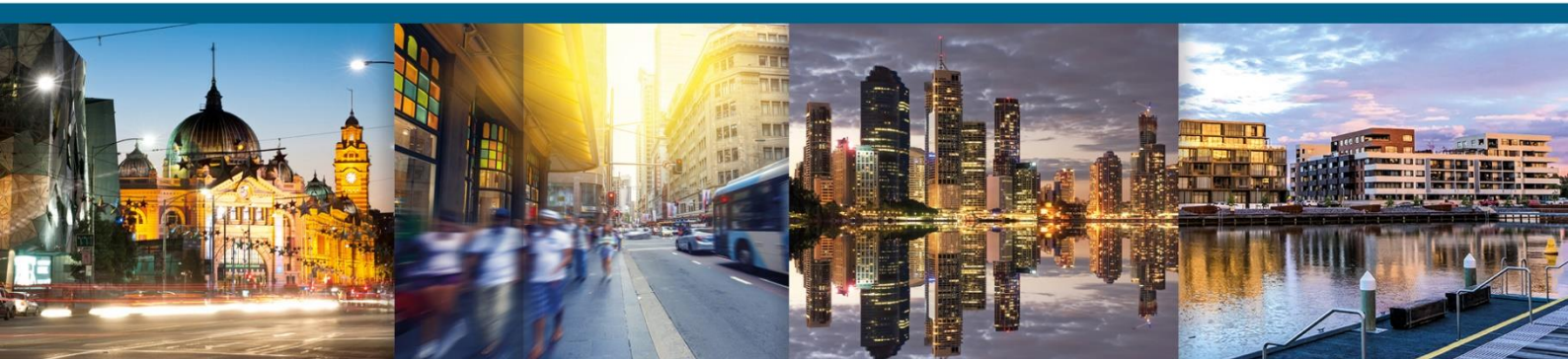




Pittwater House School

70 South Creek Road
Collaroy, NSW 2097

BCA Assessment Report to Accompany DA Submission



SYDNEY Level 17, 456 Kent Street, Sydney NSW 2000
MELBOURNE Level 8, 350 Queen Street, Melbourne VIC 3000
BRISBANE Level 4, 276 Edward Street, Brisbane QLD 4000
CANBERRA Level 1, Unit 14, 27 Hopetoun Circuit, Deakin ACT 2600

Phone: (02) 9283 6555 Fax: (02) 9283 8500
Phone: (03) 9380 5552 Fax: (03) 9380 5558
Phone: (07) 3088 2333 Fax: (07) 3088 2444
Phone: (02) 6100 6606 Fax: (02) 6100 6609



Report Revision History

SWP Quality System	
Job Number / Reference:	2019/1167
Revision Number:	R1.1
Issue Date:	29/10/2019
Author	Eddie Liu
Verifier	Andrew Rys

Revision History	
Revision Number:	1.0 Draft
Revision Details:	Draft Report for DA
Date:	4/09/2019
Author:	Eddie Liu
Verifier:	Andrew Rys



Introduction

This report presents the findings of a preliminary assessment of a proposed building works at Pittwater House School against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2019.

It has been prepared by building regulations consultants and certifiers Steve Watson and Partners for Neeson Murcutt Architects

Purpose

The assessment is undertaken for the purpose of, and to the extent necessary for, submission with the Development Application to Council under Part 4 of the Environmental Planning and Assessment Act.

Scope

The scope of this assessment is limited to the design documentation referenced in Appendix A of this report.

Description of Proposed Development

The proposed works involve the construction of a 2-storey library and a 4-storey universal access core building within Pittwater House School at 70 South Creek Road Collaroy NSW 2097.

Summary of Construction Determination	
BCA Classification	New Library – Class 9b New Universal Access Core – Class 9b
Number of storeys contained	New Library - 2 storeys New Universal Access Core – 4 storeys
Type of construction required	New Library – Type B New Universal Access Core – Type A
Effective height	New Library – Less than 12m New Universal Access Core – Less than 12m
Floor area	New Library (1646m ²) & Existing M-Block (2770m ²): circa 4416m² New Universal Access Core & Existing South & West Wing Building: circa 4176m²

Assessment

The following is a summary of an assessment of the proposed design against the relevant Deemed-to-Satisfy provision of the BCA 2019.

Section A: General Provisions

The scope of work at the Pittwater House School includes:



- Site demolition work
- Construction of a 2 storey class 9b library connected with the existing M-Block via a connecting bridge
- Construction of a 4 storey new universal access core connecting the existing West Wing and South Wing
- Associated staff carpark

Section B: Structure

The structural engineering design of the new library, connecting bridge and new universal access core will be required to comply with the structural provisions of Part B1 of the BCA, Design certification from a structural engineer is required at CC stage.

Section C: Fire Resistance

The new library is required to be of Type B construction. The FRL of building elements for Type B construction need to be in accordance with Table 4 of Specification C1.1 listed under Appendix D of this report.

The new universal access core is required to be of Type A construction. The FRL of building elements for Type A construction needs to be in accordance with Table 3 of Specification C1.1 listed under Appendix D of this report.

Proposed floor coverings and any proposed wall and ceiling lining materials must comply with the fire hazard properties nominated in Specification C1.10a of the BCA.

Section D: Access and Egress

Travel distance in the new library building complies. Future fitouts within the library will be subject to the following maximum travel distance limitations and departure from the travel distance requirements must be addressed by a performance solution:

- 20m to a single exit or point from which travel in different directions where 2 exits are available;
- 40m to the nearest exit where 2 or more exits are available;
- 60m between alternative exits;



Any enclosure of spaces under stairways in the Junior Library must not be enclosed to form an enclosed space unless the enclosing walls and ceiling have an FRL of not less than 60/60/60 and doorway is fitted with a self-closing -/60/30 fire door.

Section E: Services and Equipment

The new library and the universal access core buildings are required to be served by the fire services listed under Appendix B.

Section F: Health and Amenity

Minimum ceiling heights are to be 2.4m for schools and carpark except where 2.7m is required in corridors serving a building accommodating more than 100 persons.

Artificial lighting is required to all rooms that are occupied, all accessible spaces, all corridors and circulation spaces and path of egress in accordance with AS/NZS 1680.0 – 2009.

Ventilation will be required to all rooms occupied by a person for any purpose by means of natural ventilation complying with Clause F4.6 of the BCA or mechanical ventilation / air-conditioning complying with AS 1668.2 – 2012.

Separate unisex disabled toilets need to be provided for staff and students on both ground floor and Level 1 of the new library. A performance solution is required for shared unisex disabled toilet

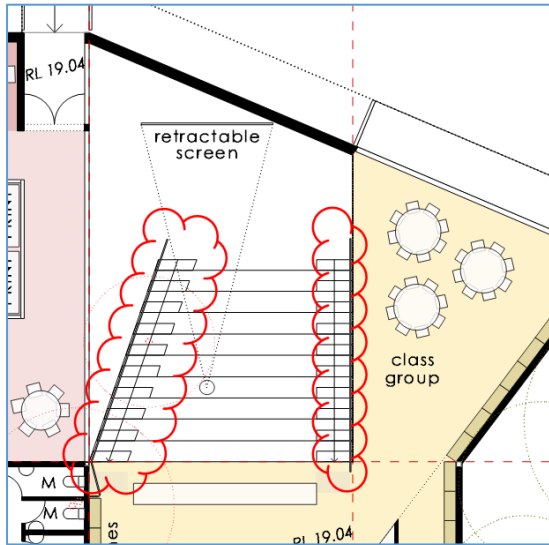
A BCA Performance Solution is required to document the compliance of the walls and roofing with Performance Requirement FP1.4 prior to the issue of the Construction Certificate.

Section G: Ancillary Provisions

The building does not contain elements subject to Section G Ancillary Provisions.

Section H: Class 9b Buildings

Detail of steps in the seating area in the Junior Library needs to be provided at CC stage.



Section J: Energy Efficiency

The buildings are to be designed to achieve compliance with the relevant provisions of BCA 2019 Part J1 to J8 respectively.

Key compliance items include:

- Roof and ceiling construction will be required to achieve compliance with Clause J1.3;
- External wall construction will be required to achieve compliance with Clause J1.5;
- External glazing will be required to achieve compliance with Clause J1.5;
- Building sealing will be required to windows and doors in accordance with the relevant sections Part J3;
- Air-conditioning and mechanical ventilation systems will need to be designed in accordance with the relevant sections of Part J5;
- Artificial lighting and power will need to be designed in accordance with the relevant sections of Part J6;
- Heated water supply system for food preparation and sanitary facilities to be designed and installed in accordance with Part B2 of the Plumbing Code of Australia; and
- Facilities for energy monitoring in accordance with Clause J8.3.

Alternative Solutions (potential)

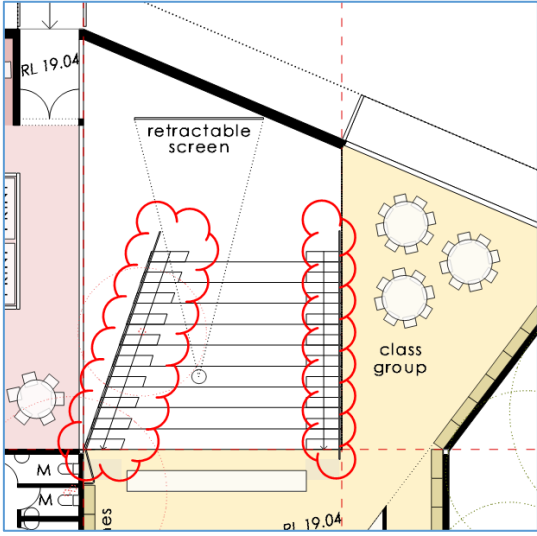
Item	Non-Compliance	DTS Clause	Description	Performance Requirement
1.	Parts of buildings to be accessible	D3.3	<p>A performance solution from an Access Consultant is required for single handrail in lieu of double handrails in seating area in the Junior Library</p>	DP1
2.	Weatherproofing	F1.0	A BCA Performance Solution is required to document the compliance of the walls and roofing with Performance Requirement FP1.4 prior to the issue of the Construction Certificate.	FP1.4
3.	Facilities in Class 3 to 9 buildings	F2.3	Separate unisex disabled toilets need to be provided for staff and students on both ground floor and Level 1 of the new library. A performance solution is required for shared unisex disabled toilet	FP2.1

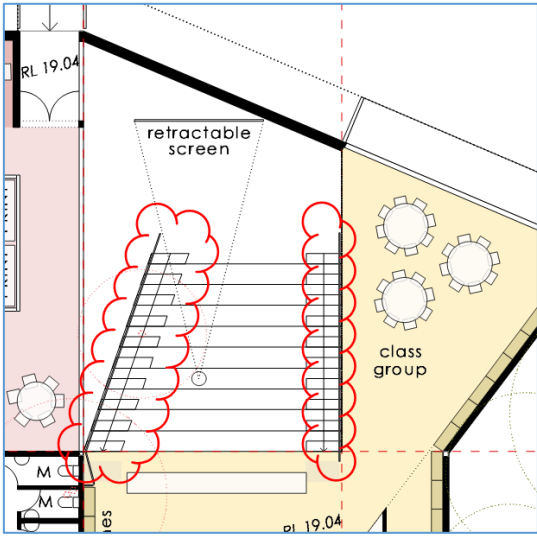
Summary of Additional Details Required at CC Stage

Item	Description	DTS Clause	Assessment	Comments
1.	Structural Provisions	Section B	New buildings need to be certified by a structural engineer. Reduced structural adequacy needs to be justified by a fire engineering solution.	Further information Required
2.	Non-combustible building elements	C1.9	<p>For a building of type A or B construction, external walls including all components incorporated in them including façade covering, framing and insulation must be non-combustible.</p> <p>Fire test reports to be provided for all proposed cladding</p>	Further information Required



Item	Description	DTS Clause	Assessment	Comments
3.	Floor, ceiling, wall and lift car linings	C1.10	Fire test reports to be provided for all proposed linings	Further information Required
4.	Ancillary elements	C1.14	Specification of any proposed signage material to be provided. Ancillary elements need to be non-combustible including the rooftop canopy, details to be provided.	Further information Required
5.	External Walls	Spec C1.1 (Table 4)	<ul style="list-style-type: none"> External walls require FRLs in accordance with Table 4 of Spec C1.1 tested from both sides. Details to be provided. 	Further information Required /
6.	Lift Pit	C1.9	Lift pit in the new library and the new universal access core required to be non-combustible. Details to be provided at CC stage.	Further information Required
7.	Enclosure of space under stairs and ramps	D2.8	Any spaces under stairs must not be enclosed to form an enclosed space unless the enclosing walls and ceiling have an FRL of not less than 60/60/60 and doorway is fitted with a self-closing -/60/30 fire door.	Further information Required
8.	Goings and risers	D2.13	Details to be provided of stairways in the new library and new universal access core. All commuting stair needs to be accessible complying with AS 1428.1 2009.	Further information Required
9.	Barriers to prevent falls	D2.16	A continuous barrier must be provided along <ul style="list-style-type: none"> a stairway and a ramp details to be provided	Further information Required

Item	Description	DTS Clause	Assessment	Comments
10.	Parts of Building to be accessible	D3.3	<p>Access is to be provided to all parts of the building normally used by the occupants as specified in the provisions of AS 1428.1 – 2009. This includes both the new library and the universal access core building.</p> <p>Certification from an access consultant needs to be provided at CC stage.</p> <p>A performance solution from an Access Consultant is required for single handrail in lieu of double handrails in seating area in the Junior Library:</p> 	<p>Further information required</p> <p>Performance Solution</p>
11.	Fire Hydrant	E1.3	Fire hydrant needs to be provided to the new library and the universal access core	Further information required
12.	Fire Hose Reel	E1.4	Fire hose reel coverage needs to be provided to the new library and all areas other than classrooms and associated corridors in a primary school	Further information required
13.	Portable fire extinguisher	E1.6	Portable fire extinguisher needs to be provided in classrooms. Details to be provided.	Further information required
14.	Automatic shutdown of air handling system	NSW Table E2.2b	Class 9b library and the universal access core must be provided with automatic shutdown of air handling system (other than non-ducted individual room units with a capacity not more than 1000L/s and miscellaneous exhaust air systems) on the activation of smoke detectors.	Further information required

Item	Description	DTS Clause	Assessment	Comments
15.	Emergency lighting requirement	E4.2	Details of emergency lights to be provided	Further information required
16.	Exit signs	E4.5 & E4.6	Details of exit signs to be provided	Further information required
17.	Weatherproofing	F1.0	A BCA Performance Solution is required to document the compliance of the walls and roofing with Performance Requirement FP1.4 prior to the issue of the Construction Certificate.	Performance Solution
18.	Facilities in Class 3 to 9 buildings	F2.3	Details of unisex disabled toilet to be provided. Separate unisex disabled toilets need to be provided for staff and students on both ground floor and Level 1 of the new library. A performance solution is required for shared unisex disabled toilet	Further information required Performance Solution
19.	Height of rooms and other spaces	F3.1	Minimum ceiling heights are to be 2.4m for schools except where 2.7m is required in corridors serving an assembly building accommodating more than 100 persons.	Further information required
20.	Seating area	H1.4	Detail of steps in the seating area in the Junior Library needs to be provided. 	Further information required
21.	Energy Efficiency	Section J	Report to be provided by section J Consultant	Further information required



Conclusion

This statement has been provided to accompany the Development Application submission following a preliminary assessment of the proposed design. The development adequately satisfies the intent of being able to comply with the requirements of the BCA for the purpose of DA submission.

We confirm the design as shown on the drawings referenced in Appendix A is capable of achieving compliance with the BCA subject to further detail at the design development stage. The design will be subject to a Construction Certificate to ensure all aspects of the design will comply with BCA requirements including any performance-based determinations.

Appendix A – Referenced Documentation

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

Drawing No.	Title	Issue	Date	Drawn By
1801	Coversheet	Draft DA	23/10/19	Neeson Murcutt Architects
1801	Site Analysis	Draft DA	23/10/19	Neeson Murcutt Architects
1801	Site Plan	Draft DA	23/10/19	Neeson Murcutt Architects
1801	Demolition Plans	Draft DA	23/10/19	Neeson Murcutt Architects
1801	Library and Student Services Plans	Draft DA	23/10/19	Neeson Murcutt Architects
1801	Library and Student Services Elevations & Sections	Draft DA	23/10/19	Neeson Murcutt Architects
1801	South & West Wing Universal Core Plans	Draft DA	23/10/19	Neeson Murcutt Architects

Appendix B – Schedule of proposed statutory Fire Safety Measures

Measure	Standard of Performance
Automatic fail safe devices	Scheduled devices release upon trip of smoke detection, fire detection or sprinkler activation in accordance with BCA2016 Clause D2.21.
Emergency lighting	BCA2019 Clause E4.2, E4.4 and AS 2293.1 – 2005
Exit signs	BCA2019 Clause E4.5, NSW E4.6, E4.8 and AS 2293.1
Fire seals protecting opening in fire resisting components of the building	BCA2019 Clause C3.15, Specification C3.15 and AS 1530.4 – 2005 and AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Fire Hydrant system	BCA 2019 Clause E1.3 and AS 2419.1 2005
Fire Hose reel system	BCA2019 Clause E1.4 and AS 2441 – 2005
Lightweight construction	BCA2019 Specifications C1.8, Clause A2.3 and AS 1530.4-2005
Portable fire extinguishers	BCA2019 Clause E1.6 and AS 2444 – 2001
Automatic Shutdown of air handling system	BCA 2019 NSW Table E2.2b and AS1668.1 2015



Measure	Standard of Performance
Smoke detectors	BCA 2019 NSW Table E2.2b and AS 1670.1 2018
Warning and Operational signs	BCA2019 Clauses E1.4 and E3.3
FER	TBC

Appendix C – Maximum size of fire compartment calculation

The maximum fire compartment size for Type B construction being documented below:

- Building is one fire compartment
- Maximum size of Class 9b fire compartment for Type B construction is 5,500m²
- Total floor area of the library & M-Block building is approximately 4,526m²

The maximum fire compartment size for Type A construction being documented below:

- Building is one fire compartment
- Maximum size of Class 9b fire compartment for Type B construction is 8,000m²
- Total floor area of the Universal Access Connection building, south wing & west wing is approximately 6,300m²

Appendix D – Fire-resistance levels

The below table contain the fire-resistance levels (FRL) required under Specification C1.1 of the BCA.

Type A Construction: FRL of Building Elements				
Building element	Class of building - FRL: (in minutes)			
	<i>Structural adequacy/Integrity/Insulation</i>			
	2, 3 or 4 part	5, 9 or 7a	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts-				
less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 TO LESS THAN 3 M	90/60/60	120/ 90/ 90	180/180/120	240/240/180
3 OR MORE	90/60/30	120/ 60/ 30	180/120/90	240/180/ 90
For non-loadbearing parts-				
less than 1.5 m	-/90/90	- /120/120	- /180/180	- /240/240
1.5 TO LESS THAN 3 M	-/60/60	- / 90/ 90	- /180/120	- /240/180
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
EXTERNAL COLUMN not incorporated in an external wall-				
For loadbearing columns	90/ - / -	120/ - / -	180/ - / -	240/ - / -
For non-loadbearing columns	- / - / -	- / - / -	- / - / -	- / - / -
COMMON WALLS and FIRE WALLS	90/90/90	120/120/120	180/180/180	240/240/240



Type A Construction: FRL of Building Elements				
INTERNAL WALLS-				
Fire-resisting lift and stair shafts-				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	- /90/90	- /120/120	- /120/120	- /120/120
Bounding public corridors, public lobbies and the like-				
Loadbearing	90/90/90	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Between or bounding sole-occupancy units-				
Loadbearing	90/90/90	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of Combustion-				
Loadbearing	90/90/90	120/ 90/ 90	180/120/120	240/120/120
Non-loadbearing	- /90/90	- / 90/ 90	- /120/120	- /120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
AND COLUMNS	90/ - / -	120/ - / -	180/ - / -	240/ - / -
FLOORS	90/90/90	120/120/120	180/180/180	240/240/240
ROOFS	90/60/30	120/ 60/ 30	180/60/30	240/ 90/ 60

Type B Construction: FRL of Building Elements				
Building element	Class of building - FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 9 or 7a	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts-				
less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 TO LESS THAN 3 M	90/60/30	120/ 90/60	180/120/90	240/180/120
3 TO LESS THAN 9 M	90/30/30	120/ 30/30	180/90/60	240/90/60
9 TO LESS THAN 18 M	90/30/-	120/30/-	180/60/-	240/60/-
18 M OR MORE	- / - / -	- / - / -	- / - / -	- / - / -
For non-loadbearing parts-				
less than 1.5 m	- /90/90	- /120/120	- /180/180	- /240/240
1.5 TO LESS THAN 3 M	- /60/30	- / 90/60	- /120/90	- /180/120
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
less than 3 m	90/ - / -	120/ - / -	180/ - / -	240/ - / -



3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
COMMON WALLS and FIRE WALLS	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS-				
Fire-resisting lift and stair shafts-				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	- /90/90	- /120/120	- /120/120	- /120/120
Bounding public corridors, public lobbies and the like-				
Loadbearing	60/60/60	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Between or bounding sole-occupancy units-				
Loadbearing	60/60/60	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
AND COLUMNS	60/ - / -	120/ - / -	180/ - / -	240/ - / -
ROOFS	- / - / -	- / - / -	- / - / -	- / - / -

Appendix E – Sanitary Facilities

Class	Use	Occupant Numbers			WC		Urinal		Basin	
		Total			Required / Provided		Required / Provided		Required / Provided	
9b	Primary School	Student number 818	Male		7	TBC	6	-	8	TBC
9b	Primary School	Student number 8181	Female		12	TBC	-	-	8	TBC
9b	Primary School	Staff number TBA	Male							
			Female					-		
			Unisex Disabled		(2 on each level of the library, i.e. 1 for student & 1 for staff)	2 on GL, 1 on L1	-	4	3	