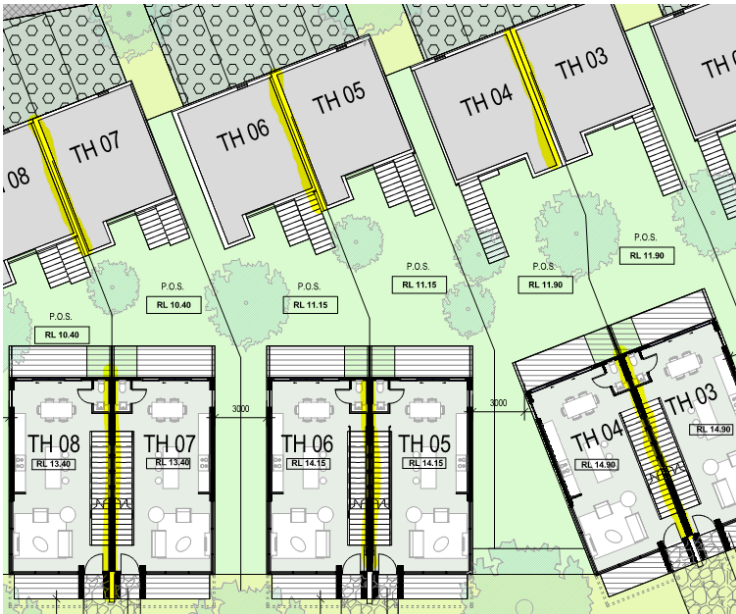
Note: The proposal comprises a mix of Class 2 & 7 buildings (apartment building north and south subject to a separate report) and the Class 1a town house development (subject of this report).

The primary purpose of this report is to identify any non-compliance matters contained in the proposed design against the current Deemed-to-Satisfy (DTS) Provisions of the BCA 2016 Class 1 & 10a buildings (Volume 2) and to provide compliance recommendations to overcome the DTS non-compliances.

The proposed design would appear to generally comply with the significant requirements of the BCA, and where the level of detail is currently insufficient to determine full compliance, it would appear that compliance with the deemed-to-satisfy provisions would be readily achievable within the general constraints of the current design.

1.1 Recommendations

The following is a list of Deemed-to-Satisfy Provisions that should be addressed either by design amendments, additional information **OR** by way of an Alternative Solution:

BCA Clause	Deemed-to-Satisfy Provision to be addressed
Clause 3.7.1.8 Separating walls	<p>DTS Compliance Readily Achievable</p> <p>The separating wall between all townhouse units (as typical shown below) shall have an FRL of 60/60/60 as required under BCA- Volume 2 for the buildings.</p> 

2.0 INTRODUCTION

This report provides a Building Code of Australia (BCA) 2016 assessment of the proposed twelve (12) townhouses and associated garages, to be constructed at 25-27 Warriewood Road, Warriewood.

This report provides a BCA assessment table in Section 3.0 that summarizes the identified non-compliance matters and offers specific recommendations.

Note: This report assesses BCA – Volume 2 compliance for the Class 1a townhouse and garage development only.

2.1 Basis of Report

The key basis of this report is to address compliance with the Building Code of Australia (BCA) 2016. This report is based on a desktop assessment of the proposed plans, with specific reference to the following:

- Architectural plans prepared by VIA Architects:

Plan reference	Title	Date
DA100	Ground floor plan	10.8.2017
DA101	First Floor Plan	10.8.2017
DA102	Second Floor Plan	10.8.2017
DA103	Roof Plan	10.8.2017
DA104	Overall Roof plan	10.8.2017
DA105	Basement 01	10.8.2017
DA106	Basement 02	10.8.2017
DA200	Elevations	10.8.2017
DA201	Elevations	10.8.2017
DA250	Sections	10.8.2017
DA251	Sections	10.8.2017

- The Building Code of Australia 2016 (BCA) prepared by the Australian Building Codes Board; and
- The Guide to the BCA 2016, prepared by the Australian Building Codes Board.

2.2 Purpose of the Report

The purpose of this report is to assess the following:

- Assessment under the current Building Code of Australia 2016 and list any departures from the BCA 2016.
- Provide recommendations to address identified non-compliances, and/or identify potential alternative solutions

2.3 Limitations of the Report

This report does not address the following:

- Reporting on hazardous materials, OH&S matters or site contamination

- Assessment of any structural elements or geotechnical matters relating to the building, including any structural or other assessment of the existing fire resistant levels of the building
- Consideration of any fire services operations (including hydraulic, electrical or other systems)
- Assessment of plumbing and drainage installations, including stormwater
- Assessment of mechanical plant operations, electrical systems or security systems
- Heritage significance
- Consideration of energy or water authority requirements
- Consideration of Council's local planning policies
- Environmental or planning issues
- Requirements of statutory authorities
- Pest inspection or assessment building damage caused by pests (general/visual pest invasion or damage will be reported, however invasive or intrusive inspections have not be carried out)
- Provision of any construction approvals or certification under Part 4A or Part 5 of the Environmental Planning & Assessment Act 1979.
- BASIX requirements are applicable to this development, but have not been considered as part of this assessment. BASIX requirements must be included on the CC plans.
- Assessment of the residential flat building portion of the development (subject to a separate report).

4.0 BCA ASSESSMENT SUMMARY

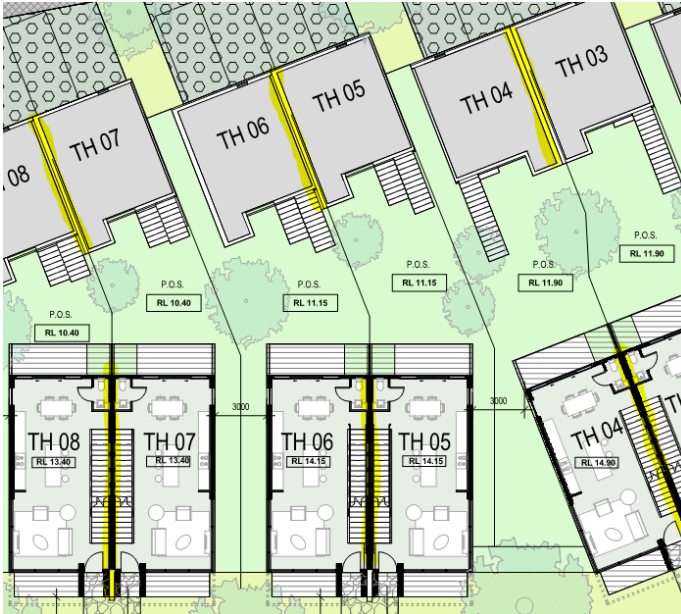
The following table details the BCA compliance of the assessed design.

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
SECTION B STRUCTURE					
Part 3.1.2 Drainage				X	<p>Stormwater drainage must comply with Part 3.1.2 of the BCA, AS/NZS 3500.3-2003 or AS/NZS 3500.5-2012.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.1.3 Termite risk management				X	<ul style="list-style-type: none"> Where the building contains primary building elements that are subject to termite attack, AS 3660.1-2000 compliant termite management system must be provided to the building, including the provision of inspection gaps between the external walls and attachments thereto (e.g. downpipes); and A durable notice must be permanently fixed to the building in a prominent location, such as in a meter box or the like, indicating- <ul style="list-style-type: none"> the termite management system used; and the date of installation of the system; and where a chemical barrier is used, its life expectancy as listed on the National Registration Authority label; and the installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.2 Footings and slabs				X	<ul style="list-style-type: none"> Footings and concrete slabs must be designed and constructed in accordance with AS 2870-2011 and a high impact damp proof membrane must be provided. Piled footings must be designed in accordance with AS 2159-2009. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.3 Masonry				X	<p>If required, masonry elements must be designed, constructed and weatherproofed in accordance with AS 3700-2011 & AS 4773-2010 Parts 1 & 2.</p> <p><i>Details demonstrating compliance with this clause</i></p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<i>must be incorporated into the construction plans and specification.</i>
Clause 3.4.0.2 Structural software				X	Structural software used in computer aided design of a building or structure, that uses design criteria based on the Deemed-to-Satisfy Provisions of the Housing Provisions, including its referenced documents, must comply with the ABCB Protocol for Structural Software. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i>
Part 3.4.1 Sub-floor ventilation			X		Not applicable – there are no sub-floor spaces
Part 3.4.2 Steel framing				X	Steel framing must be designed and constructed in accordance with AS 4100-1998, AS/NZS 4600-2005, NASH Standard Part 1 2005, or Part 3.4.2 of the BCA. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i>
Part 3.4.3 Timber framing				X	Timber framing must be designed and constructed in accordance with AS 1684.2-2010 or AS 1684.4-2010. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i>
Part 3.4.4 Structural Steel Members				X	Structural steel members must be designed and constructed in accordance with AS 4100-1998, AS/NZS 4600-2005 or Part 3.4.4 of the BCA. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i>
Part 3.5.1 Roof cladding				X	Roof cladding must comply with one of the following: <ul style="list-style-type: none"> • Roofing tiles: AS 2049-2002 and AS 2050-2002; or • Metal roofing: AS 1562.1-1992; or • Part 3.5.1 of the BCA. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i>
Part 3.5.2 Gutters and downpipes				X	Guttering and downpipes must comply with AS/NZS 3500.3-2015, AS/NZS 3500.5-2012 or Part 3.5.2 of the BCA. <i>Details demonstrating compliance with this clause must be incorporated into the construction plans</i>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					and specification.
Part 3.5.3 Wall cladding				X	Wall cladding must be installed in accordance with: <ul style="list-style-type: none"> • Metal wall cladding: AS 1562.1-1992; • Timber weatherboard cladding: Part 3.5.3.2 of the BCA; • Fibre-cement and hardboard wall cladding boards: Part 3.5.3.3 of the BCA; • Fibre-cement, hardboard and plywood sheet wall cladding: Part 3.5.3.4 of the BCA; and • Fibre-cement sheet eaves: Part 3.5.3.5 of the BCA; and • Flashing: Part 3.5.3.6 of the BCA. Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.
Part 3.6 Glazing				X	Glazing must be selected and installed in accordance with AS 1288-2006 & AS 2047-1999. Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.
Clause 3.7.1.2 General concession – non-combustible materials			X		Informational
Clause 3.7.1.3 External walls of Class 1 buildings				X	An external wall of a Class 1 building, and any openings in that wall, must comply with 3.7.1.5 if the wall is less than– <ul style="list-style-type: none"> • 900 mm from an allotment boundary other than the boundary adjoining a road alignment or other public space; or • 1.8m from another building on the same allotment other than an appurtenant Class 10 building or a detached part of the same Class 1 building.
Clause 3.7.1.4 Measurement of distances			X		Informational – <p>(a) The distance from any point on an external wall of a building to an allotment boundary or another building is the distance to that point measured along a line at right angles from the allotment boundary or external wall of the other building which intersects that point without being obstructed by a wall complying with 3.7.1.5.</p> <p>(b) Where a wall within a specified distance is required to be constructed in a certain manner, only that part of the wall (including any openings) within the specified</p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<p>distance need be constructed in that manner.</p> <p>(c) Where the distance measured is between buildings of different heights, the distance must be taken from the external wall with the highest elevation measured at right angles to a point that intersects a vertical projection above the adjacent wall (see Figure 3.7.1.2b).</p>
<p>Clause 3.7.1.5 Construction of external walls</p>				X	<p>a) External walls required to be fire-resisting (referred to in 3.7.1.3 or 3.7.1.6) must extend to the underside of a non-combustible roof covering or noncombustible eaves lining (See Figure 3.7.1.3) and must—</p> <ul style="list-style-type: none"> (i) have an FRL of not less than 60/60/60 when tested from the outside; or (ii) be of masonry-veneer construction in which the external masonry veneer is not less than 90 mm thick; or (iii) be of masonry construction not less than 90 mm thick. <p>b) Openings in external walls required to be fire-resisting (referred to in 3.7.1.3 or 3.7.1.6) must be protected by—</p> <ul style="list-style-type: none"> (i) non-openable fire windows or other construction with an FRL of not less than – /60/–; or (ii) self-closing solid core doors not less than 35 mm thick. <p>c) Sub-floor vents, roof vents, weepholes, control joints, construction joints and penetrations for pipes, conduits and the like need not comply with (b).</p>
<p>Clause 3.7.1.6 Class 10a buildings</p>			X		Not applicable.
<p>Clause 3.7.1.7 Allowable encroachments</p>			X		<p>Informational -</p> <p>a) An encroachment is any construction between the external wall of the building and the allotment boundary other than a boundary adjoining a road or other public space, or the external walls of two buildings on the same allotment and relates to any external wall of—</p> <ul style="list-style-type: none"> (i) a Class 10a building required to comply with 3.7.1.5; or (ii) a Class 1 building. <p>b) The encroachments allowed within 900 mm of an allotment boundary or within 1.8 m of another building on the same allotment are—</p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<ul style="list-style-type: none"> (i) fascias, gutters and downpipes; and (ii) eaves with non-combustible roof cladding and non-combustible lining; and (iii) flues, chimneys, pipes, domestic fuel tanks, cooling or heating appliances or other services; and (iv) light fittings, electricity or gas meters, aerials or antennas; and (v) pergolas, sun blinds or water tanks; and (vi) unroofed terraces, landings, steps and ramps, not more than 1 m in height. <p>c) Encroachments listed in (b)(i), if combustible, (b)(ii) and (b)(iii) must not be built within 450 mm of an allotment boundary nor be built within 900 mm of the external wall or associated encroachments of another building on the same allotment (see Figure 3.7.1.9).</p>
<p>Clause 3.7.1.8 Separating walls</p>				X	<p>The separating wall between all townhouse units (as typical shown below) shall have an FRL of 60/60/60 as required under BCA- Volume 2 for the buildings.</p> 
<p>Clause 3.7.1.9 Fire hazard properties</p>				X	<p>Sarking materials must have a flammability index no greater than 5.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
<p>Clause 3.7.1.10 Roof lights</p>	X				<p>Not applicable – no roof lights are proposed</p>

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Clause 3.7.1.11 Separating Floors			X		Not applicable.
Part 3.7.2 Smoke alarms				X	Smoke alarms must be— <ul style="list-style-type: none"> • located in accordance with 3.7.2.3 and • comply with AS 3786 -2014, except that in a Class 10a <i>private garage</i> where the use of the area is likely to result in smoke alarms causing spurious signals, any other alarm deemed suitable in accordance with AS 1670.1-2015 may be installed elsewhere in the Class 1 building; and • be connected to the consumer mains power where consumer power is supplied to the building; and • be interconnected where there is more than one alarm; and <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
3.7.2.3 Location – Class 1a buildings				X	In a Class 1a building, smoke alarms must be on or near the ceiling in – <ul style="list-style-type: none"> (a) any storey containing bedrooms – <ul style="list-style-type: none"> (i) between each part of the dwelling containing bedrooms and the remainder of the dwelling; and (ii) where bedrooms are served by a hallway, in that hallway, and (b) on each other storey. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.7.3 Heating appliances			X		Not applicable
Part 3.7.4 Bushfire areas				X	Where located in a designated bushfire prone area (refer to Council maps) the building must be designed and constructed in accordance with the bushfire protection requirements of AS 3959-2009 and the specific conditions of the Development Consent. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.7.5 Alpine areas			X		Not applicable

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
Part 3.8.1 Wet areas and external waterproofing				X	<ul style="list-style-type: none"> Wet areas must be water resistant or waterproofed in accordance with Table 3.8.1.1 of the BCA and comply with AS 3740-2010. Waterproofing membranes for external above ground use must comply with AS 4654 Parts 1 & 2. <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Part 3.8.2 Room heights	X				Ceiling heights must be no less than: in habitable rooms, excluding kitchens – 2.4 m; and <ul style="list-style-type: none"> in kitchens – 2.1 m; and in non-habitable rooms, corridors, passageways and the like – 2.1 m; and in stairways – 2.0 m measured vertically above the nosing line. Building complies.
Part 3.8.3 Facilities	X				A Class 1 building must be provided with— <ul style="list-style-type: none"> a kitchen sink and facilities for the preparation and cooking of food; and a bath or shower; and clothes washing facilities, comprising at least one washtub and space in the same room for a washing machine; and a closet pan and washbasin.
3.8.3.3 Construction of sanitary compartments				X	The door to a fully enclosed sanitary compartment must— <ol style="list-style-type: none"> open outwards; or slide; or be readily removable from the outside of the compartment unless there is a clear space of at least 1.2 m, measured in accordance with Figure 3.8.3.3, between the closet pan within the sanitary compartment and the doorway. <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.8.4.2 Natural lighting				X	Natural lighting must be provided in a Class 1 building to all habitable rooms, in accordance with the following: (a) <ol style="list-style-type: none"> Natural lighting must be provided by— <ol style="list-style-type: none"> windows, excluding roof lights that— <p>(A) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less</p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	NA or Informational	Compliance Required	COMMENTS
					<p>than 10% of the floor area of the room; and</p> <p>(B) are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or</p> <p>(ii) roof lights that—</p> <p>(A) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 3% of the floor area of the room; and</p> <p>(B) are open to the sky; or</p> <p>(iii) a proportional combination of windows and roof lights required by (i) and (ii).</p> <p>b) A window required to provide natural light that faces a boundary of an adjoining allotment must not be less than a horizontal distance of 900 mm from that boundary.</p> <p>c) Natural lighting to a room in a Class 1 building may come through a glazed panel or opening from an adjoining room (including an enclosed verandah) if—</p> <p>(i) the glazed panel or opening has an area of not less than 10% of the floor area of the room to which it provides light; and</p> <p>(ii) the adjoining room has—</p> <p>(A) windows, excluding roof lights that—</p> <p>(aa) have an aggregate light transmitting area of not less than 10% of the combined floor area of both rooms; and</p> <p>(bb) are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like; or</p> <p>(B) roof lights that—</p> <p>(aa) have an aggregate light transmitting area of not less than 3% of the combined floor area of both rooms; and</p> <p>(bb) are open to the sky; or</p> <p>(C) a proportional combination of windows and roof lights required by (A) and (B).</p> <p>(iii) the areas specified in (i) and (ii) may be reduced as appropriate if direct natural light is provided from another source.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Clause 3.8.4.3				X	Sanitary compartments, bathrooms, shower rooms, airlocks and laundries must be provided with artificial

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Artificial lighting					<p>light in natural lighting in accordance with the relevant provisions of 3.8.4.2 is not available –</p> <ul style="list-style-type: none"> (a) At a rate of not less than one light fitting per 16m² of floor area; or (b) In accordance with AS/NZS 1680.0.
Part 3.8.5 Ventilation				X	<p>All rooms must be provided with ventilation in accordance with the following:</p> <ul style="list-style-type: none"> • natural ventilation by windows with an openable area no less than 5% of the floor area of the compartment; or • mechanical ventilation which exhausts directly to the outside of the building by way of ducts. <p>Building complies.</p>
Clause 3.8.6.2 Sound insulation requirements				X	<p>The separating walls between dwellings must–</p> <ul style="list-style-type: none"> (i) achieve the weighted sound reduction index with spectrum adaptation term (Rw + Ctr) and discontinuous construction requirements, as required by Table 3.8.6.1; and (ii) be installed in accordance with the appropriate requirements of 3.8.6.3 and 3.8.6.4. <p>For the purpose of this Part, the Rw + Ctr must be determined in accordance with AS/NZS 1276.1 or ISO 717.1, using results from laboratory measurements.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Clause 3.8.6.3 General installation requirements for walls				X	<ul style="list-style-type: none"> • The junction of sound insulated walls with any perimeter walls and roof cladding, be sealed in accordance with Figure 3.8.6.2 of the BCA. • Masonry units must be laid with all joints filled solid, except for adequately sound insulated articulation joints, including those between the masonry and any adjoining construction. • Plasterboard must be installed as follows: <ul style="list-style-type: none"> (i) If one layer is required on both sides of a wall the joints must be staggered on opposite sides (See Figure 3.8.6.3). (ii) If two layers are required, the first layer must be fastened in accordance with (i) and the second layer joints must not coincide with those of the first layer (See Figure 3.8.6.3). (iii) The following joints must be taped and filled solid: <ul style="list-style-type: none"> (A) Outer layer joints between sheets. (B) Joints between sheets and any adjoining

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<p>construction.</p> <ul style="list-style-type: none"> • Steel framing and perimeter members must be installed as follows: <ul style="list-style-type: none"> (i) The section of steel must be not less than 0.6 mm thick. (ii) Studs must be not less than 63 mm in depth unless another depth is specified in Table 3.8.6.2. (iii) Studs must be fixed to steel top and bottom plates of sufficient depth to permit secure fixing of the plasterboard. (iv) All steel members at the perimeter of the wall must be securely fixed to the adjoining structure and bedded in resilient compound or the joints must be caulked so that there are no voids between the steel members and the wall. • Timber studs and perimeter members must be installed as follows: <ul style="list-style-type: none"> (i) Studs must be fixed to top and bottom plates of sufficient depth to permit secure fixing of the plasterboard. (ii) Noggings and like members must not bridge between studs supporting different wall leaves. (iii) All timber members at the perimeter of the wall must be securely fixed to the adjoining structure and bedded in resilient compound or the joints must be caulked so there are no voids between the timber members and the wall. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Clause 3.8.6.4 Services				X	<ul style="list-style-type: none"> a) Services must not be chased into concrete or masonry separating walls. b) If a duct, soil, waste, water supply or storm water pipe serves or passes through a separating wall or is located in a separating wall— <ul style="list-style-type: none"> (i) a door or panel providing access to a duct or pipe required to be separated must— <ul style="list-style-type: none"> (A) not open into any habitable room, other than a kitchen; and (B) in any other part must be firmly fixed so as to overlap the frame or rebate of the frame by not less than 10 mm and be constructed of— <ul style="list-style-type: none"> (aa) wood, plasterboard or blockboard not

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					<p>less than 33 mm thick; or</p> <p>(bb) compressed fibre reinforced cement sheeting not less than 9 mm thick; or</p> <p>(cc) other suitable material with a mass per unit area not less than 24.4 kg/m²; and</p> <p>(ii) in the case of a water supply pipe, it must—</p> <p>(A) only be installed in discontinuous construction; and</p> <p>(B) in the case of a water supply pipe that serves one dwelling, not be fixed to the wall leaf on the side of any other dwelling and have a clearance not less than 10 mm to the other wall leaf.</p> <p>c) Electrical outlets must be offset from each other—</p> <p>(i) in masonry walling, not less than 100 mm; and</p> <p>(ii) in timber or steel framed walling, not less than 300 mm.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
<p>Clause 3.9.1.3 Stair construction</p>				X	<ul style="list-style-type: none"> The nominal dimension of goings and risers of a stair must be constant throughout each stair flight except that the going of winders in lieu of a quarter or half landing may vary from the going of the straight treads within the same flight provided that the going of all such winders is constant. A flight of stairs must not have more than 3 winders in lieu of each quarter landing or 6 winders in lieu of each half landing. The riser opening must not allow a 125 mm sphere to pass through between the treads. Treads must have a surface with a slip-resistance classification not less than that listed in Table 3.9.1.1 when tested in accordance with AS 4586; or a nosing strip with a slip-resistance classification not less than that listed in Table 3.9.1.1 when tested in accordance with AS 4586. Landings must be not less than 750 mm long and where this involves a change in direction, the length is measured 500 mm from the inside edge of the landing. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
<p>Clause 3.9.1.4</p>				X	<p>The riser and going dimensions for each flight, except</p>

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Riser and going dimensions					<p>for the going of winders in lieu of a quarter or half landing, must comply with the following:</p> <ul style="list-style-type: none"> The going (G), riser (R) and slope relationship quantity (2R+G) must be in accordance with Figure 3.9.1.2. Risers must be between 115 mm to 190 mm in height; and Goings must be between 240 mm and 355 mm. <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.9.1.5 Thresholds				X	<p>Where a threshold is more than 190 mm above the adjoining surface, it must incorporate steps having riser and going dimensions in accordance with 3.9.1.4.</p> <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.9.2.2 When balustrades or other barriers are required.				X	<p>(a) A continuous balustrade or other barrier, except for a barrier provided to an openable window covered by 3.9.2.5, must be provided along the side of any roof to which public access is provided, any stairway or ramp, any floor, corridor, hallway, balcony, deck, verandah, mezzanine, access bridge or the like and along the side of any delineated path of access to a building, if—</p> <ul style="list-style-type: none"> (i) it is not bounded by a wall; and (ii) its level above the surface beneath, is more than 1 m. <p>(b) The requirements of (a) do not apply to—</p> <ul style="list-style-type: none"> (i) areas referred to in 3.9.1.2(b); or (ii) a retaining wall unless the retaining wall forms part of, or is directly associated with a delineated path of access to a building from the road, or a delineated path of access between buildings. <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.9.2.3 Balustrades or other barrier construction				X	<ul style="list-style-type: none"> The balustrades must be designed to take loading forces in accordance with AS/NZS 1170.1. The height of the balustrade must be not less than 865 mm above the nosing line of the stairs and not less than 1m above the landings. <p>A transition zone may be incorporated where the balustrade height changes from 865mm on the stair flight to 1m at the landing as per Figure 3.9.2.2. below.</p> <ul style="list-style-type: none"> Openings in balustrades (including decorative

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<p>balustrades) or other barriers must be constructed so that they do not permit a 125 mm sphere to pass through it and for stairs, the opening is measured above the nosing line of the stair treads.</p> <ul style="list-style-type: none"> Wire balustrades must comply with clause 3.8.2.3 (f). Glass balustrades must comply with AS 1288-2006. <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.9.2.4 Handrails				X	<p>Handrails must:</p> <ul style="list-style-type: none"> be located along at least one side of the flight or ramp; and be located along the full length of the flight or ramp, except in the case where a handrail is associated with a balustrade the handrail may terminate where the balustrade terminates; and have the top surface of the handrail not less than 865 mm vertically above the nosings of the stair treads or the floor surface of the ramp; and have no obstruction on or above them that will tend to break a handhold, except for newel posts, ball type stanchions, or the like. <p>The above requirements do not apply to—</p> <p>(i) areas referred to in 3.9.1.2(b); or</p> <p>(ii) a stairway or ramp providing a change in elevation of less than 1 m; or</p> <p>(iii) a landing; or</p> <p>(iv) a winder where a newel post is installed to provide a handhold; or</p> <p>(v) a stairway or ramp in a Class 10 building.</p> <p>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</p>
Clause 3.9.2.5 Protection of openable windows				X	<p>a) Windows must be provided with protection if the floor below the window is 2m or more above the surface beneath.</p> <p>b) Where the lowest level of the window opening is less than 1.7m above the floor, a window opening covered by (a) must comply with the following:</p> <p>(i) The openable portion of the window must be protected with—</p> <p>A. a device to restrict the window opening; or</p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	Informational NA or	Compliance Required	COMMENTS
					<p>B. a screen with secure fittings.</p> <p>(ii) A device or screen required by (i) must–</p> <p>A. not permit a 125 mm sphere to pass through the window opening or screen; and</p> <p>B. resist an outward horizontal action of 250 N against the–</p> <p>aa. window restrained by a device; or</p> <p>bb. screen protecting the opening; and</p> <p>C. have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden.</p> <p>c) A barrier with a height not less than 865 mm above the floor is required to an openable window–</p> <p>(i) in addition to window protection, when a child resistant screen release mechanism is required by (b)(ii)(C); and</p> <p>(ii) for openable windows 4m or more above the surface beneath if the window is not covered by (a).</p> <p>d) A barrier covered by (c) must not–</p> <p>(i) permit a 125 mm sphere to pass through it; and</p> <p>(ii) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
Part 3.9.3 Swimming pool access			X		Not applicable
Part 3.9.4 Swimming pool water recirculation systems			X		Not applicable
Part 3.10 Additional construction requirements			X		If located in a flood hazard area, the building must be constructed in accordance with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.
Part 3.11 Structural design manuals				X	<p>Structural engineer to provide structural drawings/details and accompanying structural design certificate to demonstrate that all building elements will comply with Part 3.11 of the BCA.</p> <p><i>Details demonstrating compliance with this clause</i></p>

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	NA or Informational	Compliance Required	COMMENTS
					<i>must be incorporated into the construction plans and specification.</i>
NSW 3.12.1 Application of NSW Part 3.12.1			X		<ul style="list-style-type: none"> NSW Part 3.12.1 only applies to thermal insulation in a Class 1 or 10 building where a development consent specifies that the insulation is to be provided as part of the development. The term development consent has the meaning given by the Environmental Planning and Assessment Act 1979. The Deemed-to-Satisfy Provisions of this Part for thermal breaks apply to all Class 1 buildings and Class 10a buildings with a conditioned space. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
NSW Part 3.12.1 Building fabric thermal insulation			X		<ol style="list-style-type: none"> Thermal insulation in a building must comply with the national BCA provisions of 3.12.1.1. A thermal break must be provided between the external cladding and framing in accordance with national BCA provisions of— <ol style="list-style-type: none"> 3.12.1.2(c) for a metal framed roof; and 3.12.1.4(b) for a metal framed wall. Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e). A floor with an in-slab heating or cooling system must comply with the national BCA provisions of— <ol style="list-style-type: none"> 3.12.1.5(a)(iii) for a suspended floor; or 3.12.1.5(c) and (d) for a concrete slab-on-ground. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
NSW Part 3.12.3 Building sealing				X	<ul style="list-style-type: none"> A seal to restrict air infiltration must be fitted to each edge of any external door, openable window or other such opening when serving a conditioned space or habitable room. <p>NB: Windows and doors complying with the maximum air infiltration rates specified in AS 2047 need not comply.</p> <ul style="list-style-type: none"> An exhaust fan must be fitted with a sealing device such as a self-closing damper, filter or the like when serving a conditioned space or habitable room. Roofs, external walls, external floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to

BCA DEEMED-TO-SATISFY PROVISION	COMPLIES	DOES NOT COMPLY	NA or Informational	Compliance Required	COMMENTS
					<p>minimise air leakage in accordance with (b) when forming part of the external fabric of a conditioned space or habitable room.</p> <ul style="list-style-type: none"> Any evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space or habitable room. <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>
NSW Part 3.12.5 Building services				X	<p>A heated water supply system must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.</p> <p><i>Details demonstrating compliance with this clause must be incorporated into the construction plans and specification.</i></p>

5.0 CONCLUSION


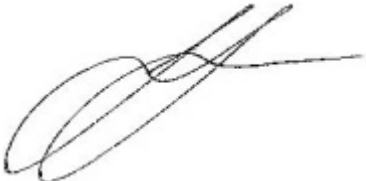
This report provides a Building Code of Australia 2016 (BCA) preliminary compliance assessment of the proposed residential development to be constructed at 25-27 Warriewood Road, Warriewood.

The development comprises 12 detached 3 storey townhouses and a 3 storey residential flat building comprising 32 apartments and two basement level car parks.

Note: The proposal comprises a mix of Class 2 & 7 buildings (apartment building north and south subject to a separate report) and the Class 1a town house development (subject of this report).

The primary purpose of this report is to identify any non-compliance matters contained in the proposed design against the current Deemed-to-Satisfy (DTS) Provisions of the BCA 2016 Class 1 & 10a buildings (Volume 2) and to provide compliance recommendations to overcome the DTS non-compliances.

This report provided a BCA 2016 assessment table in Section 3.0 that summarises the identified non-compliance matters and offers specific recommendations that are also outlined in the Executive Summary.

<p>Prepared by:</p>  <p>Adam Whitehouse Senior Building Surveyor For AE&D</p>	<p>Reviewed By:</p>  <p>Trenton Jones Director for AE&D</p>
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