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PROPOSED ALTERATIONS AND ADDITIONS TO GLENDWOOD HIGH SCHOOL

GLENWOOD PARK DRIVE & FORMAN AVENUE, GLENWOOD NSW 2768

BUILDING CODE OF AUSTRALIA 2019 AMENDMENT 1 STATE SIGNIFICANT DEVELOPMENT APPLICATION (SSDA) REPORT

Report prepared for:	NSW Department of Education Level 8, 259 George Street Sydney NSW 2020 Attention: Jeremy Stott – NSW Department of Education
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Date:	11 November 2021

DOCUMENT ACCEPTANCE

	Name	Signed	Date
Verified by	Frank De Pasquale		11/11/2021

REVISION HISTORY

Revision No.	Prepared by	Description	Date
R01	Rhoebee Clemente	Draft SSDA BCA Report	06/10/2021
R02	Rhoebee Clemente	Final SSDA BCA Report	10/11/2021

Introduction

This Building Code of Australia 2019 Amendment 1 (BCA 2019 Amdt 1) report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) in support of a State Significant Development Application (SSD - 23512960).

The development is for upgrading works comprising alterations and additions to Glenwood High School at 85 Forman Avenue, Glenwood. The site is legally described as Lot 5227 DP 868693.

The site is roughly rectangular in shape, with a total area of 60,790m2 and street frontages to Forman Avenue to the south and Glenwood Drive to the east. Glenwood Reserve adjoins the northern and western boundaries of the school.

This report addresses the relevant Secretary's Environmental Assessment Requirements (SEARs), specifically:

SEARs	Report Reference
Building Code Australia 2019 Amendment 1	20-013896_GlenwoodHS_FinalBCASSDAReport01_10112021

This report is the result of the review of the SSDA design package as issued by PTW Architects and as available at the time of assessment against the requirements of the Building Code of Australia 2019 Amendment 1 (BCA 2019 Amdt 1). This report overviews the design philosophy and provides information for the designers to incorporate into the design as well as identify areas that do not meet the BCA 2019 Amdt 1 requirements and may require some revision, additional details or performance solutions. Methodology is principally a review of the available SSDA design documentation and design report.

This report relates to the proposed works and additions to Blocks A, E, & J including the proposed new 3 storey building (referenced as Block N). The intent of this SSDA design report is to address the main Parts of the BCA inclusive of Parts A, B, C, D, E, F, G, H, and J of the BCA 2019 Amdt 1. This report demonstrates that the design is generally capable of meeting a combination of the Deemed-to-Satisfy and Performance Requirements of the BCA 2019 Amdt 1. Areas of the design are still being developed but likely to be addressed prior to issue of a Section 6.28 Crown Design Verification Certificate (S6.28 CDVC).

This report does not assess the impact of the Disability Discrimination Act (DDA) which is outside the scope of the BCA nor does it include compliance with Part D3 of the BCA. Refer to Access Consultant Report issued by Philip Chun Access for DDA related matters and or compliance. Any Access design amendments or additional information is to be addressed prior to the issue of a S6.28 CDVC.

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The Proposal

The proposed development seeks to upgrade Glenwood High School. The upgrade consists of the following alterations and additions:

- Construction of a new three-storey building at the north-eastern portion of the site facing Glenwood Park Drive which will accommodate new learning spaces;
- Construction of one storey performance pavilion;
- Refurbishment of existing Building Block A (ground floor only) to provide one new support unit within the space of an existing general learning space;

- Refurbishment of Building Block D (ground floor only) to provide an additional office space and storeroom;
- Refurbishment of Building Block E to re-purpose it on the ground floor for computer learning spaces, staff and administration spaces as well as upgrades to the library on the first floor;
- Refurbishment of Building Block J to re-purpose it from visual arts and performing arts to learning spaces and workshops for food tech and woods/metal unit;
- Demolition of existing botany room and construction of a new single storey pavilion comprising of interview rooms and end-of trip facilities; and
- The proposed development will also involve ancillary works at the site associated with the proposed upgrades.

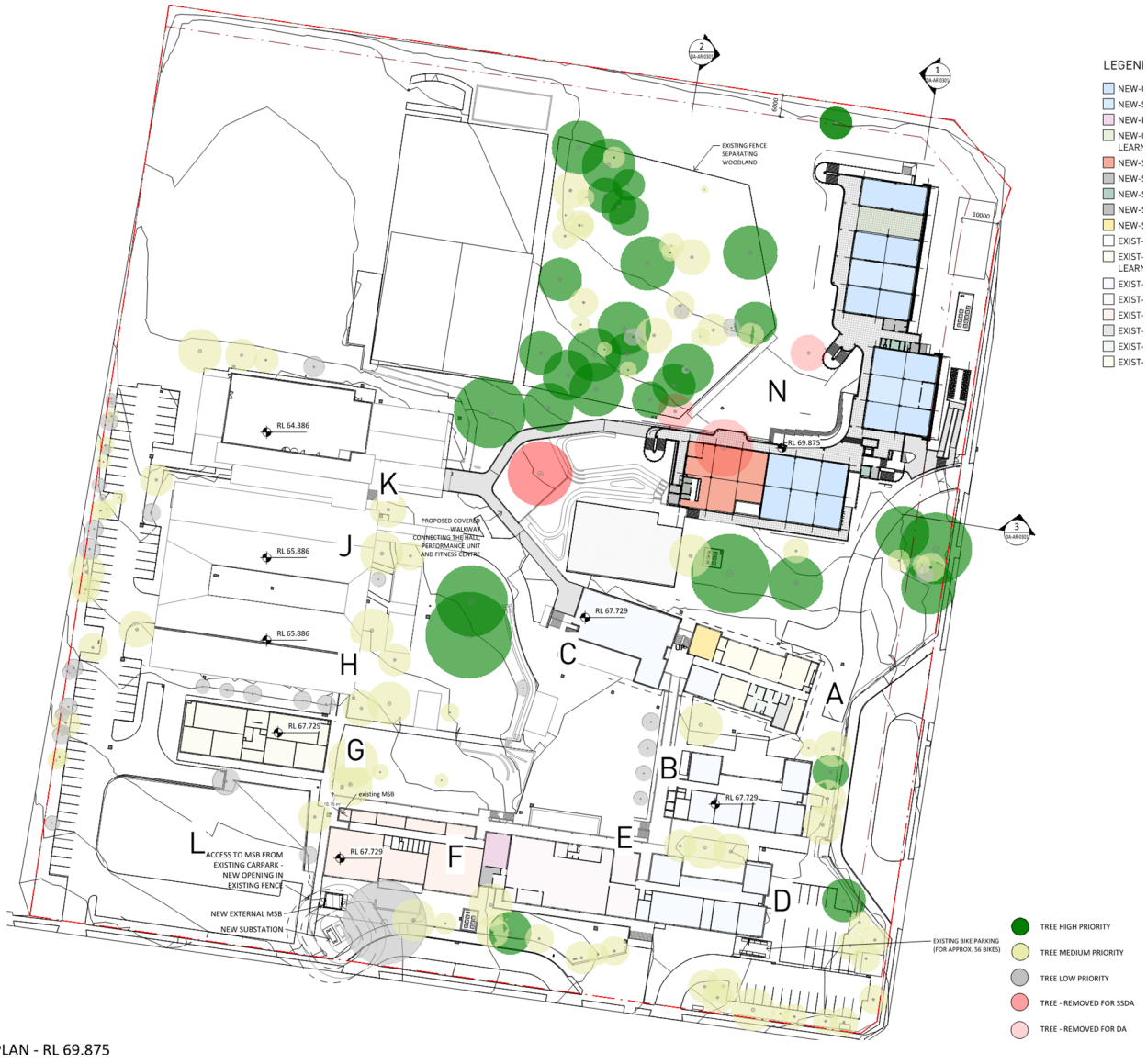
Documentation

The following architectural drawings prepared by PTW Architects form the basis of this report.

Dwg No. & Revision No.	Title	Date
DA-AR-0010/D	SSDA SITE PLAN – ROOF DEMO	10/11/21
DA-AR-0011/D	SSDA SITE – AERIAL VIEW – EXISITNG	10/11/21
DA-AR-0012/D	SSDA SITE + CONTEXT PLAN	10/11/21
DA-AR-0013/D	SSDA SITE ANALYSIS	10/11/21
DA-AR-0020/D	SSDA SITE PLAN -RL 62.075	10/11/21
DA-AR-0021/D	SSDA SITE PLAN -RL 65.975	10/11/21
DA-AR-0022/D	SSDA SITE PLAN -RL 69.875	10/11/21
DA-AR-0023/D	SSDA SITE PLAN – ROOF	10/11/21
DA-AR-0024/C	SSDA PUBLIC DOMAIN PLAN	10/11/21
DA-AR-0201/D	SSDA STREET ELEVATION	10/11/21
DA-AR-0301/D	SSDA SITE SECTIONS	10/11/21
DA-AR-A101/D	SSDA BUILDING A -DEMO PLAN - LEVEL 00	10/11/21
DA-AR-A102/D	SSDA BUILDING A -GA - LEVEL 00	10/11/21
DA-AR-E101/D	SSDA BUILDING DEF -DEMO PLAN - LEVEL 00	10/11/21
DA-AR-E102/D	SSDA BUILDING DEF -GA -LEVEL 00	10/11/21
DA-AR-E111/D	SSDA BUILDING DEF -DEMO PLAN - LEVEL 01	10/11/21
DA-AR-E112/D	SSDA BUILDING DEF -GA -LEVEL 01	10/11/21
DA-AR-E201/ C	SSDA BUILDING DEF -ELEVATIONS	10/11/21
DA-AR-E301/ C	SSDA BUILDING DEF -SECTIONS	10/11/21
DA-AR-HJ101/D	SSDA BUILDING HJ -DEMO PLAN - LEVEL 00	10/11/21
DA-AR-HJ102/D	SSDA BUILDING HJ -GA -LEVEL 00	10/11/21
DA-AR-N103/D	SSDA GA -LEVEL 00	10/11/21
DA-AR-N113/D	SSDA GA -LEVEL 01	10/11/21
DA-AR-N123/D	SSDA GA -LEVEL 02	10/11/21
DA-AR-N133/D	SSDA GA -LEVEL 03 -ROOF PLAN	10/11/21
DA-AR-N201/D	SSDA ELEVATIONS – SHEET 1	10/11/21
DA-AR-N202/D	SSDA ELEVATIONS – SHEET 2	10/11/21
DA-AR-N301/D	SSDA SECTIONS – SHEET 1	10/11/21
DA-AR-N302/D	SSDA SECTIONS – SHEET 2	10/11/21
DA-AR-N501/C	SSDA TYPICAL FAÇADE SECTIONS-SHEET1	10/11/21
DA-AR-N502/C	SSDA TYPICAL FAÇADE SECTIONS-SHEET2	10/11/21
DA-AR-P103/D	SSDA PERFORMING ARTS -FLOOR PLAN -RL 64.000	10/11/21
DA-AR-P113/D	SSDA PERFORMING ARTS -ROOF PLAN	10/11/21
DA-AR-P201/C	SSDA PERFORMING ARTS - ELEVATIONS – SHEET 1	10/11/21
DA-AR-P202/C	SSDA PERFORMING ARTS - ELEVATIONS – SHEET 2	10/11/21
DA-AR-P301/D	SSDA PERFORMING ARTS - SECTIONS	10/11/21

Site Location

Glenwood High School is located at Glenwood Park Drive & Forman Avenue, Glenwood NSW 2768.



˙E PLAN - RL 69.875

Site Plan

Building Code of Australia 2019 Amendment 1 Assessment

Section A – Governing Requirements

Compliance with the NCC (BCA) is achieved by complying with –

1. The Governing Requirements of the NCC; and
2. The Performance Requirements.

This development will comply with the Governing Requirements and adopt Performance Solutions to satisfy the Performance Requirements of the BCA 2019 Amdt 1.

The following BCA Classifications are considered applicable to the new building based on the classification and use of each level. For clarity see definitions below for each applicable class.

Building Classification(s)	Blocks A, B, C, G, H, J, K & L	Class 9b (Existing classrooms, amenities, gymnasium and pre-school)
	Blocks D, E & F	Class 5 & 9b (Staff rooms, reception, amenities, classroom and library)
	Block N Performance Workshop	Class 9b (Home bases, library, amenities and staff rooms)
Rise in Storeys	Block N – 3 Blocks D, E & F – 2 (forms one fire compartment) Blocks A & J – 1 Performance Workshop – 1	
Type of Construction	Block N - Type A Construction Blocks D, E & F – Type B Construction Blocks A, B, C, G, H, J, K & L – Type C Construction Performance Workshop – Type C Construction	
Effective Height (m)	Block N – 7.8m	

Note: Blocks B, C, G, H, K & L do not form part of the scope of works.

Building Classifications
The different parts of the building are classified as follows as they relate to the facility:

Class 5: - is an office building used for professional or commercial purposes.

Class 9: - is a building of a public nature—
(b) Class 9b — an assembly building, including a trade workshop, laboratory or the like in a primary or secondary school.

Section B – Structure

1. **Structural Provisions** – The new works to the buildings need to comply with the requirements of Part B1 of the BCA including Specification B1.2.

2. Designer/structural engineer to note all primary building elements which are subject to attack by subterranean termites must be protected in accordance with Termite Risk Management specified in AS3660.1-2000 and Clause B1.4 (i) of the BCA.

3. The fundamental concept of fire rating for the building will need to be in accordance with BCA Table 3 for Type A Construction or Table 4 for Type B Construction or Table 5 for Type C Construction of Specification C1.1 of BCA

4. Structural engineer to design the building to withstand individual actions in accordance with the following Standards; AS1170.1, AS1170.2 and AS1170.4.

Section C – Fire Resistance / Compartmentation & Separation

1. **Type of Construction (Block N)** – The building will have a rise in storey of 3 and is therefore required to be of not less than Type A Construction. The building needs to comply with BCA Table 3 for Type A Construction (See Appendix 1). Structural engineer will need to confirm at Crown Design Verification Certificate (CDVC) stage, the FRL's of the columns, slabs and load bearing walls in accordance with Table 3 of Spec C1.1 i.e. - **Class 9b –** 120 mins.

   Refer to Clauses 3.2 to 3.7 of Specification C1.1 of the BCA for Type A Construction and the relevant concessions that may apply subject to design confirmation and input from Structural Engineer.

   Type of Construction (Blocks D, E & F) – Blocks D, E & F form one fire compartment and have a rise in storey of 2 and are therefore required to be of not less than Type B Construction. The alterations and additions in these buildings need to comply with BCA Table 4 for Type B Construction (See Appendix 2). Structural engineer will need to confirm at Crown Design Verification Certificate (CDVC) stage, the FRL's of the columns and load bearing walls *for the new works only* in accordance with Table 3 of Spec C1.1 i.e. - **Class 5 & 9b –** 120 mins

   Type of Construction (Blocks A, J & Performance Workshop) – The buildings have rise in storey of 1 and are therefore required to be of not less than Type C Construction. The new performance workshop and the alterations in buildings A & J need to comply with BCA Table 5 for Type C Construction (See Appendix 3). Structural engineer will need to confirm at Crown Design Verification Certificate (CDVC) stage, the FRL's of the columns, slabs and load bearing walls *for the new works only* in accordance with Table 3 of Spec C1.1 i.e. - **Class 9b –** 90 mins.

   Architect and Structural Engineer to note the requirements for Type A, Type B and Type C Construction and the relevant concessions available above when designing the building. Any departures to the Deemed-to-Satisfy provisions of the BCA will require a Performance Solution from an accredited fire safety engineer.

2. **Non-Combustible materials** (C1.9) –

   (a) In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible:
   - (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.
   - (ii) The flooring and floor framing of lift pits.
   - (iii) Non-loadbearing internal walls where they are required to be fire-resisting.

   (b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of non-combustible construction in—
   - (i) a building required to be of Type A construction; and
   - (ii) a building required to be of Type B construction, subject to C2.10, in—
     - (A) a Class 2, 3 or 9 building; and
     - (B) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys.

   (c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1.

   (d) The requirements of (a) and (b) do not apply to the following:
   - (i) Gaskets.
   - (ii) Caulking.
   - (iii) Sealants.
   - (iv) Termite management systems.
   - (v) Glass, including laminated glass.
   - (vi) Thermal breaks associated with glazing systems.
   - (vii) Damp-proof courses.

   (e) The following materials may be used wherever a non-combustible material is required:
   - (i) Plasterboard.
   - (ii) Perforated gypsum lath with a normal paper finish.

(iii) Fibrous-plaster sheet.
(iv) Fibre-reinforced cement sheeting.
(v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
(vi) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5.
(vii) Bonded laminated materials where—
(A) each lamina, including any core, is non-combustible; and
(B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
(C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

Architect and Structural engineer to note. A design statement is to be provided prior to issue of a CDVC. This applies to Type A and B Construction.

3. **Fire Hazard Properties** (C1.10) – All new surface finishes, assemblies and linings are to comply with BCA Clause C1.10 (Specification C1.10) with regards to Fire Hazard Properties. ***Architect to note any materials selected and or proposed will require technical data sheets / test reports to ensure compliance with this clause prior to issue of a CDVC and or Crown Occupation Verification Certificate (COVC).***

4. **Ancillary Elements** (C1.14) **–** An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following;
   - An ancillary element that is non-combustible.
   - A gutter, downpipe or other plumbing fixture or fitting.
   - A flashing.
   - A grate or grille not more than 2m2 in area associated with building service.
   - An electrical switch, socket-outlet, cover plate or the like.
   - A light fitting.
   - A required sign etc.

   Architect and structural engineer to note. A design statement is to be provided prior to issue of a CDVC.

5. **Fire Compartmentation**

   Maximum size of fire compartments (for Class 9b being the predominate classification throughout):

   –Type A Construction - Max floor area 8000m^2 / Max volume 48000m^3;
   –Type B Construction - Max floor area 5500m^2 / Max volume 33000m^3.
   –Type C Construction – Max floor area 3000m^2 / Max volume 18000m^3

   The floor area and volume compartment of Building N will not exceed the limitations of Type A construction as each level will be fire separated by a concrete slab which achieves an FRL of at least 120min.

   The floor area of the Performance Workshop is approximately 405m^2 hence, complies.

   The floor area for Buildings D, E & F including the extension is to be confirmed prior to the issue of a CDVC.

   It is noted there will be no additional floor areas to Buildings A & J and assume complies.

   Architect to note. Confirmation of floor areas to all buildings to be provided prior to the issue of a CDVC.

6. **Spandrels** (C2.6) – In a building of Type A Construction, any part of a window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450mm outside the lower opening (measured horizontally), the opening must be separated in accordance with BCA C2.6. This requirement does not apply if the building is sprinkler protected (other than a FPAA101D or FPAA101H system) in accordance with Specification E1.5. ***Architect to note for Building N only. Detailed drawings are to be provided prior to issue of a CDVC.***

7. **Lightweight Construction** – Lightweight construction used in walls or used to give steel columns or the like a required FRL must comply with Specification C1.8. ***Compliance readily achievable. Architect to note – wall schedule and drawings are to be provided prior to issue of the CDVC where applicable to the new works.***

8. **Separation of lift shafts –** (C2.10) Any lift connecting more than 2 storeys, or more than 3 storeys if the building is sprinklered must be separated from the remainder of the building by enclosure in a shaft which, in a building required to be of Type A construction is to be separated from the rest of the building as per Table 3 of Spec C1.1. - ***Architect to note for Block N only. Details required prior to issue of a CDVC.***

9. **Separation of equipment** (C2.12) **–** Essential / emergency equipment including lift motor rooms, switch rooms, emergency generators, central smoke control plant, boilers or batteries are to be separated by fire rated construction with a fire resistance level as required by Specification C1.1 but not less than 120/120/120. ***Architect and services engineer to note.***

10. **Electricity supply system** (C2.13) **–** Where emergency equipment is required in a building, all switchboards in the electrical distribution system, which sustain the electricity supply to the emergency equipment, must provide full segregation by way of enclosed metal partitions designed to prevent the spread of any fault from non-emergency equipment switchgear to the emergency equipment switchgear. ***Any main switchboards (if new boards are proposed) or substation will need to be fire separated from any other part of the building. Confirm with Energy Australia as additional requirements may apply to substations. Services engineer to provide further details prior to the issue of a CDVC.***

11. **Protection of Openings in an external wall** (C3.2) **–** Openings in an external wall that is required to have an FRL must— (a) if the distance between the opening and the fire-source feature to which it is exposed is less than— (i) 3 m from a side or rear boundary of the allotment; or (ii) 6 m from the far boundary of a road, river, lake or the like adjoining the allotment, if not located in a storey at or near ground level; or (iii) 6 m from another building on the allotment that is not Class 10, be protected in accordance with C3.4 and if wall-wetting sprinklers are used, they are located externally; and (b) if required to be protected under (a), not occupy more than 1/3 of the area of the external wall of the storey in which it is located unless they are in a Class 9b building used as an open spectator stand. ***Architect to note.***

12. **Doorways in fire walls** (C3.5) – to be fire rated with an FRL of not less than that required by Specification C1.1 for the fire wall except that each door must have an insulation level of at least 30 **–** ***Architect to note. Details are to be provided prior to issue of a CDVC.***

13. **Openings in fire isolated exits** (C3.8) **–** Any doors opening into a fire isolated passageway, stair or ramp must be fire door with an FRL of not less than -/60/30 that are self-closing **or** an automatic closing door activated by smoke detector or other detector suitable in accordance with AS 1670 or any other required suitable fire alarm system, including a sprinkler system complying with Spec E1.5. - **–** ***Architect to note. Door schedule to be provided prior to issue of a CDVC.***

14. **Openings in fire isolated lift shafts** (C3.10) **–** Entrance doorways in lift shafts required to be fire isolated must be constructed with an FRL of not less than -/60/- and must comply with AS1735.11, and to remain close when not in use. - ***Compliance achievable. Details are to be provided prior to issue of a CDVC.***

15. **Openings in floors and ceilings for services** (C3.12) –
(a) Where a service passes through—
(i) a floor that is required to have an FRL with respect to integrity and insulation; or
(ii) a ceiling required to have a resistance to the incipient spread of fire, the service must be installed in accordance with (b)
(b) A service must be protected—
(i) in a building of Type A construction, by a shaft complying with Specification C1.1; or
(ii) in a building of Type B or C construction, by a shaft that will not reduce the fire performance of the building elements it penetrates; or
(iii) in accordance with C3.15.
(c) Where a service passes through a floor which is required to be protected by a fire-protective covering, the penetration must not reduce the fire performance of the covering. ***Compliance achievable. Services engineer to note prior to the issue of a CDVC.***

16. **Openings in shafts** (C3.13) **–** In a building required to be of Type A construction, any opening in a wall providing access to ventilating, pipe, garbage or other services shafts must be protected by - an access panel having an FRL of not less than –/60/30 **or** a self-closing –/60/30 fire door or hopper. - ***Compliance readily achievable. Architect to provide door schedule for compliance prior to issue of CDVC.***

17. **Openings for service installations** (C3.15) - Electrical, electronic, plumbing, mechanical ventilation, air-conditioning or other service penetrations that are required to have an FRL with respect to integrity or insulation or a resistance to the incipient spread of fire, must be fire sealed, fire rated or otherwise comply with listed standards. ***Compliance achievable. Services engineer to note prior to the issue of a CDVC.***

Section D – Access and Egress

18. **Access and Egress**

a. In addition to any horizontal exit, not less than 2 exits must be provided from each storey (D1.2)

b. The building travel distances are required to comply with the following deemed-to-satisfy requirements of the BCA:
- Maximum 20m to a point of choice.
- Maximum 40m to single exit
- Maximum 60m between alternative exits
- Alternative exits must not be less than 9m apart
- Alternative paths of travel must not converge less than 6m

c. Widths of exits and corridors must be sufficient to provide safe passage for occupant egress. The unobstructed width of each exit or path of travel to an exit, except for doorways, must be not less than 1m (D1.6).

d. Every stairway or ramp serving as a required exit must be fire-isolated unless it connects, passes through or passes by not more than 2 consecutive storeys and one extra storey of any classification may be included if the building has a sprinkler system complying with Specification E1.5 installed throughout – ***All of the egress stairs will comply with D1.8 of the BCA. Detailed drawings to be provided prior to issue of a CDVC.***

e. Each fire-isolated stair must provide independent egress from each storey served and discharge directly by way of its own fire isolated passageway to a road or open space **OR** to a point in a storey or space within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter **OR** into a covered area that adjoins a

road or open space, is open for at least 1/3 of its perimeter and has an unobstructed clear height throughout including the perimeter openings of not less that 3m and provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6m (D1.7). – ***current plans appear to comply.***

f. Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have— (i) an FRL of not less than 60/60/60; and (ii) any openings protected internally in accordance with C3.4, for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser. – ***current plans appear to comply.***

g. An external stairway or ramp may serve as a required exit in lieu of a fire-isolated exit serving a storey below an effective height of 25 m, if the stairway or ramp is— (i) non-combustible throughout; and (ii) protected in accordance with D1.8(c) if it is within 6 m of and exposed to any part of the external wall of the building it serves. ***– All of the egress stairs will comply with D1.8 of the BCA. Detailed drawings to be provided prior to issue of a CDVC.***

h. A non-fire-isolated stairway or non-fire-isolated ramp serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. ***– current plans appear to comply.***

i. In a Class 5, 6, 7, 8 or 9 building, the distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80 m. ***– current plans appear to comply.***

j. In a Class 5 to 8 or 9b building, a required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than— (i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or (ii) 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions. ***– current plans appear to comply.***

k. The space below a required non-fire-isolated stairway (including an external stairway) or non-fire-isolated ramp must not be enclosed to form a cupboard or other enclosed space unless— (i) the enclosing walls and ceilings have an FRL of not less than 60/60/60; and (ii) any access doorway to the enclosed space is fitted with a self-closing –/60/30 fire door.

l. The construction and discharge of stairs, landings, thresholds, balustrades and handrails must meet the requirements of the BCA D2.13, D2.14, D2.15, D2.16 and D2.17.

m. All doors need to be provided with a free lever latch located at 900-1100mm high or be fitted with fail-safe device which automatically unlocks the door upon fire trip (D2.21)

n. A swinging door in a required exit or forming part of a required exit must swing in the direction of egress.

o. Signage to be provided to the fire doors leading to the fire-isolated exits. The signage should be in accordance with Clause D2.23 and D3.6 of the BCA.

The above egress principles can be coordinated and detailed to comply during subsequent detailed design development stages. Compliance achievable but will require further assessment prior to issue of a CDVC.

19. **Access for people with disabilities** – Refer to Access Consultant report prepared by Philip Chun Access for specific BCA D3 and DDA requirements.

Section E – Services and Equipment

20. **Fire Hydrants (E1.3) –** The building must be served with fire hydrants complying with the requirements of BCA Clause E1.3 and AS 2419.1-2005 ***– Compliance readily achievable. Services consultant to provide details prior to issue of the relevant CDVC.***

21. **Hydrant Booster –** To comply with AS 2419.1-2005 and E1.3.

    AS2419.1-2005 requires the booster to be within sight of the main entrance of the building.

    Hydraulic consultant is to confirm if the existing booster is adequate to cater for the new proposed works. Further details to be provided prior to issue of a CDVC.

22. **Pump rooms** – Pump rooms located within a building shall have—
    (a) a door opening to a road or open space, or a door opening to fire-isolated passage or stair which leads to a road or open space; and
    (b) except where the building is sprinkler protected in accordance with AS 2118.1, enclosing walls with an FRL not less than that prescribed by the BCA for a firewall for the particular building classification served by the fire hydrant system.
    Architect and hydraulic consultant to provide further details prior to issue of CC.

23. **Fire Hose-reels (E1.4) –** The building must be provided with hose-reel coverage complying with the requirements of BCA Clause E1.4 and AS 2441-2005. Fire hose reels are not required to classrooms and associated corridors. ***Hydraulic consultant to provide further details prior to issue of a CDVC.***

24. **Extinguishers (E1.6) –** Fire extinguishers must be provided to all locations which are deemed a potential risk to the occupants of the building, i.e. areas such as main switchboards, labs etc. ***Wet & Dry fire consultant to provide details prior to issue of relevant CDVC.***

25. **Fire Control Centre (E1.8) –** A fire control centre facility in accordance with Specification E1.8 (Clauses 2-5) is required to be installed in the building. The final location of the FIP for the new buildings is to be determined by the fire service consultant. ***Architect and Fire services consultant to provide details prior to issue of CDVC. Any departures to be addressed by Fire Safety Engineer.***

26. **Smoke Hazard Management (Part E2 of the BCA) -** The following criterion applies to the building in terms of smoke hazard management and covers the various uses of the buildings. ***Once the design develops further and service consultants drawings are made available, for all mechanical and fire services, any departures to the requirements of smoke hazard management shall be addressed by the Fire Safety Engineer.***

Buildings not more than 25m in effective height	Requirements
Class 5, 6, 7b, 8 and 9b building: (a) Class 5 or 9b school building or part of a building having a rise in storeys of more than 3; or (b) Class 6, 7b, 8 or 9b building (other than a school) or part of a building having a rise in storeys of more than 2; or (c) building having a rise in storeys of more than 2 and containing— (i) a Class 5 or 9b school part; and (ii) a Class 6, 7b, 8 or 9b (other than a school) part, the building must be provided with— (d) in each required fire-isolated stairway, including any	***Technically not required from BCA perspective however, services consultant to check if there are specific requirements in the EFSG.***

associated fire-isolated passageway or fire-isolated ramp, an automatic air pressurisation system for fire-isolated exits in accordance with AS 1668.1; or (e) a zone pressurisation system between vertically separated fire compartments in accordance with AS 1668.1, if the building has more than one fire compartment; or (f) an automatic smoke detection and alarm system complying with Specification E2.2a; or (g) a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification E1.5	
NSW Class 9b – Assembly buildings: A building or part of a building used as an assembly building must be provided with automatic shutdown of any air-handling system which does not form part of the smoke hazard management system, on the activation of— (i) Smoke detectors installed complying with Clause 6 of Specification E2.2a; and (ii) Any other installed fire detection and alarm system, including a sprinkler system complying with Specification E1.5.	***Service consultant to note and to provide details prior to issue of CDVC.***

27. **Provision for special hazards:** Additional smoke hazard management measures may be necessary due to the —
(a) special characteristics of the building; or
(b) special function or use of the building; or
(c) special type or quantity of materials stored, displayed or used in a building; or
(d) special mix of classifications within a building or fire compartment,
which are not addressed in Tables E2.2a and E2.2b are to be considered by the fire safety engineer. ***Fire Safety Engineer to advise if required. Details are to be provided prior to issue of CDVC.***

28. **Stretcher Lift** – A stretcher facility must be provided to serve any storey above an effective height of 12m to accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600 mm wide x 2000 mm long x 1400 mm high above the floor level. ***Not required to Block N as the effective height of the building is less than 12m.***

29. **Exit and emergency lighting –** Emergency lighting and exit signs are required throughout the building. ***Electrical consultant to provide details prior to issue of CDVC.***

Section F – Health and Amenity

30. **Damp and Weatherproofing (FP1.4)** - The roofing and external wall systems shall be designed using materials and methods to prevent unhealthy or dangerous conditions or loss of amenity for occupants and undue dampness or deterioration of building element – ***A weatherproofing performance solution report shall be provided by an architect or façade engineer prior to issue of CDVC. Note, as there is no Deemed-to-Satisfy clause on the BCA to meet Performance Requirement FP1.4, there is no other way to comply with this requirement but through a Performance Solution.***

31. **Stormwater drainage** (F1.1) - Stormwater drainage must comply with AS/NZS 3500.3 unless the subject of a performance solution in which case compliance with FP1.3 shall be addressed using verification method as per A2.2 (2) (b) (ii) of the BCA.. ***Hydraulic services consultant to provide details prior to issue of CDVC.***

32. **Waterproofing of wet areas in buildings** (F1.7) - (wet areas must — (i) be water resistant or waterproof in accordance with Table F1.7; and (ii) comply with AS 3740. ***Architect to note and provide details prior to issue of CDVC***.

33. **Sanitary Facilities** (F2.1) **–** Sanitary and other facilities are required and shall be determined once final staff and student numbers are provided. The following provision will apply;

- Staff and students must not share the same facilities, hence separate facilities are required.
- The cubicles in each of the male and female staff and student sanitary facilities are to accommodate ambulant cubicles in accordance with BCA F2.4 and AS1428.1-2009.
- Unisex accessible sanitary facilities are to be provided in accordance with BCA F2.4 and AS1428.1-2009.
- Building occupants are to be assessed based on 50% male and 50% females or by direction from the client.
- Doors to fully enclosed sanitary compartments must open outwards, or slide or have 1.2m clear space between door and closet plan or be readily removable from the outside of the sanitary compartment.

Architect to note requirements and demonstrate compliance at next design revision.

34. **Room Sizes** (F3.1) - The minimum ceiling height of 2.4m is required to all Class 5 buildings with the exception that corridors, passageways, or the like may be reduced 2.1m.

– In a Class 9b building—
  a school classroom or other assembly building or part that accommodates not more than 100 persons — 2.4 m; and
  a theatre, public hall or other assembly building or part that accommodates more than 100 persons — 2.7 m
– A bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, or the like requires a minimum height of 2.1 m.
  Above a stairway, ramp, landing or the like requires a minimum height of 2 m measured vertically above the nosing line of stairway treads or the floor surface of the ramp, landing or the like

Compliance achievable. Architect to note.

35. **Lighting –** A combination of natural lighting and artificial lighting shall be provided and comply with Clauses F4.1 & F4.4 of the BCA including AS/NZS 1680.0-2009. ***Compliance achievable. Electrical services consultant to note.***

36. **Mechanical ventilation –** Mechanical ventilation must be provided where natural ventilation cannot be provided. ***Mechanical services consultant to provide details prior to issue of CDVC.***

Section G - Ancillary Provisions

37. **Window Cleaning NSW (G1.101)**
  a) A building must provide for a safe manner of cleaning any windows located 3 or more storeys above ground level.
  b) A building satisfies (a) where—
    (i) the windows can be cleaned wholly from within the building; or
    (ii) provision is made for the cleaning of the windows by a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.

Confirm the method of compliance prior to issue of CDVC.

38. **Occupiable Outdoor Areas (G6)** – outdoor areas that are normally occupied such as balconies and podiums will need to comply with Part G6 of the BCA. ***Architect to note.***

Section H – Class 9b Buildngs

Not applicable to the scope of works.

Section J – Energy Efficiency

39. **Energy Efficiency (Part J) –** This section is mandatory for Class 5 to 9 projects. The building is within Climate Zone 6, hence Part J applies to the building. ***Architect and consultants to note – details are to be provided prior to issue of CDVC.***

Conclusion

We have assessed the drawings with respect to the Building Code of Australia 2019 Amendment 1. We are confident that the design is generally capable of meeting a combination of the Deemed-to-Satisfy and Performance Requirements of the Building Code of Australia 2019 Amendment 1. Areas of the design are still being developed but likely to be addressed prior to issue of a Crown Design Verification Certificate (CDVC).

APPENDIX 1

Table 3 - TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building — FRL: (in minutes)			
	Structural adequacy/*Integrity*/*Insulation*			
	2, 3 or 4 part	5, 7a or 9	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 1.5 m	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 m 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
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

APPENDIX 2

Table 4 - 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, 7a or 9	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 1.5 m	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—				
For *loadbearing* columns—				
less than 18 m	90/–/–	120/–/–	180/–/–	240/–/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
For non-*loadbearing* columns—				
	–/–/–	–/–/–	–/–/–	–/–/–
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
Fire-resisting stair *shafts*—				
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 and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

APPENDIX 3

Table 5 - TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	Structural adequacy/*Integrity*/*Insulation*			
	2, 3 or 4 part	**5, 7a or 9**	**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—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	–/–/–	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
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 1.5 m	90/–/–	90/–/–	90/–/–	90/–/–
1.5 to less than 3 m	–/–/–	60/–/–	60/–/–	60/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding *public corridors*, public lobbies and the like—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if *required* to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–