GROUPDLA

Building Code of Australia 2019

Report for BCA Compliance

PROJECT NAME: **New Western Sydney University Bankstown City Campus**

DATE: **29th July 2019**

TABLE OF CONTENTS

REVISION HISTORY

Revision	Date	Details	Authorised	
			Name/Position	Signature
A	4th March 2019	Preliminary BCA Compliance Report – Schematic Design	Prepared: Nick Aitchison (BPB 3040) Building Regulations Consultant	
			Reviewed: Brett Clabburn (BPB0064) Director	
B	11th March 2019	BCA Compliance Report – Schematic Design	Prepared: Nick Aitchison (BPB 3040) Building Regulations Consultant	
			Reviewed: Brett Clabburn (BPB0064) Director	
C	29th July 2019	BCA Compliance Report – SEAR'S Submission	Prepared: Nick Aitchison (BPB 3040) Building Regulations Consultant	

			Reviewed: Brett Clabburn (BPB0064) Director	

Table 1 – Revision History

1.0 EXECUTIVE SUMMARY

The report is for the assessment of the New Western Sydney University Bankstown City Campus to assess compliance with the Building Code of Australia 2019 ("BCA"). The information submitted at this stage of the design is not considered to be detailed to the extent where the development of a full BCA report is possible and therefore this report is preliminary only. The report however is considered satisfactory for a planning submission. The report has been produced to identify areas of non-compliance that will need to be addressed by performance based solutions.

The following items have been noted as items of interest at this stage of the review. The items have been considered non-compliant require further review against the detailed design, or may be able to be justified as a Performance Solution:

Item	Query or DTS Non- Compliance	Suggested Resolution	BCA Clause	BCA Performance Requirements
1	The external wall to the Western Façade is required to achieve an FRL in accordance with Specification C1.1 of the BCA 2019. It is understood a performance solution will be developed to remove the requirement for this FRL due to the laneway directly adjacent.	Performance Solution by Fire Engineer	C1.1, Specification C1.1	CP1
2	The class 6 areas on the ground floor will have an FRL of 120/120/120 in Lieu of 180/180/180 and will not be fire separated from the Class 9b lobby areas.	Performance Solution by Fire Engineer (to rationalise & reduce to 120/120/120)	C1.1, Specification C1.1	CP1
4	Extended Travel Distances: **Base Building** Distance to a Point of Choice will exceed 20m up to approx. 23m at level 18 North Corner Distance to an exit will exceed 40m up to approx. 43m at the Ground Floor Extended Travel Distances: **Fitout (levels Ground-13)** Travel distances to a point of Choice will exceed 20m up to a maximum of 25m throughout Travel Distances to the nearest exit will exceed 40m up to a maximum of 47m at the Ground Floor. Travel distances between alternate exits will exceed 60m up to a maximum of 90m in several locations throughout.	Performance Solution by Fire Engineer	D1.4, D1.5	DP4, EP 2.2

Item	Query or DTS Non- Compliance	Suggested Resolution	BCA Clause	BCA Performance Requirements
5	Atrium smoke exhaust system to be sized for class 2, 3, 5 & 9 parts but will have class 6 areas opening into it.	Performance Solution by Fire Engineer	G3.2, Spec G3.8,	EP2.2
6	Where the atrium smoke exhaust system integrates into the zone smoke control system riser, smoke dampers will be used in lieu of sub-ducts	Performance Solution by Fire Engineer	G3.4, Spec G3.8,	EP2.2
7	The zone pressurisation system on Ground- level 2 fire compartment may not achieve a 20 Pa pressure difference between an upper level in the event of a fire on the upper levels	Performance Solution by Fire Engineer	E2.2, Spec E2.2a	EP2.2
8	Travel from The Fire Control Room at ground floor to a road or open space involves a level change of approximately 700mm in lieu of the required 300mm.	Performance Solution by Fire Engineer	Specification E1.8	EP1.5, EP1.6
9	The Atrium Well spanning from Ground – Level 7 containing the escalators, as well as the Southern Atrium spanning from Ground to Level 3 must have a minimum width throughout of not less than 6m.	Performance Solution by Fire Engineer	G3.2	CP2
10	Atrium bounding construction will not comply with DtS requirements as fire curtains are proposed.	Performance Solution by Fire Engineer	G3.4, G3.5	CP2, EP2.2
11	Atrium will not utilise visual warning devices “EVACUATE” signs.	Performance Solution by Fire Engineer	G3.8, Spec G3.8	EP4.2
12	Fire Hose Reel on Ground floor not located within 4m of an exit	Performance Solution by Fire Engineer	E1.1	EP1.1

Table 2 – DtS Non-compliances

Note: the above BCA non-compliances are not a full list of all non-compliances for the building. The report in whole needs to be reviewed by the design team to obtain an understanding of all BCA issues.

In order for Group DLA to confirm the design complies with the BCA the following items listed in Table 3 below are required to be clarified, submitted, illustrated, etc. as the case may be:

1.1 Additional Information for further assessment

Item No.	Item	Comment	BCA Clause
A	Section J Report/JV3 Assessment	Section J Report/JV3 Assessment report to be provided to confirm compliance with Section J of the BCA	Part J
B	Fire Hydrant & Fire Hose Reel Coverage	Hydraulic Consultant to confirm coverage of Fire Hydrants & Fire Hose Reels will be in accordance with AS 2419.1-2005 & AS 2441-2005.	E1.3, E1.4

Table 3 – Request for Further Information

2.0 INTRODUCTION

This BCA review has been limited to the evolving architectural drawings which do not detail sufficient information to allow a full BCA report to be produced. **The architectural plans are yet to be developed to the extent that a complete BCA assessment can be undertaken and therefore this report is preliminary only. This report is considered satisfactory for a planning submission.**

The report is prepared based on a review of the documentation listed in Table 6 and the information provided by the client and is intended for their use only.

2.1 Reporting Team

The information contained within this report was prepared by Nick Aitchison Accredited Certifier Grade A3 (BPB3040) and reviewed by Brett Clabburn, Accredited Certifier Grade A1 (BPB0064) from Group DLA.

2.2 Current Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979.

Whilst we await final confirmation on the building approval mechanism, we believe it is likely to be a Crown project. The provisions of Section 62.8 (formerly known as109R) (Crown Building Work), of this act require that the building work be carried out in accordance with the Building Code of Australia (BCA). The application of compliance with the particular version of the BCA is the date on which tenders are issued. In this case the application of the provisions of the BCA 2019 is the relevant code as tenders will be issued during the period of 1 May 2019 to 1 May 2022.

The BCA is now updated every three years, the next update will be BCA 2022 which will come into force on the 1st May 2022.

2.3 Fire Brigade

Fire & Rescue NSW ("FRNSW"): The EP&A Regulations 2000, Clause 144, requires buildings the subject of Construction Certificate approval to be referred to FRNSW. Clause 144 refers to EP&A Regs defined Category 2 Fire Safety Provisions[1]. If any of these measures are required to be considered as a performance solution due to DtS non-compliances identified within a design, and the floor area of a fire compartment exceeds 2000 m^2 or the floor area of the building exceeds 6000 m^2, the Clause 144 referral to the FRNSW is required**.**

It is common practice to adopt this process on Crown projects under a voluntary submission.

This design currently contains the following DtS non-compliance Category 2 Fire Safety Provisions or BCA Performance Requirements: EP2.2:

- EP2.2
- EP1.6

The process involves initial input from FRNSW at the Fire Engineering Brief Questionnaire ("FEBQ) stage and then official Lodgement of the Performance Solution Report by the PCA or Crown Certifier.

Under recent changes to the legislation the brigade are required to respond within 10 days advising whether or not they will be proceeding with a review and providing the Initial Fire Safety Report. If so they have not more than 28 days from the initial lodgement to provide their report or the PCA can choose to invoke the provisions of Clause 144(6A)(c) and issue the Construction Certificate after 28 days of officially lodging the Clause 144 application; further consultation is required on this issue. This may see a requirement for a peer review by an independent C10 accredited fire safety engineer.

At this stage in the design we have noted possible Performance Solutions (listed above) that require report and consent to the brigade.

[1]***Category 2 fire safety provision means the following provisions of the Building Code of Australia, namely, CP9, EP1.3, EP1.4, EP1.6, EP2.2 and EP3.2 in Volume One of that Code.***

2.4 Limitations

- This report does not include assessment of the documentation against the provisions of the Disability Discrimination Act 1992 or (Access to Premises Buildings) Standards 2010.
- This assessment is limited to the developed documentation at the date of this report and as referenced within the “Documentation Assessed” section of the Report.
- Any roof top plant or the like has been assessed (assumed) as open to the sky. Covered areas to roof tops may constitute an extra storey thus BCA requirement for the entire building may change.
- The travel distances have been assessed on an open plan basis with an allowance made for travel around pending fixed structures. It cannot be taken as accurate when considering future fixed structures parameters.
- Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Local Council, ARTC, Department of Planning and the like; and
- Demolition Standards not referred to by the BCA;
- Work Healthy and Safety Act 2011;
- The National Construction Code – Plumbing Code of Australia Volume 3

3.0 BUILDING DESCRIPTION

3.1 Building Site

The site includes 74 Rickard Road (being Lot 5 DP 777510) and a portion of 375 Chapel Street (being part Lot 6 DP 777510). In addition, public domain works are proposed to Rickard Road, 70 Rickard Road (being part Lot 7 DP 777510) and access is proposed via 80 Rickard Road (being Lot 12 DP 566924).

The site currently consists of an existing at grade cark park and grassed area.

Figure 1: Aerial View of Site

3.2 Building Development

The building development subject of this report is located adjacent to the Paul Keating Park in the Bankstown CBD at the corner of Appian Way & Rickard Road. The building comprises 18 storeys plus two below ground basement car parking levels.

The proposed development involves the construction of a new high rise mixed used building consisting of University& retail use. The building is to be occupied by the University of Western Sydney. A summary of the proposed uses is provided below:

- Ground floor containing University lecture space as well as several retail tenancies
- Levels 1-12 containing university learning/teaching spaces
- Level 13 containing a conference centre
- Levels 14-18 containing University/Education Space

Figure 2 – Proposed development

3.3 Building Description

Class	Level	Description
7a	Basement 1 & 2	Basement car parking, plans rooms, EOTF
6	Ground	Retail Tenancies
9b	Ground - Level 12	University
9b	Level 13	Conference Facility
5	Level 14-17	University/Education Use including office & meeting spaces
9b	Level 18	University/Education Use – Assembly Space

Table 4 – Building Class (or part)

Characteristic	Description
Type of Construction:	Type A Construction
Floor Area of Building:	Circa 30,000m2
Max Fire Compartment Size:	Circa 6,000m2
Rise in Storeys:	19
Levels Contained:	21
Effective Height:	75m

Table 5 – Building Characteristic

3.4 Documentation Assessed

The architectural plans are yet to be developed to the extent that a complete BCA assessment can be undertaken and therefore this report is preliminary only. The plans are considered satisfactory for a planning submission.

This report is based on the following documentation:

Description	Drawing No.	Revision	Date
Base-build – Lyons Architects			
Plan – Basement 2	A30-01	20	18.02.19
Plan – Basement 1	A30-02	22	18.02.19
Plan – Ground Floor	A30-03	24	18.02.19
Plan - Level 1	A30-04	22	18.02.19
Plan - Level 2	A30-05	21	18.02.19
Plan - Level 3	A30-06	22	18.02.19
Plan - Level 4	A30-07	22	18.02.19
Plan - Level 5	A30-08	20	18.02.19
Plan - Level 6	A30-09	20	18.02.19
Plan - Level 7	A30-10	21	18.02.19
Plan - Level 8	A30-11	18	18.02.19
Plan - Level 9	A30-12	18	18.02.19
Plan - Level 10	A30-13	18	18.02.19
Plan - Level 11	A30-14	20	18.02.19
Plan - Level 12	A30-15	18	18.02.19
Plan - Level 13	A30-16	18	18.02.19
Plan - Level 14	A30-17	18	18.02.19
Plan - Level 15	A30-18	18	18.02.19
Plan - Level 16	A30-19	18	18.02.19

Plan - Level 17	A30-20	20	18.02.19
Plan - Level 18	A30-21	18	18.02.19
Plan - Roof	A30-22	11	18.02.19
Building Elevations – North (Rickard Road)	A40-01	16	18.06.2019
Building Elevations – East (Appian Way)	A40-02	15	18.06.2019
Building Elevations - South	A40-03	16	18.06.2019
Building Elevations - West	A40-04	16	18.06.2019
Building Section A	A45-01	15	03.06.2019
Building Section B	A45-02	16	18.06.2019
Building Section C	A45-03	15	03.06.2019
Building Section D	A45-04	15	18.06.2019
Façade Type Plans	A50-01	2	18.03.2019
Façade – Detail Sections	A50-02	2	18.03.2019
Façade – Detail Sections	A50-03	3	18.03.2019
Façade – Detail Sections	A50-04	3	18.03.2019
Façade – Detail Sections	A50-05	2	18.03.2019
Façade – Detail Sections	A50-06	3	18.03.2019
Façade – Detail Sections	A50-07	1	18.03.2019
Concept Fit-out Use – HDR Architects			
GA Plan (Concept Fitout) - Ground	SK-120050	-	20.06.2019
GA Plan (Concept Fitout) – Level 01	SK-120100	-	20.06.2019
GA Plan (Concept Fitout) – Level 02	SK-120200	-	20.06.2019
GA Plan (Concept Fitout) – Level 03	SK-120300	-	20.06.2019
GA Plan (Concept Fitout) – Level 04	SK-120400	-	20.06.2019
GA Plan (Concept Fitout) – Level 05	SK-120500	-	20.06.2019

GA Plan (Concept Fitout) – Level 06	SK-120600	-	20.06.2019
GA Plan (Concept Fitout) – Level 07	SK-120700	-	20.06.2019
GA Plan (Concept Fitout) – Level 08	SK-120800	-	20.06.2019
GA Plan (Concept Fitout) – Level 09	SK-120900	-	20.06.2019
GA Plan (Concept Fitout) – Level 10	SK-121000	-	20.06.2019
GA Plan (Concept Fitout) – Level 11	SK-121100	-	20.06.2019
GA Plan (Concept Fitout) – Level 12	SK-121200	-	20.06.2019
GA Plan (Concept Fitout) – Level 13	SK-121300	-	20.06.2019
GA Plan (Concept Fitout) – Typical level 14-17	I80-17	-	-
GA Plan (Concept Fitout) - Level 18	I80-21	-	-

Table 6 – Documentation Assessed

4.0 BCA NON-COMPLIANCES & FURTHER CONSIDERATIONS

The following assessment will provide an overview of the compliance with the BCA and identify issues (non-compliances) and indicate clauses that are required to be complied with but cannot be assessed at this particular stage of the development.

Section B – Structure

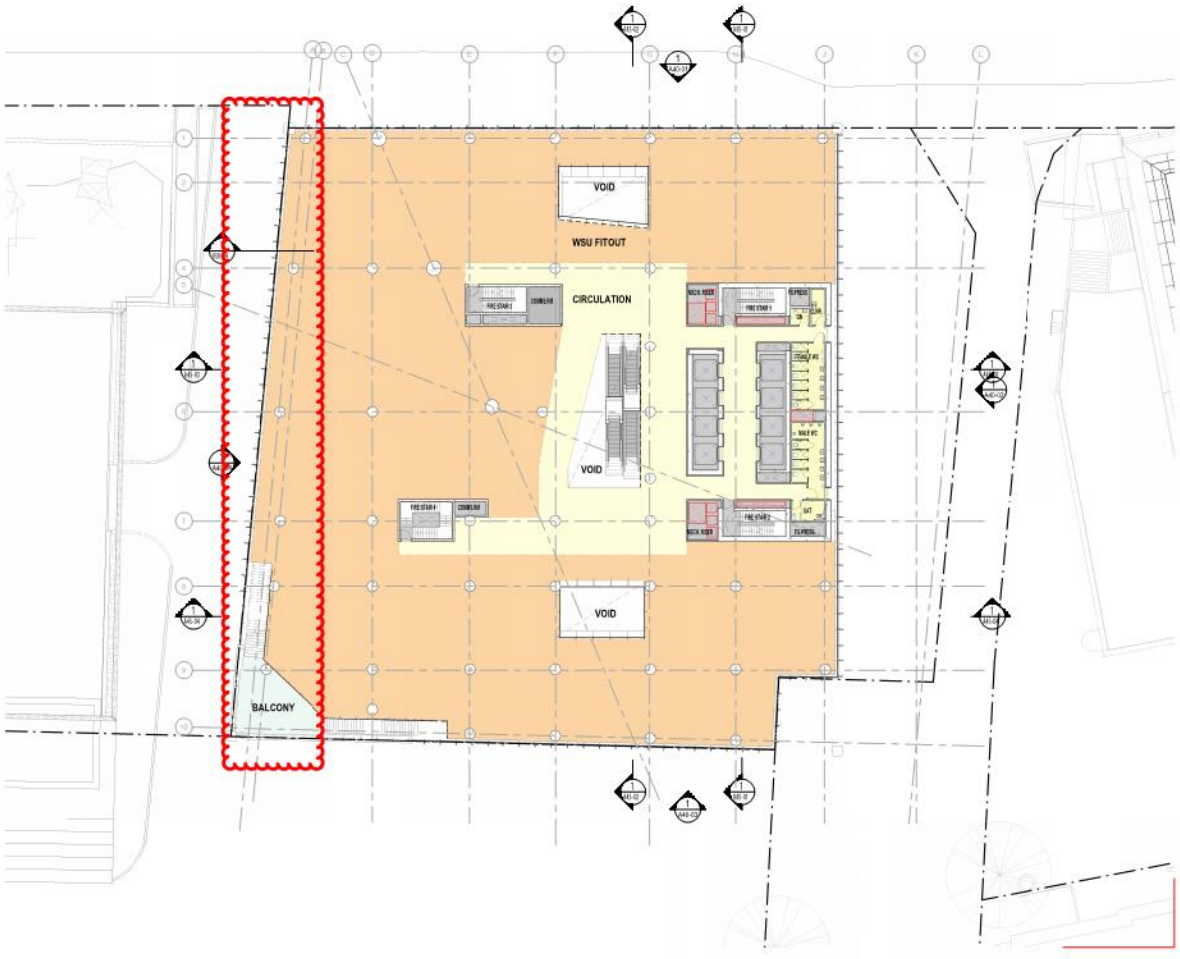
Structural Engineer to confirm compliance with Section B of the BCA.

Section C – Fire Resistance

Clause C1.1/Specification C1.1 - Fire Resistance Level's

The building is required to be constructed using Type A construction as per the requirements of Table 3 in Specification C1.1 of the BCA (refer Appendix B.)

Compliance with the requirements of table 3 of Specification C1.1 is required for all building elements. Table 3 of Spec C1.1 requires an FRL of not less than 120/120/120 for a loadbearing External Wall within 1.5m of a fire source feature. The Western Façade of the building is located within 1.5m of the boundary (a fire source feature for the purposes of this clause) and is therefore required to have an FRL of not less than 120/120/120. This is shown below:



It is understood that a Fire Engineered Performance Solution will be developed to remove the requirement for an FRL to this external wall.

Clause C1.10/Specification C1.10

The Fire Hazard Properties of floor linings and floor coverings, wall and ceiling lining's, and other material as noted within Clause C1.10, must comply with the provisions of Specification C1.10 as noted in Table 5 below. It is recommended that the Fire Hazard Property Test Reports of the various linings and coverings are submitted to this office for a compliance check prior to installation.

Item	Location	Requirement
Floor linings or coverings	All floor areas throughout the complex	*CRF of no less than 2.2
Wall and ceiling linings	Public Corridors	**Group Number 1 or 2
Wall and ceiling linings	Fire-isolated exits	Group Number 1
Wall and ceiling linings	Within the sole-occupancy units / Apartments	Group Number 1, 2 or 3
Wall and ceiling linings	Other Areas	Group Number 1, 2 or 3
Ceiling linings	Office – Open plan with a min. floor dimension/ceiling height ratio >5	Group Number 1 or 2

Table 7 – Fire Hazard Properties

Note*: CRF stands for critical radiant flux, which is a BCA defined term as follows – "Critical radiant flux means the critical heat flux at extinguishment as determined by AS ISO 92391.1 – 2003." And for buildings not fitted with a sprinkler system complying with Specification E1.5, must have a maximum smoke development rate of 750 percent-minutes.

Note**: Group Number is a BCA defined term as follows – "Group number means the number of one of 4 groups of materials used in the regulation of fire hazard properties and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling." The group numbers must be determined in accordance with AS 5637.1 - 2015 and for buildings not fitted with a sprinkler system complying with Specification E1.5, must have—

- a smoke growth rate index not more than 100; or
- an average specific extinction area less than 250 m 2/kg.

BCA Specification C1.1 Clause 2.4 & 4.1(b) illustrates the restrictions on using combustible wall cladding and external combustible walls. Such non-compliant products include but are not limited to certain Alucabonds, Apolic, Kingspan, timber, etc. Fire engineered alternative solutions may be possible but unlikely for areas around the exits and above the fire services. Please advise of any locations where such products are to be used in the form of colour coded elevations, for further assessment.

C2.12 – Separation of Equipment

The following equipment, if provided, will need to be fire separated from the remainder of the building by construction having an FRL of no less than that stipulated below:

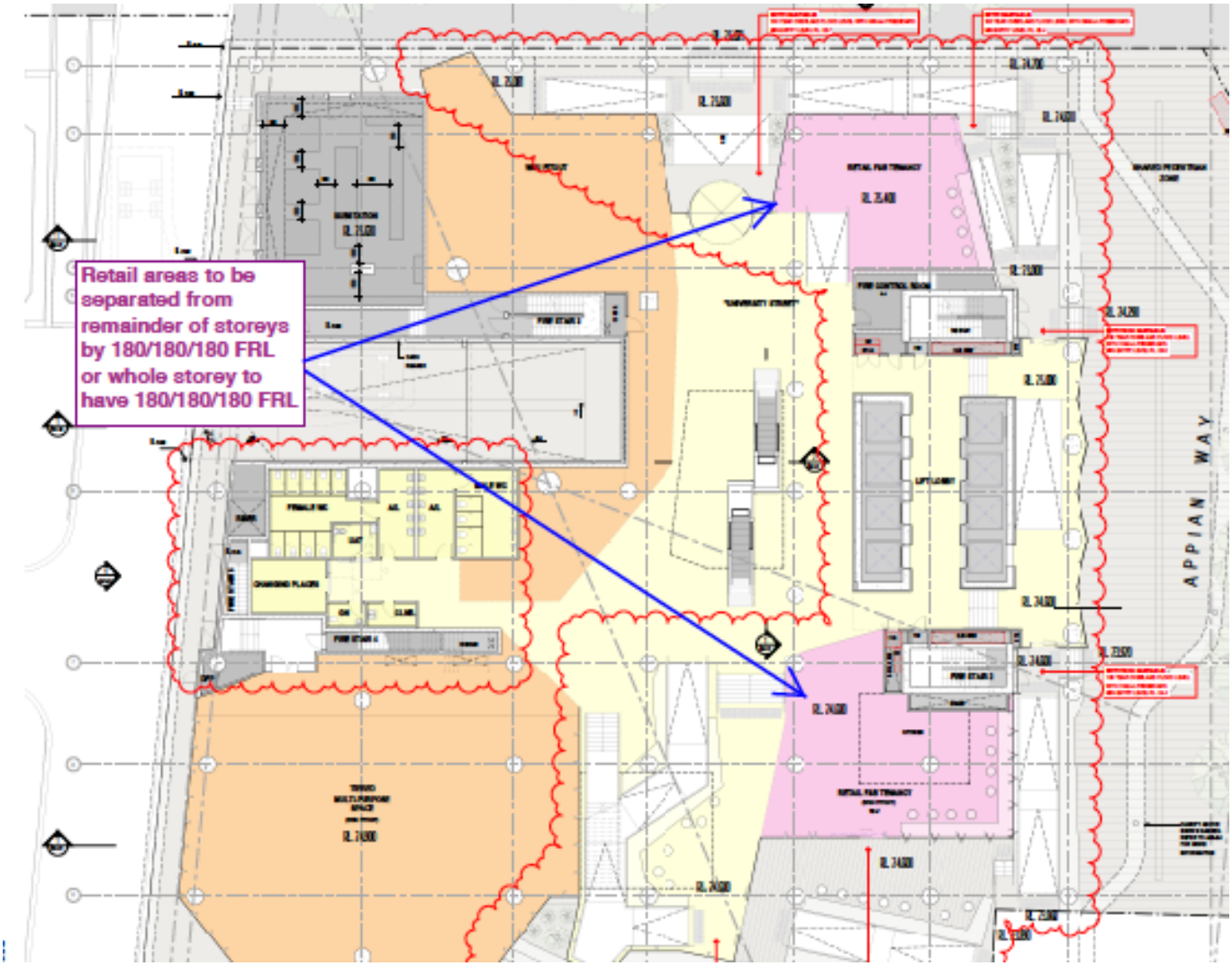
- Lift motors and control panels: 120/ - / -
- Emergency generators used to sustain emergency equipment operating in emergency mode including standby power systems: 120/120/120
- Central smoke control plant, boilers and batteries that have a voltage of more than 12V and a storage capacity exceeding 200kWh: 120/120/120
- Electricity sub-station: 120/120/120 (confirmation with the electricity supplier is required)

- Main switchboard located within the building which sustains emergency equipment in emergency mode: 120/120/120.

With regard to any installed batteries, the electrical consultant is to confirm whether the above fire rating provision is applicable when considering the limitations of BCA Clause C2.12, batteries that have a voltage of more than 12V and a storage capacity exceeding 200kWh Details of these areas are required to confirm compliance. Compliance is readily achievable.

Clause C2.8 – Separation of classifications in the same storey

If a building has parts of different classifications located alongside one another in the same storey the parts must be separated in that storey by a fire wall having the higher FRL prescribed in Table 3 of Specification C1.1 or the whole fire compartment is to be constructed to the higher FRL, being 180/180/180 for a Class 6 area.



A performance solution is proposed to reduce the FRL of the compartment to 120/120/120 in lieu of 180/180/180.

Section D – Access & Egress

Clause D1.4/D1.5 – Exit travel distances

Clause D1.4 requires that no point on floor must be more than 20m from an exit or a point of choice to two exits, in which case the maximum distance to one of those exits must not exceed 40m.

Clause D1.5 requires that alternative exits be no closer than 9m or further than 60m apart Travel Distance Non-Compliances. The travel distances identified below are based on the concept fit-out drawings for levels Ground to 12 and Level 18, and base building drawings for Basement levels 1 & 2 and Levels 13-17.

Location	DTS Travel Distance Requirement	Non-Compliance	Performance Requirement	Resolution
Ground Floor	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**44m to Exit In Lieu of 40m**	DP4, EP2.2	Performance Solution to be included in the FER
Level 2	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**100m Between Exits**	DP4, EP2.2	Performance Solution to be included in the FER
Level 4	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**21m to POC**	DP4, EP2.2	Performance Solution to be included in the FER
Level 5	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**90m Between Exits**	DP4, EP2.2	Performance Solution to be included in the FER
Level 6	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**90m Between Exits**	DP4, EP2.2	Performance Solution to be included in the FER
Level 10	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**75m Between Exits**	DP4, EP2.2	Performance Solution to be included in the FER

Level 18	• 20m max. to a point of choice. • 40m max. to an exit (2 min.). • 60m max between alternative exits.	**23m to POC**	DP4, EP2.2	Performance Solution to be included in the FER

It is understood the extended travel distances identified in the table above will be addressed via design changes or a performance solution by the Fire Engineer.

Clause D1.6 Dimensions of exits and paths of travel to exits

Clause D1.6 (a) requires that the unobstructed height throughout a required exit or path of travel to an exit must not be less than 2m, except for a doorway of which the unobstructed height may be reduced to 1980mm. Further information will be required at detailed design stage to confirm compliance with this clause however compliance is readily achievable.

Clause D1.6 (c) requires, for a storey accommodating more than 100 persons but not more than 200 persons, the aggregate unobstructed egress width except for doorways be not less than:

i) 1m plus 250mm for each 25 persons (or part) in excess of 100

Clause D1.6 (d) requires, for a storey accommodating more than 200 persons, the aggregate unobstructed egress width, except for doorways must be increased to:

i) 2m plus 500mm for every 60 persons (or part) in excess of 200 if egress involves a change in floor level by a stairway or ramp with a gradient steeper than 1 in 12; or
ii) In any other case, 2m plus 500mm for every 75 persons in excess of 200

The building as designed is compliant with the requirements of this clause based upon the maximum populations proposed. Refer to Appendix B, Lyons Populations Memo Revision 6 dated 21st May 2019, created in consultation with the Client, Western Sydney University, detailing maximum populations and corresponding egress widths.

D2 – Construction of Exits

D2.8 Enclosure of Space Under Stairs & Ramps

The space below a required non-fire isolated stairway (including an external stairway) or non-fire-isolated ramp must not be enclosed to form a cupboard or other enclosed space unless-

(i) The enclosing walls and ceilings have an FRL of not less than 60/60/60; and

(ii) Any access doorway to the enclosed space is fitted with a self-closing -/60/30 fire door.

The building as designed is compliant with this clause and hence this clause is advisory only.

D2.13 Goings & Risers

Stairs are to have constant goings & risers throughout each flight, with the dimensions of goings & risers considered constant if the variation between –

a) Adjacent risers, or between adjacent goings, Is not greater than 5mm; and

b) The largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10mm.

This clause is advisory only and compliance will be assessed during the constructions stage of works.

D2.16 Barriers to prevent falls

A continuous barrier must be provided along the side of –

(i) A roof to which general access is provided; and

(ii) A stairway or ramp; and

(iii) A floor, corridor, hallway, balcony, deck, veranda, mezzanine, access bridge or the like; and

(iv) Any delineated path of access to a building

If the trafficable surface is 1m or more above the surface beneath.

Further detail is required to determine compliance with this clause however compliance is readily achievable.

D2.17 Handrails

As per the requirements of this clause, for the subject building, handrails must be:

(i) Located along at least one side of the ramp or flight; and

(ii) Located along each side if the total width of the stairway or ramp is 2m or more; and

(iii) Fixed at a height of not less than 865mm measured above the nosing's of stair treads and the floor surface of the ramp, landing or the like; and

(iv) Continuous between stair flight landings and have no obstruction on or above them that will tend to break a hand-hold; and

(v) In a required exit serving an area required to be accessible, designed and constructed to comply with clause 12 of AS 1428.1.

Further detail is required to determine compliance with this clause however compliance is readily achievable.

D2.18 Fixed Platforms, walkways, stairways and ladders

A fixed platform, walkway, ladder and any going, riser, landing, handrail or barrier attached thereto may comply with AS 1657 in lieu of D2.13, D2.14, D2.16 & D2.17 of the BCA if it only serves:

a) Machinery rooms, boiler houses, lift-machine rooms, plant rooms or the like;

b) Non-habitable rooms, such as attics, storerooms and the like that are not used on a frequent or daily basis in the internal parts of a sole-occupancy unit in a class 2 building or class 4 part of a building.

Further detail is required to determine compliance with this clause however compliance is readily achievable.

D2.21 Operation of Latch

a) A door in a required exit, forming part of a required exit or in the path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by—

i) a single hand downward action on a single device which is located between 900 mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3—

A) be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and

B) have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35 mm and not more than 45 mm; or

ii) a single hand pushing action on a single device which is located between 900 mm and 1.2m from the floor.

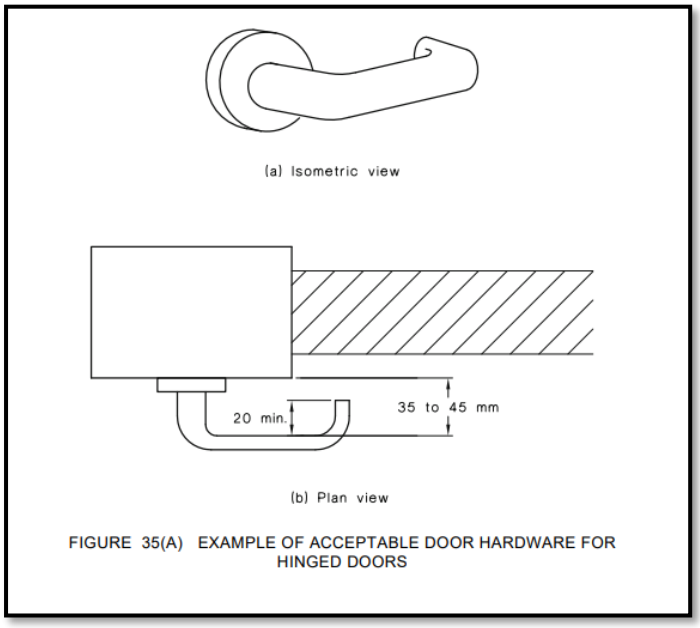


FIGURE 35(A) EXAMPLE OF ACCEPTABLE DOOR HARDWARE FOR HINGED DOORS

Example of Compliant Door Hardware

Further detail is required to determine compliance with this clause however compliance is readily achievable.

Part D3 – Access for people with a disability

Refer to separate disability access report for compliance with part D3.

Section E – Fire Services & Equipment

E1 – Fire Fighting Equipment

The following firefighting equipment is required to be installed in this building and will be subject to specific requirements of the Fire Engineering Report when it becomes available:

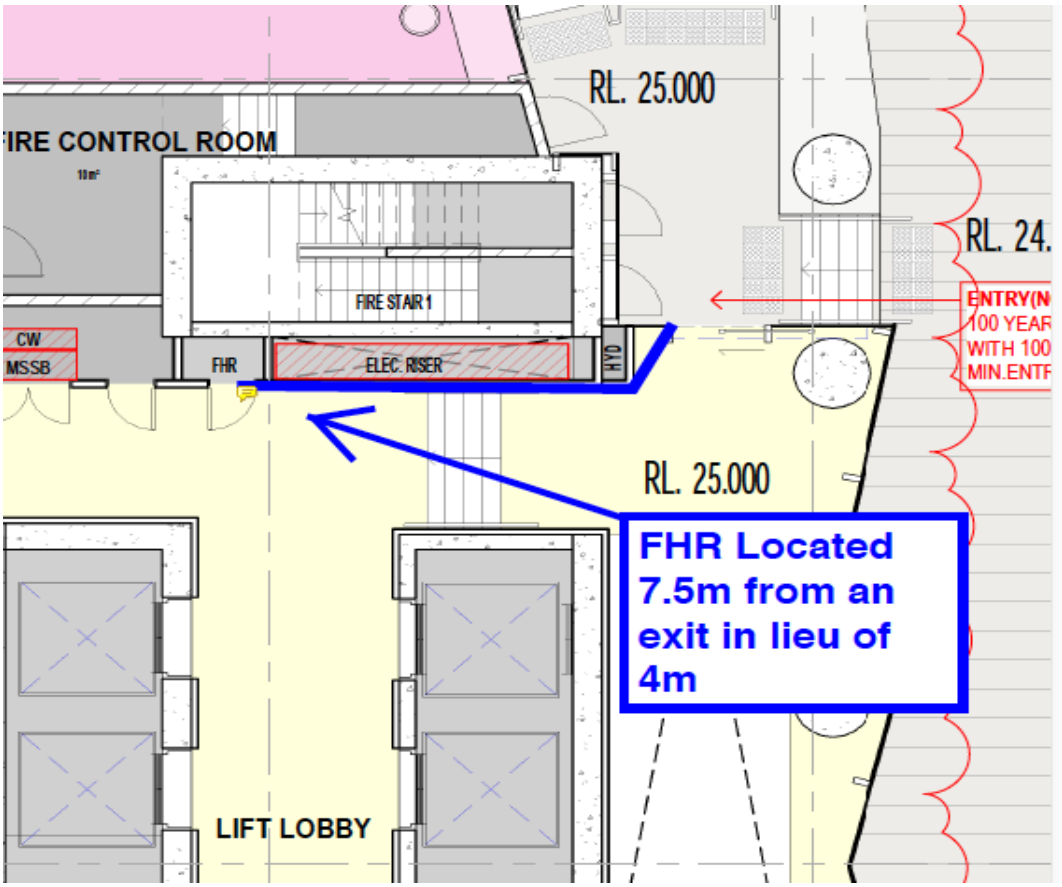
- Fire hydrants to AS 2419.1-2005
- Fire Hose Reels to AS 2441-2005
- Automatic Fire Sprinkler System to AS 2118.1-2017
- Portable Fire Extinguishers to AS 2444-2001

Design Certification is required from relevant Consultant Engineers for each of these services.

Clause E1.4

Clause E1.4 (e) (i) & (ii) requires that a fire hose reel be provided adjacent to an internal fire hydrant (other than one in a fire-isolated exit) and within 4m of an exit, however they need not be located within 4m of every exit or adjacent to every internal fire hydrant provided system coverage can be achieved.

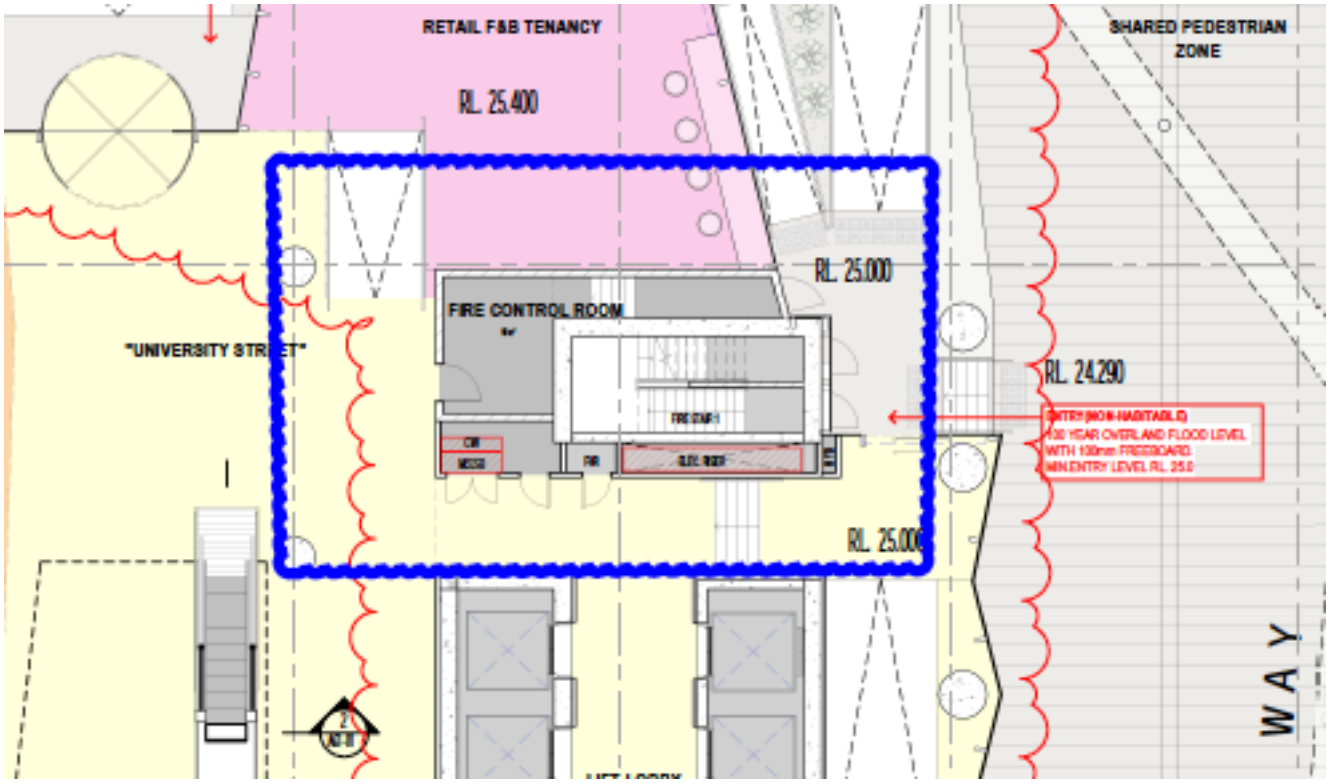
A fire hose reel at the ground floor adjacent to the Appian Way exit is proposed to be located 7.5m from an exit in lieu of 4m. A Performance solution by the Fire Engineer is proposed to address this non-compliance.



Clause E1.8/Specification E1.8 – Fire Control Centres

Specification E1.8 requires a Fire Control Centre be located within a separate room (Fire Control Room) where the effective height of a building exceeds 50m. Specification E1.8 (3) states that a fire control centre must not be so located in a building that egress from any part of its floor, to a road or open space, does not involve changes in level which in aggregate exceed 300mm.

The proposed location of the fire control room is in aggregate approximately 700mm above the level of the closest area considered a road or open space. A Performance Solution is to be developed to address this non-compliance.



E2 – Smoke Hazard Management

The BCA requires the following Smoke Hazard Provisions to be implemented for this development and is subject to specific requirements of the Fire Engineering Report.

- Zone smoke control system to AS/NZS 1668.1-2015
- Stair pressurisation to all fire-isolated exists and passageways to AS/NZS 1668.1-2015
- BOWS to Clause 7 of specification E2.2a
- Carpark mechanical ventilation / extraction, to BCA E2.2, AS 1668.2-2012 & Clause 5.5 of AS/NZS 1668.1- 2015
- Automatic Smoke Exhaust System complying with Specification E2.2b

Design Certification is required from relevant Consultant Engineers for each of these services.

Zone Smoke Control – Pressure Differential non-compliance

AS 1668.1-2015 (part 5) requires that a pressure differential of 20Pa be maintained between the fire floor and all other floors. This is to mitigate smoke spread between levels. In the proposed building, as the atrium fire compartment will include Ground level – Level 2 (atrium fire compartment), it has been indicated by the design team due to the likely number of doors being open (for occupants evacuating on the Ground level), that it will be difficult to maintain 20 Pa between this compartment and the fire affected compartment. While exclusively negative pressure may be used on the fire floor to maintain a pressure difference to the atrium fire compartment, it is considered difficult to ensure exit door forces are appropriate for occupants evacuating. This non-compliance will be addressed via a performance solution by the Fire Engineer.

E3 – Lift Installations

The BCA requires the following lift provisions to be implemented for this development:

- At least two (2) Emergency Lifts are required to serve all storeys.
- Stretcher facilities are required in at least one of the lifts. A stretcher facility must 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.
- Warning signage, i.e. “Do not use lifts if there is a fire”
- Landings are to comply with the access and egress provision of Section D of the BCA.
- The lifts must be a type of lift noted in Table E3.6(a) of the BCA.
- The lifts must have features in accordance with Table E3.6(b), i.e. handrails, certain dimensions, etc, as stipulated within this table.
- Fire Services Controls – consisting of a fire recall switches for the group of lifts and a lift car fire service drive control switch complying with E3.10 for every lift.
- The lift car must have emergency lighting.
- Cooling of the lift shaft to ensure that the dry bulb air temperature in the lift shaft does not exceed 40oC and if the cooling is by ventilated system, be provided with an air change rate determined using a temperature rise of no more than 5 K.
- Emergency access doors may be required for these single enclosed shafts, vertical transport consultant to advise when considering the multiple prerequisites of Specification E3.1 Clause 6.

An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1.

E4 – Visibility in an Emergency Lighting, Exit Signs and Warning Systems

The BCA requires the following Emergency Lighting, Exit Signs and Warning Systems for this development:

- Emergency lighting and exit signs are required to be installed throughout the building in accordance with the provisions of the BCA and AS 2293.1 - 2018.
- A sound system and intercom system for Emergency purposes complying with AS1670.1-2018 and specific fire engineering requirements is required throughout the building.

Section F – Health and Amenity

F1 – Damp and Weatherproofing

Storm water drainage must comply with AS/NZS 3500.3-2018 and the NCC Plumbing Code of Australia.

Any external above ground membranes are required to comply with AS 4654-2012 Parts 1 & 2. This is a new requirement coming into effect as of 1 May 2014 and careful design consideration will need to be applied in the areas of the balconies and the like in this development.

The internal wet areas must comply with BCA Table F1.7and AS 3740-2010.

Moisture from the ground must be prevented from reaching the building elements such as the flooring, walls above DPC levels, etc. Vapour barriers must comply with AS 2870-2011.

F2 – Sanitary & Facilities

Clause F2.3 requires sanitary facilities to be provided in Class 3-9 buildings in accordance with the provisions of Table F2.3.

Refer to Appendix B, Lyons Populations Memo Revision 7 dated 22nd July 2019, created in consultation with the Client, Western Sydney University, detailing sanitary facilities on each floor in accordance with the stipulated population numbers and as per the DtS requirements of the BCA.

F3 – Room Sizes

The ceiling height must be not less than—

- Generally, 2.4 m; and
- A habitable room excluding kitchen; and a corridor, passageway, or the like — 2.4 m; and
- a bathroom, shower room, sanitary compartment, airlock, tea preparation room, pantry, store room, garage, car parking area, apartment kitchen and laundry, or the like — 2.1 m; and
- a commercial kitchen — 2.4 m; and
- above a stairway, ramp, landing or the like — 2 m measured vertically above the

nosing line of stairway treads or the floor surface of the ramp, landing or the like.

The sections appear to illustrate compliance with this provision, however they should be updated with relevant dimensions for absolute confirmation.

NSW G1.101 Provision for Cleaning Windows

A building must be provided for a safe manner of cleaning windows above 3 or more storeys. This provision is satisfied if the windows can be cleaned from the inside, or externally via a method complying with the Work Health and Safety Act 2011 and associated regulations. Design certification will be required from an appropriately qualified person prior to the issue of the Crown Certification, and Installation Certification will be required prior to issuing the Crown Completion Certificate.

Section G - Ancillary Provisions

G3 – Atrium Construction

Smoke Exhaust Rate

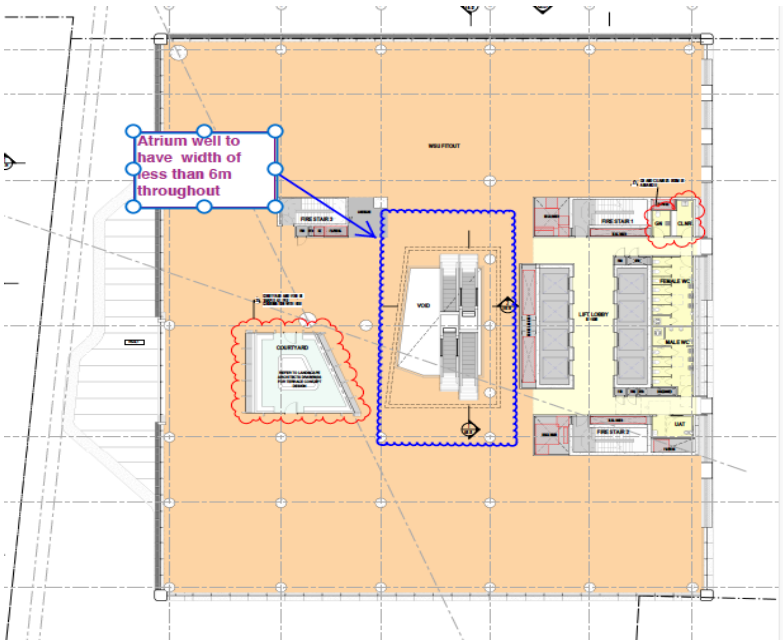
The smoke exhaust rate for the smoke exhaust system required for the atrium is designed exclusively for Class 9b use however the atrium fire compartment has Class 6 areas opening into it as well. The exhaust rate is proposed to be 45m3/s in lieu of 74m3/s. This non-compliance will be addressed via a performance solution by the Fire Engineer.

Omission of Sub-ducts to Hot Layer Smoke Exhaust System

The atrium smoke exhaust will be exhausted via the smoke control riser shaft. The zone smoke control riser shaft will have sub-ducts at every level for the zone smoke control system in accordance with AS 1668.1 The atrium exhaust will also utilise this riser (essentially as a zone smoke control system for Ground - Level 2, but at a higher exhaust rate). To reduce the duct sizes above the ceiling it has been proposed to extract smoke from the atrium at several levels (e.g. Level 7, 6, 5 & 4) and use the atrium as a smoke reservoir. Therefore, at each level where the duct from the atrium enters the riser, AS 1668.1 (Part 5) would require the ducts to have a sub-duct. It is proposed not to use sub-ducts into the atrium riser, rather motorised smoke dampers will be used. This non-compliance will be addressed via a performance solution by the Fire Engineer.

Width of Atrium Well

Section G3 of the BCA requires an Atrium well to have a width throughout the well that is able to contain a cylinder having a horizontal diameter not less than 6m.



Atrium Bounding Construction

The proposed atrium bounding construction will not comply with the DtS requirements of the BCA as fire curtains are proposed on various levels in lieu of DtS compliant drencher protected glazing or solid construction achieving the required FRL. This non-compliance will be addressed via performance solution by the Fire Engineer.

Omission of 'Evacuate' Signage on Atrium Levels

It is proposed to omit the 'EVACUATE' signs required by BCA DtS Clause G3.8 & Specification G3.8 Clause 5. This non-compliance will be addressed via. Performance solution by a Fire Engineer.

Section J – Energy Efficiency

Section J compliance is to be confirmed by the Energy Efficiency Consultant. It is noted that the Section J provisions of BCA 2019 are not mandatory until 1st May 2020 and it is understood that this project will utilise the Section J provisions of BCA 2016 Amendment 1.

5.0 ESSENTIAL FIRE SAFETY MEASURES (EFSM)

Below is a list of essential fire safety services that are required/expected to be installed / designed for the building, and the relevant standards of performance for each measure to be designed/constructed to. This table may be required to be updated as the design develops.

Fire Safety Measure	Standard of Performance	BCA Clause(s)	Proposed Fire Safety Measures
Access panels, doors & hoppers to fire resisting shafts	AS 1530.4 – 2014	C3.13	☐
Atrium provisions • Detection & alarm system • SSISEP • Sprinklers • Stair pressurisation	AS 1670.1-2018 AS 1670.4-2018 AS 2118.1-2017 AS 1668.1-2015	G3.8, Spec G3.8	☐
Automatic fail-safe devices	--	C3.8, D2.21, Spec C3.4	☐
Automatic fire detection & alarm systems	AS 1670.1 – 2018	Spec E2.2b, G3.8	☐
Automatic fire suppression systems	AS 2118.1 – 1999	E1.5, Spec E1.5, NSW Table E2.2b, G3.8	☐
Emergency lighting	AS 2293.1 – 2015	E4.2, E4.4	☐
Exit signs	AS 2293.1 – 2015	E4.5, NSW E4.6 & E4.8, EP4.2	☐
Fire dampers	AS 1668.1 – 2015	Spec E2.2a	☐
Fire doors	AS 1905.1 – 2015	Spec C3.4, C3.10	☐
Fire hose reel systems	AS 2441 – 2005	E1.4, EP1.1	☐
Fire hydrant systems	AS 2419.1 – 2005	E1.3, EP1.3	☐
Fire seals (protecting openings in fire resisting components of the building)	AS 4072.1 – 2005 AS 1530.4 – 2014	C3.12, C3.13, C3.15	☐
Lightweight construction	--	C1.8, Spec C1.8, CP1, CP2	☐
Mechanical air handling systems • Auto shutdown • Stair pressurisation • Smoke exhaust • Zone Smoke Control	AS 1668.1 – 2015 AS 1668.2 –2012	E2.2, Spec E2.2a, Spec E2.2b	☐
Portable fire extinguishers & fire blankets	AS 2444 – 2001	E1.6	☐
Smoke dampers	AS/NZS 1668.1 – 2015	C3.15, Spec G3.8	☐
Sound systems and intercom systems for emergency procedures	AS 1670.4 – 2018 AS 4428.4 – 2004	E4.9, Spec G3.8	☐
Standby power systems	-	Spec G3.8	☐

Fire Safety Measure	Standard of Performance	BCA Clause(s)	Proposed Fire Safety Measures
Wall wetting sprinklers & drencher systems	AS 2118.1 – 2017	Spec G3.8	☐
Warning and operational signs	--	C3.6, E3.3, D2.23 & Spec E1.8	☐
Paths of Travel	--	D1.6, DP4, DP5, DP6, EP2.2	☐
Fire/Smoke Curtain	--	--	☐
Alternative Performance Solution, Report No. TBC	Alternative Solution, Report No. **TBC**, issued by, dated **TBC**.	-	☐

Table 7 – Essential Fire Safety Measures (EFSM)

Appendix A:

Fire Resistance Levels (FRL's)

Specification C1.1, BCA Table No. 3 – Type A Construction: FRL of Building Elements

Item	~~Class 2, 3 or 4 part~~	Class 5, 7a or 9b	Class 6	~~Class 7b or 8~~
Loadbearing External Walls • Less than 1.5m to a fire source feature • 1.5 – less than 3m from a fire source feature; • 3m or more from a fire source feature	~~90/90/90~~ ~~90/60/60~~ ~~90/60/30~~	**120/120/120** **120/90/90** **120/60/30**	**180/180/180** **180/180/120** **180/120/90**	~~240/240/240~~ ~~240/240/180~~ ~~240/180/90~~
Non-Loadbearing External Walls • Less than 1.5m to a fire source feature • 1.5 – less than 3m from a fire source feature; • 3m or more from a fire source feature	~~-/90/90~~ ~~-/60/60~~ ~~-/-/-~~	**-/120/120** **-/90/90** **-/-/-**	**-/180/180** **-/180/120** **-/-/-**	~~-/240/240~~ ~~-/240/180~~ ~~-/-/-~~
External Columns • Loadbearing • Non-loadbearing	~~90/-/-~~ ~~-/-/-~~	**120/-/-** **-/-/-**	**180/-/-** **-/-/-**	~~240/-/-~~ ~~-/-/-~~
Common Walls & Fire Walls	~~90/90/90~~	**120/120/120**	**180/180/180**	~~240/240/240~~
Stair and Lift Shafts required to be fire-resisting • Loadbearing • Non-loadbearing	~~90/90/90~~ ~~-/90/90~~	**120/120/120** **-/120/120**	**180/120/120** **-/120/120**	~~240/120/120~~ ~~-/120/120~~
Internal walls bounding sole occupancy units • Loadbearing • Non-loadbearing	~~90/90/90~~ ~~-/60/60~~	**120/-/-** **-/-/-**	**180/-/-** **-/-/-**	~~240/-/-~~ ~~-/-/-~~
Internal walls bounding public corridors, public lobbies and the like: • Loadbearing • Non-loadbearing	~~90/90/90~~ ~~-/60/60~~	**120/-/-** **-/-/-**	**180/-/-** **-/-/-**	~~240/-/-~~ ~~-/-/-~~
Ventilating, pipe, garbage and like shafts: • Loadbearing • Non-loadbearing	~~90/90/90~~ ~~-/90/90~~	**120/90/90** **-/90/90**	**180/120/120** **-/120/120**	~~240/120/120~~ ~~-/120/120~~
Other loadbearing internal walls, beams trusses and columns	~~90/-/-~~	**120/-/-**	**180/-/-**	~~240/-/-~~
Floors	~~90/90/90~~	**120/120/120**	**180/180/180**	~~240/240/240~~
Roofs	~~90/60/30~~	**120/60/30**	**180/60/30**	~~240/90/60~~

Note: See concessions in Spec C1.1 for concessions to these above tabulated requirements, as this may reduce or remove fire rating requirements subject to certain criteria and haven't been captured in this report.

Table 8 – Fire Resistance Levels (FRL's)

Appendix B:
Populations & Amenities

Appendix C:
BCA Provisions

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Memorandum – Base Building Populations & Amenities

Date	**22 July 2019**	To	**WSU, Archerfield, NDY, Umow Lai, HDR, Group DLA**
Total pages	**7**	Project	**WSU Bankstown City Campus**
Job no.	**UW04**	Subject	**Base Building Populations & Amenities**
Revision	**REVISION 7**	From	**Lyons**

REV1: Correction to Table 1 Total Occupancy Population
REV2: Updates to Table 1 Level 13 Conference Population and Table 3 Toilet provision notes for alternative occupation of Levels 8 to 13 in response to WSU comment [Aconex ACAP-GCOR-000078]
REV3: Correction to Table 1 Population total, Removal of Squat Toilets at Ground as per Design Coordination meeting 5th February 2019.
REV 4: Level 18 change to Industry Partnership, Toilets increased at Level 13 Conference, Blocking and stacking updated to reflect HDR Fitout Blocking and Stacking dated 1 March 2019, Amenities notes and Table 3 updated.
REV 5: Table 1 Total population correction. Squat toilets location updated
REV 6 : Table 1 Level 18 and Total Population correction
REV 7 : Level 14-18 wording, Amenities table updated

This memo identifies the populations that are supported by the Base Building design for the Western Sydney University Bankstown City Campus development.

The population numbers accommodated on each level inform the clear width of egress stairs and fire isolated egress routes, the design of toilet amenities, mechanical air handling design, and effectiveness of the vertical transport systems. The population information is set out as follows:

- **Design Assumptions** - key building design information that the populations are based on.
- **Estimated Occupancy Populations** - Identifying the population based on internal floor area and use.
- **Life Safety Populations** – The upper limit of occupancy for life safety design purposes.
- **Amenities** – The design basis for the proposed amenities, including the number of facilities provided on each level in the Base Building.

Changes of use or populations in the future, during the design or post construction, will have the following impacts and limitations:

- Maximum population will be governed by the egress capacity provided by the stairs and doors.
- The proposed toilet allocations accommodate the likely populations for different occupancy uses. The need for additional toilets are considered unlikely, subject to use or layout changes associated with the Fitout briefing and design.
- There may be some impacts on the effectiveness of the mechanical services, which would need to be reviewed and assessed by NDY.
- Lift waiting times may change.
- Any changes would need to be considered against the Fire Engineering strategy for the building, and by the Building Surveyor for code compliance.

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Memorandum – Base Building Populations & Amenities

Design Assumptions:

The proposed floor-by-floor population is based on the following assumptions:

1. Use of different floor levels will be as per the blocking and stacking diagram and summary table below, reflecting the HDR Fitout Block & Stack principles as at 1 March 2019, with long term flexibility for the University to expand staff workspace occupancy into Levels 14 to 18, and increase teaching capacity on the lower and middle tower levels.
2. Total Base Building NLA **26,270m^2**.
3. Benchmark area per person for University occupied floors with learning spaces (including classrooms and informal learning spaces) Net Lettable Area (NLA) is **between 5 and 6m^2/p**, based on WSU precedent facilities.
4. Benchmark area per person for University Staff Workspace NLA is **10m^2/p** based on BCA guidelines for Office Space.

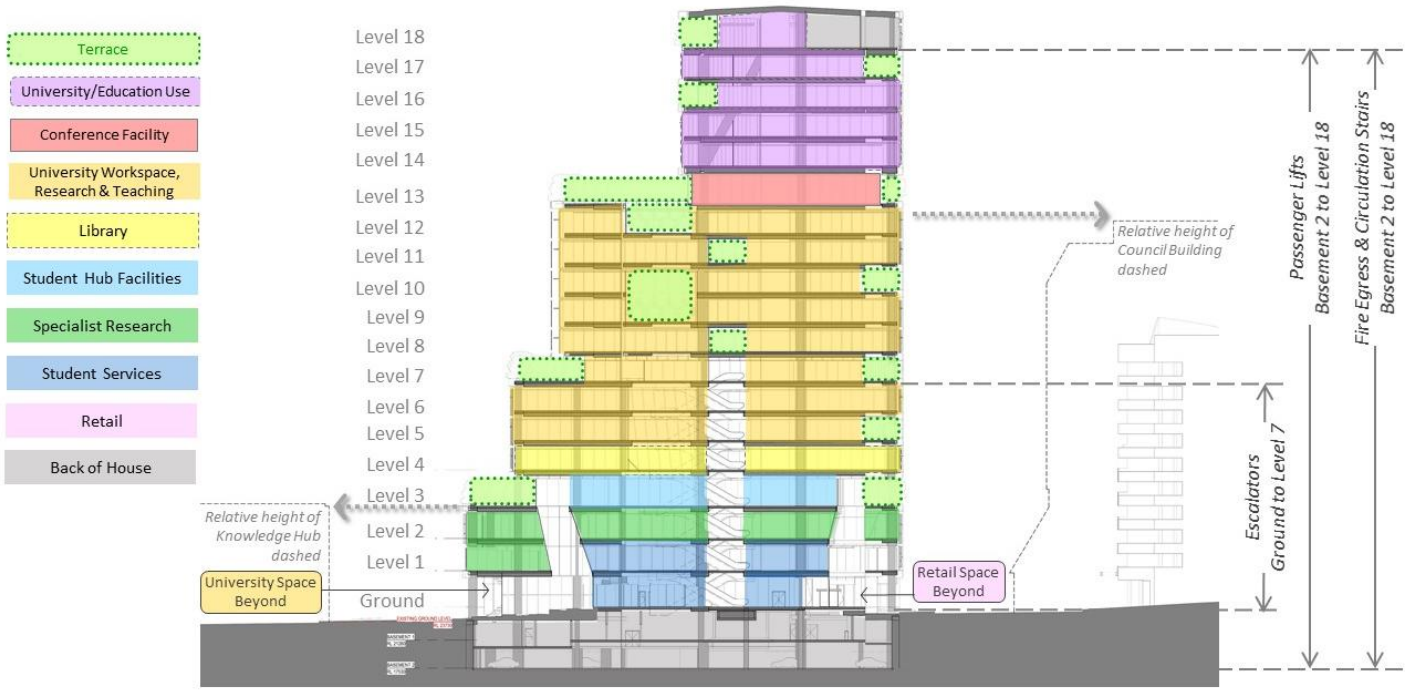

Diagram 1 Blocking and Stacking diagram [Revision 7]

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Memorandum – Base Building Populations & Amenities

Estimated Occupancy Populations:

Floor by floor breakdown of NLA and the estimated Occupancy Population for proposed space use are provided in Table 1 below.

The External Space accessed from each level of the building is also identified. Some levels may have additional population occupying these areas, particularly at Level 3 (Student Hub), Level 7 (Collaborative Research) and Level 13 (Confer ence Facilities).

Usage	Level	NLA m²	Occupancy Population	Population m²/p	External Area m²
Upper Tower – University / Education Use	Level 18	607	65 REV6	10.0 REV6	79
	Level 17	945	111	10.0	107
	Level 16	1,092	104	10.0	327
	Level 15	1,290	126	10.0	0
	Level 14	1,360	134	10.0	0
Conference Facilities & Terrace	Level 13	905	320	2.5	342
Mid Tower – Learning spaces, University Staff Workspaces, Research.	Level 12	1,255	200 A	6.0	67
	Level 11	1,284	200 A	6.0	39
	Level 10	1,202	200 A	5.7	88
	Level 9	1,264	200 A	6.0	62
	Level 8	1,260	200 A	6.0	21
Collaborative Spaces & Terrace	Level 7	1,065	198	5.0	673
Lower Tower – Learning spaces, University Staff Workspaces, Research.	Level 6	1,759	320 B	5.5	0
	Level 5	1,711	320 B	5.4	40
Library	Level 4	1,740	320 B	5.4	50
Student Hub & Terrace	Level 3	1,314	243	5.0	1192
Engagement, Research & Student Services	Level 2	2,383	440	5.4	85
	Level 1	2,210	440	5.4	62
'University street' Concierge, Tiered Multipurpose Space & Retail.	Ground Level	1,465	*612 C*	2.7	excl
End of trip facilities, Plant, Loading, Carparking, Parking.	Basement 1 & 2	511	minimal	-	0
TOTAL		**26,622 REV 7**	**4,753 REV6**		**3,233 REV 7**

Table 1 Estimated Occupancy Populations

NOTES:

A. *Population noted allows for a mix of office and teaching use.*

B. *Population noted allows for full floor teaching use for future growth, up to life safety population limit. Potential population with a mix of office and teaching use is nominally 257p to 262p, at an area of 6.7m²/p.*

C. *Ground level occupancy assumes 250 students, 12 staff, 350 Retail (food outlet) patrons.*

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Memorandum – Base Building Populations & Amenities

Life Safety Populations:

Life Safety populations is fixed by clear egress widths, including fire isolated stairs and egress routes, based on BCA requirements and Fire Engineering assessment. The configuration of fire egress stairs for the building also addresses the egress distance requirements to suit the stepped floor plate sizes. The Maximum Population for life safety on each level should exceed the Estimated Occupancy Populations identified in Table 1.

The following table outlines the proposed egress configuration and capacity per level:

Usage	Level	Number of Stairs	Total Egress Width	Maximum Population
Upper Tower – University / Education Use	Level 18	2	2m	200
	Level 17	2	2m	200
	Level 16	2	2m	200
	Level 15	2	2m	200
	Level 14	2	2m	200
Conference Facilities & Terrace	Level 13	3	3m	320[B]
Mid Tower – Learning spaces, University Staff Workspaces, Research.	Level 12	3[C]	3m	320
	Level 11	3[C]	3m	320
	Level 10	3[C]	3m	320
	Level 9	3[C]	3m	320
	Level 8	3[C]	3m	320
Collaborative Spaces & Terrace	Level 7	3[C]	3m	320
Lower Tower – Learning spaces, University Staff Workspaces, Research.	Level 6	3	3m	320
	Level 5	3	3m	320
Library	Level 4	3	3m	320
Student Hub & Terrace	Level 3	4	4m	440
Engagement, Research & Student Services	Level 2	4	4m	440
	Level 1	4	4m	440
'University street' Concierge, Tiered Multipurpose Space & Retail	Ground Level	0[D]	4m[D]	440[D]
Retail Spaces	Ground Level	0	1/1/1.5[E]	100/100/150[E]
End of trip facilities, Plant, Loading, Carparking, Parking.	Basement 1 & 2	4[A]	4m[A]	440[A]

Table 2 Life Safety Populations

NOTES:

A. *Basement requires 4 egress stairs due to distances. Anticipated population is substantially less.*
B. *Conference Level - high occupancy allowance for egress capacity during events.*
C. *Mid Tower requires 3 stairs due to distances. Maximum population is not expected to be reached for proposed space use, noting that exclusion of escalators above Level 7 limits suitability of these levels for higher student populations.*
D. *Stairs through Ground provide egress from levels above and below. Ground egress via external doors.*
E. *Retail spaces assume direct access to open space, egress width to suit food & beverage patron capacity.*

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Memorandum – Base Building Populations & Amenities

Amenities:

1. Toilet Facilities

The proposed allocation includes toilet facilities on all levels from B1 to 18, entailing shared staff and student facilities, and incorporating Male, Female, Universal Access (UAT, complying with DDA requirements) and Gender Neutral (GN) facilities. The design will not meet 'Deemed to Comply' NCC specifications because the facilities are shared between staff and students. Instead, the facilities will be certified on a Performance Basis, requiring sign off by the University.

The following breakdown identifies proposed toilet facilities and calculation basis, with the estimated occupancy and life safety populations noted for reference. The calculations assume that the population is 50% male, 50% female. The provision of UAT facilities at each toilet block allows for the reduction of Male and Female facilities by one, and this adjustment has been made to the proposed facility numbers. Additionally, an adult assisted change facility is provided at Ground Level, designed as a Changing Places Type 2 facility with toilet, basin, shower, change bench and hoist.

Gender Neutral toilets are not currently addressed in the NCC. These facilities have been included as an extra facility above the NCC basis, in response to the University's request for inclusive facilities.

Note that Basement 1 will include a small number of toilets as part of the End of Trip shower and change facilities (designed for Staff use). These can be accessed by staff, including Building Management Staff.

2. Provision for Squat Toilets

Squat toilets are not currently addressed in the NCC but are sometimes be provided in University buildings as an additional facility to accommodate the cultural preferences of likely building occupants and visitors. Recent precedent projects with squat toilets include Adelaide Health and Medical Sciences Building (Lyons, University of Adelaide) and Melbourne School of Design (John Wardle Architects, Melbourne University). Subject to WSU direction, individual squat toilets are proposed at Level 4 (Library Level) Male and Female toilets. This locates these facilities at key destination levels for students, and where they can be accessed by all building users.

3. Cleaner's Facilities

A cleaner's cupboard with sink and storage is proposed to be co-located with the toilet block on each level, subject to consultation with the relevant WSU stakeholder representatives and confirmation of space requirements.

4. Shower Facilities

Shower facilities will be incorporated in the End of Trip shower and change facilities, based on facility requirements for PCA Grade A 2012 standard. Showers and toilet facilities are anticipated to be all-gender access and will include one DDA compliant facility.

5. Other Amenities

It is assumed that the following amenities will be addressed in the Fitout Architect scope, noting that the locations, floor set downs and building services requirements will need to be coordinated with the Base Building documentation:

- Parenting facilities (identified in the Functional Design Brief)
- First Aid Room (identified in the Functional Design Brief)
- Tea Rooms and kitchen facilities, including staff and student use facilities, and Reheat Kitchens.
- Ablution facilities associated with Prayer rooms or other spaces identified in fitout briefing.

Memorandum – Base Building Populations & Amenities

Usage	Level	Toilet Facilities					Calculation Basis	Toilet Population	Estimated Occupancy (Table 1)	Maximum Life Safety (Table 2)
		User	Pans	Urinals	Basins	Other				
Upper Tower – University / Education Use	Level 14 to 18	Male	3	3	3		Class 5 Office employees	*REV2* 150p	From 104p to 134p	200p
		Female	4	-	3					
		UAT	1	-	1					
		GN	1	-	1					
Conference Facilities & Terrace	Level 13	Male	4	3	3		Class 9b Schools-Students OR Class 9b Function Halls	320p OR >320p	Up to 320p	320p
		Female	6	-	3					
		UAT	1	-	1					
		GN	1	-	1					
Mid Tower – Learning, Spaces, Staff & Research	Level 12 to 8	Male	3	3	3		Class 5 Office employees OR Class 9b Schools-Students	150p OR 200p	From 200p to 270p	320p
		Female	4	-	3					
		UAT	1	-	1					
		GN	1	-	1					
Learning Spaces & Terrace (Level 7) / Lower Tower – Learning, Spaces, Staff & Research / Library (Level 4)	Level 7 to 4	Male	4	3	3	1 squat (Level 4)	Class 9b Schools-Students OR Class 5 Office employees	320p OR 180p	From 198p to 320p	320p
		Female	6	-	3	1 squat (Level 4)				
		UAT	1	-	1					
		GN	1	-	1					
Student Hub & Terrace	Level 3	Male	4	3	3		Class 9b Schools-Students	320p	243p (Plus Terrace occupants)	440p
		Female	6	-	3					
		UAT	1	-	1					
		GN	1	-	1					
Engagement, Research, Student Services	Level 2 and 1	Male	4	4	4		Class 9b Schools-Students	440p	440p	440p
		Female	7	-	4					
		UAT	1	-	1					
		GN	1	-	1					

Memorandum – Base Building Populations & Amenities

Usage	Level	Toilet Facilities					Calculation Basis	Toilet Population	Estimated Occupancy (Table 1)	Maximum Life Safety (Table 2)
		User	Pans	Urinals	Basins	Other				
'University street' Concierge, Tiered Multipurpose Space & Retail.	Ground Level	Male	4	6	5		Class 6 Retail (food/beverage) AND Class 9b Schools-Students	350p AND 250p	612p	Egress via external doors to outside space. Total open width to be resolved.
		Female	9	-	5					
		UAT	1	-	1	Changing Places Type 2 facility				
		GN	1	-	1					
End of trip facilities, Plant, Loading, Carparking, Parking.	Basemt 1	UAT	1	-	1	1 shower	To suit 32 staff bike parking spaces, <10 employees	-	Minimal	440p
		GN	2	-	4	6 showers 32 lockers				

Table 3 Amenities

BCA PROVISIONS

The following is a clause-by-clause assessment of the architectural drawings against the deemed-to-satisfy provisions of the BCA 2019.

Key of Figures:

✓	The building as designed / indicated complies with this clause.
X	The building does not comply with this clause.
?	Further information or documentation required to clarify compliance.
CR	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
N/A	This clause is not applicable to this project.
PS	Performance Solution using Performance Requirements has been utilised/proposed to address this item – see body of report for further information
Noted	This clause is for information.

Section A: General Provisions		
A3	**Classification of Buildings and Structures**	
Clause	**Reference**	**Comment**
A3.2	Classifications	
✓	The classification of a building is determined by the purpose for which it is designed, constructed or adapted.	9b, 7a, 6, 5
A3.3	Multiple classification	
✓	Each part must be classified separately: (a) Classified to the major use if not more than 10% of the floor area of the storey. (b) Plant rooms are classified as the same part.	Considered.
A4	**United Buildings**	
Clause	**Reference**	**Comment**
A4.1	When buildings are united	
N/A	Two or more buildings adjoining each other form one united building if they are connected through openings in the walls dividing them and both buildings comply with the requirements of the BCA as though they are a single building.	This clause is not applicable to this project

Section B: Structure		
B1	**Structural Provisions**	
Clause	**Reference**	**Comment**
B1.1	Resistance to actions & Loads	Structural Engineer to Confirm
B1.2	Determination of individual actions	
CR	The building or structure must resist loads determined in accordance with the following: (a) Dead and live load combinations: AS 1170.0-2002 and AS 1170.1-2002 (b) Wind loads AS 1170.2- 2011 and BCA Part B1 (c) Snow loads AS 1170.3-2003 (d) Earthquake loads AS 1170.4-2007	Structural Engineer to Confirm
B1.3	Materials and forms of construction	
CR	The building or structure must resist loads determined in accordance with the following: (a) Dead and live load combinations: AS 1170.1 (b) Wind loads AS 1170.2-2002 or 2011 with BCA B1 (c) Snow loads AS 1170.3-2003 (d) Earthquake loads AS 1170.4-2007	Structural Engineer to Confirm
B1.4	Materials and forms of construction	
CR	Forms of construction are to be designed to the following Australian Standards as applicable: (a) AS 3700 (b) AS 3600 (c) AS 4100 (d) AS 1288-2006 (see note below) (e) AS 2047 (f) AS 1562.1 (g) AS 1720.1 (h) AS 3660.1 (i) AS 4654.1 and 2 – Waterproofing of external above ground areas (j) AS/NZS 4505 – garage doors and large access doors (k) Table B1.4 – re Glazing in lift shafts that do not require an FRL	All to be listed in the building specification. Structural Engineer, Architect and Manufacturers to certify.
B1.6	Construction in Flood Prone Areas	
N/A	A Class 2, 3, 4 (part), 9a or 9c building in a flood hazard area must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.	This clause is not applicable to this project

Section C: Fire Provisions		
Part C1 – Fire Resistance and Stability		
Clause	**Reference**	**Comment**
C1.1	Type of construction	
Noted PSOL	Type of Construction required is determined by the Table C1.1, to comply with general requirements of Spec C1.1 and: Type A – Part 3 of Spec C1.1	Type A Construction is required. Performance Solution is proposed to reduce FRL of Retail Tenancies on Ground Floor & To allow Western Façade to not achieve an FRL. See body of report and Fire Engineering Strategy for further information.
C.1.2	Calculation of rise in storeys	
Noted	The rise in storeys is the greatest number of storeys at any part of the external walls of the building above the finished ground next to that part. It excludes a single level of plant room only, and any storeys completely below ground Note: Some over height spaces in industrial and warehouse buildings can count as two storeys in some situations	The building has a rise in storeys of 19 in accordance with the BCA definition.
C1.3	Building of multiple classification	
Noted	The Type of construction required is determined on the basis that the classification of the top storey applies to all storeys.	This Clause is for information only.
C1.4	Mixed types of construction	
N/A	Building may be of mixed Types of Construction where it is separated in accordance with C2.7	This clause is not applicable to this project.
C1.5	Two storey Class 2 or 9c buildings	
N/A	Class 2 or 3 of two storeys may be Type C construction if each SOU has: • Access to at least 2 exits; or • Its own direct access to a road or open space.	This clause is not applicable to this project.
C1.6	Class 4 parts of a building	
N/A	Class 4 part of a building requires same FRL as that required by a Class 2 in similar circumstances.	This clause is not applicable to this project.
C1.7	Open spectator stands and indoor sports stadium	
N/A	May be of Type C construction if it contains only 1 tier and is of non-combustible material.	This clause is not applicable to this project.
C1.8	Lightweight construction	

Noted	Lightweight construction may be used if it is in compliance with Specification C1.8.	Compliance required where applicable. Further information to be provided at Construction Stage if lightweight fire-rate construction is to be utilised in the building.

C1.10	Fire hazard properties	
CR **Noted**	Materials and assemblies used in the building must comply with the requirements of Specification C1.10. • In the case of a sarking material the Flammability Index (FI) shall not be more than 5. • Floor materials – Critical Radiant Flux (CRF) of not less than 1.2 (sprinkler protected building) • Wall and Ceiling materials – Either Group 1, 2 or 3 materials. • Ductwork – to comply with AS 4254 • Lift Cars – to be CRF of 2.2 or more for floors, and Group 1 or 2 material for the wall/ceilings Note: Timber as a product generally only achieves a Group 3 rating, so if Group 1 or 2 is required then an alternative product is to be sourced or this is to be the subject of a Performance Solution from a qualified fire safety engineer.	Compliance required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. Fire Hazard test reports and certificates will be required for review and comment, suggest these are submitted prior to purchasing of the product and installation.
C1.11	Performance of external wall in fire	
N/A	In buildings of up to two storeys, any concrete external walls that could collapse as complete panels to comply with specification C1.11.	This clause is not applicable to this project.
C1.13	Fire-protected timber – Concession	
N/A	Fire-protected timber may be used on a class 2, 3 or 5 building whenever an element is required to be non-combustible provided: • The building has an effective height of not more than 25 m; and • The building contains a sprinkler system throughout; and • Any related insulation is non-combustible; and • Cavity barriers are provided in accordance with Specification C1.13.	This clause is not applicable to this project.

C1.14	Ancillary Elements	
Noted	An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following: • An ancillary element that is not combustible • Plumbing fixtures / fitting (i.e. gutter, downpipe, etc) • Grate / grille with less than $2m^2$ associated with a building service • Light fitting • Required sign • Flashing • Awning, sunshade, canopy (except ground level and level above) that is not in an exit • Intercom devices • Wiring • Paint or the like • Gasket / caulking / sealant	This Clause is for information.
Part C2 – Compartmentation and Separation		
Clause	**Reference**	**Comment**
C2.2	General floor area limitations	
✓	Table C2.2 limits the size of fire compartments to: - Class 5 or 9b Type A, 8,000 m^2 & 48,000m^3 - Class 6, 7, 8 or 9a Type A, 5,000 m^2 & 30,000 m^3	The building is under the size limitation from Table C2.2 and this clause.
C2.3	Large isolated buildings	
N/A	A fire compartment may exceed that specified in Table C2.2. Buildings under of exceeding 18,000m^2 in floor area to be provided with specific requirements Generally, a sprinkler system complying with Specification E1.5 provided with a perimeter vehicular access complying with C2.4 (b) – additional measures may include a smoke exhaust system in accordance with Specification E2.2b or smoke-and-heat vents in accordance with Specification E2.2c.	This clause is not applicable to this project.

C2.4	Requirements for open spaces and vehicular access	
N/A	Requirements for open spaces and vehicular access capable of supporting emergency vehicles, 6m wide not more than 18m from the building. Part (a) – 18m wide open space without any buildings or obstructions whatsoever and must also comply with Part (b) of this section. ✓	This clause is not applicable to this project.
C2.5	Class 9a & 9c buildings	
N/A	Class 9a & 9c Fire Compartmentation and separation requirements: 9a • Patient care areas not greater than 2000 m2 • Ward areas divided into 1000 m2 60/60/60 compartments, 500 m2 smoke separation • Treatment areas 1,000 m2 smoke compartments • Ancillary areas separated from Patient Care areas by 60/60/60 walls • Openings in wall required to have an FRL to be protected • All Ward areas are to be smoke separated from the rest of building if Ward area is less than 500m2 (60/60/60 FRL in this case), or if Ward area is less than 1,000m2 9c • 500 m2 smoke compartments • Fire compartments with 60/60/60 (see also C2.7 & Spec C1.1) • Internal walls supporting floors to have 60/-/- • Ancillary areas separated from sole-occupancy units by smoke proof walls • Openings in wall required to have an FRL to be protected	This clause is not applicable to this project.

C2.6	Vertical separation of openings in external walls	
N/A	The following applies to buildings Type A Construction that are not provided with a sprinkler system installed throughout. Where the vertical projection of an opening in an external wall falls no further than 450 mm outside an opening in the storey next below, the openings must be provided with vertical separation complying with Clause C2.6, that is: • They must be protected with a 900mm high (FRL 60/60/60) spandrel extending at least 600mm above the separating slab, or • They must be provided with a 1.1m horizontal projection (FRL 60/60/60) also extending at least 450mm either side of the openings. Note: The above does not apply to openings within the same stairway. Note: When the BCA requires an FRL the fire rating is required to come from both directions, from outside in and from inside out.	This clause is not applicable to this project.
C2.7	Separation by fire walls	
Noted	Firewalls are to be designed/built to the various requirements of this provision.	This clause is for information.
C2.8	Separation of classifications in the same storey	
PSOL	Firewalls are needed to separate different classifications, or the building must be built to the higher fire resistance level.	Performance solution using performance requirements has been utilised/proposed to address separation of retail tenancies at Ground Floor. See body of report & Fire Engineering Strategy for further details.
C2.9	Separation of classifications in different storeys	
Noted & CR.	The separating floors must have an FRL not less than that required for the lower storey use. Note: Determination of Floor FRL's must also consider compliance with C2.7 whereby the floor must have the same FRL as the fire wall of the fire compartment below and D2.12 whereby roof as open space must have an FRL not less than 120/120/120.	The building as designed is proposed to comply with this clause.
C2.10	Separation of lift shafts	

Noted & CR	The lift is to be enclosed in a fire-isolated shaft if it connects more than two storeys or three storeys if provided with a sprinkler system. Note: Emergency lifts must be in fire-rated shafts not less than FRL 120/120/120 (Type A Construction).	The building as designed is proposed to comply with this clause.

C2.11	Stairs and lift in one shaft	
✓	Not to be within the same shaft if either is required to be fire-isolated.	The building as designed is proposed to comply with this clause.
C2.12	Separation of equipment	
Noted & CR.	Equipment comprising lift motors and control plant, emergency generators or central smoke control plant; boilers or batteries are required to be separated from the remainder of the building by construction achieving a FRL of 120/120/120 with openings protected by self-closing fire doors having an FRL of not less than –/120/30. Note: Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005. Note: Battery rooms are rooms where the batteries stored exceed 10 ampere hours and 24 volts	Compliance required and appears readily achievable.
C2.13	Electricity supply system	
Noted & CR.	A substation located within a building or main switchboard, which sustains emergency equipment, must be separated from the remainder of the building by construction achieving a FRL of not less than 120/120/120.	Compliance required and appears readily achievable.
C2.14	Public corridors in Class 2 & 3 buildings	
N/A	In a Class 2 & 3 building, a public corridor, if more than 40m in length, must be divided at intervals of not more than 40m with smoke-proof walls complying with Clause 2 of Spec C2.5.	This clause is not applicable to this project.
Part C3 – Protection of Openings		
Clause	**Reference**	**Comment**
C3.2	Protection of opening in external walls	
Complies	Openings in the external walls are to be protected in accordance with C3.4 if: • less than 3m to side or rear boundary • less than 6m from the far boundary of a road if not located at or near ground level • Less than 6m from another building on the same allotment.	The building as designed/indicated is proposed to comply with this clause.

<table>
<tr><td>C3.3</td><td colspan="2">Separation of external walls and associated openings in different fire compartment</td></tr>
<tr><td>N/A</td><td>External walls of a different fire compartments to be separated by a fire wall of not less than FRL 60/60/60 or any openings must be protected in accordance with Clause C3.4 if within the distance set out in Table C3.3.

Table C3.3 DISTANCE BETWEEN EXTERNAL WALLS AND ASSOCIATED OPENINGS IN DIFFERENT FIRE COMPARTMENTS<table><tr><th>Angle between walls</th><th>Min Distance</th></tr><tr><td>0° (walls opposite)</td><td>6m</td></tr><tr><td>more than 0° to 45°</td><td>5m</td></tr><tr><td>more than 45° to 90°</td><td>4m</td></tr><tr><td>more than 90° to 135°</td><td>3m</td></tr><tr><td>more than 135° to less than 180°</td><td>2m</td></tr><tr><td>180°or more</td><td>Nil</td></tr></table>Note: Please note that fire does not transfer through openings in 180° between different fire compartments.</td><td>This clause is not applicable to this project.</td></tr>
<tr><td>C3.4</td><td colspan="2">Acceptable methods of protection</td></tr>
<tr><td>✓</td><td>Where openings are exposed require to be protected by the followings:
Doorways:
Internal or external wall-wetting sprinklers as appropriate used with doors that are self-closing; or
–/60/30 fire doors that are self-closing.
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 automatically closing or permanently fixed in the closed position; or
–/60/– automatic closing fire shutters.
Other openings:
Excluding voids – internal or external wall-wetting sprinklers; or
Construction having an FRL not less than –/60/–
Note: Fire doors, fire windows and fire shutters must comply with BCA Specification C3.4.</td><td>Openings at the external walls adjacent to Fire Stairs discharging at apian way are proposed to be protected in Accordance with this clause (As required by Clause D1.7 (C) (ii))</td></tr>
</table>

C3.5	Doorways in fire walls	
Noted	Doorways in a fire wall which are not part of a horizontal exit, must not exceed ½ the length of the fire wall, and: • have the FRL required for the fire wall, and • Be self-closing or automatic-closing. Note: Door in a fire wall can have an insulation level of at least 30.	This clause is for information.
C3.6	Sliding fire doors	
N/A	If utilised must fail-safe in the closed position, be suitably signposted with an audible alarm, signage and directional arrow to indicate direction to slide door to open when in the closed position.	This clause is not applicable to this project.
C3.7	Doorways in horizontal exits	
Noted CR	To be suitably protected by fire doors with FRL of not less than that required for the fire wall and be self-closing or automatic-closing. Note: Door must swing in the direction of travel (this may be both ways if so either two doors or a multi directional swing fire door is required).	Compliance required and appears readily achievable.
C3.8	Openings in fire-isolated exits	
Noted CR	Doorways that open to fire-isolated stairways, fire-isolated passageways or fire-isolated ramps, and are not doorways opening to a road or open space, must be protected by a -/60/30 fire door that is self-closing, or automatic closing.	Compliance required and is readily achievable.
C3.9	Service penetrations in fire-isolated exits	
Noted	Fire exits must not be penetrated by services other than electrical wiring associated with lighting, stair pressurisation or the intercommunication system & hydrant system.	Compliance required.
C3.10	Openings in fire rated lift shafts	
CR	• Doors to be - /60/ - fire doors to AS1735.11. Lift indicator panels to be backed by -/60/60 construction if exceeding 35,000mm^2 in area.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

C3.11	Bounding Construction; Class 2, 3 & 4 buildings	
N/A	Doorway to each SOU to be protected by self-closing -/60/30 fire doors. Note: Protection of openings in an external wall are required where a path of travel from an SOU to a single exit does not provide a person seeking egress with alternative exits, and passes another SOU along a balcony, landing or the like.	This clause is not applicable to this project.
C3.12	Openings in floors for services	
Noted CR	To be enclosed in a fire rated shaft with a FRL or a ceiling required to have a resistance to the incipient spread of fire in accordance with Specification C1.1 or protected by Clause C3.15 of BCA	Compliance required and is readily achievable.
C3.13	Openings in shafts	
Noted CR	Openings in shafts must be protected by: • if it is in a sanitary compartment – a door or panel which together with its frame, is non-combustible or has an FRL of not less than –/30/30; or • a self-closing –/60/30 fire door or hopper; or • an access panel having an FRL of not less than –/60/30; or • if the shaft is a garbage shaft – a door or hopper of non-combustible construction.	Compliance required and is readily achievable.
C3.15	Openings for service installations	
Noted CR	Where services pass through an element which is required to achieve a FRL (other than an external wall or roof), the service must be fire protected in accordance with BCA Clause C3.15. These electrical, plumbing mechanical ventilation shafts etc. not to impair the FRL of rated members. For Type A Construction all services passing through the slab or other fire rated elements are to be fire sealed in accordance with this clause. For other types of construction penetrations to fire rated elements are required to be provided. • Electrical – cables etc. fire sealed in accordance with Spec C3.15 or in accordance with a tested prototype. • Hydraulic – PVC pipes provided with fire collars, metal pipes fire sealed, these are both to be in accordance with Spec C3.15. • Mechanical Ducts – to AS 1668 and AS 1682 with fire dampers in accordance with these standards.	Compliance required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
C3.16	Construction joints	

Noted CR	Where constriction joints are required to be fire resisting for integrity and insulation they must be constructed identical to test prototype tested in accordance to AS1530.4	Compliance required.
C3.17	Columns protected with lightweight construction to achieve an FRL	
Noted CR	Where required and passing through and building element required to have an FRL must be installed same as tested prototype	Compliance required.
Specification C1.1 – Fire Resisting Construction		
Clause	**Reference**	**Comment**
3	Type A Fire Resisting Construction	
PSOL CR	The building is to be designed to comply with the general requirements of Spec C1.1 & Spec C1.1 part 3.	Performance solution using performance requirements has been proposed to partially address this item. See body of report and Fire Engineering Strategy for further information. The building as designed/indicated is compliant or compliance is readily achievable where FRL's have not yet been indicated.

Section D: Access and Egress		
Part D1 – Provision for Escape		
Clause	**Reference**	**Comment**
D1.2	Number of exits required	
✓	• The number of exits is to be designed to satisfy performance standard DP4 of the BCA. • A minimum of one exit is required from all buildings, and • Two (2) exits for each storey are required for buildings over 25m, basement storeys or for class 9b of 6 storey or greater, buildings that exceed 50 persons, school buildings, class 9a patient care areas or class 9c sleeping areas, etc.	The building as designed/indicated is compliant with this clause.
D1.3	When fire isolated exits are required	
✓	• Every stair in a building must be fire isolated unless it does not connect or pass through more than 3 consecutive floors in a sprinkler protected building or 2 storeys in a non-sprinkler protected building. • Class 9a & 9c buildings require stairs to be fire isolated. • Those stairs not requiring fire isolating must discharge at a level of road or open space	The building as designed/indicated is compliant with this clause.
D1.4	Exit travel distances	
PSOL	No point on the floor must be more than 20m to an exit or a point in which travel in different directions to 2 exits is available, in which case, the maximum distance to 1 exit cannot exceed 40m.	Non-compliances exist throughout the building which are proposed to be addressed via performance solution. See body of report & Fire Engineering Strategy for further information.
D1.5	Distance between alternative exits	
PSOL	To be no less than 9m or more than 45m in a Class 2, 3, and 9a, or 60m in all other classes, uniformly distributed with access to 2 exits if required and not converge so they become less than 6m apart.	Non-compliances exist throughout the building which are proposed to be addressed via performance solution. See body of report & Fire Engineering Strategy for further information.

D1.6	Dimensions of exits and paths of travel	
✓	• Height – minimum 2m: doorways 1980mm • Width 1m minimum • Width change based upon populations – generally for populations up to 100 persons require 1m of egress, up to 200- 2m and then varies according to use over 200 people per floor / storey depending on the use/classification. • Door width clear opening size of a minimum 850mm (AS 1428.1-2009) • Egress dimensions are not to diminish in direction of travel. Note: see also re number of exits for certain uses Clause D1.2 as may require additional exits no matter the population of the storey.	The building as designed / indicated complies with this clause.
D1.7	Travel by fire isolated stairs	
✓	• Must provide independent egress and discharge to road or open space or complying covered area. • Details of height and extent of open area depends on distance and location of the discharge. This clause outlines details of the methods of compliance. • Also, if passing by openings of the building within 6m of the pathway, then the openings are to be protected internally 9 Fire doors fire dampers, fire shutters or sprinklers on fixed non-operable glazing	The building as designed / indicated complies with this clause.
D1.8	External stairs or ramps in lieu of fire isolated exits	
N/A	External stairs or ramps may be used in lieu of a fire-isolated stair or ramp to a building under 25m in effective height.	This clause is not applicable to this project.
D1.9	Travel by non-fire-isolated stairs	
N/A	Travel by non-fire-isolated stairs: • The distance from any point on the floor to a point of egress not to exceed 80m. • The stairway not to discharge at a point more than: - 20m to an exit - 40m to one of 2 exits.	This clause is not applicable to this project.
D1.10	Discharge from exits	

	• An exit must not be blocked nor be capable of being blocked at its point of discharge. • Ramp to a grade of 1:8 is required to connect with open space.	<Add text>
D1.11	Horizontal exits	
✓	May be counted as required exits if the path of travel from a fire compartment leads by one or more horizontal exits directly into another fire compartments which has at least one required exit which is not a horizontal exit. Cannot be utilised in some classes or areas of buildings details to be assessed to ensure compliance with specific clause	The building as designed / indicated complies with this clause.
D1.12	Non-required stairs	
✓	May connect 2 levels in a non-sprinkler protected building. Within a sprinkler protected building may serve 3 storeys.	The building as designed / indicated complies with this clause.
D1.13	Number of persons accommodated	
Noted	To be in accordance with Table D1.13 of the BCA	This clause is for information.
D1.16	Plant rooms and lift motor rooms: Concessions	
Complies	• Where a plant room or lift motor room has a floor area: - Not more than 100m2 a ladder may be used in lieu of a stairway. - More than 100m2 but less than 200m2 where two or more points of egress are provided, a ladder may be used in lieu of a stairway from all but one of those points. • A ladder to the plant room is to comply with AS 1657 and the ladder to the lift motor room is to comply with AS 1735.2. Note: Lift machine room access – AS 1657 access may be utilised if the lift machine room complies with the listed parameters of Clause D1.16 (a) and (b) (iv) of the BCA	The building as designed / indicated complies with this clause.
D1.17	Access to lift pits	
CR	Requirements apply to access to lift pits less than or greater than 3m including signage.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

Part D2 – Construction of Exits		
Clause	**Reference**	**Comment**
D2.2	Fire isolated stairs	
Noted CR	Must be in a fire resisting shaft and be constructed of non-combustible materials and if there is local failure not cause structural damage or impair the fire resistance of the shaft.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
D2.3	Non-fire-isolated stairs	
N/A	Non fire isolated stairways must be constructed of either: • reinforced or pre-stressed concrete • 6mm thick steel • 44mm thick timber	This clause does not apply to this proect.
D2.4	Separation of rising and descending stairs flights	
✓	A required fire isolated stair cannot connect above and below ground flights unless separated by fire and smoke separation.	The building as designed / indicated complies with this clause.
D2.5	Open access ramps and balconies	
N/A	Open access ramp or balcony is provided to meet the requirements of smoke hazard management E2.2a, it must; • have ventilation openings to the outside air; and • Not be enclosed on its open sides above height of 1m.	This clause is not applicable to this project.
D2.6	Smoke lobbies	
N/A	Smoke lobby required by D1.7 must; • have a floor area not less than 6sqm; and • be separated by walls impervious to smoke; and • be fitted with smoke doors; and • Be pressurised if the exit is required to be.	This clause is not applicable to this project.

D2.7	Installations in exits and paths of travel	
CR	• No openings to ducts conveying hot products of combustion permitted. • Gas or fuel services not permitted in required exits. • Electric or services equipment not permitted unless in a non-combustible and smoke sealed enclosure.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
D2.8	Enclosure of space beneath stairs	
Noted.	• in a fire stair no cupboards are permitted under the stair • The space beneath the non-fire isolated stairs are not to be enclosed unless in 60/60/60 construction with 60/60/30 fire doors.	Compliance required. No enclosure of spaces underneath stairs is proposed at this stage of the design.
D2.9	Width of stairs	
Noted.	Width is to be measured clear of all obstructions and the stair must extend a minimum 2.0m above nosing's. (unless specified elsewhere to require a greater height)	Further review of the detailed design required in order to determine design compliance.
D2.10	Pedestrian ramps	
Noted.	A fire isolated ramp may be substituted for a fire isolated stairway where installed in accordance with AS 1428.1, and not having a gradient steeper than 1:8, and be finished with a slip resistant as per Table D2.14	Noted and not applicable at this stage of the design.
D2.11	Fire-isolated passageways	
✓	To attain the same FRL as the fire isolated stair	The building as designed/indicated complies with this clause.
D2.12	Roof as open space	
N/A	If an exit discharges to a roof of a building, the roof must; • have an FRL 120/120/120; and • Have roof lights or other openings within 3m of the path of travel.	Not applicable.

<table>
<tr><td>D2.13</td><td colspan="2">Treads and risers</td></tr>
<tr><td>CR</td><td>• minimum 2 risers / maximum 18 in each flight
• risers 115mm min 190 mm max - going 250mm min 355mm max - 2R+G 550mm min 700mm max.
• Goings and risers to be constant.
• risers not to permit 125mm sphere to pass through
• treads to be slip resistant as per Table D2.14
• no stepped quarter landings</td><td>Further review of the detailed design required in order to determine design compliance.</td></tr>
<tr><td>D2.14</td><td colspan="2">Landings & Slip Resistance requirements</td></tr>
<tr><td>CR</td><td>Maximum gradient not to exceed 1:50 and be a minimum 750 long measured from the inside edge of the landing.

<u>Note</u>: if required for Disabled access the landing sizes and circulation areas will be determine in accordance with AS 1428.1-2009 and will exceed these minimums.
<table>
<tr><th rowspan="2">Application</th><th colspan="2">Surface Conditions</th></tr>
<tr><th>Dry</th><th>Wet</th></tr>
<tr><td>Ramp Steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr>
<tr><td>Ramp steeper than 1:20 but flatter than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Tread or Landing Surface</td><td>P3 or R10</td><td>P4 or R11</td></tr>
<tr><td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr>
</table></td><td>Design statement required from the architect.</td></tr>
<tr><td>D2.15</td><td colspan="2">Thresholds</td></tr>
<tr><td>✓</td><td>• No step or ramp at any point closer to the door than the width of the door leaf.
• Generally, doors opening to outside are able to be provided with a maximum 190mm step or 50mm if Class 9b Assembly building (NSW)
• If the building is required to be accessible the doorways that open to road or open space, and must be provided with a threshold ramp or step ramp in accordance with AS1428.1-2009 (except for D3.4 exempted areas and discharges from fire isolated stairs)</td><td>The building as designed/indicated appears compliant with this clause.</td></tr>
</table>

D2.16	Balustrades	
CR	A continuous balustrade or barrier must be provided along the side of any roof to which public access is provided, any stairway or ramp, any floor, corridor, hallway, balcony, veranda, mezzanine, access bridge or the like and along any side of any access path to a building if it is not bounded by a wall and the level above the floor or ground surface is more than 4m where it is possible to fall through an open window or 1m in any other case. Note: Frameless glass balustrades are no longer a feasible option to achieve compliance with the BCA – see AS 1288-2006 for details of balustrade to ensure design achieves compliance or the structural engineer is to design the glazing in this location to ensure compliance with the structural code. BCA 2014 (Residential buildings): Effective from 1st May 2013, the BCA will require window barriers and non-climable elements below windows in bedrooms in residential buildings - such as houses, apartments, hotels - where the floor beneath the window is more than two metres above the surface beneath. – See BCA Clause D2.24 for details	Compliance required. Further review of the pending detail required. Compliance readily achievable.
D2.17	Handrails	
CR	Required along one side and on both sides of stairs over 2m in width, 865mm above nosing's and be continuous.	Compliance required. Further review of the pending detail required. Compliance readily achievable.
D2.18	Fixed platforms, walkways, stairways and ladders	
CR	Treads, risers, handrails, ladders and balustrades to plant rooms and the like must comply with AS 1657	Compliance required. Further review of the pending detail required. Compliance readily achievable.
D2.19	Doorways and doors	
✓	A doorway serving as a required exit (or forming part of a required exit) must not be revolving door, roller shutter or tilt door. Can be fitted with a sliding door if it leads directly to open space and can be opened manually under a force of not more than 110N and be fitted with a fail-safe device if the door is power operated.	The building as designed/indicated is compliant with this clause.
D2.20	Swinging doors	
✓	Must not encroach more than 500mm into the required width of the stair or 100mm when fully open and swing in the direction of travel.	Complies.

D2.21	Operation of latch	
Noted CR	To be located 900mm to 1100mm above the floor and be openable with a single-handed downward action. It must be such that the hand must not slip, i.e. "D" shaped handle and have a clearance between the handle and the back of the door of not less than 35 mm and bot more than 45 mm. Fail safe unlock is permitted as long as linked to the base building fire alarm system.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
D2.22	Re-entry from fire-isolated exits	
CR	Every door serving a fire isolated must not be locked from the inside to prevent re-entry to the storey or room, where the subject stair serves any storey over 25m in height. Specific details of compliance are defined in this clause of the BCA – the doors all must unlock on fire trip, if needed to be locked may be provided with alarm to allow re-entry in a non-fire situation	Compliance with this clause is required and is readily achievable at this stage of the design.
D2.23	Signs on doors	
Noted CR	Fire & Smoke Door signage required: • "Fire Safety Door – Do Not Obstruct" (if on magnamatic hold open device • "Fire Safety Door-Do Not Obstruct – Do Not Keep open" – if self-closing door • Fire Safety Door – DO Not Obstruct – for the discharge door to outside from a fire isolated exit These signs are <u>only</u> required to: • Doors opening into a fire isolated exit • Required Smoke Doors • Fire doors used as Horizontal Exits • Door leading from a fire isolated exit to outside The location of signs, i.e. on one side or both sides is: • For Horizontal fire door exits, smoke doors that swing both ways, doors on hold open devices and door leading from a fire exit to outside – signage on both sides of the door • Doors into fire isolated exits, and single swing smoke doors – on the side facing the occupants when exiting the area <u>Note</u>: See Clause D3.6 for Exit Signage to Exit doors, which is in addition to this signage	Compliance required.

D2.24	Protection of Openable Windows	
N/A	(a) A window opening must be provided with protection, if the floor below the window is 2 m or more above the surface beneath in— (i) a bedroom in a Class 2 or 3 building or Class 4 part of a building; or (ii) a Class 9b early childhood centre. (b) Where the lowest level of the window opening is less than 1.7 m above the floor, a window opening covered by (a) must comply with the following: (i) The openable portion of the window must be protected with— (A) a device to restrict the window opening; or (B) a screen with secure fittings. (ii) A device or screen required by (i) must— (A) not permit a 125mm sphere to pass through the window opening or screen; and (B) resist an outward horizontal action of 250 N against the— (aa) window restrained by a device; or (bb) screen protecting the opening; and (C) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. (c) A barrier with a height not less than 865 mm above the floor is required to an openable window— (i) in addition to window protection, when a child resistant screen release mechanism is required by (b)(ii)(C); and (ii) for openable windows 4m or more above the surface beneath if the window is not covered by (a). (d) A barrier covered by (c) must not— (i) permit a 125mm sphere to pass through it; and (ii) have any horizontal or near horizontal elements between 150mm and 760mm above the floor that facilitate climbing	This clause is not applicable to this project.

D2.25	Timber Stairways – Concession	
N/A	(a) Notwithstanding D2.2(a), timber treads, risers, landings and associated supporting framework which— (i) has a finished thickness of not less than 44 mm; and (ii) has an average density of not less than 800 kg/m3 at a moisture content of 12%, may be used within a required fire-isolated stairway or fire-isolated passageway constructed from fire-protected timber in accordance with C1.13 subject to— (iii) the building being protected throughout by a sprinkler system complying with Specification E1.5 which extends to within the fire-isolated enclosure; and (iv) fire protection being provided to the underside of stair flights and landings located immediately above a landing level which— (A) is at or near the level of egress; or (B) provides direct access to a carpark. (b) Fire protection required by (a) must be not less than one layer of 13 mm fire-protective grade plasterboard fixed in accordance with the system requirements for a fire-protective covering.	N/A
Part D3 – Access for People with Disabilities		
Clause	**Reference**	**Comment**
D3.1	General building access requirements	
CR	Building must be accessible as required by Table D3.1 (unless exempted by D3.4). See Table D3.1	Refer to separate disability access compliance report.
D3.2	Access to buildings	
CR	Access to buildings require: • An access way must be provided to a building required to be accessible • In a building required to be accessible, an access way must be provided through the principal public entrance • Where a pedestrian entrance required to be accessible has multiple doorways • Where a doorway has multiple leaves	Refer to separate disability access compliance report.

D3.3	Parts of a building to be accessible	
CR	In a building required to be accessible • Every ramp and stairwell to comply with AS1428.1 • Every lift to E3.6 • Accessways to have turning and passing spaces • Ramp of lift not required to a building not more than 3 stores and each storey (excluding the entrance storey) is not more than 200 m2 • Pile height of carpet not exceeding 11 mm and backing thickness not to exceed 4 mm	Refer to separate disability access compliance report.
D3.4	Exemptions	
CR	Areas not required to be accessible: • areas inappropriate because of purpose area is used • an area posing a health or safety risk for people with a disability • any path or travel providing access only to an area exempted above	Refer to separate disability access compliance report.
D3.5	Accessible Car parking	
CR	• Spaces to be provided as per Table D3.5 of the BCA • Accessible spaces need not be provided in a Class 7a or car parking area where a parking service is provided and direct access to spaces is not available to public • Must comply with AS/NZS 2890.6 • Need not be designated car spaces where not more than 5 spaces are provided in total	Refer to separate disability access compliance report.

D3.6	Signage	
CR	• Braille and tactile signage complying with Specification D3.6 and incorporating the international symbol of access, or deafness as appropriate, must identify each: – sanitary facility; and – any space with a hearing augmentation system; and – identify each door required by E4.5 to be provided with an exit sign and state "Exit" and "Level" and either: (aa) the floor level number; or (bb) a floor level descriptor; or (cc) a combination of (aa) and (bb) • Signage including the international symbol for deafness in accordance with AS1428.1 must be provided within a room containing a hearing augmentation system identifying – – the type of hearing augmentation; and – the area covered within the room; and – if receivers are being used and where the receivers can be obtained. • Signage to accessible sanitary facilities must identify if the facility is suitable for left or right-handed use; and • Signage to identify an ambulant accessible facility in accordance with AS1428.1 must be located on the door of the facility. • Where a pedestrian entrance is not accessible, directional signage incorporating the international symbol of access, in accordance with AS1428.1 must be provided to direct a person to the location of the nearest accessible pedestrian entrance; • Where a bank of facilities is not provided with an accessible unisex sanitary facility, directional signage incorporating the international symbol of access in accordance with AS 1428.1 must be places at the location of the sanitary facilities that are not accessible, to direct a person to the location of the nearest accessible unisex facility.	Refer to separate disability access compliance report.

D3.7	Hearing augmentation	
CR	Where an inbuilt amplification system other than an EWIS is provided a hearing augmentation system is to be provided in the following locations: • Conference room with a floor area greater than 100m2, • Judicatory room, • Auditorium in a Class 9b building, • Ticket office, reception area where the public is screened from the service provider.	Refer to separate disability access compliance report.
D3.8	Tactile indicators	
CR	Required to public stairs and ramps in accordance with Section 1 and 2 of AS/NZS1428.4.1	Refer to separate disability access compliance report.
D3.9	Wheelchair seating spaces in Class 9b assembly buildings	
CR	Number and grouping must be provided in accordance with Table D3.9	Refer to separate disability access compliance report.
D3.10	Swimming pools	
CR	• Not less than 1 means of entry /exit in accordance with Specification D3.10 to pool require to be accessible by Table 3.1 • Where perimeter more than 70m entry must be by ramp/aquatic wheelchair or zero depth entry	This clause is not applicable to this project.
D3.11	Ramps	
CR	• Series of connected ramps must not have a combined vertical rise of more than 3.6 m • A landing for a step ramp must not overlap a landing for another step ramp or ramp	Refer to separate disability access compliance report.
D3.12	Glazing on accessway	
CR	On an accessway where this is no transom, all fully glazed doors sidelights and glazing capable of being mistaken for a doorway or opening must be clearly marked in accordance with As1428.1 (75 mm solid line located at a height between 900 mm and 1100 mm above the FFL) Doorways are also required to be highlighted via a luminance contrast of no less than 30%, which can be by painting the door a different colour than the wall or architrave. In the case of fully glazed openings, it must be a obscuration strip or solid line of not less than 50 mm at the above noted height and must also run around the door opening.	Refer to separate disability access compliance report.

Section E: Services and Equipment		
Part E1 – Fire Fighting Equipment		
Clause	**Reference**	**Comment**
E1.3	Hydrants	
CR	• System to be provided to serve whole building: - Floor area exceeds 500m^2 - Installed to AS2419.1-2005 - Pump set to AS2419.1-2005. Note: Details of the proposed Hydrant Booster locations are to be provided, to ensure compliance with AS2419.1 (2005)	As the building has a floor area greater than 500m2, a fire hydrant system complying with AS2419.1-2005 must be provided to serve the building. Details should be provided showing: • Hydrant booster assembly location. The booster location must comply with the following: - be within 8m of a hardstand for fire brigade appliance; - be within sight of the main entry; - assuming it is attached to the building, be separated from the building by construction achieving FRL 90/90/90 for 2m either side of and 3m above the upper hose connections • Hydrant pump room location (if a pumpset is required). An internal pump room must have a door opening to road or open space or egress to open space via a fire-isolated exit; • Internal hydrants in each fire-isolated exit at each storey providing coverage to all parts of the building. For internal fire hydrant coverage, all points on the floor must be covered by a 10m hose stream, issuing from 30m hose length, extending not less than 1m into the room.
E1.4	Fire hose reels	

CR **PSOL**	• System to be provided to serve whole building: - Where hydrants installed internally or to serve any fire compartment greater than 500m^2: - Installed to AS2441-2005 - Hose to reach every part • Located externally or, - Within 4m of exit or further if coverage cannot be achieved or, - Adjacent to hydrant (not within fire isolated exit). Note: FHR's must not pass through fire or smoke doors	Hydraulic Consultant to confirm system compliance including coverage and locations. PSOL proposed to address Non-compliance with location of FHR on ground floor, see body of report and All required FHR to be illustrated.
E1.5	Sprinklers	
CR	System required to be provided to serve the entire building to AS2118.1 and Spec E1.5 as applicable.	The fire sprinkler valve room is yet to be illustrated for comment. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
Spec E1.5	Fire Sprinkler Systems	
CR	Sprinkler Alarm valves must be located in a secure room which has direct egress to a road or open space. The area must be secured with system suitable to the NSWFB	Fire service consultant to confirm. Not yet illustrated.

E1.6	Portable fire extinguishers	
Noted CR	To be installed to Table E1.6 and AS 2444. ABE Type 2.5 kg fire extinguishers are required to be installed so that the travel distance from the entrance doorway of any sole-occupancy unit is not more than 10 m.	Compliance required. Installation and commissioning certification will be required from the installer.
E1.8	Fire control centres	
PSOL	A fire control centre facility is required for a building which; • Exceeds 25m in effective height, or • Class 6, 7, 8 or 9 with a total floor area exceeding 18,000m2	Performance Solution is proposed for non-compliance of fire control room location. See body of report & Fire Engineering Strategy for further information.
Part E2 – Smoke Hazard Management		
Clause	**Reference**	**Comment**
E2.2a	General requirements	
PSOL CR	This building requires those highlighted in bold below: • **Smoke Detection and Alarm System** • **Sprinkler system** • **Stair pressurisation** • **Automatic Smoke Exhaust system** • **Shutdown of Air Handling system and units** • **BOWS (Building Occupant Warning System)** • **Sound systems and intercom systems for emergency purposes**	Performance Solution is proposed addressing non-compliances with smoke exhaust & zone pressurisation systems. See body of report and Fire Engineering Strategy for further information. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E2.3	Provision for special hazards	
N/A	Additional smoke hazard management measures may be necessary due to the: • Special characteristics of the building, including nature or quantity of materials stored or location of building in relation to a water supply to fight fire.	No special characteristics or hazards identified.
Part E3 – Lift Installations		
Clause	**Reference**	**Comment**
E3.1	Lift Installations	

CR	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

E3.2	Stretcher facility in lifts	
CR	• Must be provided within: - at least 1 emergency lift (if required by E3.4), or - where an emergency lift is not required, in at least 1 **passenger** lift installed to serve a storey above an effective height of 12m. • Required to be not less than 600mm wide and 2000mm long x 1400mm height.	Required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E3.3	Warning against use of lift in fire	
CR	Warning signs are required at each lift landing located near every call button in accordance with Figure E3.3.	Compliance required and is readily achievable.
E3.4	Emergency lifts	
CR	(a) At least one emergency lift complying with (e) must be installed in— (i) a building which has an effective height of more than 25 m; and (ii) a Class 9a building in which patient care areas are located at a level that does not have direct egress to a road or open space. (b) An emergency lift may be combined with a passenger lift and must serve those storeys served by the passenger lift so that all storeys of the building served by passenger lifts are served by at least one emergency lift. (c) Where two or more passenger lifts are installed and serve the same storeys, excluding a lift that is within an atrium and not contained wholly within a shaft— (i) at least two emergency lifts must be provided to serve those storeys; and (ii) if located within different shafts, at least one emergency lift must be provided in each shaft. (d) An emergency lift must— (i) be contained within a fire-resisting shaft in accordance with C2.10; and (ii) in a Class 9a building serving a patient care area— (A) have minimum dimensions, measured clear of all obstructions, including handrails, etc complying with Table E3.4; and (B) be connected to a standby power supply system where installed; and (iii) if the building has an effective height of more than 75 m, have a rating of at least— (A) 600 kg if not provided with a stretcher facility; or (B) 900 kg if provided with a stretcher facility.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

E3.5	Landings	
CR	Access and egress to and from liftwell landings must comply with the Deemed-to-Satisfy Provisions of Section D.	Refer to separate disability Access compliance report.
E3.6	Passenger lifts	
CR	Every passenger lift must comply with Table E3.6a and include Disabled accessible features as per Table E3.6b. The lift must not rely on a constant pressure device for its operation if the lift car is fully enclosed	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E3.7	Fire service controls	
CR	All passenger lift cars require fire service controls in accordance with AS 1735.2, serving a storey above an effective height of 12m.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E3.8	Aged care buildings	
N/A	Where residents are on levels which do not have direct access to a road or open space the building must be provided with either: • At least one lift to accommodate a stretcher or • A ramp in accordance with AS1428.1 • Must both discharge at a level providing direct access to a road or open space	This clause is not applicable to this project.
E3.9	Fire service recall operation switch	

CR	(a) Each group of lifts must be provided with one fire service recall control switch required by E3.7 that activates the fire service recall operation at (e). The switch must— (i) be located at the landing nominated by the appropriate authority; and (ii) be labelled "FIRE SERVICE" in indelible white lettering on a red background; and (iii) have two positions with an "OFF" and an "ON" position identified; and (iv) be operable only by the use of a key that is removable in either the "OFF" position or the "ON" position. (b) Adhesive labels must not be used for compliance with (a)(ii) and (a)(iii). (c) The key in (a)(iv) must be able to turn all fire service recall control switches in the building and must have a different key combination to other keys used for lifts in the building. (d) The fire service recall operation must be activated by— (i) switching the fire service recall control switch in (a) to "ON"; or (ii) a signal from a fire management system approved by the appropriate authority. (e) The activation of the fire service recall operation at (d) must— (i) cancel all registered car and landing calls; and (ii) inactivate all door reopening devices that may be affected by smoke; and (iii) ensure lift cars travelling toward the nominated floor continue to the nominated floor without stopping; and (iv) ensure lift cars travelling away from the nominated floor stop at or before the next available floor without opening the doors (either automatically or by the door open button), reverse direction and travel without stopping to the nominated floor; and (v) for lifts stopped at a floor other than the nominated floor, close the doors and travel without stopping to the nominated floor; and (vi) ensure that lifts stay at the nominated floor with doors open; and (vii) permit all lifts to return to normal service if the fire service recall control switch at (a) is switched to the "OFF" position during or after the fire service recall operation. (f) The requirements of (e) do not apply to lifts on inspection service or when the lift car fire service control switch required by E3.10 is in the "ON" position.	Required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	(g) Lifts having manual controls must signal an alert to the lift for the lift to return to the nominated floor containing the recall switch that activated the signal.	
E3.10	Lift Car Fire Service Drive Control	

CR	(a) The lift car fire service drive control switch required by E3.7 must be activated from within the lift car. The switch must— (i) be located between 600 mm and 1500 mm above the lift car floor; and (ii) be labelled "FIRE SERVICE" by indelible white lettering on a red background; and (iii) have two positions with an "OFF" and an "ON" position identified; and (iv) operate only by the use of a key that is removable in either the "OFF" position or the "ON" position. (b) Adhesive labels must not be used for compliance with (a)(ii) or (a)(iii). (c) When the lift car fire service drive control switch at (a) is turned to the "ON" position, the lift must— (i) not respond to the fire service recall control switch; and (ii) cancel all registered lift car and landing calls; and (iii) override all lift car call access control systems; and (iv) inactivate all door reopening devices that may be affected by smoke; and (v) allow the registration of lift car call by lift car call buttons, however the lift doors must not close in response to the registration of lift car calls; and (vi) activate door closing by constant pressure being applied on the "door close" button unless the button is released before the doors are fully closed, in which case the doors must reopen and any registered lift car calls must be cancelled; and (vii) when the doors are closed, move the lift in response to registered lift car calls while allowing additional lift car calls to also be registered; and (viii) travel to the first possible floor in response to registered lift car calls and cancel all registered lift car calls after the lift stops; and (ix) ensure doors do not open automatically, rather by constant pressure being applied on the "door open" button unless the button is released before the doors are fully open, in which case the doors must re-close; and the requirements of (c)(i) to (c)(ix) do not apply to a lift operating on inspection service. (d) A multi-deck lift installation must have systems in place that— (i) are able to communicate to the fire officer that the fire service drive control switch will not	Required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	operate until all decks have been cleared of passengers; and (ii) ensure there is an appropriate method of clearing all deck landings of passengers; and (iii) maintain all doors to deck landings not containing the fire service control switch closed and inoperative while the lift is on fire service drive control.	
Part E4 – Emergency Lighting, Exit and Warning Systems		
Clause	**Reference**	**Comment**
E4.2	Emergency lighting	
CR	Required in every path of travel to an exit and any room having a floor area more than 100m^2 that does not open to a corridor or space with emergency lighting and any room having a floor area in excess of 300m^2 required in every required non-fire isolated stair way. Emergency signage to be installed to AS 2293.1 - 2005	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E4.3	Measurement of distance	
Noted	Distances other than vertical rise must be measured along the shortest path of travel whether by straight lines, curves or a combination of both.	This clause is for information.
E4.4	Design and operation of exit signs	
CR	Every required exit sign must comply with AS 2293.1-2005	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E4.5	Exit signage	
CR	Required above egress doors and doors from an enclosed stair to open space. Directorial signs required to designate paths of travel. Exit signage to be installed to AS 2293.1	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

E4.6	Direction signs	
CR	Where an exit is not apparent, exit signs with directional arrows are required. Class 9b POPE must have exit signs external to the building to show the way to the road if not apparent when in the open space.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E4.7	Class 2, 3 and 4 parts: Exemptions	
NA	E4.5 does not apply to- • Class 2 building if the word "EXIT" is placed on the side of door remote from an exit, • An entrance door of a SOU in Class 2, 3 or 4.	This clause is not applicable to this project.
E4.8	Design and operation of exit signs	
CR	Every required exit sign must - • Comply with AS 2293.1; and • Be clearly visible at all times when the building is occupied.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
E4.9	Sound systems and intercom systems for emergency purposes	
CR	Sound systems and intercom systems for emergency purposes required to comply with AS 1670.4; • Buildings exceeding 25m in effective height • In a Class 3 building having an RIS greater than 2, used as accommodation for aged or children • Class 3 residential age care • Class 9b building having RIS more than 2 and floor area greater than 1000m2 • Class 9b used as school (RIS greater than 3), or public hall / theatre having RIS more than 2 and floor area greater than 100m2	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant

Section F: Health and Amenity		
Part F1 – General		
Clause	**Reference**	**Comment**
FP1.4	External Wall Water Proofing	
CR	An external wall (including openings around windows and doors) must prevent the penetration of water that could cause unhealthy conditions, or loss of amenity for occupants; and undue dampness or deterioration of building elements.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. This should be provided from the façade consultant or architect and should include manufacturer's relevant details and any tests reports.
F1.1	Stormwater Drainage	
CR	Stormwater drainage must comply to AS 3500.3.2015	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.4	External Waterproofing of above ground membranes	
CR	Waterproofing membranes for external above ground use must comply with AS 4654 Parts 1 and 2 - 2012	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.5	Roof Covering	
CR	Roof covering must comply with required Australian Standard	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

F1.6	Sarking	
CR	Sarking used for weather proofing of roofs must comply with AS/NZS 4200.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.7	Water Proofing of Wet Areas in Buildings	
CR	Water proofing of wet areas within a building to comply with AS 3740.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.9	Damp-proofing	
CR	Damp-proofing where required to be installed in accordance with AS/NZS 2904 or AS 3660.1	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.10	Damp-proofing of Floors on the Ground	
CR	Damp-proofing where required to be installed in accordance with AS 2870	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F1.12	Sub-floor Ventilation	
N/A	The sub-floor space between a suspended floor of a building and the ground must be in accordance with the requirements of this clause.	This clause is not applicable to this project.
F1.13	Glazed assemblies	

CR	Glazed assemblies in an external wall to comply with AS 2047 requirements for resistance to water penetration	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
Part F2 – Sanitary and Other Facilities		
Clause	**Reference**	**Comment**
F2.1	Facilities in Residential Buildings	
N/A	Within each sole occupancy unit, the following are to be provided; • Kitchen sink, including area for food preparation; • Bath or shower; • Closet pan and washbasin • Laundry facilities, including at least one washtub and space for washing machine, and clothes drying facilities, including clothes line or hoist (min. 7.5m line) or space for heat operated drying appliance., or • A separate laundry for each 4 Sole occupancy units or part thereof. In addition, where a building contains more than 10 sole occupancy units, a closet pan and washbasin is to be in a compartment at or near ground level, accessible to employees without entering a sole occupancy unit.	This clause is not applicable to this project.
F2.3	Sanitary facilities in Class 3-9 buildings	
✓	The number of sanitary facilities must be based upon the number of person accommodated calculated in accordance with D1.13 Note: Showers are required for Class 9b Theatres and sporting venues must be provided, being 1 shower for each 10 participants.	The building is as designed/indicated is compliant with this clause based on the population numbers provided at this stage.

F2.4	Facilities for persons with disabilities	
CR	In a building required to be accessible— (a) accessible unisex sanitary compartments must be provided in accessible parts of the building in accordance with Table F2.4(a); and (b) accessible unisex showers must be provided in accordance with Table F2.4(b); and (c) at each bank of toilets where there is one or more toilets in addition to an accessible unisex sanitary compartment at that bank of toilets, a sanitary compartment suitable for a person with an ambulant disability in accordance with AS 1428.1 must be provided for use by males and females; and (d) an accessible unisex sanitary compartment must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels; and (e) the circulation spaces, fixtures and fittings of all accessible sanitary facilities provided in accordance with Table F2.4(a) and Table F2.4(b) must comply with the requirements of AS 1428.1-2009; and (f) an accessible unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only; and (g) where two or more of each type of accessible unisex sanitary facility are provided, the number of left and right handed mirror image facilities must be provided as evenly as possible; and (h) where male sanitary facilities are provided at a separate location to female sanitary facilities, accessible unisex sanitary facilities are only required at one of those locations; and (i) an accessible unisex sanitary compartment or an accessible unisex shower need not be provided on a storey or level that is not required by D3.3(f) to be provided with a passenger lift or ramp complying with AS 1428.1.	Refer to separate disability access compliance report.
F2.5	Construction of sanitary compartments	
Noted	Where clear space between closet pan and doorway is less than 1.2m, doors must open outwards, slide or be readily removable from outside. Doors to disabled toilets are required to be provided with Lift off hinges to the doors irrespective of distance between pan and doorway	Compliance Appears readily achievable. Further review of the detailed design required in order to determine design compliance.
F2.6	Interpretation: Urinals and washbasins	
Noted.	Urinal may be 600 mm of urinal trough or a closet pan used in place of a urinal Washbasin me be individual basin or part of a hand washing trough served by a single water tap	This clause is for information.

F2.8	Waste management	
Noted.	In a Class 9a a slop hopper or other device must be provided on any storey containing ward areas or bedrooms and a flushing apparatus, tap and grating In a Class 9c for every 60 beds on each storey containing resident use areas must be provided with a slop-hopper and a device for the disinfection of pans or an adequate means to dispose of receptacles	This clause is not applicable to this project.
Part F3 – Room Sizes		
Clause	**Reference**	**Comment**
F3.1	Height of Rooms	
Complies	Room heights to be a minimum of 2.4m generally for office areas & 2.7m for other areas, except as follows in which case 2.1m is allowable; • Corridors, passageways or the like. • Car parking areas • Sanitary compartments • Kitchen / Laundry • Non-habitable rooms	Building as designed/indicated appears compliant with this clause.
Part F4 – Provision of Natural Light		
Clause	**Reference**	**Comment**
F4.1	Provision of Natural Light	
N/A	Class 2 buildings, Class 3 buildings and Class 4 parts and Class 9b classrooms to schools – to habitable rooms and classrooms	This clause is not applicable to this project.
F4.4	Artificial Lighting	
CR	Required to all rooms that are frequently occupied, all spaces required to be accessible, all corridors, lobbies, internal stairways, other circulation spaces and paths of egress. Artificial lighting system is to comply with AS1680.0 Note: See also Section J for details of energy efficiency of lighting required.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

F4.5	Ventilation of Rooms	
CR	A mechanical ventilation or air conditioning system complying with AS 1668.2 - 2012 version is required. Note: See also Section J for details of energy efficiency of Ventilation / Mechanical Ventilation/Air-conditioning required.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F4.6	Natural ventilation	
Noted	(a) Natural ventilation provided in accordance with F4.5(a) must consist of openings, windows, doors or other devices which can be opened— (i) with a ventilating area not less than 5% of the floor area of the room require ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7. (b) The requirements of (a)(i) do not apply to a Class 8 electricity network substation.	This clause is for information.

F4.7	Ventilation borrowed from adjoining room	
Noted	Natural ventilation to a room may come through a window, opening, door or other device from an adjoining room (including an enclosed verandah) if both rooms are within the same soleoccupancy unit or the enclosed verandah is common property, and— (a) in a Class 2 building, a sole-occupancy unit of a Class 3 building or Class 4 part of a building— (i) the room to be ventilated is not a sanitary compartment; and (ii) the window, opening, door or other device has a ventilating area of not less than 5% of the floor area of the room to be ventilated; and (iii) the adjoining room has a window, opening, door or other device with a ventilating area of not less than 5% of the combined floor areas of both rooms; and (b) in a Class 5, 6, 7, 8 (except a Class 8 electricity network substation) or 9 building— (i) the window, opening, door or other device has a ventilating area of not less than 10% of the floor area of the room to be ventilated, measured not more than 3.6 m above the floor; and (ii) the adjoining room has a window, opening, door or other device with a ventilating area of not less than 10% of the combined floor areas of both rooms; and (c) the ventilating areas specified in (a) and (b) may be reduced as appropriate if direct natural ventilation is provided from another source.	This clause is for information.
F4.8	Restriction on location of sanitary compartments	
Noted	Sanitary compartments must not open directly into— (a) a kitchen or pantry; or (b) a public dining room or restaurant; or (c) a dormitory in a Class 3 building; or (d) a room used for public assembly (which is not an early childhood centre, primary school or open spectator stand); or (e) a workplace normally occupied by more than one person.	The building as designed/indicated is compliant with this clause.
F4.9	Airlocks	

N/A	Required for rooms containing a closet pan or urinal where it opens directly to another room Exemption to use mechanical exhaust if Class 5-9	This clause does not apply to this project.
F4.11	Car Parks	
CR	Every storey of a car park, except an open deck car park, must have a system of ventilation complying with AS/NZS 1668.1-2015 and AS/NZS1668.2 – 2012 or AS1668.4-2012 Note: for natural ventilation AS1668.4-Natural Ventilation of buildings is now a referenced Australia standard	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
F4.12	Kitchen local exhaust ventilation	
CR	Commercial kitchen must be provided with a kitchen exhaust hood complying with AS/NZS1668.1- 2015 and AS1668.2 - 2012 (depending on input)	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
Part F5 – Sound Insulation & Transmission		
Clause	**Reference**	**Comment**
Part F5	General requirements from the Part	
N/A	Applicable to Class 2, 3 and 9c buildings only. Various walls, doors & Floors require airborne and impact sound insulation ratings as noted within F5.2 to F5.6, to AS/NZS 1276.1 or ISO 717.1, or comply with Specification F5.2. Discontinuous construction required to various walls as noted within F5.5. Sound insulation rating of internal services & pumps is required as per F5.6 & F5.7.	This clause is not applicable to this project.

Section G: Ancillary Provisions		
Part G1 – Minor Structures and Components		
Clause	**Reference**	**Comment**
G1.2	Refrigeration and Cool rooms and Vaults	
N/A	(a) A refrigerated or cooling chamber, strongroom or vault which is of sufficient size for a person to enter must have— (i) a door which is capable of being opened by hand from inside without a key; and (ii) internal lighting controlled only by a switch which is located adjacent to the entrance doorway inside the chamber, strongroom or vault; and (iii) an indicator lamp positioned outside the chamber, strongroom or vault which is illuminated when the interior lights required by (a)(ii) are switched on; and (iv) an alarm that is— (A) located outside but controllable only from within the chamber, strongroom or vault; and (B) able to achieve a sound pressure level outside the chamber, strongroom or vault of 90 dB(A) when measured 3 m from the sounding device. (b) A door required by (a)(i) in a refrigerated or cooling chamber must have a doorway with a clear width of not less than 600 mm and a clear height not less than 1.5 m.	This clause is not applicable to this project.
NSW G1.101	Provision for Cleaning of Windows	
CR	Provision is to be made for the cleaning of windows either within the building or to the WH&S Act 2011 and regs for any windows three (3) or more above the ground.	Compliance required. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

Part G3	Atrium Construction	
PSOL	An atrium is defined as a space within a building that connects two or more storeys, and is wholly or substantially enclosed at the top by a floor or roof (including a glazed roof structure). This part does not apply to an atrium which • Connects only 2 storeys, or • Connects only 3 storeys, providing each storeys is provided with a sprinkler protection system, and a storey discharges direct to road or open space. The requirements of atrium under this clause and associated specification include; • Sprinkler protection throughout; and • Separation of atrium by bounding walls; and • Fire and Smoke Control provisions • Enhanced SSESIP system • Smoke Detection throughout to AS 1670.1 • Automatic Smoke Exhaust • Pressurisation of fire stairs	Performance Solution is proposed to address compliance with Part G3, refer to body of report and Fire Engineering Strategy for further information.

Section J: Energy Efficiency		
Part J1 to J8 – Building Fabric		
Clause	**Reference**	**Comment**
J0.1	Application of Section J	
CR	Performance Requirements JP1, JP2 and JP3 are satisfied by complying with— • for reducing the heating or cooling loads of a Class 2 to 9 building, other than the sole-occupancy units of a Class 2 building or a Class 4 part of a building, Parts J1, J2 and J3; and • for air-conditioning and ventilation, Part J5; and • for artificial lighting and power, Part J6; and • for hot water supply and swimming pool and spa pool plant, Part J7; and • for facilities for maintenance and monitoring, Part J8.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant
J1.1	Application of Part	
CR	The Deemed-to-Satisfy Provisions of this Part apply to building elements forming the envelope of a Class 2 to 9 building. (Excluding Class 2 and 4 buildings that have BASIX certificates in NSW) Envelope, for the purposes of Section J, means the parts of a building's fabric that separate a conditioned space or habitable room from – • the exterior of the building; or • a non-conditioned space including – - the floor of a rooftop plant room, lift-machine room or the like; and - the floor above a carpark or warehouse; and the common wall with a carpark, warehouse or the like. Conditioned space means a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by air-conditioning, but does not include— • a space in a Class 6, 7, 8 or 9b building where the input energy to an air-conditioning system is not more than 15 W/m2 or 15 J/s.m2 (54 KJ/hour.m2); or • a lift shaft.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant
J1.2	Thermal Construction General	
CR	• Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it— - abuts or overlaps adjoining insulation other than at supporting members such as studs,	Energy Efficiency Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building

	noggings, joists, furring channels and the like where the insulation must be against the member; and - forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and - does not affect the safe or effective operation of a service or fitting. • Where required, reflective insulation must be installed with— - the necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and - the reflective insulation closely fitted against any penetration, door or window opening; and - the reflective insulation adequately supported by framing members; and - each adjoining sheet of roll membrane being— (A) overlapped not less than 50mm; or (B) taped together. • Where required, bulk insulation must be installed so that— - it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and - in a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50mm. • Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification J1.2.	will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. A Section J building envelope plan will need to be completed for further review and comment.
J1.3	Roof and Ceiling Construction	
CR	A roof or ceiling in Climate Zone 5 is to achieve a Total R-Value in the DOWNWARD direction of heat flow of not less than: • 3.2 – for a roof or ceiling generally with roof upper surface solar absorption of not more than 0.4 (light coloured roof) • 3.7 – for a roof or ceiling generally with roof upper surface solar absorption between 0.4 – 0.6 (Medium coloured Roof) • 4.2 – for a roof or ceiling generally with roof upper surface solar absorption of more than 0.6 (Dark or Grey coloured Roof) Where, for operational or safety reasons associated with exhaust fans, flues or recessed down lights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing	Details of proposed roof colour / surface solar absorption levels are required and if any roof lights etc are proposed. If unknown then a R value of 4.2 (or more) will need to be designed for to ensure compliance until such time as the colour is known A Section J building envelope plan will need to be completed for further review and comment.

	the R-Value of the insulation in the remainder of the ceiling in accordance with Table J1.3b. A roof that— • is required to achieve a minimum Total R-Value; and • has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and • does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see Specification J1.3 Figure 2(c) and (f)), must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.	
J1.4	Roof Lights	
CR	Roof lights, including any associated shaft and diffuser, that form part of the envelope, must— • if the roof lights are not required for compliance with Part F4, comply with Table J1.4; or • if the roof lights are required for compliance with Part F4— - have an area not more than 150% of the minimum area required by F4.6; and - have transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of not more than— (A) 0.29 Total System SHGC; and (B) 2.9 Total System U-Value.	Energy Efficiency Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. A Section J building envelope plan will need to be completed for further review and comment.
J1.5	Walls	
CR	• Each part of an external wall that is part of the envelope, other than of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, must satisfy one of the options in Table J1.5a except for— - opaque non-glazed openings in external walls such as doors (including garage doors), vents, penetrations, shutters and the like; and - glazing; and - an earth retaining wall or earth-berm, in other than climate zone 8. • External walls within Climate Zone 5 are to achieve: - A Total R-Value of 2.8 (reduced by 0.5 if wall has a surface density of not less than 220kg/m^2)	Energy Efficiency Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. A Section J building envelope plan will need to be completed for further review and comment. A Section J building envelope plan will need to be completed for further review and comment.

	• If only space for a furring channel, top hat section, batten or the like and satisfy Option B for Glazing calculator: - A Total R-Value of 1.4 Any wall, other than an external wall, that is part of the envelope must achieve the Total R-Value in Table J1.5b. i.e. internal walls separating heated or cooled areas from non-heated or cooled areas. R Value of R 1.8 will cater for Climate Zone 4, 5 and 6.	
J1.6	Floors	
CR	(a) A floor that is part of the envelope of a building including a floor above or below a carpark or a plant room— (i) must achieve the Total R-Value specified in Table J1.6; and (ii) with an in-slab heating or cooling system, must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0. (b) In climate zones 1 to 6, the minimum Total R-Value required in (a) may be reduced by R0.5 provided R0.75 is added to the Total R-Value required for the roof and ceiling construction. (c) A concrete slab-on-ground— (i) with an in-slab heating or cooling system; or (ii) located in climate zone 8, must have insulation installed around the vertical edge of its perimeter. (d) Insulation required by (c) must— (i) have an R-Value of not less than 1.0; and (ii) be water resistant; and (iii) be continuous from the adjacent finished ground level— (A) to a depth of not less than 300 mm; or (B) for the full depth of the vertical edge of the concrete slab-on-ground. (e) Floor construction is deemed to have the thermal properties listed in Specification J1.6.	Energy Efficiency Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant. A Section J building envelope plan will need to be completed for further review and comment.
Part J2 – External Glazing		
Clause	**Reference**	**Comment**
J2.1	Application of Part	
CR	This part of the BCA does not apply to a sole occupancy unit of a Class 2 building	Energy Efficiency Consultant to confirm compliance.
J2.4	Glazing – Assessment	
CR	(a) The glazing in each storey, including any mezzanine, of a building must be assessed separately in accordance with (b) and (c) for— (i) glazing in the external fabric facing each orientation; and	Energy Efficiency Consultant to confirm compliance. Glazing Calculators are available at the ABCB Website:

	(ii) glazing with a P/H value of not less than 2 in the internal fabric using the south orientation sector energy constants in Table J2.4b and shading multipliers in Table J2.4c and Table J2.4d; and (iii) glazing with a P/H value of less than 2 in the internal fabric as for glazing in the external fabric in accordance with (i). (b) The aggregate air-conditioning energy value attributable to the glazing must not exceed the allowance obtained by multiplying the facade area that is exposed to the conditioned space for the orientation by the energy index in Table J2.4a.	http://www.abcb.gov.au/major-initiatives/energy-efficiency/glazing-calculator Option A in the calculator applies to all glazing other than where compliance with Option B is required by Table J1.5a of the BCA. A Section J building envelope plan will need to be completed for further review and comment.
J2.5	Shading of Glazing	
CR	Where shading is required to comply with J2.4, it must— (a) be provided by an external permanent projection, such as a verandah, balcony, fixed canopy, eaves or shading hood, which— (i) extends horizontally on both sides of the glazing for the same projection distance P in Figure J2.4; or (ii) provides the equivalent shading to (i) with a reveal or the like; or (b) be provided by an external shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats, which— (i) is capable of restricting at least 80% of summer solar radiation; and (ii) if adjustable, is operated **automatically** in response to the level of solar radiation. (Note manual operation not allowable for compliance)	Energy Efficiency Consultant to confirm compliance.
Part J3 – Building Sealing		
Clause	**Reference**	**Comment**
J3.1	Application of Part	
CR	The Deemed-to-Satisfy Provisions of this Part apply to elements forming the envelope of a Class 2 to 9 building, other than— • a building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or • a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or • a building or space where the mechanical ventilation required by Part F4 provides sufficient pressurisation to prevent infiltration. • NSW Variation - Parts of the building that cannot be fully enclosed	Energy Efficiency Consultant to confirm compliance. A Section J building envelope plan will need to be completed for further review and comment.
J3.2,3,5	Chimneys, Roof lights, exhaust fans	

CR	**Chimneys or flues** must be provided with a damper or flap that can be closed to seals the chimney or flu when not in use **Roof lights** (a) A roof light must be sealed, or capable of being sealed, when serving— (i) a conditioned space; or (ii) a habitable room in climate zones 4, 5, 6, 7 or 8. (b) A roof light required by (a) to be sealed, or capable of being sealed, must be constructed with— (i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or (ii) a weatherproof seal; or (iii) a shutter system readily operated either manually, mechanically or electronically by the occupant. **Miscellaneous Exhaust fans** A miscellaneous exhaust fan, such as a bathroom or domestic kitchen exhaust fan, must be fitted with a sealing device such as a self-closing damper or the like when serving— (a) a conditioned space; or (b) a habitable room in climate zones 4, 5, 6, 7 or 8.	Energy Efficiency Consultant to confirm compliance. A Section J building envelope plan will need to be completed for further review and comment.
J3.4	External Windows and Doors	
CR	(a) A seal to restrict air infiltration must be fitted to each edge of a door, openable window or the like forming part of— (i) the envelope of a conditioned space; or (ii) the external fabric of a habitable room or public area in climate zones 4, 5, 6, 7 or 8. (b) The requirements of (a) do not apply to— (i) a window complying with AS2047; or (ii) a fire door or smoke door; or (iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security. (c) A seal required by (a)— (i) for the bottom edge of an external swing door, must be a draft protection device; and (ii) for the other edges of an external door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like. (d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like, other than— (i) where the conditioned space has a floor area of not more than 50 m2; or (ii) where a café, restaurant, open front shop or the like has—	Energy Efficiency Consultant or Architect is to confirm compliance with the design. A Section J building envelope plan will need to be completed for further review and comment.

	(A) a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and (B) at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.	
J3.6	Construction of Roof, Walls and Floors	
CR	(a) Roofs, 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 (b) when forming part of— (i) the envelope; or (ii) the external fabric of a habitable room or a public area in climate zones 4, 5, 6, 7 or 8. (b) Construction required by (a) must be— (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or (ii) sealed by caulking, skirting, architraves, cornices or the like. (c) The requirements of (a) do not apply to openings, grilles or the like required for smoke hazard management.	Energy Efficiency Consultant to confirm compliance. A Section J building envelope plan will need to be completed for further review and comment.
J3.7	Evaporative Coolers	
N/A	An evaporative cooler must be fitted with a self-closing damper or the like when serving— (a) a heated space; or (b) a habitable room or a public area of a building in climate zones 4, 5, 6, 7 or 8.	This cause is not applicable to this project.
Part J5 – Air Condition & Ventilation Systems		
Clause	**Reference**	**Comment**
Part J5	Air Con and Mech Vent system design	
CR	(a) An air-conditioning unit or system must— (i) be capable of being deactivated when the sole-occupancy unit, building or part of the building served is not occupied; and (ii) where the air-conditioning unit or system has motorised outside air and return dampers, close the dampers when the air-conditioning unit or system is deactivated; and (iii) when serving a sole-occupancy unit of a Class 3 building, not operate when any external door including a door opening to a balcony, patio, courtyard or the like is open for more than 1 minute; and (iv) have any supply and return ductwork sealed and insulated in accordance with Specification J5.2; and	Mechanical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	(v) when serving more than one air-conditioning zone or area with different heating and cooling needs— (A) thermostatically control the temperature of each zone or area; and (B) not control the temperature by mixing actively heated air and actively cooled air; and (C) limit reheating to not more than— (aa) for a fixed supply air rate, a 7.5K rise in temperature; and (bb) for a variable supply air rate, a 7.5K rise in temperature at the nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or increased; and (vi) other than where a packaged air-conditioning unit is used, have a variable speed fan when its supply air quantity is varied; and (vii) where the air-conditioning system provides the required mechanical ventilation, in other than process related applications where humidity control is needed, have an outdoor air economy cycle— (A) in climate zone 2 and 3, when the air-conditioning unit capacity is over 50 kWr; and (B) in climate zones 4, 5, 6, 7 and 8, when the air-conditioning unit capacity is over 35 kWr; and (viii) in a Class 3 building, be capable of controlling the temperature of a sole-occupancy unit at a different temperature during sleeping periods than during other periods; and (ix) be designed so that the total fan motor power of the air-conditioning supply air and return air fans in the building, divided by the floor area served by those fans is, in accordance with Table J5.2, except the following need not comply with this requirement: (A) fans in unducted air-conditioning units with a supply air capacity of less than 1000 L/s, (B) The power for a fan in an energy reclaiming system that preconditions outdoor air. (C) The power for process related components such as high efficiency particulate air filters.	
J5.3	Time Switch	
CR	(a) A time switch in accordance with Specification J6 must be provided to control each of the following: (i) An air-conditioning system of more than 10 kWr. (ii) A ventilation system with an air flow rate of more than 1000 L/s. (iii) A heating system of more than 10 kWheating. (b) The requirements of (a) do not apply to—	Mechanical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	(i) an air-conditioning system or ventilation system that serves only one sole-occupancy unit of— (A) a Class 2 or 3 building; or (B) a Class 4 part of a building; or (C) a Class 9c aged care building; or (ii) a building where air-conditioning or ventilation is needed for 24 hour occupancy such as a manufacturing process or emergency services; or (iii) a Class 8 electricity network substation.	
J5.4	Heating and Cooling systems	
CR	(a) Systems that provide heating or cooling for air-conditioning systems must— (i) have any piping, vessels, heat exchangers or tanks containing heated or chilled fluid, other than those with insulation levels covered by Minimum Energy Performance Standards (MEPS), insulated in accordance with Specification J5.4; and Comply with the relevant requirements of this Clause and associated tables of the BCA. Note: the full extent of the clause has not been included in this report, the mechanical consultant is to read BCA 2014 and ensure included in the design	Mechanical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
J5.5	Miscellaneous exhaust systems	
CR	(a) A miscellaneous exhaust system with an air flow rate of more than 1000 L/s, that is associated with equipment having a variable demand such as a stove in a commercial kitchen or a chemical bath in a factory, must— (i) have the means for the operator to— (A) reduce the energy used, such as by a variable speed fan, and (B) stop the motor when the system is not needed; and (ii) be designed to minimise the exhausting of conditioned air. (b) The requirements of (a) do not apply— (i) within a sole-occupancy unit of a Class 2 or 3 building, Class 4 part of a building or Class 9c aged care building; or (ii) where additional exhaust ventilation is needed to balance the required outside air for ventilation; or (iii) where air flow must be maintained for safe operation; or (iv) to a Class 8 electricity network substation.	Mechanical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
Part J6 – Artificial Lighting & Power		
Clause	**Reference**	**Comment**

J6.1	Application of part	
CR	This part does not apply to a Class 8 electricity network substation	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
J6.2	Interior artificial lighting	
CR	In a building other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building— (i) for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density in Table J6.2a; and (ii) the aggregate design illumination power load in (i) is the sum of the design illumination power loads in each of the spaces served; and (iii) in determining the design illumination power load for (ii) the following must be used: (A) Where there are multiple lighting systems serving the same space— (aa) the total illumination power load of all systems; or (bb) for a control system that permits only one system to operate at a time, the design illumination power load is— (AA) based on the highest illumination power load; or (BB) determined by the formula listed in this clause of the BCA (B) Where there is adjustable position lighting such as trapeze lighting or track lighting other than trunking systems that accept fluorescent lamps— (aa) the rating of the circuit breaker protecting the track; or (bb) of extra low voltage, 80% of the power rating of the transformer; or (cc) of mains voltage, 100 W per metre of track. (c) The requirements of this clause **do not apply** to the following: (i) Emergency lighting in accordance with Part E4. (ii) Signage and display lighting within cabinets and display cases that are fixed in place.	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	(iii) Lighting for accommodation within the residential part of a detention centre. (iv) A heater where the heater also emits light, such as in bathrooms. (v) Lighting of a specialist process nature such as in an operating theatre, fume cupboard or clean workstation. (vi) Lighting of performances such as theatrical or sporting. (vii) Lighting for the permanent display and preservation of works of art or objects in a museum or gallery other than for retail sale, purchase or auction.	
J6.3	Interior artificial lighting and power control	
CR	(a) Artificial lighting of a room or space must be individually operated by a switch or other control device. (b) An occupant activated device, such as a room security device, a motion detector in accordance with Specification J6, or the like, must be provided in the sole-occupancy unit of a Class 3 building, other than where providing accommodation for people with a disability or the aged, to cut power to the artificial lighting, air-conditioner, local exhaust fans and bathroom heater when the sole-occupancy unit is unoccupied. (c) An artificial lighting switch or other control device in (a) must— (i) if an artificial lighting switch, be located in a visible position— (A) in the room or space being switched; or (B) in an adjacent room or space from where the lighting being switched is visible; and (ii) for other than a single functional space such as an auditorium, theatre, swimming pool, sporting stadium or warehouse— (A) not operate lighting for an area of more than 250 m^2 if in a Class 5 building or a Class 8 laboratory; or (B) not operate lighting for an area of more than— (aa) 250 m^2 for a space of not more than 2000 m^2; or (bb) 1000 m^2 for a space of more than 2000 m^2, if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building. (d) 95% of the light fittings in a building or storey of a building, other than a Class 2 or 3 building or a	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	Class 4 part of a building, of more than 250 m^2 must be controlled by— (i) a time switch in accordance with Specification J6; or (ii) an occupant sensing device such as— (A) a security key card reader that registers a person entering and leaving the building; or (B) a motion detector in accordance with Specification J6. (e) In a Class 5, 6 or 8 building of more than 250 m^2, artificial lighting in a natural lighting zone adjacent to windows must be separately controlled from artificial lighting not in a natural lighting zone in the same storey except where— (i) the room containing the natural lighting zone is less than 20 m^2; or (ii) the room's natural lighting zone contains less than 4 luminaires; or (iii) 70% or more of the luminaires in the room are in the natural lighting zone.	
CR	(f) The requirements of (a), (b), (c), (d) and (e) do not apply to the following: (i) Emergency lighting in accordance with Part E4. (ii) Where artificial lighting is needed for 24 hour occupancy such as for a manufacturing process, parts of a hospital, an airport control tower or within a detention centre. (g) The requirements of (d) do not apply to the following: (i) Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as in a patient care area in a Class 9a building or in a Class 9c aged care building. (ii) A heater where the heater also emits light, such as in bathrooms.	
J6.4	Interior decorative and display lighting	
CR	(a) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled— (i) separately from other artificial lighting; and (ii) by a manual switch for each area other than when the operating times of the displays are the same in a number of areas such as in a museum, art gallery or the like, in which case they may be combined; and (iii) by a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW.	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

	(b) Window display lighting must be controlled separately from other display lighting.	
J6.5	Artificial lighting around the perimeter of a building	
CR	(a) Artificial lighting around the perimeter of a building, must— (i) be controlled by— (A) a daylight sensor; or (B) a time switch that is capable of switching on and off electric power to the system at variable pre-programmed times and on variable pre-programmed days; and (ii) when the total perimeter lighting load exceeds 100 W— (A) have an average light source efficacy of not less than 60 Lumens/W; or (B) be controlled by a motion detector in accordance with Specification J6; and (iii) when used for decorative purposes, such as facade lighting or signage lighting, have a separate time switch in accordance with Specification J6. (b) The requirements of (a)(ii) do not apply to the following: (i) Emergency lighting in accordance with Part E4. (ii) Lighting around a detention centre.	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
J6.6	Boiling water and chilled water units	
CR	Power supply to these units (Billy units) must be controlled by a time switch that complies with Spec J6	Electrical Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
Part J7 – Hot Water Supply		
Clause	**Reference**	**Comment**
J7.2	Hot Water Supply	
CR	Hot water supply for food preparation and sanitary purposes must comply with Part B2 of NCC Volume 3	Hydraulic Consultant to confirm compliance. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

J7.3 & J7.4	Swimming Pool and Spa Heating and Pumping Requirements	
N/A	Should a swimming pool or Spa form part of this development, compliance with the requirements of these clauses of the BCA will be required	This clause is not applicable to this project.
Part J8 – Access for Maintenance and Monitoring		
Clause	**Reference**	**Comment**
NSW J8.2	Access for Maintenance	
CR	Access for maintenance must be provided to— • adjustable or motorised shading devices; and • time switches and motion detectors; and • room temperature thermostats; and • plant thermostats such as on boilers or refrigeration units; and • motorised air dampers and control valves; and • reflectors, lenses and diffusers of light fittings; and • heat transfer equipment; and • plant that receives a concession under JV3(b) for the use of energy obtained from— - an on-site renewable energy source; or - another process as reclaimed energy.	Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.
J8.3	Energy Monitoring	
CR	(a) A building or sole-occupancy unit with a floor area of more than 500m^2 must have the facility to record the consumption of gas and electricity. (b) A building with a floor area of more than 2,500m^2 must have the facility to record individually the energy consumption of— (i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and (ii) artificial lighting; and (iii) appliance power; and (iv) central hot water supply; and (v) internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and (vi) other ancillary plant. (c) The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2,500m^2 where the total area of the common areas is less than 500m^2.	Details of compliance are to be provided by the electrical consultant for these monitoring devices. Design statement (or other means) required from appropriate qualified designer/person that the building will comply with this clause at the design stage & installation certification will be required on completion of the project from the relevant installer or engaged consultant.

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