Building Code of Australia

Assessment Report

Project: UNSW BUILDING E25 BIOLINK REDEVELOPMENT

Address: 356 Anzac Parade, Kensington, NSW 2052

Client: UNSW

Report Number: 240221

Revision: 04

REPORT REVISION HISTORY

Revision	Date Issued	Revision Description
01	12/11/24	Draft issued for client comment
		Prepared by
		Chris Michaels *Executive Director*
02	27/11/24	SSDA Issue
		Prepared by
		Chris Michaels *Executive Director*
03	05/12/24	Final SSDA Issue
		Prepared by
		Chris Michaels *Executive Director*
04	05/03/24	Revised Final SSDA Issue
		Prepared by
		 Chris Michaels *Executive Director*

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This Building code of Australia (BCA) report has been prepared by City Plan Services to accompany a detailed State Significant Development Application (SSDA) for alterations and additions to a UNSW teaching facility within the Kensington campus at 356 Anzac Parade, Kensington, NSW 2052. The site is made up of a single building within a large lot. The legal description of the site is outlined in Table 1.

Table 1 Legal Description

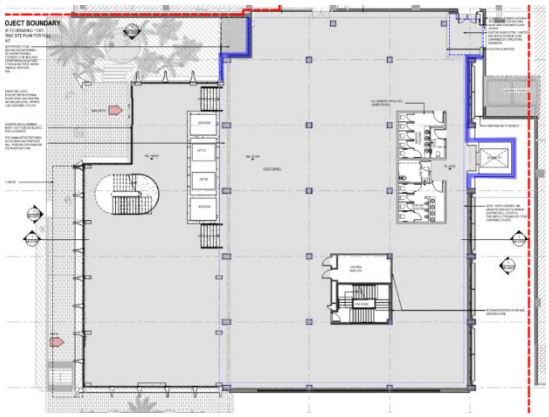
Property Address	**Title Description**
356 Anzac Parade, Kensington, NSW 2052	Lot 5 in Deposited Plan 1264171
Project Site Area	2,173sqm

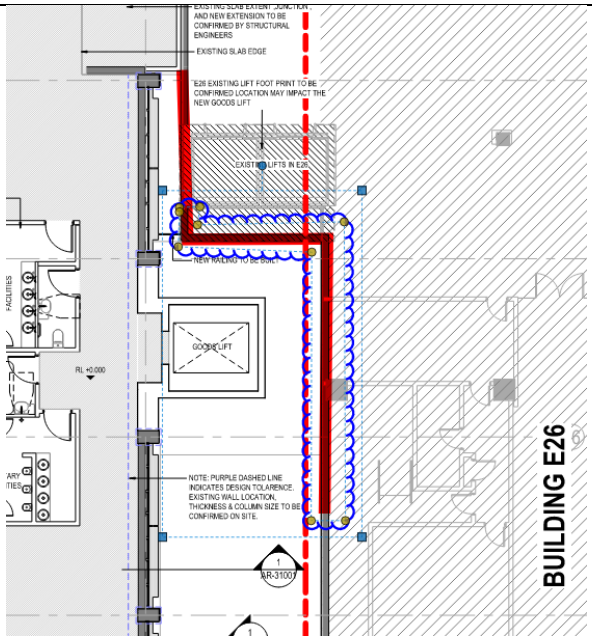
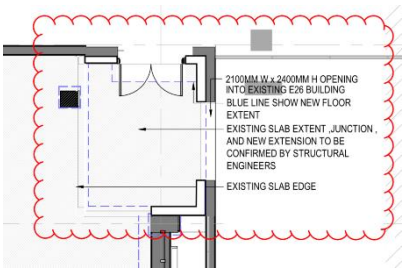
This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-73456206).

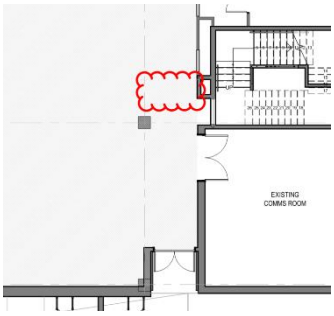
This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the performance solutions as mitigation measures and upgrade of the existing non-compliances listed in Table 2:

Table 2

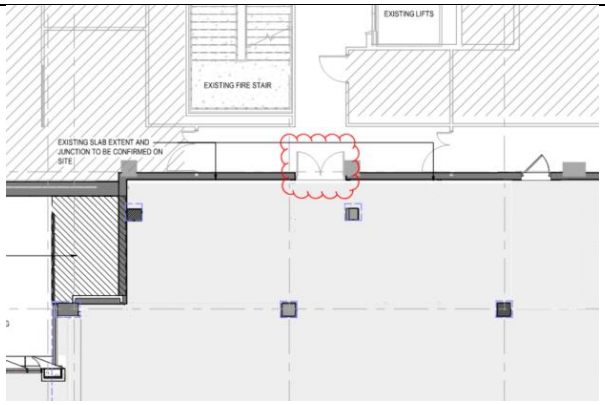
Clause	**Comments**	**Action**
B1D2 Resistance to actions to B1D4 Determination of structural resistance of materials & forms of construction	The existing building does not fully comply with the current structural provisions of the BCA. Full upgrade to current BCA structural standards is not feasible or practical. A degree of structural upgrade is proposed for the following: 1. Strengthening / alterations to the structure that are required to support the increased loading conditions. 2. Remediation to the structure where it has deteriorated. 3. Strengthening areas that represent a high structural risk. 4. Undertaking testing works to improve the reliability of the existing drawings and collect information where the drawings are incomplete. Further, a Structural Engineers Certificate will be provided prior to commencement of works certifying that the existing building can support the proposed loads, and that the structural capacity of the existing building will not be reduced. It is requested that the consent authority support a partial upgrade to the existing structure, under Clause 64 of the Environmental Planning and Assessment Regulation 2021, taking into consideration the existing nature of the building, the degree of structural upgrade proposed, and the impracticality of full compliance.	Partial upgrade of existing structure proposed

S5C11 Fire-resistance of building elements & C4D3 Protection of openings in external walls	The achieved FRLs for the existing structure (as determined by the structural engineer) are: • Slabs – 120/120/120 • Beams – 60/-/- • Columns – 60/-/- The Class 8 laboratory/animal holding/research on Levels Lower ground, Level 4 & 5 are to be performance justified to 2 hrs fire resistance in lieu of 4 hrs. Where the existing structure is less than 2 hr fire resistance, upgrade to 2 hrs is proposed. The existing beams and columns within the proposed Class 9b teaching levels (Ground to Level 3) are to be performance justified to 1 hr fire resistance in lieu of 2 hrs. The new extension on these levels will be designed to the 2hr deemed-to-satisfy requirements subject to a performance solution being provided to justify the non-fire separation between level 3 and 4 due to the connection of the open stairs. Any existing external walls proposed to be retained, and within 6 m of Building D26 or E26, that do not have the required FRL of 2 hours are to be reviewed by the fire engineer for consistency with the existing Fire engineering report prepared by Arup Ref 281879 rev A date 09.06.22. Any new walls within 6 m of Building D26 or E26 are to have the required FRL of 2 hours. Typical Level – walls less than 6 m from D26 & E26: 	Performance solution
	The existing E26 contains non-loadbearing external walls that are within 6 m of the proposed new external walls of E25. This includes the E26 storeys above the E25 building for a height of 15 m (by application of Clause S5C2). The extract below is a typical level identifying in red the E26 wall within 6 m of the proposed external walls of E25 and clouded in blue is the walls that do not have an FRL of 2 hours. Performance justification is required.	Performance solution

		
C2D10 Non-combustible building elements	The existing timber framing in the south elevation, internal skin of external wall, is to be removed. 	Upgrade considered necessary
C3D3 General floor area and volume limitations	Ground floor to Level 5 floor area does not comply with the floor area limits of this clause as it consists of a floor area of 7,489 m². Performance justification is proposed.	Performance Solution
C4D6 Doorways in fire walls	The proposed double doors running across all floors in the existing fire wall separating Building E25 from D26 are required to be fire doors achieving a fire rating of -/120/30. It is also proposed that there will be double doors opening into E26 from E25 which also require the same fire rating. 	Performance Solution

	The fire door tag to the LGF Fire doors separating Building E25 from E26 (South of E25) does not adequately identify the fire rating of the fire door. The tag has been damaged such that the FRL reference is not legible. The fire door is required to be a -/120/30 fire door (2 hrs proposed to be performance justified – refer to S5C11 above). The fire door shall be assessed by a fire door contractor and the fire rating confirmed and door/door tag rectified. Should the door be less than -/120/30 fire door, performance justification or replacement of the door is required.	Upgrade is considered necessary
C4D9 Openings in fire isolated exits	The existing fire stair complies except that the junction of the LGF fire stair fire door with the wall does not appear to be adequately sealed to maintain the FRL of the wall. Access to the room opening into the LGF fire isolated passageway was not available at the time of inspection. Confirmation is required that the door is tagged as at least -/60/30 fire door. The existing fire door and wall separating the Lower Ground Floor from the fire isolated passageway is to be retained to maintain fire separation of the fire isolated passageway as shown in Figure A.  *Figure A – Location of existing fire door*	Upgrade considered necessary
C4D10 Service penetrations in fire isolated exits	The fire isolated passageway on the LGF connecting fire stair to the outside of the building contains services (argon and nitrogen pipes) therein that are not permitted in the fire isolated passageway. The services shall be removed, or fire separated from the fire isolated passageway. 	Upgrade considered necessary
NSW D2D3 Number of exits required	The building is required to be provided with a minimum of 2 exit(s) for levels containing class 9b teaching and a minimum of 1 exit for other levels. The LGF to L5 building complies subject to the door opening into D26 on Ground floor to Level 5 being performance justified as a horizontal exit (it is technically not a deemed-to-satisfy exit as it discharges into another separate building). The rooftop plant room does not have a minimum of 2 exits serving the storey as required by this clause. Performance justification will be required.	Performance solution

D2D5 Exit travel distances	Egress travel distances from the rooftop plant room exceed 20 m to the fire stair. Performance justification of the extended travel distance is required.	Performance Solution
D2D12 Travel via fire isolated exits	At the discharge of the fire isolated exit to the outside of the building at LGF, travel to the street involves passing within 6 m of external doors within the elevation. Such doors are required to be -/60/30 fire doors. Access to open the doors was not available at the time of inspection. The doors shall be checked for compliance. Any noncompliance is to rectified to comply.	Upgrade considered necessary
D2D17 Non-required stairways, ramps or escalators	The open stair connecting ground floor to level 5 has been assessed as a non-required stairway. As the stair connects more than 3 storeys, performance justification is required.	Performance Solution
D3D8 Installation in exits and paths of travel	The services within the service cupboard in the LGF fire isolated passageway are to be removed from the cupboard. The cupboard door is to permanently fixed closed so that the cupboard is not usable. The opening in the floor slab at the top of the cupboard which is sealed with fire pillows is to be certified by a fire stopping contractor as providing an FRL of -/120/120.	Upgrade considered necessary
NSW D3D14 Goings and risers	The existing E25 fire stairs shall be upgraded as follows: (a) Contrast nosing's in accordance with AS1428.1. (b) The nosing's must have a slip resistance rating of not less than P3.	Upgrade considered necessary
D3D22 Handrails	A handrail shall be provided to the short stair flight in the fire isolated stair accessing the roof.  *Figure B – Stair to Roof*	Upgrade considered necessary
D3D25 Swinging doors	Currently there is an LGF E25 exit sign pointing towards the fire door separating E25. The exit sign shall be repositioned to the door opening into D26 subject to the door being provided with 'pull to open' signage being provided as required by the existing E25 FER .	Upgrade considered necessary
	The horizontal exit opening from E25 to D26 on each level is to be performance justified. We note that swing of the doors is currently justified in the existing E25 fire engineering report prepared by Arup Ref 281879 rev A date 09.06.22, however as building E25 is being extended, it should be readdressed.	Performance solution

		
E1D2 Fire hydrants	The position of the exiting hydrant outside the fire stair do not comply. Hydrants shall be installed within the fire stair in accordance with the BCA.	Upgrade considered necessary
E1D3 Fire hose reels	Fire hose reels shall be upgraded to comply with current BCA, including location requirements. In this regard the existing FHR near the southern fire stair is located 4.85 m from the fire stair door which is more than the maximum 4 m required by this clause.	Upgrade considered necessary
NSW E2D19 Class 9b - assembly buildings: other assembly buildings (not listed in NSW E2D16 to E2D18)	A class 9b building (except classrooms) must have an automatic smoke exhaust system complying with Spec 21 to fire compartments more than 2000 m2. Omission of smoke exhaust is to be performance justified.	Performance Solution
F3D5 Wall cladding	External wall cladding must comply with one or a combination of the following: *(a)* Masonry, including masonry veneer, unreinforced and reinforced masonry: AS 3700. *(a)* Autoclaved aerated concrete: AS 5146.3. *(b)* Metal wall cladding: AS 1562.1. External wall cladding, other than specified above, will require performance justification.	Performance solution

Following the implementation of the above mitigation measures, the remaining impacts are appropriate.

2. INTRODUCTION

2.1. General

The application seeks consent for alterations and additions to Building E25 for fit out and use as a teaching and research facility within the UNSW Kensington campus.

Specifically, the SSDA seeks development consent for:

- Site preparation works including the partial demolition of existing building and façade on the
- western side of the building
- Minor excavation to a depth of approximately RL 50.85
- External alterations and additions to the existing building including extension of the building to the west to provide a total GFA of 7,620sqm for use as teaching and learning facilities .
- Alterations to building links and external goods lift.
- Internal alterations to the existing building including fit out for use as teaching and learning facilities.
- Associated hard and soft landscaping

The purpose of the project is to facilitate the delivery of an upgraded and expanded teaching facility to meet the University's needs. The current building is not fit for purpose and underutilised with a large portion of the building vacant.

2.2. Purpose of Report

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 7 August 2024 and issued for the SSDA (SSD-73456206). Specifically, this report has been prepared to respond to the SEARs requirement:

Table 3 SEARS Requirements

Item	Description	Section reference (this report)
4	• Explain and illustrate the proposed built form, including a detailed site and context analysis to justify the proposed site planning and design approach. • Demonstrate how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality. • Demonstrate how the building design will deliver a high-quality development, including consideration of façade design, articulation, activation, roof design, materials, finishes, colours, any signage and integration of services. • Assess how the development complies with the relevant accessibility requirements.	4

2.3. The Site

The site is located at 356 Anzac Parade, Kensington within Randwick Local Government Area. The site is legally described as Lot 5 in Deposited Plan 1264171. The project site area is part of Lot 5 in DP 1264171, with an area of 2,137sqm. The wider lot has an approximate area of 10ha. The UNSW Kensington campus is made up on Lot 5 in DP 1264171 and Lot 3 in DP 1264172 and has a site area of approximately 35ha.

The urban context surrounding the site is characterised by a mix of education, health, commercial, retail and residential land uses.

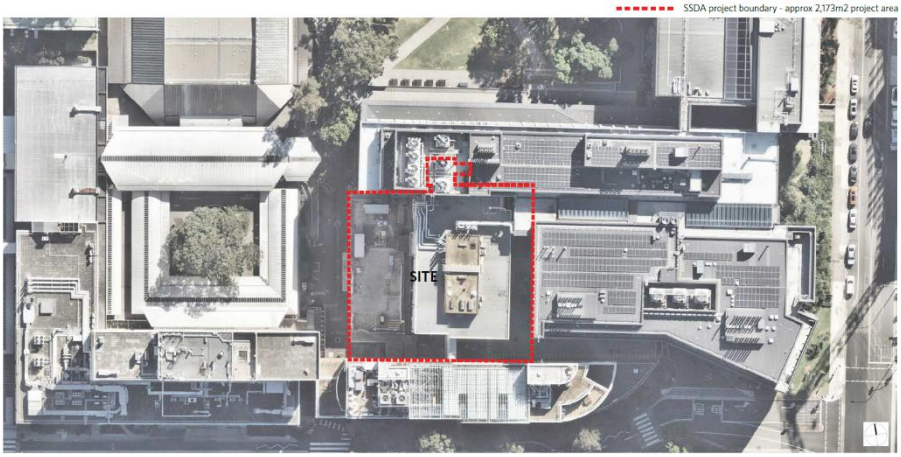
The surrounding locality is described below:
North: Directly to the north of the site is Building D26 Biological Sciences (north). Further to the north of the site is High Street, residential land uses and Randwick Racecourse.
East: Directly to the east of the site is Building E26 Biological Sciences (south). Further to the east is the Prince of Wales and Sydney Children's Hospitals
South: Directly south of the site Building F25 Samuels. Further to the south of the site is residential land uses comprising low and medium density housing.
West: To the west of the site is Chancellery Walk, Building E24 Matthews Pavilion and the wider UNSW campus.

The site benefits from excellent access to public and active transport. The site has access to the L2 light rail along High Street to the north which provides routes to Sydney CBD through Moore Park and Surry Hills. Additionally, multiple bus routes also run along High Street and Avoca Street to the east which provide access to various areas of the city and the eastern suburbs.

The existing development includes a six-storey building known as Building E25 Biolink built in the mid1970s. The building is part of the Faculty of Science and is currently underutilised University office space and storage with a number of spaces being vacant. Vehicle access to the building is via the Library Walk internal road which connects onto Botany Road. Service vehicle access is provided via campus Gate 11 and the existing service road to the east of the building. Staff car parking is available in close proximity to the site at the UNSW campus Botany Street car park to the south of the site. The building has pedestrian access from multiple points. There is no existing vegetation on the site.

Figure 1 – Site Location Plan within Lot 5

Figure 2 – Arial Photograph



2.4. Methodology

2.4.1. Information relied upon

The following information has been directly referenced or relied upon in the preparation of this report:

- Architectural plans prepared by HDR Pty Ltd, as identified in the attached Appendix 2.
- Inspection of the building on 01.07.24
- Fire engineering report Building E25 prepared by Arup Ref 281879 rev A date 09.06.22.
- Fire engineering report for Building D26 prepared by Arup Ref BS2-Arup-FS-0402 FER rev B dated 7.06.17.
- Fire engineering report Building E26 prepared by Arup Ref 238676 rev H dated 04.10.17.

- The Building Code of Australia 2022, inclusive of NSW variations (See Note 1).
- Environmental Planning and Assessment Act 1979.
- Environmental Planning and Assessment (Development Certification & Fire Safety) Regulation 2021
- Environmental Planning and Assessment Regulation 2021.

Note1: Building Code of Australia (BCA) 2022 was adopted in NSW on 1 May 2023. The version of the BCA applicable is the version as in force at the time of invitation of tenders to carry out the building work. Therefore, comments may be subject to changes to comply with updated versions of the Building Code of Australia.

2.4.2. BCA Description

(c) Relationship to Building D26 & E26

Building E25 has been assessed as a separate building to the attached Building E25 & E26 (Figure 2), for the purpose of BCA assessment, consistent with methodology outlined in the fire engineering report for Building E25 prepared by Arup Ref 281879 rev A date 09.06.22.

Figure 2 – Location Plan of E25 and surrounding buildings.

(d) Classification (BCA Part A6)

The E25 building consists of:

Level	Existing Classification	Proposed Classification
Lower ground	Class 8 Research	Class 8 Research
Ground	Class 5 Office Class 9b teaching	Class 9b teaching

Level 1	Class 5 office Class 8 Labs Class 9b teaching	Class 9b teaching
Level 2	Class 5 office Class 8 Labs Class 9b teaching	Class 9b teaching
Level 3	Class 5 office Class 8 Labs Class 9b teaching	Class 9b teaching
Level 4	Class 5 office Class 8 Labs Class 9b teaching	Class 8 laboratories & Research facility/Animal Holding
Level 5	Class 5 office Class 8 Labs Class 9b teaching	Class 8 laboratories & Research facility/Animal Holding
Level 6 roof	Class 8 plant	Class 9b

(e) **Effective Height (BCA Schedule 1)**

The proposed building will have an effective height of less than 25 m. (Level 5 RL 77.37 – LGF RL53.47 = 23.9m).

(f) **Rise in Storeys (BCA C2D3)**

The proposed building will consist of a rise in storeys of seven (7).

(g) **Type of Construction (BCA C2D2)**

Type A construction in accordance with Specification C2D2 of the BCA, is the applicable type of fire resisting construction.

2.5. Exclusions and Limitations

Refer to Attachment 2

3. ASSESSMENT & FINDINGS - BUILDING CODE OF AUSTRALIA ASSESSMENT

3.1. Structure (BCA Section B)

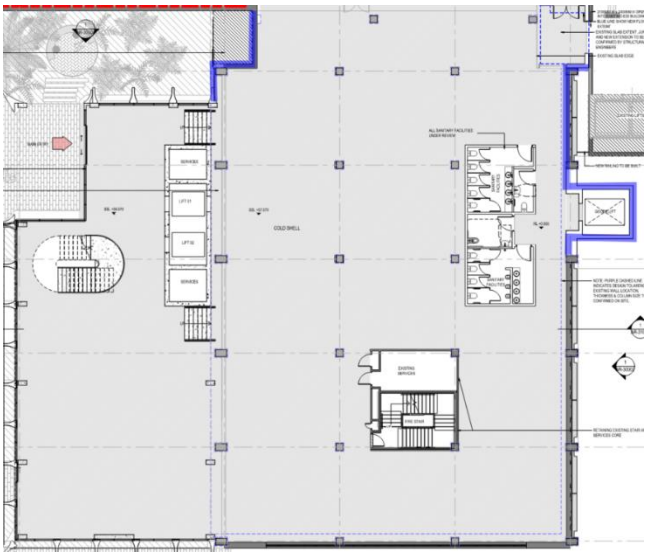
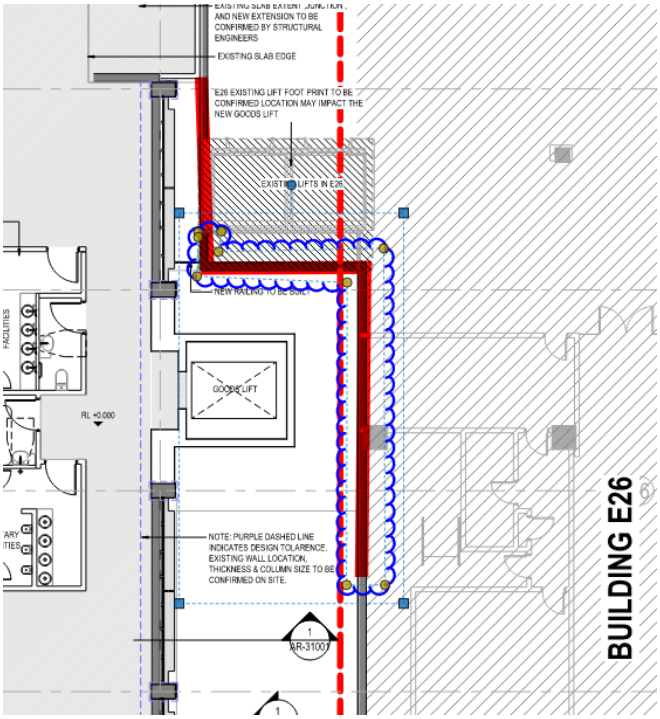
BCA Clause	Assessment and Comment	Status
Part B1 Structural Provisions		
B1D2 Resistance to actions	The structural design of the alterations and additions is to be completed by a Structural Engineer to meet the requirements of this provision.	Proposed alterations and additions are capable of complying
	The existing building does not fully comply with the current structural provisions of the BCA. Full upgrade to current BCA structural standards is not feasible or practical. A degree of structural upgrade is proposed for the following: 1. Strengthening / alterations to the structure that are required to support the increased loading conditions. 2. Remediation to the structure where it has deteriorated. 3. Strengthening areas that represent a high structural risk. 4. Undertaking testing works to improve the reliability of the existing drawings and collect information where the drawings are incomplete. Further, a Structural Engineers Certificate will be provided prior to commencement of works certifying that the existing building can support the proposed loads, and that the structural capacity of the existing building will not be reduced. It is requested that the consent authority support a partial upgrade to the existing structure, under Clause 64 of the Environmental Planning and Assessment Regulation 2021, taking into consideration the existing nature of the building, the degree of structural upgrade proposed, and the impracticality of full compliance.	Partial upgrade of existing structure proposed
B1D3 Determination of individual actions	The structural design is to be completed by a Structural Engineer to meet the requirements of this provision. Non-structural components such as partitions, ceilings, services, etc, and their fastenings must be designed for earthquake forces to comply with AS 1170.4-2007 Amdt 1 & 2, as relevant.	Proposed alterations and additions are capable of complying
	Refer to B1D2 above regarding existing structure.	Refer to B1D2 above regarding existing structure.
B1D4 Determination of structural resistance of materials & forms of construction	The structural resistance of the following materials and forms of construction for the following elements are to be in accordance with the standards nominated in this clause: ▪ Masonry ▪ Concrete ▪ Steel construction ▪ Composite steel and concrete ▪ Aluminium construction ▪ Timber construction	Proposed alterations and additions are capable of complying

BCA Clause	Assessment and Comment	Status
	▪ Piling ▪ Glazing assemblies ▪ Termite risk management ▪ Roof construction ▪ Particleboard structural flooring ▪ Garage doors ▪ Lift shafts The method of termite control shall be to: (a) use primary building elements (as defined by the BCA) that are of a material that is not subject to termite attack, ie. primary building elements must not be timber unless the timber is naturally termite resistant, or preservative treated in accordance with AS 3660.1; and (b) Provide physical or chemical termite control measures at the ground floor slab level in accordance with AS 3660.1 The structural design is to be completed by a Structural Engineer to meet the requirements of this provision.	
	Refer to B1D2 above regarding existing structure.	Partial upgrade of existing structure proposed
B1D5 Structural Software	Structural software used in computer aided design is to comply with the requirements of this provision.	Capable of Complying

3.2. Fire Resistance (BCA Section C)

BCA Clause	Assessment and Comment	Status
Part C2 Fire Resistance and Stability		
C2D2 Type of construction required	The type of fire resisting construction applicable is Type A construction.	Refer below
	Specification 5 Fire-resisting construction	
	S5C3 Fire protection for support of another part When determining FRL's applicable to a particular building element, the requirements of this clause are required to be complied with.	Proposed alterations and additions are capable of complying
	S5C4 Lintels Lintels are to be protected as required by the requirements of this clause	Proposed alterations and additions are capable of complying
	S5C5 Method of attachment not to reduce the fire resistance of building elements	Proposed alterations and additions are

BCA Clause	Assessment and Comment	Status
	The method of attaching or installing a finish, lining, ancillary element or service installation to the building element must not reduce the fire-resistance of that element to below that required.	capable of complying
	S5C6 General concessions Roof top plant rooms need not have an FRL if they are non-combustible, and they only contain equipment specified in this clause.	Capable of Complying
	S5C8 Enclosure of shafts Fire rated shafts are to be enclosed at the top and bottom in accordance with the requirements of this clause. Where the roof is constructed of lightweight construction, the shaft lids must be non-combustible and achieve an FRL of -/120/120	Capable of Complying
	Type A Fire resisting construction	
	S5C11 Fire-resistance of building elements Each building element listed in Tables S5C11a, S5C11b, S5C11c, S5C11d, S5C11e, S5C11f and S5C11g and any beam or column incorporated in it, must have an FRL not less than that listed in those Tables for the particular Class of building concerned. Any internal wall required to have an FRL with respect to integrity and insulation must extend to a building element referred to in S5C11(1)(b). A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be constructed from concrete or masonry. The FRLs specified in Table S5C11c for an external column apply also to those parts of an internal column that face and are within 1.5 m of a window and are exposed through that window to a fire-source feature. The achieved FRLs for the existing structure (as determined by the structural engineer) are: • Slabs – 120/120/120 • Beams – 60/-/- • Columns – 60/-/- The Class 8 laboratory/animal holding/research on Levels Lower ground, Level 4 & 5 are to be performance justified to 2 hrs fire resistance in lieu of 4 hrs. Where the existing structure is less than 2 hr fire resistance, upgrade to 2 hrs is proposed. The existing beams and columns within the proposed Class 9b teaching levels (Ground to Level 3) are to be performance justified to 1 hr fire resistance in lieu of 2 hrs. The new extension on these levels will be designed to the 2hr deemed-to-satisfy requirements subject to a performance solution being provided to justify the non-fire separation between level 3 and 4 due to the connection of the open stairs. Any existing external walls proposed to be retained, and within 6 m of Building D26 or E26, that do not have the required FRL are to be reviewed by the fire engineer for consistency with the existing Fire engineering report prepared by Arup Ref 281879 rev A date	Performance solution

BCA Clause	Assessment and Comment	Status
	09.06.22. Any new loadbearing walls are to have the required FRL of 2 hours. Any new non-load bearing external walls within 6 m of Building D26 or E26 are to have the required FRL of 2 hours. Typical Level – walls less than 6 m from D26 & E26: 	
	The existing E26 contains non-loadbearing external walls that are within 6 m of the proposed new external walls of E25. This includes the E26 storeys above the E25 building for a height of 15 m (by application of Clause S5C2). The extract below is a typical level identifying in red the E26 wall within 6 m of the proposed external walls of E25 and clouded in blue is the walls that do not have an FRL of 2 hours. Performance justification is required. 	Performance solution

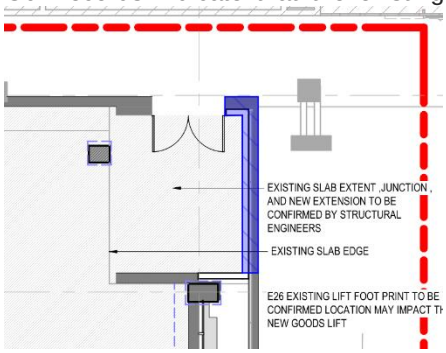
BCA Clause	Assessment and Comment	Status
	S5C15 Roof: Concession A roof need not comply with Table S5C11g if its covering is non-combustible and the building: *(a)* has a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17 installed throughout; or *(b)* has an effective height of not more than 25 m and the ceiling immediately below the roof has a resistance to the incipient spread of fire to the roof space of not less than 60 minutes.	Capable of Complying
	S5C16 Roof lights New roof lights are not proposed. The top of the existing fire stair contains a roof light that complies with this clause. Refer to S5C8 above for additional requirements for roof lights to fire stairs.	N/A to proposed works Existing skylight complies
	S5C17 Internal columns and walls: Concession Internal columns, internal walls (other than fire walls and shaft wall) immediately below the roof are permitted to achieve an FRL of 60/60/60. This concession does not apply to internal columns within 1.5m from the external windows	Capable of Complying
C2D9 Lightweight construction	Lightweight construction must comply with Specification 6 if it is used in a wall system: *(a)* that is required to have an FRL; or *(b)* for a lift shaft, stair shaft or service shaft or an external wall bounding a public corridor including a non fire-isolated passageway or non fire-isolated ramp, in a spectator stand, sports stadium, cinema or theatre, railway station, bus station or airport terminal. If lightweight construction is used for the fire-resisting covering of a steel column or the like, and if: *(a)* the covering is not in continuous contact with the column, then the void must be filled solid, to a height of not less than 1.2 m above the floor to prevent indenting; and *(b)* the column is liable to be damaged from the movement of vehicles, materials or equipment, then the covering must be protected by steel or other suitable material.	Capable of Complying
C2D10 Non-combustible building elements	1. In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible: (a) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation. (b) The flooring and floor framing of lift pits. (c) Non-loadbearing internal walls where they are required to be fire-resisting. 2. 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: (a) a building required to be of Type A construction; and (b) a building required to be of Type B construction, subject to C3D11, in: (i) a Class 2, 3 or 9 building; and	Capable of Complying

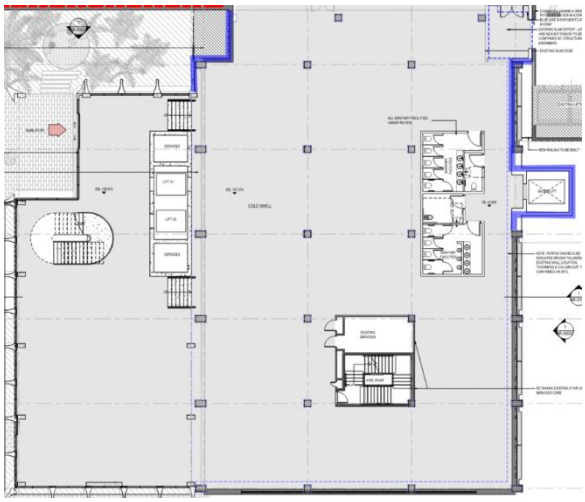
BCA Clause	Assessment and Comment	Status
	(ii) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys. 3. A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shafts, must comply with Specification 5. 4. The requirements of (1) and (2) do not apply to the following: (a) Gaskets. (b) Caulking. (c) Sealants. (d) Termite management systems. (e) Glass, including laminated glass, and associated adhesives, including tapes. (f) Thermal breaks associated with: (i) glazing systems; or (ii) external wall systems, where the thermal breaks: (A) are no larger than necessary to achieve thermal objectives; and (B) do not extend beyond one storey; and (C) do not extend beyond one fire compartment. (g) Damp-proof courses. (h) Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50 mm. (i) Isolated: (i) construction packers and shims; or (ii) blocking for fixing fixtures; or (iii) fixings, including fixing accessories; or (iv) acoustic mounts. (j) Waterproofing materials applied to the external face, used below ground level and up to 250 mm above ground level. (k) Joint trims and joint reinforcing tape and mesh of a width not greater than 50 mm. (l) Weather sealing materials, applied to gaps not wider than 50 mm, used within and between concrete elements. (m) Wall ties and other masonry components complying with AS 2699 Part 1 and Part 3 as appropriate, and associated with masonry wall construction. (n) Reinforcing bars and associated minor elements that are wholly or predominately encased in concrete or grout. (o) A paint, lacquer or a similar finish or coating. Adhesives, including tapes, associated with stiffeners for cladding systems. (p) Fire-protective materials and components required for the protection of penetrations. 5. The following materials, when entirely composed of itself, are non-combustible and may be used wherever a non-combustible material is required: (a) Concrete. (b) Steel, including metallic coated steel. (c) Masonry, including mortar. (d) Aluminium, including aluminium alloy. (e) Autoclaved aerated concrete, including mortar.	

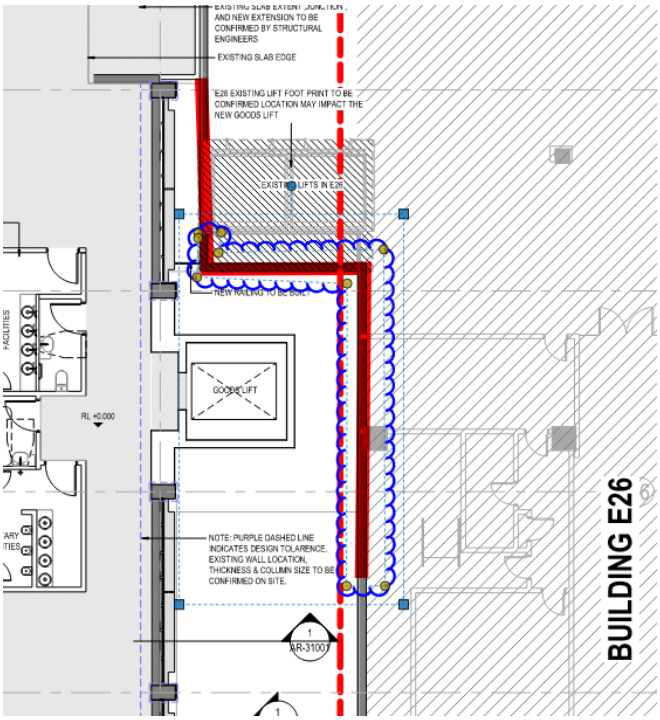
BCA Clause	Assessment and Comment	Status
	(f) Iron. (g) Terracotta. (h) Porcelain. (i) Ceramic. (j) Natural stone. (k) Copper. (l) Zinc. (m) Lead. (n) Bronze. (o) Brass. 6. The following materials may be used wherever a non-combustible material is required: (a) Plasterboard. (b) Perforated gypsum lath with a normal paper finish. (c) Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) 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. (f) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5. (g) Bonded laminated materials where: (i) each lamina, including any core, is non-combustible; and (ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (iii) 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; and (iv) when located externally, are fixed in accordance with C2D15.	
	The existing timber framing in the south elevation, internal skin of external wall, is to be removed. 	Upgrade considered necessary
NSW C2D11 Fire hazard properties	Proposed internal linings, materials and assemblies are to be selected to comply with the required fire hazard properties of Specification 7. Evidence of compliance (test certificates) shall be obtained from the supplier or manufacturer.	Capable of Complying
C2D14 Ancillary Elements	An ancillary element must not be fixed, installed, attached to or supported by the concealed internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following:	Capable of Complying

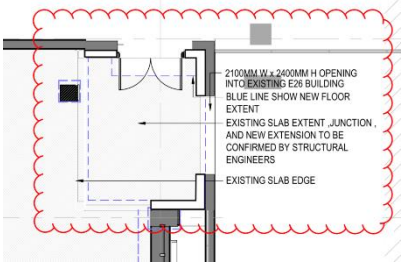
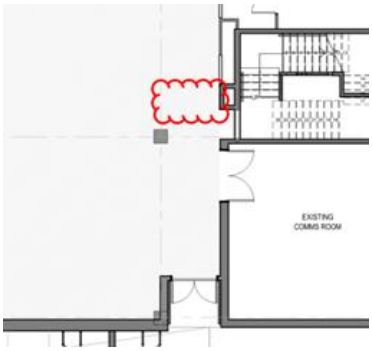
BCA Clause	Assessment and Comment	Status
	(a) An ancillary element that is non-combustible. *(b)* A gutter, downpipe or other plumbing fixture or fitting. *(c)* A flashing. *(d)* A grate, grille or similar cover not more than 2 m² in area associated with a building service. *(e)* An electrical switch, socket-outlet, cover plate or the like. *(f)* A light fitting. *(g)* A required sign. *(h)* A sign other than one provided under (a) or (g) that: (i) achieves a group number of 1 or 2; and (ii) does not extend beyond one storey; and does not extend beyond one fire compartment; and (iii) is separated vertically from other signs permitted under (h) by at least 2 storeys. *(i)* An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that: (i) meets the relevant requirements of Table S7C7 as for an internal element; and (ii) serves a storey: (A) at ground level; or (B) immediately above a storey at ground level; and (iii) does not serve an exit, where it would render the exit unusable in a fire. *(j)* A part of a security, intercom or announcement system. *(k)* Wiring. *(l)* Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface. *(m)* Collars, sleeves and insulation associated with service installations. *(n)* Screens applied to vents, weepholes and gaps complying with AS 3959. *(o)* Wiper and brush seals associated with doors, windows or other openings. *(p)* A gasket, caulking, sealant or adhesive directly associated with (a) to (o). ***Limitations:*** *C2D14 does not apply to ancillary elements fixed, installed or attached to the internal face or lining of an external wall.* ***Notes:*** *C2D14 does not prevent the mounting of domestic air-conditioning condenser units on external walls.* ***Explanatory information:*** *Ancillary elements fixed, installed or attached to the internal face or lining of an external wall may be subject to other provisions such as C2D11.*	
C2D15 Fixing of bonded laminated cladding panels	1. In a building required to be of Type A or B construction, externally located bonded laminated cladding panels must have all layers of cladding mechanically supported or restrained to the supporting frame. 2. An externally located bonded laminated cladding panel need not comply with (1) if it is one of the following: (a) A laminated glass system. (b) Layered plasterboard product.	Capable of Complying

BCA Clause	Assessment and Comment	Status
	(c) Perforated gypsum lath with a normal paper finish. Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) A component of a garage door.	
Part C3 Compartmentation and Separation		
C3D3 General floor area and volume limitations	The following maximum fire compartmentation floor area and volume limitations apply to the following fire compartments: Lower Ground floor: 5,000 m^2 and 30,000 m^3 Ground floor to Level 5*: 6,800 m^2 & 42,000 m^3 The LGF complies. Ground floor to Level 5 floor area does not comply as it consists of a floor area of 7,489 m^2. Performance justification is proposed. The Ground to Level 5 volume complies. * The maximum fire compartment size for GF to Level 5 has been calculated based on the percentage of each classification as a proportion of the actual floor area of the building as stated in the Guide to the BCA as follows: Floor area: • Maximum area of Class 9b allowed by Table C3D3 = 8,000 m^2 • The percentage of Class 9b is 60% = 60% of 8,000 m^2 = 4,800 m^2 • Maximum area of Class 8 allowed by Table C3D3 = 5,000 m^2 • The percentage of Class 8 is 40% = 20% of 5,000 m^2 = 2,000 m^2 • Total maximum allowable floor area = 4,800 + 2,000 = 6,800 m^2 The volume was assessed in the same manner.	Performance Solution
C3D7 Vertical separation of openings in external walls	The building is required to be protected with sprinkler system in accordance with AS 2118.1 throughout and therefore vertical separation is not required.	N/A
C3D8	The building contains existing fire walls separating the building from Building D26 & E26. These are proposed to be retained.	Note

BCA Clause	Assessment and Comment	Status
Separation by fire walls	The proposal involves extending E25 to E26 in the area highlighted below. Our records indicate that the existing wall of E26 is - /120/120 FRL. 	Capable of Complying
C3D9 Separation of classifications in the same storey	If a building has parts of different classifications located alongside one another in the same storey: *(a)* each building element in that storey must have the higher FRL prescribed in Specification 5 for that element for the classifications concerned; or *(b)* the parts must be separated in that storey by a fire wall. Compliance option (a) is to be adopted.	Capable of Complying
C3D10 Separation of classifications in different storeys	If parts of different classification are situated one above the other in adjoining storeys, they must be separated by a floor having have an FRL of not less than that prescribed in Specification 5 for the classification of the lower storey.	Note
C3D11 Separation of lift shafts	1. Any lift connecting more than 2 storeys, or more than 3 storeys if the building is sprinklered, (other than lifts which are wholly within an atrium) must be separated from the remainder of the building by enclosure in a shaft in which the walls have the relevant FRL prescribed by Specification 5; 2. Openings for lift landing doors and services must be protected in accordance with the Deemed-to-Satisfy Provisions of Part C4.	Capable of Complying
C3D12 Stairways and lifts in one shaft	A stairway and lift must not be in the same shaft if either the stairway or the lift is required to be in a fire-resisting shaft.	Complies
C3D13 Separation of equipment	The following equipment is required to be fire separated from the remainder of the building by 120/120/120 FRL construction: ▪ Lift motor rooms and lift control panels. ▪ Emergency Generators. ▪ Central smoke control plant. ▪ Boilers. ▪ Battery systems installed in the building that has a total voltage of 12 volts or more and a storage capacity of 200 kWh or more. The building does not contain any of the above rooms and the requirements of this provision do not apply. Separation of on-site fire pumps must comply with the requirements of AS 2419.1.	Capable of Complying

BCA Clause	Assessment and Comment	Status
C3D14 Electricity supply system	The electricity substation is required to be fire separated from the remainder of the building. The BCA requires 2 hr separation however the electricity authority generally requires 3 hr separation. Any main switchboard located in the building which sustains emergency equipment operating in emergency mode, is required to be fire separated from the remainder of the building by 2 hr fire resisting construction. Electrical conductors and switchboards are required to comply with this clause. 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.	Capable of Complying
Part C4 Protection of Openings		
C4D3 Protection of openings in external walls	1. Subject to (2), openings in an external wall that is required to have an FRL must be protected in accordance with C4D5, and if wall-wetting sprinklers are used they must be located externally. 2. The requirements of (1) only apply if the distance between the opening and the fire-source feature to which it is exposed is less than: (a) 3 m from a side or rear boundary of the allotment; or (b) 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 (c) 6 m from another building on the allotment that is not Class 10. 3. Openings in an external wall that is required to have an FRL, if required to be protected under (1), must 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. Any existing openings in external walls proposed to be retained, and within 6 m of Building D26 or E26, that do not have the required protection, are to be reviewed by the fire engineer for consistency with the existing Fire Engineering Report prepared by Arup Ref 281879 rev A dated 09.06.22. Any new openings in external walls within 6 m of Building D26 or E26 are to protected in accordance with this clause or performance justified. Typical Level – walls less than 6 m from D26 & E26: 	Performance Solution

BCA Clause	Assessment and Comment	Status
	The existing E26 contains non-loadbearing external walls that are within 6 m of the proposed new external walls of E25. This includes the E26 storeys above the E25 building for a height of 15 m (by application of Clause S5C2). The extract below is a typical level identifying in red the E26 wall within 6 m of the proposed external walls of E25 and clouded in blue is the walls that do not have an FRL of 2 hours. Performance justification is required. 	Performance solution
C4D5 Acceptable method of protection	1. Where protection is required, doorways, windows and other openings must be protected as follows: (a) Doorways - internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or –/60/30 fire doors that are self-closing or automatic closing. (b) Windows - internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or–/60/– fire windows that are automatic closing or permanently fixed in the closed position; or–/60/– automatic closing fire shutters. (c) Other openings (excluding voids) - internal or external wall-wetting sprinklers, as appropriate; or construction having an FRL not less than –/60/–. 2. Fire doors, fire windows and fire shutters must comply with Specification 12.	Note
C4D6 Doorways in fire walls	The building contains existing fire walls with fire doors separating the building from Building D26 & E26. These are proposed to be retained.	Capable of complying
	The proposed double doors running across all floors in the existing fire wall separating Building E25 from D26 are required to be fire doors achieving a fire rating of -/120/30. It is also proposed that there will be double doors opening into E26 from E25 which also require the same fire rating.	Capable of complying

BCA Clause	Assessment and Comment	Status
		
	The fire door tag to the LGF Fire doors separating Building E25 from E26 does not adequately identify the fire rating of the fire door. The tag has been damaged such that the FRL reference is not legible. The fire door is required to be a -/120/30 fire door (2 hrs proposed to be performance justified – refer to S5C11 above). The fire door shall be assessed by a fire door contractor and the fire rating confirmed and door/door tag rectified. Should the door be less than -/120/30 fire door, performance justification or replacement of the door is required.	Further assessment & upgrade is considered necessary
C4D7 Sliding fire doors	Sliding doors in fire walls are not proposed	N/A
C4D8 Protection of doorways in horizontal exits	The fire door between E25 & D26 is proposed to be a horizontal exit.	Complies
C4D9 Openings in fire isolated exits	The proposed new doors that open to the fire isolated stairway is required to achieve an FRL of -/60/30 in accordance with this clause.	Capable of complying
	The existing fire stair complies except that the junction of the LGF fire stair fire door with the wall does not appear to be adequately sealed to maintain the FRL of the wall. Access to the room opening into the LGF fire isolated passageway was not available at the time of inspection. Confirmation is required that the door is tagged as at least -/60/30 fire door. The existing fire door and wall separating the Lower Ground Floor from the fire isolated passageway is to be retained to maintain fire separation of the fire isolated passageway. 	Upgrade considered necessary

BCA Clause	Assessment and Comment	Status
	The existing fire doors my not comply with current version of AS1905.1-2015 however, except where specifically mentioned in this report, the doors are fire doors (as evidenced by the fire door tags). Replacement of the doors in not considered necessary.	Upgrade not considered necessary
C4D10 Service penetrations in fire isolated exits	Services are not to penetrate through fire isolated exits unless permitted by this clause.	Capable of Complying
	The fire isolated passageway on the LGF connecting fire stair to the outside of the building contains services (argon and nitrogen pipes) therein that are not permitted in the fire isolated passageway. The services shall be removed, or fire separated from the fire isolated passageway.  	Upgrade considered necessary
C4D11 Openings in fire isolated lift shafts	The lift doors are required to be -/60/- fire doors and comply with this provision. A lift call panel, indicator panel or other panel in the wall of a fire-isolated lift shaft must be backed by construction having an FRL of not less than -/60/60 if it exceeds 35,000 mm^2 in area.	Capable of Complying
C4D13 Openings in floors and ceilings for services.	Fire separation between floors is required to be maintained where services penetrate though floors in accordance with this clause	Capable of Complying
C4D14 Openings in shafts	Opening in shafts are required to be protected in accordance with this clause.	Capable of Complying
C4D15 Openings for service installations	Services that penetrate a building element that is required to have an FRL must be protected utilising one of the options listed under this clause. Test certificates describing each individual service penetration and configuration will be required at the construction certificate stage.	Capable of Complying
C4D16 Construction joints	Construction joints in building elements required to be fire resistant are required to be protected in accordance with this clause.	Capable of Complying
C4D17 Columns protected with lightweight construction to achieve an FRL	Any columns protected with fire resisting lightweight construction to achieve an FRL must be installed in a manner that's identical to the tested prototype.	Capable of Complying

3.3. Access and Egress (BCA Section D)

<table>
<tr><th>BCA Clause</th><th>Assessment and Comment</th><th>Status</th></tr>
<tr><td colspan="3">Part D1 Access and Egress</td></tr>
<tr><td>NSW D2D3
Number of exits required</td><td>The building is required to be provided with a minimum of 2 exit(s) for levels containing class 9b teaching and a minimum of 1 exit for other levels.

The LGF to L5 building complies subject to the door opening into D26 on Ground floor to Level 5 being performance justified as a horizontal exit (it is technically not a deemed-to-satisfy exit as it discharges into another separate building).

The rooftop plant room does not have a minimum of 2 exits serving the storey as required by this clause. Performance justification will be required.</td><td>Performance solution</td></tr>
<tr><td>D2D4
When fire isolated exits are required</td><td>The existing fire stair is required to be fire isolated stair.</td><td>Note</td></tr>
<tr><td>D2D5
Exit travel distances</td><td>No point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40m.

Egress travel distances from the rooftop plant room exceed 20 m to the fire stair. Performance justification of the extended travel distance is required.</td><td>Performance Solution</td></tr>
<tr><td>D2D6
Distance between alternative exits</td><td>Exits that are required to serve as alternative means of egress must not be more than 60m. The distance between alternative exits complies.
Exits required as alternative means of egress must be located not less than 9m apart and located so that the alternative paths of travel do not converge such that they become less than 6m apart. The exits comply with the requirements above.</td><td>Complies</td></tr>
<tr><td>D2D7
Height of exits, paths of travel to exits and doorways</td><td>In a required exit or path of travel to an exit the unobstructed height throughout must be not less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm.</td><td>Complies</td></tr>
<tr><td>NSW D2D8
Width of exits and paths of travel to exits</td><td>The unobstructed width of each required exit or path of travel to an exit, except for ladders provided in accordance with D2D21, D3D23 or I3D5, and doorways, must be not less than 1 m.

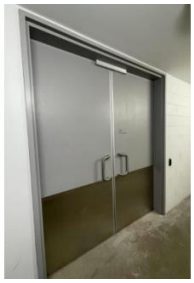
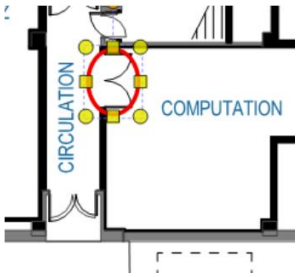
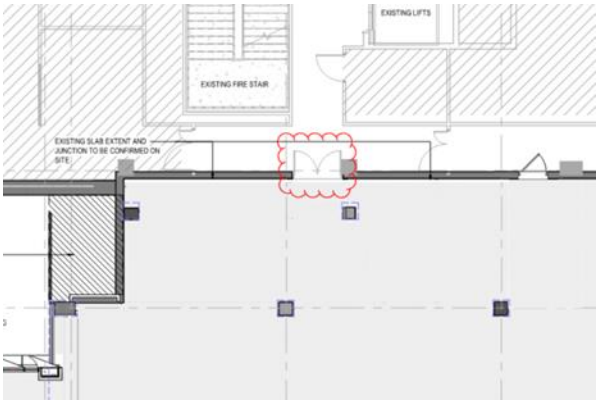
The aggregate exit width required, based on the population, and provided is identified below:
<table>
<tr><th>Level</th><th>Population</th><th>Required</th><th>Provided</th></tr>
<tr><td>LGF</td><td>83</td><td>1 m</td><td>2 m</td></tr>
<tr><td>Ground Floor</td><td>216</td><td>2.5 m</td><td>7.7 m</td></tr>
<tr><td>Level 1</td><td>250</td><td>2.5 m</td><td>4 m</td></tr>
<tr><td>Level 2</td><td>253</td><td>2.5 m</td><td>4 m</td></tr>
<tr><td>Level 3</td><td>253</td><td>2.5 m</td><td>4 m</td></tr>
<tr><td>Level 4</td><td>126</td><td>1.5 m</td><td>4 m</td></tr>
<tr><td>Level 5</td><td>123</td><td>1.25 m</td><td>4 m</td></tr>
</table></td><td>Capable of Complying</td></tr>
</table>

BCA Clause	Assessment and Comment	Status
	<table><tr><td>Level 6</td><td>37</td><td>1 m</td><td>1 m</td></tr></table> The provided aggregate exit width has been determined as follows. LGF: Existing fire passageway 1 m & existing horizontal exit 1 m, GF: Proposed exits into open space 3.7 m, Proposed horizontal exit 1.5 m, existing fire stair 1 m & existing horizontal exit 1.5 m L1 to L5: Proposed horizontal exit 1.5 m, existing fire stair 1 m & existing horizontal exit 1.5 m L6: Existing fire stair 1 m Refer to D2D18 below for determined population numbers.	
NSW D2D9 Width of doorways in exits or paths of travel to exits	In a required exit or path of travel to an exit, the unobstructed width of a doorway must be not less than the unobstructed width of each exit provided to comply with D2D8(1), (2), (3) or (4), minus 250 mm.	Capable of Complying (except for item below)
	The fire stair doors forming part of the fire stair have a clear width of 740 mm which is less than the minimum 750 mm required. As this is a minor departure, it is not considered that upgrade is necessary, however the fire engineer is to take this into consideration in any aggregate egress analysis that is taken as part of the FER.	Upgrade not considered necessary
D2D10 Exit width not to diminish in direction of travel	The unobstructed width of a required exit must not diminish in the direction of travel to a road or open space, except where the width is increased in accordance with D2D8(1)(b) or D2D9(a)(i).	Capable of Complying
D2D11 Determination and measurement of exits and paths of travel to exits	The required width of stairs and ramps is to be measured in accordance with this clause.	Note
D2D12 Travel via fire isolated exits	A doorway from a room must not open directly into a stairway, passageway or ramp that is required to be fire-isolated unless it is from: (a) a public corridor, public lobby or the like; or (b) a sole-occupancy unit occupying all of a storey; or (c) a sanitary compartment, airlock or the like.	Complies
	Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway to a road, or open space, or into a covered area that is open for at least 1/3 of its perimeter and has an unobstructed clear height of not less than 3m throughout (including the perimeter openings), and provides an unimpeded path of travel from the point of discharge to the road or open space of not less than 6m.	Complies
	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	Further assessment

<table>
<tr><th>BCA Clause</th><th>Assessment and Comment</th><th>Status</th></tr>
<tr><td></td><td>the wall must have an FRL of not less than 60/60/60 and any openings protected internally in accordance with C4D5, 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.
At the discharge of the fire isolated exit to the outside of the building at LGF, travel to the street involves passing within 6 m of external doors within the elevation. Such doors are required to be -/60/30 fire doors. Access to open the doors was not available at the time of inspection. The doors shall be checked for compliance. Any noncompliance is to rectified to comply.</td><td>/upgrade considered necessary</td></tr>
<tr><td>NSW D2D15
Discharge from exits</td><td>1. An exit must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit, or access to it.
2. If a required exit leads to an open space, the path of travel to the road must have an unobstructed width throughout of not less than the minimum width of the required exit; or 1 m, whichever is the greater.
3. Where there is a change of level, the path must contain a complying stair or ramp.
4. The discharge point of alternative exits must be located as far apart as practical.</td><td>Complies</td></tr>
<tr><td>D2D16
Horizontal exits</td><td>The door opening into D26 on Ground floor to Level 5 has been assessed as a horizontal exit. The exit complies with this clause</td><td>Complies</td></tr>
<tr><td>D2D17
Non-required stairways, ramps or escalators</td><td>The open stair connecting ground floor to level 5 has been assessed as a non-required stairway. As the stair connects more than 3 storeys, performance justification is required.</td><td>Performance Solution</td></tr>
<tr><td>NSW D2D18
Number of persons accommodated</td><td>Populations have been assessed in accordance with information provided by the client and Table D2D18, as follows:
<table>
<tr><th>LEVEL</th><th>BASIS OF OCCUPANT NUMBERS</th><th>FLOOR AREA</th><th>OCCUPANT NUMBERS</th></tr>
<tr><td>LGF</td><td>Research/Laboratory10m^2/person (Table D2D18)</td><td>830 m^2</td><td>83</td></tr>
<tr><td rowspan="3">GF</td><td>Class rooms (given)</td><td></td><td>102</td></tr>
<tr><td>Informal learning (given)</td><td>260 m^2</td><td>114</td></tr>
<tr><td colspan="2"></td><td>Total GF 216</td></tr>
<tr><td rowspan="3">L1</td><td>Class rooms (given)</td><td>364 m2</td><td>170</td></tr>
<tr><td>Informal learning (given)</td><td>120 m^2</td><td>80</td></tr>
<tr><td colspan="2"></td><td>Total L1 250</td></tr>
<tr><td rowspan="3">L2</td><td>Class rooms (given)</td><td>436 m^2</td><td>198</td></tr>
<tr><td>Informal learning /social hub (given)</td><td>135 m^2</td><td>55</td></tr>
<tr><td colspan="2"></td><td>Total L2 253</td></tr>
<tr><td>L3</td><td>Class rooms (given)</td><td>364 m^2</td><td>198</td></tr>
</table></td><td>Note</td></tr>
</table>

<table>
<tr><th>BCA Clause</th><th>Assessment and Comment</th><th>Status</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>Informal learning (given)</td><td>138 m²</td><td>55</td></tr>
<tr><td></td><td></td><td></td><td>Total L3 253</td></tr>
<tr><td>L4</td><td>Laboratory 10m²/person (Table D2D18)</td><td>1,266 m²</td><td>126</td></tr>
<tr><td>L5</td><td>Laboratory 10m²/person (Table D2D18)</td><td>1,232 m²</td><td>123</td></tr>
<tr><td>L6</td><td>Plant 30 m² person(Table D2D18)</td><td>1,138 m²</td><td>37</td></tr>
</table>
</td><td></td></tr>
<tr><td>D2D21
Plant rooms, lift machine rooms and electricity network substations: Concession</td><td>A ladder may be used in lieu of a stairway to provide egress from a plant room with a floor area less than 100m² or plant or lift machine rooms with a floor area of less than 200 m², for all but one point of egress. Ladders are required to comply with AS 1657 and the requirement of this clause.</td><td>Note</td></tr>
<tr><td>D2D22
Access to lift pits</td><td>Access to lift pits is to be in accordance with this clause.</td><td>Capable of Complying</td></tr>
<tr><td colspan="3">Part D3 Construction of exits</td></tr>
<tr><td>D3D4
Non-fire isolated stairs and ramps</td><td>Non-fire isolated stairs are not proposed.</td><td>N/A</td></tr>
<tr><td rowspan="2">D3D8
Installation in exits and paths of travel</td><td>Access to service shafts and services other than to firefighting or detection equipment as permitted in the Deemed-to-Satisfy provisions of Section E, must not be provided from a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp.
Gas or other fuel services must not be installed in a required exit.
Electrical or telecommunications cupboards opening onto a corridor, or the like must be of non-combustible construction and smoke sealed from the corridor (including metal lining to inside face of door and smoke seals to door).
Only electrical wiring associated with services specified in the clause, are permitted to be installed in a fire isolated exit.</td><td>Capable of Complying</td></tr>
<tr><td>The services within the service cupboard in the LGF fire isolated passageway are to be removed from the cupboard. The cupboard door is to permanently fixed closed so that the cupboard is not usable. The opening in the floor slab at the top of the cupboard which is sealed with fire pillows is to be certified by a fire stopping contractor as providing an FRL of -/120/120.</td><td>Upgrade considered necessary</td></tr>
<tr><td>D3D9
Enclosure of space under stairs and ramps</td><td>1. The space below the required fire-isolated stairways must not be enclosed to form a cupboard or similar enclosed space.
2. 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:
(a) the enclosing walls and ceilings have an FRL of not less than 60/60/60; and
(b) any access doorway to the enclosed space is fitted with a self-closing –/60/30 fire door.</td><td>Complies</td></tr>
</table>

BCA Clause	Assessment and Comment	Status
D3D12 Fire-isolated passageways	The fire rating of fire-isolated passageways is required to be achieved from the outside.	Complies
NSW D3D14 Goings and risers	Goings and risers are to be designed in accordance with this clause.	Capable of Complying
	The existing E25 fire stairs shall be upgraded as follows: (c) Contrast nosings in accordance with AS1428.1. (d) The nosing's must have a slip resistance rating of not less than P3.	Upgrade considered necessary
D3D15 Landings	Landings are to be designed in accordance with this clause.	Capable of Complying
NSW D3D16 Thresholds	Doorway thresholds are to be designed in accordance with this clause.	Capable of Complying
D3D17 Barriers to prevent falls	Balustrades are to be designed in accordance with this clause.	Capable of Complying
NSW D3D18 Height of barriers	Balustrades are to be designed in accordance with this clause.	Capable of Complying
D3D19 Openings in barriers	Balustrades are to be designed in accordance with this clause.	Capable of Complying
D3D20 Barrier climbability	Balustrades are to be designed in accordance with this clause.	Capable of Complying
D3D21 Wire barriers	Wire balustrades are to be designed in accordance with this clause.	Capable of Complying
D3D22 Handrails	Handrails are required to be designed in accordance with this clause.	Capable of Complying
	A handrail shall be provided to the short stair flight in the fire isolated stair accessing the roof. 	Upgrade considered necessary
D3D23 Fixed platforms, walkways, stairways & ladders	Fixed platforms, walkways, stairways & ladders are to be designed in accordance with this clause.	Capable of Complying
NSW D3D24 Doorways and doors	Doorways and doors are to be designed in accordance with this clause. The auto sliding external exit doors on ground floor are required:	Capable of Complying

BCA Clause	Assessment and Comment	Status
	- To be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source; and - To open automatically if there is a power failure to the door or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door.	
D3D25 Swinging doors	A swinging door must not encroach and impede the path of travel/exit width by more than 500mm at any part of it swing. When in the fully open position, it must not encroach into the path of travel/exit width by more than or 100mm. Doors in or serving as a required exit must swing in the direction of egress unless they are subject to the concession in this clause.	Capable of Complying (except for items identified bow)
	Currently there is an LGF E25 exit sign pointing towards the fire door separating E25. The exit sign shall be repositioned to the door opening into D26 subject to the door being provided with 'pull to open' signage being provided as required by the existing E25 FER .	Upgrade considered necessary
	The doors to the room opening direct into the fire isolated passage on LGF, swing against the direction of egress. As this room is a small room, upgrade is not considered necessary  	Upgrade not considered necessary
	The horizontal exit opening from E25 to D26 on each level is to be performance justified. We note that swing of the doors is currently justified in the existing E25 fire engineering report prepared by Arup Ref 281879 rev A date 09.06.22, however as building E25 is being extended, it should be readdressed. 	Performance solution
NSW D3D26 Operation of latch	Door hardware is to comply with this clause. The push button for the external sliding exit doors on ground floor are required to comply with the following: (a) manual controls to power-operated doors must be at least 25 mm wide, proud of the surrounding surface and located— i. not less than 500 mm from an internal corner; and	Capable of Complying

BCA Clause	Assessment and Comment	Status
	ii. for a hinged door, between 1 m and 2 m from the door leaf in any position; and iii. for a sliding door, within 2 m of the doorway and clear of a surface mounted door in the open position; and (b) braille and tactile signage complying with S15C3 and S15C6 must identify the latch operation device.	
D3D28 Signs on doors	A sign, to alert persons that the operation of certain doors must not be impaired, must be installed where it can readily be seen on, or adjacent to exit door and smoke doors, in accordance with this clause.	Capable of Complying
D3D29 Protection of openable windows	Window openings must be protected in accordance with this clause to limit the risk of a person falling through an openable window	Capable of Complying
Part D4 Access for People with Disabilities		
D4D2 General building access requirements to D4D13 Glazing on an accessway	Refer to separate access report by others	Note

3.4. Services and Equipment (BCA Section E)

BCA Clause	Assessment & Comment	Status
Part E1 Firefighting Equipment		
E1D2 Fire hydrants	A fire hydrant system must be provided in accordance with this clause to serve the whole building and must also be installed in accordance with AS 2419.1-2021.	Capable of Complying
	The position of the exiting hydrant outside the fire stair do not comply. Hydrants shall be installed within the fire stair in accordance with the BCA.	Upgrade considered necessary
E1D3 Fire hose reels	A hose reel system must be provided to serve the whole building. The hose reel system must be installed in accordance with this clause and AS 2441.	Capable of Complying
	Fire hose reels shall be upgraded to comply with current BCA, including location requirements. In this regard the existing FHR near the southern fire stair is located 4.85 m from the fire stair door which is more than the maximum 4 m required by this clause.	Upgrade considered necessary
E1D4 Sprinklers	A sprinkler system must: *(a)* be installed in a building or part of a building when required by E1D5 to E1D13 as applicable; and *(a)* comply with Specification 17 and Specification 18 as applicable.	Capable of Complying
	Sprinkler protection is required under E2D9 below.	Refer to E2D9 below

BCA Clause	Assessment & Comment	Status
Specification 17 - Fire sprinkler systems	S17C2 Application of automatic fire sprinkler standards The following sprinkler system is proposed: AS 2118.1	Capable of Complying
	S17C3 Separation of sprinklered and non-sprinklered areas	Capable of Complying
	S17C4 Protection of openings	Capable of Complying
	S17C5 Quick response sprinklers	Capable of Complying
	S17C6 Sprinkler valve enclosures	Capable of Complying
	S17C7 Water supply	Capable of Complying
	S17C8 Building occupant warning system	Capable of Complying
	S17C9 Connection to other systems	Capable of Complying
	S17C10 Anti-tamper devices	Capable of Complying
	S17C13 Sprinkler systems in lift installations	Capable of Complying
E1D14 Portable fire extinguishers	Portable fire extinguishers are to be provided in accordance with this clause and comply with this provision and sections 1, 2, 3 and 4 of AS 2444.	Capable of Complying
E1D16 Fire precautions during construction	In a building under construction not less than one fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required exit or temporary stairway or exit. After the building has reached an effective height of 12 m the required fire hydrants and fire hose reels must be operational in at least every storey that is covered by the roof or the floor structure above, except the 2 uppermost storeys and any required booster connections must be installed.	Capable of Complying
E1D17 Provision for special hazards	The existing radioactive store on the ground floor is sprinkler protected and fire separated from the remainder of the building.	Note
Part E2 Smoke Hazard Management		
E2D3 General requirements	1. An air-handling system which does not form part of a smoke hazard management system in accordance with E2D4 to E2D20 and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must, subject to (2), be designed and installed: (a) to operate as a smoke control system in accordance with AS 1668.1; or (b) such that it:	Capable of Complying

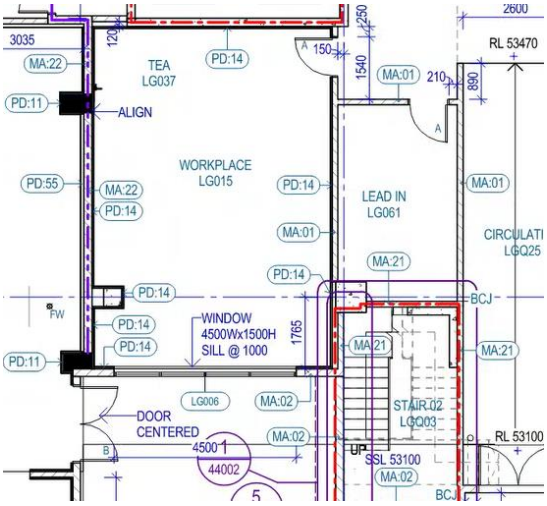
BCA Clause	Assessment & Comment	Status
	(i) incorporates smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and (i) is arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 7.5 of AS 1670.1. 2. Miscellaneous air-handling systems covered by Sections 5 and 6 of AS 1668.1 serving more than one fire compartment (other than a carpark ventilation system) and not forming part of a smoke hazard management system must comply with these Sections of the Standard.	
E2D9 Buildings not more than 25 m in effective height: Class 5, 6, 7b, 8 and 9b buildings	An AS 2118.1 sprinkler system is proposed to be provided.	Capable of Complying (except as provided below)
	The existing sprinkler system hardware in the radioactive store and associated lab on the LGF is proposed to be connected to the new sprinkler system. It is not proposed to provide a new sprinkler system hardware in the radioactive store and associated lab for the reasons specified in the UNSW memo attached in appendix 1 of this report . An upgrade to current hardware & spacing standards is not considered necessary.	Upgrade not considered necessary
NSW E2D16 Class 9b - assembly buildings: All	The Class 9b building must be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000 L/s and miscellaneous exhaust air systems installed in accordance with Sections 5 and 6 of AS 1668.1) which does not form part of the smoke hazard management system, on the activation of— 1. smoke detectors installed complying with S20C6; and 2. any other installed fire detection and alarm system, including a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17.	Capable of Complying
NSW E2D19 Class 9b - assembly buildings: other assembly buildings (not listed in NSW E2D16 to E2D18)	A class 9b building (except classrooms) must have an automatic smoke exhaust system complying with Spec 21 to fire compartments more than 2000 m^2. Omission of smoke exhaust is to be performance justified.	Performance Solution
E2D21 Provision for special hazards	The existing radioactive store on the ground floor is sprinkler protected and fire separated from the remainder of the building.	Note
Part E3 Lift Installations		
E3D2 Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification 24.	Refer below
	Specification 24 Lift installations	
	S24C2 Lift cars exposed to solar radiation	Capable of Complying

BCA Clause	Assessment & Comment	Status
	S24C3 Lift car emergency lighting	Capable of Complying
	S24C4 Cooling of lift shaft	Capable of Complying
	S24C5 Lift foyer access	Capable of Complying
	S24C6 Emergency access doors in a single enclosed lift shaft	Capable of Complying
E3D3 Stretcher facility in lifts	The lift/s specified in this clause, must be able 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.	Capable of Complying
E3D4 Warning against use of lifts in fire	Warning signs must be displayed near every lift call button in accordance with this clause.	Capable of Complying
E3D5 Emergency lifts	Emergency lifts are not required.	N/A
E3D6 Landings	Access and egress to and from lift well landings must comply with the DTS provision of Parts D2, D3 & D4	Capable of Complying
E3D7 Passenger lift types and their limitations	Lift types are to be selected in accordance with this clause.	Capable of Complying
E3D8 Accessible features required for passenger lifts	Lifts are to have features in accordance with this clause.	Capable of Complying
E3D9 Fire service controls	Fire service controls are required to every lift serving any storey above an effective height of 12m. Fire service controls are required to comply with the requirements of this provision.	Capable of Complying
E3D11 Fire service recall operation switch	Each group of lifts must be provided with one fire service recall control switch where fire service controls are required by E3D9. Fire recall operation switches are to comply with the requirements of this provision.	Capable of Complying
E3D12 Lift car fire service drive control switch	Lift car fire service drive control switch required by E3D9 must be activated from within the car and the switch must comply with the requirements of this clause.	Capable of Complying
Part E4 Visibility in an Emergency, Exit Signs and Warning Systems		
E4D2 to E4D4 Emergency lighting requirements	Emergency lighting must be provided in accordance with these clauses. Emergency lighting is required to comply with AS 2293.1-2018.	Capable of Complying
E4D5 to E4D8 Exit signs	Exit signage must be provided in accordance with these clauses. Exit signage is required to comply with AS 2293.1-2018 and be clearly visible at all times.	Capable of Complying

BCA Clause	Assessment & Comment	Status
E4D9 Emergency warning and intercom systems	EWIS is required in accordance with AS1670.4-2018 and this clause.	Capable of Complying

3.5. Health and Amenity (BCA Section F)

BCA Clause	Assessment and Comment	Status
Part F1 Surface Water Management, Rising Damp and External Waterproofing		
F1D2 Application of Part	1. F1D4 and F1D5 do not apply to a roof with a covering complying with F3D2(a) to (d). 1. F1D3 to F1D5 do not apply to a balcony, podium or similar horizontal surface part of a building - where the flooring is of timber decking or other perforated flooring; or which is located directly above ground.	Note
F1D3 Stormwater drainage	Stormwater drainage is required to be designed to comply with AS/NZS 3500.3-2021.	Capable of Complying
F1D4 Exposed joints	Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must: *(a)* be protected in accordance with Section 2.9 of AS 4654.2; and *(a)* not be located beneath or run through a planter box, water feature or similar part of the building.	Capable of Complying
F1D5 External above ground membranes	A roof, balcony, podium or similar horizontal surface part of a building must be provided with a waterproofing membrane - consisting of materials complying with AS 4654.1; and designed and installed in accordance with AS 4654.2.	Capable of Complying
F1D6 Damp-proofing	Damp proofing is required to be provided in accordance with this clause.	Capable of Complying
F1D7 Damp-proofing of floor on ground	Damp proofing is required to be provided in accordance with this clause.	Capable of Complying
F1D8 Sub-floor ventilation	The sub-floor space between the suspended floor of a building and the ground must be provided with cross ventilation, be cleared of all debris, and graded to prevent ponding and evenly spaced ventilation openings in accordance with this clause.	Capable of Complying
Part F2 Wet Areas and Overflow Protection		
F2D2 Wet area construction	Wet areas, as required by this clause, must be water resistant or waterproof in accordance with Specification 26; and comply with AS 3740-2021	Capable of Complying
F2D3 Rooms containing urinals	Rooms containing urinals are to be designed in accordance with this clause.	Capable of Complying
F2D4 Floor wastes	Floor wastes and falls to floor wastes are required to be provided in accordance with this clause.	Capable of Complying

BCA Clause	Assessment and Comment	Status
Part F3 Roof and Wall Cladding		
F3D2 Roof coverings	A roof must be covered with: *(b)* roof tiles complying with AS 2049-2002, fixed in accordance with AS 2050; or *(c)* metal sheet roofing complying with AS 1562.1-2018; or *(d)* plastic sheet roofing designed and installed in accordance with AS 1562.3-206; or *(e)* terracotta, fibre-cement and timber slates and shingles designed and installed in accordance with AS 4597-1999, except in cyclonic areas; or *(f)* an external waterproofing membrane complying with F1D5.	Capable of Complying
F3D3 Sarking	Sarking-type material used for weatherproofing of roofs and walls must comply with AS 4200.1-2017 and AS 4200.2-2017.	Capable of Complying
F3D4 Glazed assemblies	Glazed assemblies to comply with AS 2047-2014, as applicable.	Capable of Complying
F3D5 Wall cladding	External wall cladding must comply with one or a combination of the following: *(g)* Masonry, including masonry veneer, unreinforced and reinforced masonry: AS 3700. *(h)* Autoclaved aerated concrete: AS 5146.3. *(i)* Metal wall cladding: AS 1562.1. External wall cladding, other than specified above, will require performance justification. The existing internal wall of the LGF E26 'Lead In' room and adjoining corridor will be an external wall following demolition of the workplace room. The wall shall be assessed for weatherproofing and upgraded if necessary.  	Performance solution
Part F4 Sanitary and Other Facilities		
NSW F4D4 Facilities in Class 3 to 9 buildings	Sanitary facilities are to be provided in accordance with BCA Part F4. The required sanitary facilities have been calculated to be as per the confirmed number of students and employees as noted below:	Performance solution

<table>
<tr><th>BCA Clause</th><th>Assessment and Comment</th><th>Status</th></tr>
<tr><td></td><td>
<table>
<tr><th>Level</th><th>User</th><th>Gender</th><th>Numbers</th><th>Closet pan</th><th>Ambulant</th><th>Urinal</th><th>Basin</th><th>Access</th></tr>
<tr><td rowspan="8">LGF & GF</td><td rowspan="2">Students: 212</td><td>Male</td><td>106</td><td>1</td><td>1</td><td>3</td><td>3</td><td rowspan="6">1</td></tr>
<tr><td>Female</td><td>106</td><td>4</td><td>1</td><td>-</td><td>3</td></tr>
<tr><td rowspan="2">GF Staff: 4</td><td>Male</td><td>2</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td>Female</td><td>2</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td rowspan="2">LGF Staff: 83</td><td>Male</td><td>42</td><td>1</td><td>1</td><td>1</td><td>2</td></tr>
<tr><td>Female</td><td>42</td><td>2</td><td>1</td><td>-</td><td>2</td><td></td></tr>
<tr><td rowspan="4">L1</td><td rowspan="2">Students: 245</td><td>Male</td><td>123</td><td>1</td><td>1</td><td>3</td><td>3</td><td rowspan="4">1</td></tr>
<tr><td>Female</td><td>123</td><td>4</td><td>1</td><td>-</td><td>3</td></tr>
<tr><td rowspan="2">Staff: 5</td><td>Male</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td>Female</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td rowspan="4">L2</td><td rowspan="2">Students: 248</td><td>Male</td><td>124</td><td>1</td><td>1</td><td>3</td><td>3</td><td rowspan="4">1</td></tr>
<tr><td>Female</td><td>124</td><td>4</td><td>1</td><td>-</td><td>3</td></tr>
<tr><td rowspan="2">Staff: 5</td><td>Male</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td>Female</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td rowspan="4">L3</td><td rowspan="2">Students: 248</td><td>Male</td><td>124</td><td>1</td><td>1</td><td>3</td><td>3</td><td rowspan="4">1</td></tr>
<tr><td>Female</td><td>124</td><td>4</td><td>1</td><td>-</td><td>3</td></tr>
<tr><td rowspan="2">Staff: 5</td><td>Male</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td>Female</td><td>3</td><td>-</td><td>1</td><td>-</td><td>1</td></tr>
<tr><td rowspan="2">L4</td><td rowspan="2">Employees: 126</td><td>Male</td><td>63</td><td>2</td><td>1</td><td>3</td><td>3</td><td rowspan="2">1</td></tr>
<tr><td>Female</td><td>63</td><td>3</td><td>1</td><td>-</td><td>3</td></tr>
<tr><td rowspan="2">L5</td><td rowspan="2">Employees: 123</td><td>Male</td><td>62</td><td>2</td><td>1</td><td>3</td><td>3</td><td rowspan="2">1</td></tr>
<tr><td>Female</td><td>62</td><td>3</td><td>1</td><td>-</td><td>3</td></tr>
</table>

The number of facilities complies.

Facilities for staff and students are required to be separate blocks in both assessment cases, i.e. staff cannot share facilities with students. Combined facilities will require performance justification (performance solution report by the architect or BCA consultant (other than the BCA consultant issuing the Crown building work certificate).
</td><td></td></tr>
<tr><td>F4D5
Accessible sanitary facilities</td><td>Accessible unisex and ambulant sanitary facilities are required in accordance with clause. The design of accessible sanitary facilities is to comply with AS1428.1-2009.</td><td>Capable of Complying</td></tr>
</table>

BCA Clause	Assessment and Comment	Status
F4D6 Accessible unisex sanitary compartments	The number of accessible sanitary facilities is to be provided in accordance with this clause.	Capable of Complying
F4D8 Construction of sanitary compartments	The construction of sanitary compartments is required to comply with this requirement.	Capable of Complying
Part F5 Room heights		
F5D2 Height of rooms and other spaces	The height of rooms and other spaces is to be in accordance with this clause.	Capable of Complying
Part F6 Light and Ventilation		
F6D5 Artificial lighting	Artificial lighting is to be provided in accordance with AS/NZS1680.0 to spaces required by this clause.	Capable of Complying
NSW F6D6 Ventilation of rooms	Ventilation is to be provided by natural or mechanical means in accordance with this provision and Clause F6D6.	Capable of Complying
F6D9 Restriction on the position of water closets and urinals	A sanitary compartment must not open directly into a kitchen or pantry; or a public dining room or restaurant; or a dormitory in a Class 3 building; or a room used for public assembly (which is not an early childhood centre, primary school or open spectator stand); or a workplace normally occupied by more than one person.	Capable of Complying

3.6. Ancillary Provisions (BCA Section G)

BCA Clause	Assessment and comment	Status
Part G1 Minor Structures and Components		
NSW G1D5 Provision for cleaning windows	The method of provision for the cleaning of windows is required to be in accordance with this clause (windows 3 or more storeys above the ground level).	Capable of Complying

3.7. Energy Efficiency (BCA Section J – Class 3 and 5 to 9 Buildings)

BCA Clause	Assessment and Comment	Status
Part J4 Building Fabric		
NSW J4D2 Application of Part to J4D7 Floors	Refer to separate report by Energy consultant.	Note
Part J5 Building Sealing		

BCA Clause	Assessment and Comment	Status
NSW J5D2 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to building elements forming the envelope of a Class 3 and Class 5 to 9 building, other than areas exempt by this clause.	Note
NSW J5D5 Windows and doors	Windows and doors are to be designed in accordance with this clause, inclusive of: *(a)* windows compliant with AS 2047; *(a)* seals to restrict air infiltration; *(b)* unconditioned zones for cafes, restaurants, open front shop; and *(c)* rapid roller doors, as required by this clause.	Capable of Complying
J5D6 Exhaust fans	An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space; or a habitable room in climate zones 4, 5, 6, 7 or 8.	Capable of Complying
J5D7 Construction of ceilings, walls and floors	Ceilings, walls, floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with this clause when forming part of the envelope; or in climate zones 4, 5, 6, 7 or 8.	Capable of Complying
J5D8 Evaporative coolers	An evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space; or in climate zones 4, 5, 6, 7 or 8.	Capable of Complying
Part J6 Air-Conditioning and Ventilation		
NSW J6D2 Application of part	The Deemed-to-Satisfy Provisions of this Part do not apply to a Class 8 electricity network substation.	Note
J6D3 Air-conditioning system control	An air-conditioning system is to be designed in accordance with this clause.	Capable of Complying
J6D4 Mechanical ventilation system control	Mechanical ventilation control is to be designed in accordance with this clause.	Capable of Complying
J6D5 Fans and duct systems	Fans and duct systems to be designed in accordance with this clause.	Capable of Complying
J6D6 Ductwork insulation	Ductwork insulation to be provided in accordance with this clause.	Capable of Complying
J6D6 Ductwork sealing	Ductwork sealing is to be provided in accordance with this clause.	Capable of Complying
J6D8 Pump systems	Pumped systems are to be designed in accordance with this clause.	Capable of Complying
J6D9 Pipework insulation	Pipework insulation to be provided in accordance with this clause	Capable of Complying
NSW J6D10 Space heating	Space heating is to be provided in accordance with this clause	Capable of Complying

BCA Clause	Assessment and Comment	Status
J6D11 Refrigerant chillers	Refrigerant chillers are to be designed in accordance with this clause.	Capable of Complying
J6D12 Unitary air-conditioning equipment	Unitary air-conditioning equipment are to be designed in accordance with this clause.	Capable of Complying
J6D13 Heat rejection equipment	Unitary air-conditioning equipment are to be designed in accordance with this clause.	Capable of Complying
Part J7 Artificial Lighting and Power		
NSW J7D2 Application of Part	J7D3, J7D4 and J7D6(1)(b) do not apply to a Class 8 electricity network substation.	Note
NSW J7D3 Artificial lighting	Artificial lighting is to be designed in accordance with this clause.	Capable of Complying
NSW J7D4 Interior artificial lighting and power control	Interior artificial lighting and power control is to be designed in accordance with this clause.	Capable of Complying
J7D5 Interior decorative and display lighting	Interior decorative and display lighting is to be designed in accordance with this clause.	Capable of Complying
J7D6 Exterior artificial lighting	Exterior artificial lighting is to be designed in accordance with this clause.	Capable of Complying
J7D7 Boiling water and chilled water storage units	Boiling water and chilled water storage units are to be designed in accordance with this clause.	Capable of Complying
J7D8 Lifts	Lifts are to be designed in accordance with this clause.	Capable of Complying
Part J8 Heated Water Supply and Swimming Pool and Spa Pool Plant		
J8D2 Heated water supply	A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B237 of NCC Volume Three - Plumbing Code of Australia.	Capable of Complying
Part J9 Energy Monitoring and On-site Distributed Energy Resources		
J9D2 Application of Part	The Deemed-to-Satisfy Provisions of this Part do not apply to a Class 8 electricity network substation.	
J9D3 Facilities for energy monitoring	Facilities for energy monitoring are to be designed in accordance with this clause.	Capable of Complying

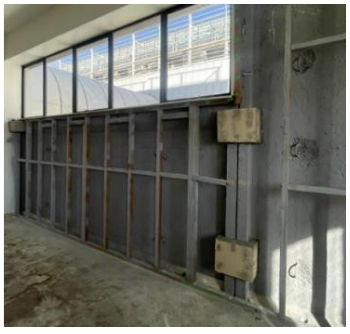
BCA Clause	Assessment and Comment	Status
J9D5 Facilities for solar photovoltaic and battery systems	Facilities for Facilities for solar photovoltaic and battery systems are to be designed in accordance with this clause.	Capable of Complying

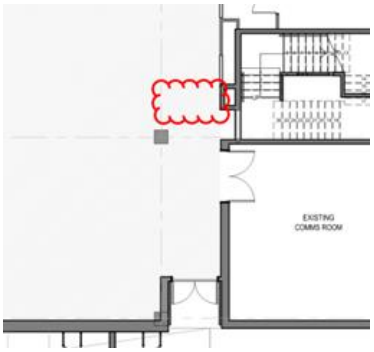
4. MITIGATION MEASURES

Table 4 below identifies proposed performance solutions to be justified against the performance requirements of the BCA, in accordance with BCA Clause A2G3, and required upgrades of he existing building.

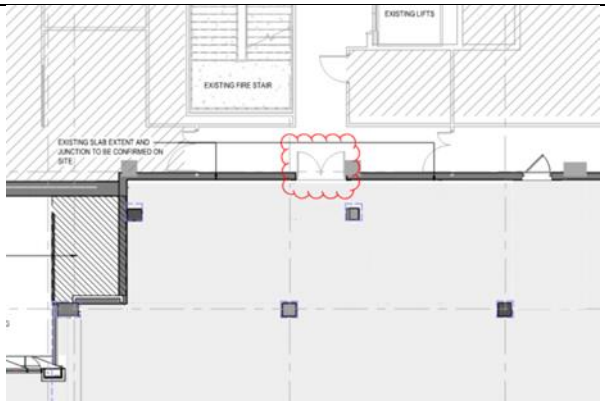
Table 4 Compliance Items

Clause	**Comments**	**Action**
B1D2 Resistance to actions to B1D4 Determination of structural resistance of materials & forms of construction	The existing building does not fully comply with the current structural provisions of the BCA. Full upgrade to current BCA structural standards is not feasible or practical. A degree of structural upgrade is proposed for the following: 5. Strengthening / alterations to the structure that are required to support the increased loading conditions. 6. Remediation to the structure where it has deteriorated. 7. Strengthening areas that represent a high structural risk. 8. Undertaking testing works to improve the reliability of the existing drawings and collect information where the drawings are incomplete. Further, a Structural Engineers Certificate will be provided prior to commencement of works certifying that the existing building can support the proposed loads, and that the structural capacity of the existing building will not be reduced. It is requested that the consent authority support a partial upgrade to the existing structure, under Clause 64 of the Environmental Planning and Assessment Regulation 2021, taking into consideration the existing nature of the building, the degree of structural upgrade proposed, and the impracticality of full compliance.	Partial upgrade of existing structure proposed
S5C8 Enclosure of shafts	The top of the fire stair on Building E25 contains a roof light which is not compliant. performance justification is required.	Performance solution
S5C11 Fire-resistance of building elements & C4D3 Protection of openings in external walls	The achieved FRLs for the existing structure (as determined by the structural engineer) are: • Slabs – 120/120/120 • Beams – 60/-/- • Columns – 60/-/- The Class 8 laboratory/animal holding/research on Levels Lower ground, Level 4 & 5 are to be performance justified to 2 hrs fire	Performance solution

	resistance in lieu of 4 hrs. Where the existing structure is less than 2 hr fire resistance, upgrade to 2 hrs is proposed. The existing beams and columns within the proposed Class 9b teaching levels (Ground to Level 3) are to be performance justified to 1 hr fire resistance in lieu of 2 hrs. The new extension on these levels will be designed to the 2hr deemed-to-satisfy requirements subject to a performance solution being provided to justify the non-fire separation between level 3 and 4 due to the connection of the open stairs. Any existing external walls proposed to be retained, and within 6 m of Building D26 or E26, that do not have the required FRL are to be reviewed by the fire engineer for consistency with the existing Fire engineering report prepared by Arup Ref 281879 rev A date 09.06.22. Any new walls within 6 m of Building D26 or E26 are to have the required FRL. Typical Level – walls less than 6 m from D26 & E26: 	
C2D10 Non-combustible building elements	The existing timber framing in the south elevation, internal skin of external wall, is to be removed. 	Upgrade considered necessary
C3D3 General floor area and volume limitations	Ground floor to Level 5 floor area does not comply with the floor area limits of this clause as it consists of a floor area of 7,489 m². Performance justification is proposed.	Performance Solution

C4D6 Doorways in fire walls	The fire door tag to the LGF Fire doors separating Building E25 from E26 does not adequately identify the fire rating of the fire door. The tag has been damaged such that the FRL reference is not legible. The fire door is required to be a -/120/30 fire door (2 hrs proposed to be performance justified – refer to S5C11 above). The fire door shall be assessed by a fire door contractor and the fire rating confirmed and door/door tag rectified. Should the door be less than -/120/30 fire door, performance justification or replacement of the door is required.	Upgrade is considered necessary
C4D9 Openings in fire isolated exits	The existing fire stair complies except that the junction of the LGF fire stair fire door with the wall does not appear to be adequately sealed to maintain the FRL of the wall. Access to the room opening into the LGF fire isolated passageway was not available at the time of inspection. Confirmation is required that the door is tagged as at least -/60/30 fire door. The existing fire door and wall separating the Lower Ground Floor from the fire isolated passageway is to be retained to maintain fire separation of the fire isolated passageway. 	Upgrade considered necessary
C4D10 Service penetrations in fire isolated exits	The fire isolated passageway on the LGF connecting fire stair to the outside of the building contains services (argon and nitrogen pipes) therein that are not permitted in the fire isolated passageway. The services shall be removed, or fire separated from the fire isolated passageway.  	Upgrade considered necessary
NSW D2D3 Number of exits required	The building is required to be provided with a minimum of 2 exit(s) for levels containing class 9b teaching and a minimum of 1 exit for other levels. The LGF to L5 building complies subject to the door opening into D26 on Ground floor to Level 5 being performance justified as a horizontal exit (it is technically not a deemed-to-satisfy exit as it discharges into another separate building).	Performance solution

	The rooftop plant room does not have a minimum of 2 exits serving the storey as required by this clause. Performance justification will be required.	
D2D5 Exit travel distances	Egress travel distances from the rooftop plant room exceed 20 m to the fire stair. Performance justification of the extended travel distance is required.	Performance Solution
D2D12 Travel via fire isolated exits	At the discharge of the fire isolated exit to the outside of the building at LGF, travel to the street involves passing within 6 m of external doors within the elevation. Such doors are required to be -/60/30 fire doors. Access to open the doors was not available at the time of inspection. The doors shall be checked for compliance. Any noncompliance is to rectified to comply.	Upgrade considered necessary
D2D17 Non-required stairways, ramps or escalators	The open stair connecting ground floor to level 5 has been assessed as a non-required stairway. As the stair connects more than 3 storeys, performance justification is required.	Performance Solution
D3D8 Installation in exits and paths of travel	The services within the service cupboard in the LGF fire isolated passageway are to be removed from the cupboard. The cupboard door is to permanently fixed closed so that the cupboard is not usable. The opening in the floor slab at the top of the cupboard which is sealed with fire pillows is to be certified by a fire stopping contractor as providing an FRL of -/120/120.	Upgrade considered necessary
NSW D3D14 Goings and risers	The existing E25 fire stairs shall be upgraded as follows: (e) Contrast nosing's in accordance with AS1428.1. (f) The nosing's must have a slip resistance rating of not less than P3.	Upgrade considered necessary
D3D22 Handrails	A handrail shall be provided to the short stair flight in the fire isolated stair accessing the roof. 	Upgrade considered necessary
D3D25 Swinging doors	Currently there is an LGF E25 exit sign pointing towards the fire door separating E25. The exit sign shall be repositioned to the door opening into D26 subject to the door being provided with 'pull to open' signage being provided as required by the existing E25 FER .	Upgrade considered necessary
	The horizontal exit opening from E25 to D26 on each level is to be performance justified. We note that swing of the doors is currently justified in the existing E25 fire engineering report prepared by Arup Ref 281879 rev A date 09.06.22, however as building E25 is being extended, it should be readdressed.	Performance solution

		
E1D2 Fire hydrants	The position of the exiting hydrant outside the fire stair do not comply. Hydrants shall be installed within the fire stair in accordance with the BCA.	Upgrade considered necessary
E1D3 Fire hose reels	Fire hose reels shall be upgraded to comply with current BCA, including location requirements. In this regard the existing FHR near the southern fire stair is located 4.85 m from the fire stair door which is more than the maximum 4 m required by this clause.	Upgrade considered necessary
NSW E2D19 Class 9b - assembly buildings: other assembly buildings (not listed in NSW E2D16 to E2D18)	A class 9b building (except classrooms) must have an automatic smoke exhaust system complying with Spec 21 to fire compartments more than 2000 m2. Omission of smoke exhaust is to be performance justified.	Performance Solution
F3D5 Wall cladding	External wall cladding must comply with one or a combination of the following: *(d)* Masonry, including masonry veneer, unreinforced and reinforced masonry: AS 3700. *(e)* Autoclaved aerated concrete: AS 5146.3. *(f)* Metal wall cladding: AS 1562.1. External wall cladding, other than specified above, will require performance justification.	Performance solution

5. CONCLUSION

The design as proposed is capable of complying with the Building Code of Australia and will be subject to construction documentation that will provide appropriate details to demonstrate compliance. This report has identified areas of non-compliance with the deemed-to-satisfy provisions and indicates the design intent to demonstrate compliance with the Performance Requirements of the BCA. Whilst the performance-based solutions are to be design developed, it is our view that the solutions will not impact on the current design.

This report also identifies aspects of the existing building that does not comply with the deemed-to-satisfy provisions of the BCA and:

(a) the design intent to upgrade to comply with deemed to satisfy provision of the BCA; or
(b) the intention to performance justify against the performance provisions of the BCA; or
(c) the intention to bring the building into partial compliance with the BCA due to the minor nature of the departure; and/or the impracticality of full compliance.

ATTACHMENT 1 – UNSW MEMO - PARTIAL CONFORMATY OF FIRE SERVICES IN RADIOACTIVE STORE AND LAB

UNSW E25 Biolink Redevelopment

Partial Conformity of Fire Services in Radioactive Store and Lab

The UNSW E25 Biolink Redevelopment will refurbish and extend an existing building at UNSW Kensington to breathe new life into a vacant space and create learning, teaching and research facilities to meet the future needs of UNSW.

As part of the redevelopment, the building is proposed to be upgraded to meet current regulatory compliance requirements where possible within the constraints of the existing structure. UNSW has appointed the following specialist consultant team to provide advice on the extent of building services improvements required to obtain regulatory compliance:

- WSP – building services engineering consultants,
- City Plan – Building Certification consultants,
- Arup – fire engineering consultants.

The scope of the redevelopment will require most existing occupants within the building to be relocated. However, some occupants will remain in their current location due to the nature of the spaces and the complexity of potential relocation.

WSP have provided advice regarding the extent of wet and dry fire services works required to achieve full compliance to current codes and standards whilst maintaining existing sensitive spaces in their current locations. Following this advice, and a buildability review of the proposed scope of works, it has been determined that there would be significant challenges to carrying out the recommended fire services upgrade works within the radioactive store and associated lab area located within the Lower Ground floor.

UNSW is seeking support from the Consent Authority for a partial conformance strategy for the wet and dry fire services systems, such that the current fire sprinkler system and dry fire detection system within these spaces can be maintained.

The radioactive store and lab are specialised research spaces which are subject to accreditation by specialist regulatory bodies. Any construction work to be done inside these spaces needs to be approved by the UNSW Radiation Safety Committee, and potential impact on the accreditation needs to be reviewed and shared with the regulator as required. The replacement of fire services inside these spaces would require relocation of potentially hazardous radioactive materials within the storage area to allow for access to ceilings above where the materials are currently stored. This would create a safety risk in potential radiation exposure to workers relocating the materials.

The specialist consultant team appointed by UNSW (WSP, City Plan, and Arup) support the partial conformity strategy for the fire services in the radioactive store and lab. These spaces are constructed with concrete and lead lined walls which shield surrounding areas from potential radiation exposure. This construction is non-combustible, so it assists with lowering the fire risk within the spaces. UNSW confirm commitment to upgrade fire safety services in the rest of the building to current regulatory standards.

ATTACHMENT 2 - ASSESSED PLANS

Assessed plans prepared by HDR

Plan Title	Drawing No	Revision	Date
Cover sheet & drawing list	0001	H	20/02/25
Existing site plan	11001	F	20/02/25
Shadow diagrams - summer solstice -existing	11005	E	20/02/25
Shadow diagrams - summer solstice -proposed	11005.1	F	20/02/25
Shadow diagrams - autumn equinox - existing	11005.2	E	20/02/25
Shadow diagrams - autumn equinox proposed	11005.3	E	20/02/25
Shadow diagrams - winter solstice - existing	11005.4	F	20/02/25
Shadow diagrams - winter solstice -proposed	11005.5	F	20/02/25
Shadow diagrams - spring equinox - existing	11005.6	E	20/02/25
Shadow diagrams - spring equinox - proposed	11005.7	E	20/02/25
Demolition cover sheet	12000	G	20/02/25
Demolition plan - site	12001	F	20/02/25
Demolition plan - lower ground	12010	F	20/02/25
Demolition plan - ground	12011	G	20/02/25
Demolition plan - level 01	12012	H	20/02/25
Demolition plan - level 02	12013	G	20/02/25
Demolition plan - level 03	12014	G	20/02/25
Demolition plan - level 04	12015	H	20/02/25
Demolition plan - level 05	12016	H	20/02/25
Demolition plan - level 06	12017	F	20/02/25
Demolition plan - roof	12018	E	20/02/25
F25 Demolition Plans Levels 1&2	12100	C	20/02/25
F25 Demolition Plans Levels 5	12101	C	20/02/25
Proposed site plan/cover page	13001	F	20/02/25
GFA plans/calculations - sheet 01	20003	G	20/02/25

GFA plans/calculations - sheet 02	20004	G	20/02/25
GA Lower Ground Floor	21001	G	20/02/25
GA Ground Floor	21002	H	20/02/25
GA Level 1	21003	I	20/02/25
GA Level 2	21004	J	20/02/25
GA Level 3	21005	I	20/02/25
GA Level 4	21006	I	20/02/25
GA Level 5	21007	H	20/02/25
GA Level 6	21008	G	20/02/25
GA Roof plan	21009	G	20/02/25
F25 General arrangement Level 01	21100	C	20/02/25
F25 General arrangement Level 05	21101	B	20/02/25
Elevations - sheet 01	30001	F	20/02/25
Elevations - sheet 02	30002	F	20/02/25
Elevations - sheet 03	30003	F	20/02/25
Elevations - sheet 04	30004	F	20/02/25
Elevations – F25 North elevation	30005	C	20/02/25
Sections - sheet 01	31001	G	20/02/25
Sections - sheet 02	31002	B	20/02/25

ATTACHMENT 3 - EXCLUSIONS AND LIMITATIONS

1. This report has been prepared by City Plan for UNSW and may only be used and relied on by UNSW for the purpose agreed between City Plan and UNSW, as set out in section 2.1 and 2.2 of this report.
2. City Plan otherwise disclaims responsibility to any person other than UNSW arising in connection with this report. City Plan also excludes implied warranties and conditions, to the extent legally permissible.
3. City Plan Services Pty Ltd undertakes no duty, nor accepts any responsibility, to any third party who may rely upon or use this document.
4. The services undertaken by City Plan in connection with preparing this report are limited to those specifically detailed within the report and subject to scope limitations as set out in the report but specifically exclude:
   - Structural design in any form or content.
   - The Disability Discrimination Act 1992.
   - Disability (Access to Premises – Building) Standards 2010.
   - The existing level of Building Code of Australia compliance unless specifically identified in Section 2.3 within this report.
   - The operational capabilities or compliance of any existing services installed within the building.
   - Assessment of any existing Performance Solutions, including Fire Safety, addressing compliance with the Performance Requirements of the BCA.
5. This report is not a Part 6 compliance certificate under the Environmental Planning & Assessment Act 1979
6. The opinions, conclusions and any recommendations within this report are based on conditions encountered and information reviewed at the date of preparation of the report. City Plan has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared.
7. The methodologies adopted within this report specifically relate to the subject building and must not be used for any other purpose.
8. City Plan has prepared this report based on information provided by others, including but not limited to Architectural Plans and Annual Fire Safety Statements. City Plan has not independently verified or checked beyond the agreed scope of work the validity of the documentation prepared and provided by others. City Plan accepts no liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions within the information relied upon.
9. The documentation relied upon has been reviewed only to the degree reasonable as pertaining to City Plan's scope, as defined within the contract and fee agreement. It is expressly not City Plan's responsibility to:
   - Familiarise ourselves with all information and documentation relating to the project, or the potential BCA, Access, or fire safety aspect derivatives thereof,
   - Conduct a "full BCA audit or compliance assessment" in any way defined, implied, or assumed, for matters outside of City Plans scope.
   - Prepare a holistic BCA, Access or Fire Safety strategy for the building or carry out a full assessment of all information and documentation relating to the project, or the potential BCA, Access, or Fire Safety aspect derivatives thereof.
10. Where the report relied on a site inspection, the inspection was based on a visual, non-invasive check of representative samples of the building to which the report and scope applied, and to which safe and reasonable access was available/permitted on the date and time of the inspection. The inspection should not be considered as a testing, commissioning or maintenance procedure nor act as a guarantee or warranty of any kind.