



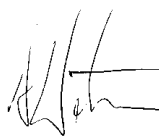
5-15 Rynan Avenue, Edmondson Park

BCA Assessment Report

REPORT 2015/2200 R1.2

April 2016

Report Revision History

Revision	Date	Reason for Revision	Prepared by	Reviewed	Approved by
R1.0	11/04/16	Draft	Timothy Abovian		
R1.1	13/04/16	Updated Draft (Review of updated plans)	Timothy Abovian		
R1.2	14/04/16	Final (Amendments to spandrels and fire hydrant booster compliance)	Tim Abovian 	Tim Abovian 	Steve Watson 

EXECUTIVE SUMMARY

An assessment of the proposed design of 5-15 Rynan Avenue, Edmondson Park has been undertaken against the Deemed-to-Satisfy provisions of the relevant sections of the BCA in Appendix B of this report. The assessment has revealed that in order to comply a number of issues need to be resolved.

The following are the main issues that require amendments to plans;

1. Spandrel separation – a number of openings are not provided with the separation required under Clause C2.6. These are listed in Appendix B of this report;

The following are the main issues proposed to be addressed by the Fire Safety Engineer via an Alternative Solution;

1. The required stairways in Blocks B & C and Block D, which connect more than 3 consecutive storeys, are not proposed to be fire-isolated in accordance with Clause D1.3;
2. Extended travel distances in both blocks;
3. Fire Stair 01 & 02 in Blocks B & C discharge to an area with inadequate perimeter openings, a height less than 3m and within 6m of the non-fire rated lobby doors, which contravene the requirements of Clause D1.7;
4. The non-fire-isolated stairways in Block D do not provide a continuous means of travel by their own flights and landings to the ground floor as required under Clause D1.9; and
5. The fire hydrant booster assembly serving Block B & C is not provided with adequate shield wall protection in accordance with AS 2419.1.

Whilst not precluding the issue of a Construction Certificate, it is noted that many detailed design issues are not indicated on the drawings. These issues are designated “Compliance Readily Achievable” in the “Status” column of the assessment at Appendix B of the report and should be resolved prior to construction. Key issues should be clarified with SWP prior to construction.

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1. INTRODUCTION

This report presents the findings of an assessment of the design of Blocks B, C & D at 5-15 Rynan Avenue, Edmondson Park against the Deemed-to-Satisfy (DTS) provisions of the relevant sections of the Building Code of Australia (BCA).

It has been prepared by building regulations consultants and certifiers Steve Watson and Partners for Joshua Farkash & Associates Pty Ltd.

2. PURPOSE

The purpose of this report is to provide an assessment of the design documentation for the proposed project against the current requirements of the BCA.

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

3. SCOPE AND LIMITATIONS

3.1. SCOPE

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

3.2. LIMITATIONS

The following limitations apply to the assessment:

- The plans are assessed to the extent necessary for submission with the Development Application to Council under Part 4 of the Environmental Planning and Assessment Act. This means the design has been assessed to be capable of complying with the BCA without necessarily having all the details required to issue a Construction Certificate.
- Details in regard to access for people with disabilities have been assessed to the extent of the deemed-to-satisfy provisions of the BCA only. An assessment against AS 1428 is outside the scope of this report.
- The assessment does not consider the requirements of legislation other than the nominated sections of the EP&A Act which might address building works such as OH&S, Construction Safety or the like.
- Generally the assessment does not incorporate the detailed requirements of the Australian Standards.

4. STATUTORY FRAMEWORK

The following table summarises the key statutory issues relating to fire safety and the BCA in relation to the certification of new building works.

Issue	EPAR Clause Ref	Comment	Relevant section of this report
New Work	145	All new works must comply	Error! Reference ource not found. and 11

4.1. NEW WORK

Clause 145 of the Environmental Planning and Assessment Regulation 2000 (EPAR) requires that all new work comply with the current requirements of the BCA.

This means that all works proposed in the plans are required to comply but that existing features of

an existing building need not comply with the BCA unless required to under other clauses of the legislation.

4.2. RESIDENTIAL FLAT DEVELOPMENT

Clause 143A of the EPAR requires a qualified designer to provide a statement that verifies that the plans and specifications achieve or improve the design quality of the development having regard to the design quality principles set out in Part 2 of the *State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development* (SEPP 65) prior to the issue of a Construction Certificate.

Clause 154A of the EPAR requires a qualified designer to provide a statement that verifies that the residential flat development achieves the design quality of the development as shown in the plans and specifications having regard to the design quality principles set out in Part 2 of SEPP 65 prior to issuing an Occupation Certificate.

4.3. FULFILMENT OF BASIX COMMITMENTS

Clause 154B of the EPAR requires the certifying authority to monitor fulfilment of any commitments listed on the BASIX certificate, where the BASIX certificate requires the certifying authority to monitor those commitments. A final occupation certificate must not be issued until the certifying authority is satisfied that each of the commitments has been fulfilled.

5. METHODOLOGY

5.1. PROCESS ADOPTED

The following method of assessment has been used in the preparation of this report:

- 1) Determine the basic assessment data for the building.
- 2) Assess the design of the building against the current Deemed-to-Satisfy requirements of Sections B, C, D, E, F, G and J of the BCA. Establish the status of each clause into the following categories:
 - a) Clause is administrative information only (**Noted**).
 - b) Clause is or is not relevant to the proposed work (**Applicable or Not Applicable**).
 - c) The proposed work complies with the requirements of the clause (**Complies**).
 - d) Compliance with the requirements of the clause is unable to be determined from the documentation provided (**Compliance Readily Achievable**). A recommendation in the "Comments" column will indicate what is required to achieve compliance. The design and construction teams are responsible to ensure compliance is achieved.
 - e) Compliance with the requirements of the clause is unable to be determined from the documentation provided. Additional details or relevant information required to verify compliance (**Additional Details Required**);
 - f) Proposed work does not comply with the requirements of the clause (**Does Not Comply**). An indication will be given in the Comments field as to the nature of the issue and whether an alternative solution has been proposed to address the issue.
 - g) Proposed work is to be addressed on a performance basis via an Alternative Solution satisfying the relevant Performance Requirements. (**Alternative Solution**).
- 3) Nominate the status of the design against each BCA requirement.
- 4) Provide comments against each BCA requirement as appropriate

6. DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development consists of two adjoining residential buildings over two storeys of

basement carpark (Blocks B & C) & an adjacent residential building over a single level of basement parking (Block D). Both buildings contain 5 above ground storeys.

7. ASSESSMENT DATA SUMMARY

The following basic assessment data has been drawn from the provisions of the BCA 2013.

7.1. ASSUMPTIONS

Assumptions made in the preparation of this report are listed below:

1.

7.2. INTERPRETATIONS

A number of issues within the BCA are recognised to be interpretive in nature. Where these issues are encountered, interpretations are made that are consistent with Standard Industry Practise and/or Steve Watson & Partners policy formulated in regard of each issue.

1. The bathroom located beneath the southern stair on the basement floor of Block D does not constitute a 'cupboard or similar space' for the purposes of D2.8. This room will be provided with sprinkler protection and need not be fire rated.

7.3. BUILDING CHARACTERISTICS

The following assessment data has been drawn from the provisions of the BCA.

7.3.1. Classification

The significant spaces in the proposed design have been classified in accordance with the requirements of Clause A3.2 of the BCA and are summarised in the table below:

Block B & C		
Floor	Space	Classification
Basement Level 1-2	Carpark	7a
Ground – Level 4	Residential apartments	2
Block D		
Floor	Space	Classification
Basement Level 1	Carpark	7a
Ground – Level 3	Residential apartments	2

7.3.2. Summary of construction determination

The type of construction required for the proposed design is summarised in the table below. Refer to

appendix B for further detailed assessment data on the proposed development.

Assessment Data	Block B & C	Block D
Classification	2 & 7A	2 & 7A
Number of storeys contained	7	5
Rise in storeys	5	4
Type of construction required	A	A
Effective height	13.5m RL 41850 (Ground Floor) – RL 55300 (Level 4)	9.15m RL 43.550 (Ground Floor) – RL 52.700 (Level 3)

8. STATUTORY FIRE SAFETY MEASURES

The Statutory Fire Safety Measures listed in Appendix F of this report are required to be certified upon completion of the project and prior to occupation of the building by the owner of the building, by issuing a Final Fire Safety Certificate under the Act.

The owner is also required under the Act to certify each of the Fire Safety Measures annually by issuing a Fire Safety Statement.

9. CONCLUSIONS

The design is capable of complying with the requirements of the relevant sections of the BCA subject to resolution of the identified areas of non-compliance and compliance with the recommendations provided within the report.

10. APPENDIX A – DETAILED ASSESSMENT DATA

10.1. FLOOR AREAS AND VOLUMES

Block B & C			
Floor	Approx Area (m²)	Approx Volume (m³)	Comment
Basement Level 1	2500	9150	-
Basement Level 2	2500	7250	-
Ground Floor	1750	-	-
Level 1	1850	-	-
Level 2	1850	-	-
Level 3	1850	-	-
Level 4	1050	-	-
Block D			
Floor	Approx Area (m²)	Approx Volume (m³)	Comment
Basement Level 1	1500	4350	-
Ground Floor	800	-	-
Level 1	785	-	-
Level 2	785	-	-
Level 3	785	-	-

10.2. NOMINATED FIRE COMPARTMENTS

The BCA does not require Class 2 buildings to be considered.

These are indicated in the table above.

Block B & C			
Compartment	Approx Area (m²)	Approx Volume (m³)	Comment
Basement Level 1-2	5000	16400	-
Block D			
Compartment	Approx Area (m²)	Approx Volume (m³)	Comment
Basement Level 1	1500	4350	-

11. APPENDIX B – CLAUSE BY CLAUSE ASSESSMENT

11.1. SECTION B – STRUCTURE

Clause	Description	Status	Comments
B1.1	Resistance to actions	Compliance Readily Achievable	The resistance of a building or structure must be greater than the most critical action effect resulting from different combinations of actions. Certification from a qualified structural engineer to be provided at Construction Certificate stage.
B1.2	Determination of individual actions	Compliance Readily Achievable	The magnitude of individual actions must be determined in accordance with Clause B1.2 of the BCA. Certification from a qualified structural engineer to be provided at Construction Certificate stage.
B1.3	-	-	No provisions.
B1.4	Determination of structural resistance of materials and forms of construction	Compliance Readily Achievable	The structural resistance of materials and forms of construction must be determined in accordance with the relevant Australian Standards in accordance with Clause B1.4 of the BCA. Certification from a qualified structural engineer to be provided at Construction Certificate stage.
B1.5	Structural Software	Compliance Readily Achievable	Structural software used in computer aided design of a building or structure that uses design criteria based on DTS provisions of the BCA must comply with the ABCB Protocol for Structural Software. Certification from a qualified structural engineer to be provided at Construction Certificate stage.
B1.6	Construction of buildings in flood hazard areas	Compliance Readily Achievable	A Class 2 or 3 building, 9a health care building, 9c aged care building or Class 4 part of a building in a flood hazard area must comply with the ABCB Standard for Construction of Buildings in Flood Hazard Areas. Certification from a qualified structural and services engineers to be provided at Construction Certificate stage.

11.2. SECTION C - FIRE RESISTANCE

Clause	Description	Status	Comments
C1.1	Type of construction required	Compliance Readily Achievable	The buildings are to be erected in Type A fire resisting construction in accordance with Specification C1.1 of the BCA. Refer to Appendix D for the relevant fire resisting requirements.
Spec C1.1	Fire Resisting Construction	Noted	The following concessions are available under Specification C1.1: - The roofs on both buildings need not achieve an FRL provided their coverings are non-combustible; and - Reduced FRLs are available for the basement carpark, which need only comply with Table 3.9 of Spec. C1.1, provided the storage cages associated with an SOU do not occupy a floor area greater than 10% of that SOU.

Clause	Description	Status	Comments
		Compliance Readily Achievable	Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must have an FRL and be non-combustible as required by Clause 2.2 of the Specification. Certain lintels must have the FRL require for the part of the building in which they are situated in. A combustible material may be used as a finish or lining to a wall or roof, or in a sign, sunscreen or blind, awning, or other attachment to a building element which has the required FRL if the material is exempt under Clause C1.10 or complies with the fire hazard properties prescribed in Specification C1.10. It must not be located near or directly above a required exit and must not constitute an undue risk of fire spread via the façade. Certain columns, structures on roofs, and balconies and verandahs are provided with concessions. Mezzanine floors concessions may apply subject to increased FRL's of surrounding construction. Shafts required to have an FRL must be enclosed at the top and bottom by construction having an FRL not less than that required for the walls of a non- loadbearing shaft in the same building. The top of a shaft, other than one enclosing a fire-isolated stairway or ramp, is exempt if it extends beyond the roof covering. The bottom of a shaft is exempt if it is non-combustible and laid directly on the ground. Type A Construction A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be of concrete or masonry. Generally, external walls, common walls, internal walls required to have an FRL and shaft walls must be of non-combustible construction.
		Compliance Readily Achievable	Where it is proposed to use metal cladding to the façade on the façade, the material must be adequately fire rated. The proposed wall system is to be included on the Wall Type Schedule. The proposed product and test report is to be provided to SWP for assessment with the application for the Construction Certificate.
C1.2	Calculation of rise in storeys	Noted	Refer to Section 7.3.2 of this report.
C1.3	Buildings of multiple classification	Noted	The building is required to be constructed of Type A fire resisting construction as the classification of the top storey is a Class 2.

Clause	Description	Status	Comments
C1.4	Mixed types of construction	Not Applicable	-
C1.5	Two storey Class 2, 3 or 9c buildings	Not Applicable	-
C1.6	Class 4 parts of buildings	Not Applicable	-
C1.7	Open spectator stands and indoor sports stadiums	Not Applicable	-
C1.8	Lightweight construction	Compliance Readily Achievable	Lightweight construction used in a wall system must comply with Specification C1.8. Lightweight construction used as a fire-resisting covering of a steel column or the like, and where the covering is not in continuous contact with the column must have the voids filled to a height of not less than 1.2m above the floor and where the column is liable to be damaged must be protected by steel or other suitable material.
C1.9	-	-	No provisions.
C1.10	Fire hazard properties (NSW additional requirements for Entertainment Venues)	Compliance Readily Achievable	The fire hazard properties of linings materials and assemblies must comply with Specification C1.10 and NSW Specification C1.10.
C1.11	Performance of external walls in fire	Compliance Readily Achievable	Concrete external walls that could collapse as complete panels are to be designed in accordance with Specification C1.11 to minimise the likelihood of external walls collapsing outwards in the event of a fire and separating from supporting members.
C1.12	Non-combustible materials	Noted	Gypsum, metal and laminated non-combustible materials containing combustible components are deemed to be non-combustible.
C2.1	Application of Part	Applicable	Clauses C2.2, C2.3 and C2.4 do not apply to a sprinkler protected carpark, open deck carpark or open spectator stand.
C2.2	General floor area limitations	Not Applicable	-
C2.3	Large isolated buildings	Not Applicable	-
C2.4	Requirements for open spaces and vehicular access	Not Applicable	-
C2.5	Class 9a and 9c buildings (NSW modified requirements for Class 9c Buildings)	Not Applicable	-
C2.6	Vertical separation of openings in external walls	Complies	Compliance spandrel separation is provided throughout both buildings.
C2.7	Separation by fire walls	Not Applicable	-
C2.8	Separation of classifications in the same storey	Not Applicable	-

Clause	Description	Status	Comments
C2.9	Separation of classifications in different storeys	Compliance Readily Achievable	As different classifications are situated one above the other in adjoining storeys they must be separated in accordance with the DTS provisions of the BCA.
C2.10	Separation of lift shafts	Compliance Readily Achievable	As the lifts in both buildings connect more than 2 storeys, they must be separated from the remainder of the building as specified in Clause C2.10. Openings for lift landing doors and services must be protected in accordance with the DTS provisions of Part C3 of the BCA
C2.11	Stairways and lifts in one shaft	Complies	Stairways and lifts are contained in separated shafts.
C2.12	Separation of equipment	Compliance Readily Achievable	Equipment that comprises lift motors, lift control panels, central smoke control plant, boilers or batteries must be separated from the remainder of the building by construction with an FRL as required under Specification C1.1 but not less than 120/120/120.
C2.13	Electricity supply system	Compliance Readily Achievable	Electrical substations and main switchboards sustaining emergency equipment operating in the emergency mode must be separated from the remainder of the building by construction with an FRL not less than 120/120/120. All switchboards and electrical conductors are to comply with the requirements of Clause C2.13.
C2.14	Public corridors in Class 2 and 3 buildings	Complies	It is understood that open balconies are provided throughout Block B & C and Block D, which will meet the requirements for public corridors under this clause.
C3.1	Application of Part	Applicable	Concessions and definition of certain openings.
C3.2	Protection of openings in external walls	Not Applicable	-
C3.3	Separation of external walls and associated openings in different fire compartments	Not Applicable	-
C3.4	Acceptable method of protection	Not Applicable	-
C3.5	Doorways in fire walls	Not Applicable	-
C3.6	Sliding fire doors	Not Applicable	-
C3.7	Protection of doorways in horizontal exits	Not Applicable	-
C3.8	Openings in fire isolated exits	Compliance Readily Achievable	-/60/30 self-closing fire doors are required to doorways providing access to fire isolated stairways.
C3.9	Service penetrations in fire isolated exits	Compliance Readily Achievable	Service penetrations other than electrical wiring for essential service installations, pressurisation ducts with an FRL of -/120/60, or water pipes for fire services are not permissible.

Clause	Description	Status	Comments
C3.10	Openings in fire isolated lift shafts	Compliance Readily Achievable	Openings in lift shafts are to be protected by -/60/- fire doors complying with AS1735.11. Lift indicator panels are to be backed by construction having an FRL of not less than -/60/60 if it exceeds 35,000mm ² (175 X 200 mm).
C3.11	Bounding construction: Class 2, 3, 4 and 9 buildings (NSW Requirements for Class 3 changed and additional requirements for Class 9 Entertainment Venue)	Compliance Readily Achievable	A wall type schedule and corresponding floor plans are to be provided for assessment. The schedule is to nominate each wall type, the FRL achieved, the acoustic rating achieved and the test report number if a light weight system is selected. A Door Schedule nominating all fire resistant door sets is also to be provided for review. Documentation demonstrating compliance is to be provided with the Construction Certificate application.
C3.12	Openings in floors for services	Compliance Readily Achievable	Services passing through floors are to be placed within fire resisting shafts or in accordance with Clause C3.15. Loadbearing shafts are required to have an FRL of not less than 120/120/120 and for non-loadbearing shafts an FRL of not less than -/120/120 when penetrating a floor slab in the basement carpark and 90/90/90 for loadbearing and - /90/90 for non-loadbearing when penetrating the residential towers above.
C3.13	Openings in shafts	Compliance Readily Achievable	In a building of Type A construction, an opening in a wall providing access to a ventilating, pipe, garbage, or other service shaft must be protected by: • If it is 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 with an FRL of not less than -/60/30, or • If the shaft is a garbage shaft - a door or hopper of non-combustible construction.
C3.14	-	-	No provisions
C3.15	Openings for service installation	Compliance Readily Achievable	Methods and materials used are to be identical to tested prototypes and in accordance with AS4072.1 and AS1530.4, and having achieved the required FRL or resistance to the incipient spread of fire or other specified method. An independent BCA Consultant is to be engaged to review penetrations throughout the building and the proposed method of protection. Their report is to be submitted for approval with the Construction Certificate.
C3.16	Construction Joints	Compliance Readily Achievable	Construction joints are to be installed in accordance with a tested prototype in accordance with AS1530.4.
C3.17	Columns protected with lightweight construction	Compliance Readily Achievable	Columns must be protected in accordance with the identical tested prototype.

11.3. SECTION D – ACCESS AND EGRESS

Clause	Description	Status	Comments
D1.1	Application of Part	Applicable	Does not apply to the internal parts of a sole occupancy unit in a Class 2, 3 or 4 building.
D1.2	Number of exits required (NSW Extra Entertainment Venue subclause)	Complies	A compliant number of exits are provided throughout.
D1.3	When fire isolated exits are required	Alternative Solution	The non-fire-isolated required stairways in Blocks B & C and Block D connect more than 3 consecutive storeys and are not proposed to be fire-isolated. This non-compliance is to be addressed as part of a fire engineered alternative solution.
D1.4	Exit travel distances	Alternative Solution	The following extended travel distances have been identified: Block B & C - APT G3 – distance to an exit 21m in lieu of 20m - APT G4 – distance to an exit 26m in lieu of 20m Block D - APT D11 – Approx. 8.5m to an exit in lieu of 6m - APT D16 – Approx. 8m to an exit in lieu of 6m - APT D21 – Approx. 8.5m to an exit in lieu of 6m - APT D26 – Approx. 8m to an exit in lieu of 6m - APT D31 – Approx. 8.5m to an exit in lieu of 6m - APT D36 – Approx. 8m to an exit in lieu of 6m This non-compliance is to be addressed as part of a fire engineered alternative solution.
D1.5	Distance between alternative exits	Alternative Solution	The following extended travel distances have been identified: Block B & C Level 1-Level 4 – distance between Fire Stair 01 & Fire Stair 02 53m in lieu of 45m This non-compliance is to be addressed as part of a fire engineered alternative solution.
D1.6	Dimensions of exits (NSW Differing requirements for Entertainment Venue)	Compliance Readily Achievable	In a required exit or path of travel, the unobstructed height throughout must be not less than 2m, except the unobstructed height of any doorway must be reduced to not less than 1980mm. The unobstructed width of each exit or path of travel to an exit except a doorway must not be less than 1m.

Clause	Description	Status	Comments
D1.7	Travel via fire-isolated exits	Alternative Solution	Block B & C The following issues have been identified with Stair 01 & 02: - Both discharge to a covered area with inadequate perimeter openings and an unobstructed clear height less than the 3m; - The paths of travel from the point of discharge of both stairs necessitate passing with the glazed main entry doors, which form openings that require internal protection in accordance with C3.4 of the BCA. These non-compliances are required to be addressed as part of a Fire Engineered Alternative Solution.
D1.8	External stairways in lieu of fire-isolated exits	Not Applicable	-
D1.9	Travel by non-fire-isolated stairways or ramps	Alternative Solution	The non-fire-isolated stairways in Block D do not provide a continuous means of travel by their own flights and landings from every storey served to the level at which egress to a road or open space is provided. This non-compliance is required to be addressed as part of a Fire Engineered Alternative Solution.
D1.10	Discharge from exits (NSW Additional requirements for Entertainment Venues)	Compliance Readily Achievable	Suitable barriers such as bollards are to be provided to prevent the blockage of exits by vehicles, etc. An unobstructed path of travel to the road must be provided with a width not less than the width of the required exit.
D1.11	Horizontal exits	Not Applicable	-
D1.12	Non-required stairs, ramps or escalators	Not Applicable	-
D1.13	Number of persons accommodated (NSW Differing requirements for Entertainment Venues)	Noted	Refer to section Error! Reference source not found. of his report
D1.14	Measurement of distance	Noted	-
D1.15	Method of measurement	Noted	-
D1.16	Plant rooms and lift machine rooms: Concession	Noted	-
D1.17	Access to lift pits	Compliance Readily Achievable	Access to lift pits where the pit depth is not more than 3m must be through the lowest landing doors. Lift pits with a depth of more than 3m must have an access doorway that is level with the pit floor and not be less than 600mm wide by 1980mm high. Access to the doorway must be by a stairway complying with AS 1657. Doors must be horizontal sliding or outward opening and be self-closing and self-locking from the outside and be provided with signage on the landing side in letters not less than 35mm high stating: "DANGER LIFTWELL- ENTRY OF UNAUTHORISED PERSON PROHIBITED – KEEP CLEAR AT ALL TIMES"

Clause	Description	Status	Comments
D2.1	Application of Part (NSW Differing requirements for Entertainment Venue)	Applicable	-
D2.2	Fire isolated stairs or ramps	Compliance Readily Achievable	Stairs or ramps within fire resisting shafts are to be constructed of non-combustible materials. The construction of the stairs is not to cause structural damage or impair the fire resistance of the shaft if there is local failure.
D2.3	Non-fire-isolated stairways and ramps	Compliance Readily Achievable	Required stairs that are not required to be within a fire-resting shaft are to be constructed of concrete, steel, or timber of specified minimum dimensions.
D2.4	Separation of rising and descending stair flights	Complies	Rising and descending fire isolated stairways are not be directly connected.
D2.5	Open access ramps and balconies	Not Applicable	-
D2.6	Smoke lobbies	Not Applicable	-
D2.7	Installations in exits and paths of travel	Compliance Readily Achievable	Electrical boards and the like are to be located within and enclosed by non-combustible construction or have a fire-protective covering with the doorway suitably sealed against smoke spreading from the enclosure. Generally the services or equipment may be enclosed in non-combustible construction such as MDF with a solid core door. Electrical wiring may only be installed in a fire-isolated exit if the wiring is associated with: • a lighting, detection, or pressurisation system serving the exit, or • a security, surveillance or management system serving the exit, or • intercommunication system or audible or visual alarm system in accordance with Clause D2.22 or • the monitoring or hydrant or sprinkler isolation valves.
D2.8	Enclosure of space under stairs and ramps	Complies	Spaces under stairs are not enclosed to form cupboards.
D2.9	Width of stairways	Not Applicable	A stairway more than 2m in width is only counted as having a width of 2m unless it is divided by a continuous handrail or balustrade between landings and each division is less than 2m wide.
D2.10	Pedestrian ramps	Compliance Readily Achievable	Ramps serving as required exit must have a gradient not less steeper than 1:8. If the ramp is required for disabled access under Part D3 it must comply with AS1428.1. The surface of the ramp must have a non-slip finish.
D2.11	Fire-isolated passageways	Not Applicable	-
D2.12	Roof as open space	Compliance Readily Achievable	The slab separating the basement carpark and ground floor in both blocks must achieve an FRL of not less than 120/120/120.

Clause	Description	Status	Comments
D2.13	Goings and risers (NSW Differing requirements for Entertainment Venue)	Compliance Readily Achievable	Stairs are to have risers measuring between 115-190mm and goings between 250-355mm. Goings and Risers are to satisfy the equation of $2R+G=700(\text{max})$ and $550(\text{min})$. Goings and risers are to be consistent throughout in one flight. Under the requirements of AS1428.1-2009 open riser are not permitted. All treads to be fitted with non-slip finish or non-skid strips. Treads must be of solid construction if the stairway is more than 10m high or connects more than 3 storeys.
D2.14	Landings	Compliance Readily Achievable	Landings must comply with the requirements of Clause D2.14 of the BCA. Landings must be not less than 750mm long and have a non-slip finish throughout or an adequate non-skid strip near the edge of the landing where it leads to a flight below.
D2.15	Thresholds (NSW Differing requirements for Entertainment Venue)	Compliance Readily Achievable	A threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless: - In a building required to be accessible the door opens to a road or open space and is provided with a threshold ramp or step ramp in accordance with AS1428.1. - In other cases the door opens to a road or open space, external stair landing or external balcony, and the doorsill is not more than 190mm above the finished surface of the ground balcony or the like to which the door opens.
D2.16	Balustrades (NSW Differing requirements for Entertainment Venue)	Compliance Readily Achievable	Balustrades complying with Deemed-to-Satisfy provisions of the BCA are to be provided to where the level of the surface below is 1m or more. Where the level of the surface below is 4m or more, a balustrade or other barrier must not facilitate climbing of horizontal elements between 150mm and 760mm above the floor. Any opening in the balustrade must not permit a 125mm sphere to pass through the balusters. Wire balustrades must be constructed to comply with Clause D2.16(i) and Tables D2.16a and D2.16b.
D2.17	Handrails	Compliance Readily Achievable	Handrails are to be provided to at least one side of stair flights and located not less than 865mm above the nosings of stair treads and the floor surfaces of landings. Handrails must be not more than 2m apart in the case of intermediate handrails. The fire-isolated stairways serving residential levels in Block B & C must comply with Clause 12 of AS1428.1.
D2.18	Fixed platforms walkways, stairways, and ladders	Compliance Readily Achievable	Fixed platforms, walkways, stairways, ladders, landings, handrails, balustrades and any tread or riser in a plant room, lift motor room or the like is to comply with AS1657.

Clause	Description	Status	Comments
D2.19	Doorways and doors (NSW Additional requirements for Entertainment Venue)	Compliance Readily Achievable	In a resident use area of a Class 9c building a doorway is generally restricted to swinging doors. In a Class 9a the sliding doors must be able to be opened manually under a force of not more than 110N. As the main entry door leads to an open space it must automatically open if there is a power failure to the door or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. The power-operated sliding doors must be able to be opened manually under a force of not more than 110N if there is a malfunction or failure of the power source.
D2.20	Swinging doors	Complies	All required exit doors swing in the direction of egress.
D2.21	Operation of latch (NSW Additional requirements for Entertainment Venue)	Compliance Readily Achievable	The latch of a door in a required exit, forming part of a required exit or in the path of travel is to be readily openable without a key from the side of that faces a person seeking egress. It is to have a single downward action and be located between 900mm and 1.1m from the floor. This means lever handles are generally required. If serving an area required to be accessible the hardware must be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch.
D2.22	Re-entry fire-isolated exits	Compliance Readily Achievable	Doors of fire isolated exits must not be locked from the inside of a fire isolated exit, unless all doors are automatically unlocked by a failsafe device by activation of a fire alarm. Signage or an intercommunication system is to be additionally provided to the doors.

Clause	Description	Status	Comments
D2.23	Signs on doors (NSW Additional requirements for Entertainment Venue)	Compliance Readily Achievable	Fire doors providing direct access into fire isolated exits and required smoke doors are required to have signage on the side of the door that faces the person seeking egress. If the doors are held up by a hold open device the signage is to be provide on the wall adjacent the doorway or on both sides of the door. Horizontal exits, smoke doors that swing in both directions and doors leading from a fire isolated exit to a road or open space must have signage on each side of the door. An automatic door held open by an automatic hold-open device: FIRE SAFETY DOOR DO NOT OBSTRUCT Or for a self-closing door FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN or for a door discharging from a fire-isolated exit FIRE SAFETY DOOR DO NOT OBSTRUCT Under Clause 183 of the Environmental Planning and Assessment Regulation 2000 a notice is to be displayed in a conspicuous location adjacent to a doorway providing access to but not within a fire isolated stairway, passageway or ramp. The words "OFFENCES RELATING TO FIRE EXITS" are to be provided in letters at least 8mm high and the remaining words are to be at least 2.5mm high. The notice is to state the following: OFFENCES RELATING TO FIRE EXITS It is an offence under the Environmental Planning and Assessment Act 1979: - to place anything in or near this fire exit that may obstruct persons moving to and from the exit, or - interfere with or obstruct the operation of any fire doors, or - to remove, damage or otherwise interfere with this notice.
D2.24	Protection of openable windows	Compliance Readily Achievable	Window openings in Class 2 SOU's must be provided with protection if the floor below the window is 2m or more above the surface beneath in the bedrooms of Class 2 buildings. The openable portion of the window must be protected with - a device to restrict the window opening or - a screen with secure fittings A device or screen required must: - not permit a 125mm sphere to pass through the window opening or screen; and - resist an outward horizontal action of 250N against the window restrained by a device or screen protecting the opening and have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden.
NSW D2.101	Doors in path of travel in an Entertainment Venue	Not Applicable	-

Clause	Description	Status	Comments
D3.1	Application of Part	Applicable	All buildings and parts of buildings as specified under Table D3.1 must be accessible unless exempted under Clause C3.4.
D3.2	Access to buildings	Compliance Readily Achievable	Access must be provided to a building from 1. the main points of a pedestrian entry at the allotment boundary, and 2. another accessible building connected by a pedestrian link, and 3. from any accessible carparking space on the allotment. An accessway is required to be provided through the principal pedestrian entrance and through not less than 50% of all pedestrian entrances. In a building with a floor area over 500m², a pedestrian entrance which is not accessible must not be located more than 50m from an accessible entrance. If a pedestrian entrance consists of more than 3 doorways then not less than 50% of those doorways must be accessible.
D3.3	Parts of buildings to be accessible	Compliance Readily Achievable	Every ramp, except a fire isolated ramp, must comply with Clause 10 if AS 1428.1. Every stairway, except a fire isolated stairway, must comply with Clause 11 of AS 1428.1. A fire isolated stairway must comply with Clause 11(f) and (g) of AS 1428.1. Every passenger lift must comply with Clause E3.6. Accessways must have passing spaces and turning spaces complying with AS 1428.1. Pile height or pile thickness of carpets shall comply with the requirements of this Clause and AS 1428.1.
D3.4	Concessions	Noted	-
D3.5	Carparking	Compliance Readily Achievable	Carparking spaces for people with disabilities are to be provided in accordance with the conditions of consent once released from Council. Compliance with AS/NZS 2890.6 is required.
D3.6	Signage	Compliance Readily Achievable	Every doorway required to be provided with an exit sign under Clause E4.5 is to be provided with braille and tactile signage that states "EXIT" and identify the floor level "LEVEL #". Where the pedestrian entrance is not accessible, directional signage in accordance with AS 1428.1 must be provided to direct a person to the location of the nearest accessible pedestrian entrance.
D3.7	Hearing augmentation	Not Applicable	-

Clause	Description	Status	Comments
D3.8	Tactile indicators	Compliance Readily Achievable	Tactile indicators are to be provided to all stairways, ramps and escalators must be provided to warn people who are blind or have a vision impairment that they are approaching: • a stairway, other than a fire-isolated stairway, • a ramp other than a fire-isolated ramp, step ramp, kerb ramp or swimming pool ramp, or • in the absence of a suitable barrier an overhead: ○ obstruction less than 2 m above floor level, other than a doorway ○ an accessway meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no kerb or kerb ramp at that point Tactile ground surface indicators must comply with sections 1 and 2 of AS/NZS 1428.4.1
D3.9	Wheel Chair Seating Spaces in Class 9b Assembly Buildings	Not Applicable	-
D3.10	Swimming Pools	Not Applicable	-
D3.11	Ramps	Complies	On an accessway a series of connected ramps must not have a combined vertical rise of more than 3.6m. A landing for a step ramp must not overlap a landing of another step ramp or ramp.
D3.12	Glazing on an accessway	Compliance Readily Achievable	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.

11.4. SECTION E – SERVICES AND EQUIPMENT

Clause	Description	Status	Comments
E1.1	-	-	No provisions
E1.2	-	-	No provisions
E1.3	Fire Hydrants	Compliance Readily Achievable	Hydraulic plans identifying the locations of all fire hydrants and booster assembly are to be provided. The hydraulic engineer will also need to provide certification certifying that the design complies with Clause E1.3 of the BCA and AS2419.1 – 2005. The pump room located on basement level 1 in Block B & C must be access via a fire-isolated area. The plans indicate compliance. Design details demonstrating compliance are to be provided with the Construction Certificate application.

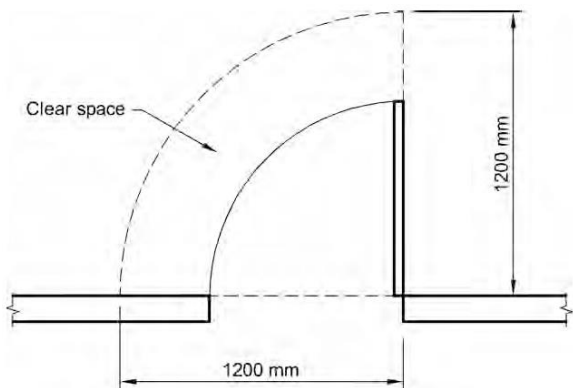
Clause	Description	Status	Comments
		Alternative Solution	The booster assembly located outside Block B & C adjacent the basement carpark driveway is located within 10m of the external building. The shield wall does not extend 2m either side of the booster assembly as required by AS2419.1. This non-compliance is proposed to be addressed as part of a fire engineered alternative solution.
E1.4	Hose reels	Compliance Readily Achievable	Fire hose reels are to be installed internally within 4m of an exit or internally adjacent to a fire hydrant so that the fire hose reel will not need to pass through fire and smoke doors in the basement carpark in both Blocks. Additional hose reels are permitted to be installed further than 4m from exit to achieve coverage. Fire hose reels are to be installed accordance with AS2441. Design details demonstrating compliance are to be provided with the Construction Certificate application.
E1.5	Sprinklers	Compliance Readily Achievable	The basement carparks in both blocks accommodate more than 40 vehicles and require sprinkler protection in accordance with Specification E1.5. A sprinkler valve enclosure must be located in a secure room or enclosure that has direct egress to road or open space. Design details demonstrating compliance are to be provided with the Construction Certificate application.
E1.6	Portable fire extinguishers	Compliance Readily Achievable	Portable fire extinguishers are required to be provided in accordance with Table E1.6 of the BCA and Sections 1, 2, 3 and 4 of AS 2444. Portable extinguishers to cover Class A risk fires are only required in fire compartments less than 500m² not provided with hose reels.
E1.7	-	-	No provisions.
E1.8	Fire control centres	Not Applicable	-
E1.9	Fire precautions during construction	Compliance Readily Achievable	During construction, not less than one fire extinguisher to suit Class A, B and C fires is required for each storey, and is required to be located adjacent to each exit.
E1.10	Provisions for special hazards	Not Applicable	-
E2.1	Application of Part	Applicable	Part is not applicable to • open deck car parks • open spectator stands • storerooms, etc less than 30m² • sanitary compartments • plantrooms or the like

Clause	Description	Status	Comments
E2.2	General requirements (NSW Replacement of provisions for Class 9b buildings)	Compliance Readily Achievable	Block B & C & Block D The residential portions must be provided with an automatic smoke exhaust system complying with Specification E2.2. An air-handling system that does not form part of the smoke hazard management system and recycles air from one fire compartment to another must be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1 or incorporate smoke dampers and automatically shutdown upon activation of smoke detectors in accordance with Clause 4.10 of AS/NZS 1668.1. The carpark may be provided with fans with metal blades suitable for operation at normal temperature and electrical power and control cabling need not be fire rated. The Fire Indicator Panel is to be located at the main entry to each block and noted on the drawings at Construction Certificate stage.
E2.3	Provisions for special hazards	Not Applicable	-
E3.1	Lift installations	Compliance Readily Achievable	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1.
E3.2	Stretcher facility in lifts	Complies	Not less than one lift serving Block B & C is to be provided with a stretcher facility. The plans indicate that the minimum dimensions of a lift accommodating a stretcher facility are provided (600mm wide x 2000mm long and 1400mm high above floor level).
E3.3	Warning against use of lifts in fire	Compliance Readily Achievable	A warning sign is to be displayed where it can be readily seen near every call button of the passenger lift. The warning sign is to comply with the details and dimensions set out in Figure E3.3 of the BCA.
E3.4	Emergency lifts	Not Applicable	-
E3.5	Landings	Compliance Readily Achievable	Access and egress to and from the lift well landings is to comply with the Deemed-to-Satisfy provisions of Section D of the BCA.
E3.6	Passenger lifts	Compliance Readily Achievable	Every passenger lift must be one of the types identified in Table E3.6a, have accessible features in accordance with Table E3.6b and not rely on a constant pressure device for its operation if the lift car is fully enclosed.
E3.7	Fire Services Control	Compliance Readily Achievable	The lifts in Block B & C serve a storey above an effective height of 12m and must be provided with a fire control switch complying with Clause E3.9 and a lift car fire service drive control switch complying with Clause E3.10.
E3.8	Aged care buildings	Not Applicable	-
E3.9	Fire service recall operation switch	Compliance Readily Achievable	The switch must be located at the landing nominated by the appropriate authority, be labelled 'FIRE SERVICE' in indelible white lettering on red background. The "OFF" and "ON" positions are to be identified.

Clause	Description	Status	Comments
E3.10	Lift car fire service drive control switch	Compliance Readily Achievable	The lift car service drive control must be activated from within the lift car. The switch is to be located between 600mm and 1500mm above the lift car floor and be labelled 'FIRE SERVICE' in indelible white lettering on red background. The "OFF" and "ON" positions are to be identified.
E4.1	-	-	No provisions.
E4.2	Emergency light requirements	Compliance Readily Achievable	Emergency lighting is to be provided throughout the building in accordance with Clause E4.2 of the BCA. Emergency lighting is to be provided in : - every fire-isolated stairway; - Every passageway, hallway, corridor or the like, that is part of the path of travel to an exit; and - In every required non-fire isolated stairway. Details demonstrating compliance are to be provided with the Construction Certificate application.
E4.3	Measurement of distance	Noted	-
E4.4	Design and operation of emergency light	Compliance Readily Achievable	Emergency lighting shall be provided throughout the building in accordance with the requirements of Clause E4.4 of the BCA and AS 2293.1.
E4.5	Exit signs	Compliance Readily Achievable	Exit signs are to be provided in accordance with Clause E4.5 of the BCA. Exit signs must be clearly visible to person approaching the exit and must be installed on, above or adjacent to; - A door providing direct egress from a storey to a stairway, passageway or ramp serving as a required exit. - A door from an enclosed stairway, passageway or ramp at every level of discharge to a road or open space. - A door serving as or forming part of a required exit in a storey required to be provided with emergency lighting.
E4.6	Direction signs (NSW Entertainment Venue - External to the building where the exit does not open directly onto a street.)	Compliance Readily Achievable	Where an exit is not readily apparent then exit signs with directional arrows must be installed in appropriate positions in corridors, hallways, lobbies and the like indicating the direction to a required exit in accordance with Clause E4.6 of the BCA.
E4.7	Class 2, 3 and 4 buildings: Exemptions	Noted	-
E4.8	Design and operation of exit signs	Compliance Readily Achievable	Exit signs are to operate in accordance with AS 2293.1 and be clearly visible at all times while the building is occupied.
E4.9	Sounds systems and intercom systems for emergency purposes	Not Applicable	-

11.5. SECTION F – HEALTH AND AMENITY

Clause	Description	Status	Comments
F1.1	Stormwater drainage	Compliance Readily Achievable	Stormwater drainage design shall be in accordance with AS/NZS 3500.3.
F1.2	-	-	No provisions
F1.3	-	-	No provisions
F1.4	External above ground membranes	Compliance Readily Achievable	Waterproofing membranes for external above ground use must comply with AS 4654 Parts 1 and 2.
F1.5	Roof coverings	Compliance Readily Achievable	Roof coverings are to comply with the relevant Australian Standards as per Clause F1.5.
F1.6	Sarking	Compliance Readily Achievable	Sarking type materials used for weatherproofing of roofs and walls must comply with AS/NZS 4200 Parts 1 and 2.
F1.7	Waterproofing of wet areas	Compliance Readily Achievable	Shower enclosure surfaces, floor surfaces in bathrooms, shower rooms, slop hoppers, sink compartments, laundry and sanitary compartments is required to be waterproofed in accordance with AS 3740.
F1.8	-	-	No provisions
F1.9	Damp-proofing	Compliance Readily Achievable	Moisture from the ground must be prevented from reaching the lowest floor timber and the walls above the lowest floor joists, the walls above the dam proof course and the underside of a suspended floor constructed of a material other than timber, and the supporting beams or girders. Damp proof course must consist of a material that complies with AS/NZS 2904 or an impervious termite shield in accordance with AS 3660.1.
F1.10	Damp-proofing of floors on the ground	Compliance Readily Achievable	A vapour barrier in accordance with AS2870 is to be provided beneath the lower ground floor slab.
F1.11	Provision of floor wastes	Compliance Readily Achievable	The floor of each bathroom and laundry in each sole occupancy of a Class 2 or 3 building, or class 4 part is to be graded to permit drainage to a floor waste.
F1.12	Sub-floor ventilation	Compliance Readily Achievable	The lower ground sub floor space is to be cleared of all building debris and vegetation and be cross ventilated in accordance with Table F1.12 by evenly distributed openings provided in the external walls. Additionally the sub floor space is to contain no dead air spaces and be graded to prevent water ponding under the building.
F1.13	Glazed assemblies	Compliance Readily Achievable	Windows, sliding doors with a frame, adjustable louvres, shopfronts and window walls with one piece framing in an external wall must comply with AS 2047 requirements for resistance to water penetration.
F2.1	Facilities in residential buildings	Compliance Readily Achievable	The minimum number of facilities required in Table F2.1 are to be provided in each residential apartment. The plans indicate that compliance has been achieved.

Clause	Description	Status	Comments
		Complies	Facility for use by employees are provided in the basement in both blocks.
F2.2	Calculation of number of occupants and fixtures	Noted	-
F2.3	Facilities in Class 3 to 9 buildings	Not Applicable	-
F2.4	Facilities for people with disabilities	Not Applicable	-
F2.5	Construction of sanitary compartments	Compliance Readily Achievable	Doors to the fully enclosed toilets are to open outwards, slide or be readily removable from the outside of the sanitary compartment where obstructions are located within 1.2m of the door.  The diagram illustrates a door opening outwards from a room. A dashed arc indicates the door's swing. A horizontal dimension line below the door shows a clear space of 1200 mm. A vertical dimension line to the right of the door shows a clear height of 1200 mm. An arrow points to the area between the door and the wall, labeled 'Clear space'.
F2.6	Interpretation: Urinals and washbasins	Noted	-
F2.7	Warm water installations (NSW – deleted)	Not Applicable	Not Applicable in NSW.
F2.8	Waste	Not Applicable	-
F3.1	Height of rooms and other spaces	Complies	Internal ceiling heights throughout comply with the minimum requirements of this clause.
F4.1	Provision of natural light	Complies	Natural light is provided to every habitable room throughout each block.
F4.2	Methods and extent of natural light	Compliance Readily Achievable	A detailed review ensuring that a minimum 10% light transmitting area is provided to each room will be required at Construction Certificate stage.
F4.3	Natural light borrowed from adjoining room	Noted	Natural light may be borrowed from adjoining rooms in accordance with this clause.
F4.4	Artificial lighting	Compliance Readily Achievable	Lighting shall be provided throughout the building to comply with AS1680.0 in accordance with the requirements of Clause F4.4 of the BCA.
F4.5	Ventilation of rooms (NSW Reference to AS/NZS 3666.1 deleted for NSW)	Compliance Readily Achievable	Ventilation shall be provided throughout the building in by means of natural ventilation complying with Clause F4.6 or mechanical ventilation complying with the requirements of AS1668.2 as required by Clause F4.5 of the BCA.
F4.6	Natural ventilation	Complies	The design complies with the requirements of this clause.
F4.7	Ventilation borrowed from adjoining room	Noted	Natural ventilation may be borrowed from other rooms to achieve compliance.

Clause	Description	Status	Comments
F4.8	Restriction on position of water closets and urinals	Not Applicable	-
F4.9	Airlocks	Not Applicable	-
F4.10	-	-	No Provisions
F4.11	Carparks	Compliance Readily Achievable	The carpark is to be provided with ventilation complying with AS1668.2.
F4.12	Kitchen local exhaust	Not Applicable	-
F5.1	Application of part	Applicable	Applicable to Class 2 buildings.
F5.2	Determination of airborne sound insulation ratings	Compliance Readily Achievable	Construction required to have an airborne sound insulation rating must have the value for weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation term ($R_w + C_{tr}$) determined in accordance with AS/NZS1276.1 or ISO717.1 using result from laboratory measurements, or comply with Specification F5.2 of the BCA. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.
F5.3	Determination of impact sound insulation ratings	Compliance Readily Achievable	A floor required to have an impact sound insulation rating must have the required value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w} + C_i$) determined in accordance with AS/ISO 717.2 using results from laboratory measurements or comply with Specification F5.2 of the BCA. A wall in a class 2 or 3 building that is required to have an impact sound insulation rating must be of discontinuous construction. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.
F5.4	Sound insulation rating for floors	Compliance Readily Achievable	Floors in a class 2 or 3 building separating sole occupancy units or separating sole occupancy units from a plant room, lift shaft, public corridor, public lobby or the like or parts of different classifications must have an $R_w + C_{tr}$ of not less than 50 and an $L_{n,w} + C_i$ of not more than 62. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.

Clause	Description	Status	Comments
F5.5	Sound insulation rating of walls	Compliance Readily Achievable	A wall in a class 2 building must have an $R_w + C_{tr}$ of not less than 50 if it separates sole occupancy units and an R_w of 50 if it separates a sole occupancy unit from a plant room, lift shaft, public corridor, public lobby or the like or parts of different classifications. Compliance with F5.3(b) is required if the wall separates a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit from a habitable room (excluding a kitchen) in another adjoining unit or a sole occupancy unit from a plant room or lift shaft. A door may be incorporated in a wall in a Class 2 building that separates a <i>sole-occupancy unit</i> from a stairway, <i>public corridor</i>, public lobby or the like, provided the door assembly has an R_w not less than 30. Where a wall required to have sound insulation has a floor above, the wall must continue to the underside of the floor above or a ceiling that provides the sound insulation required for the wall. Where a wall required to have sound insulation has a roof above, the wall must continue to the underside of the roof above or a ceiling that provides the sound insulation required for the wall. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.
F5.6	Sound insulation rating of services	Compliance Readily Achievable	If a duct, soil, waste, water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serve or passes through more than one sole occupancy unit, the duct or pipe must be separated from the rooms of any sole-occupancy unit (SOU) by construction with an $R_w + C_{tr}$ (airborne) not less than – 40 if the adjacent room is a habitable room (other than a kitchen); or 25 if the adjacent room is a kitchen or non-habitable room If a stormwater pipe passes through a SOU it must be separated in accordance with the requirements above. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.
F5.7	Isolation of pumps	Compliance Readily Achievable	A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating or other pump. Acoustic Consultant's design certification to be provided with the application for the Construction Certificate.

11.6. SECTION G – ANCILLARY PROVISIONS

Clause	Description	Status	Comments
G1.1	Swimming Pools	Not Applicable	A swimming pool is not proposed.

Clause	Description	Status	Comments
G1.2	Refrigerated chambers, strong-rooms and vaults	Not Applicable	A refrigerator, cooling chamber, strong room or vault is not proposed.
NSW G1.101	Provision for cleaning windows	Complies	This clause requires that windows either be able to be cleaned wholly from within the building, or a method complying with the Construction Safety Act 1912 and Regulations be installed. A 'Roof Safety Access System' is proposed to the entire roof (details noted on plan A124).
Part G2	Heating Appliances, Fireplaces, Chimneys and Flues – Application of Part	Not Applicable	No solid-fuel burning appliances, fireplaces or incinerator rooms are proposed.
Part G3	Atrium Construction – Application of Part	Not applicable	The building does not contain an atrium.
Part G4	Construction in Alpine Areas – Application of Part	Not applicable	The building is not located in an alpine area.
Part G5	Construction in Bushfire Prone Areas – Application of Part	Not Applicable	The building is not located on bushfire prone land.

11.7. SECTION J – ENERGY EFFICIENCY

Clause	Description	Status	Comments
NSW J(A)	Energy Efficiency – Class 2 Buildings and Class 4 Parts	Noted	The building is located in climate zone 5.
NSW J(A)1	Building Fabric		
NSW J(A)1.1	Application of Part	Noted	Applies to thermal insulation in a Class 2 building or Class 4 part of a building where a development consent or complying development certificate specifies that the insulation is to be provided.
NSW J(A)1.2	Compliance with BCA provisions	Not Applicable	Class 2 and Class 4 parts of a building are required to comply with the national provisions of Clause J1.2 except the reference to "Where required" is deemed to refer to "Where a development consent, complying development certificate, or an environmental planning instrument specifies that insulation is to be provided." A thermal break must be provided between the external cladding and framing in accordance with Clause J1.3(d) for a metal framed roof and Clause J1.5(e) for a metal framed wall.
J1.2	Thermal construction general	Compliance Readily Achievable	Insulation is to be provided in accordance with AS/NZS 4859.1 and in accordance with the requirements of Clause J1.2 where a development consent specifies that insulation is to be provided.

Clause	Description	Status	Comments
J1.3(c) and (d)	Roof and ceiling construction	Compliance Readily Achievable	Where, for operational or safety reasons associated with exhaust fans, flues or recessed downlights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing 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.
J1.5(c)	Walls	Compliance Readily Achievable	A wall that is required to achieve a minimum Total R-Value, has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame and does not have a wall lining or has a wall lining that is fixed directly to the same metal frame must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the external cladding and the metal frame.
J1.6(c) and (d)	Floors	Compliance Readily Achievable	A concrete slab-on-ground with an in-slab heating or cooling system; or located in climate zone 8 must have insulation installed around the vertical edge of its perimeter. The insulation must have an R-Value of not less than 1.0, be water resistant and be continuous from the adjacent finished ground level to a depth of not less than 300 mm or for the full depth of the vertical edge of the concrete slab-on-ground
NSW J(A)2	Building Sealing		
NSW J(A)2.1	Application of Part	Noted	Applies to a Class 2 building or Class 4 part of a building, excluding; - a building in climate zone 2 and 5 where the only means of air-conditioning is by using an evaporative cooler, and - a building ventilation opening that is necessary for the safe operation of a gas appliance, and - parts that can not be fully enclosed.
NSW J(A)2.2	Compliance with BCA provisions	Not Applicable	Class 2 and 4 parts of a building must comply with the national provisions of J3.2, J3.3, J3.4, J3.5, J3.6 and J3.7
J3.2	Chimneys and flues	Not Applicable	-
J3.3	Roof lights	Not Applicable	-
J3.4	Windows and doors	Compliance Readily Achievable	A seal to restrict air infiltration must be fitted to each edge of an external door, openable external window or the like when serving a conditioned space or in climate zones 4, 6, 7 and 8 when serving habitable rooms.

Clause	Description	Status	Comments
J3.5	Exhaust fans	Not Specified	A miscellaneous exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or a habitable room in climate zones 4, 6, 7 and 8.
J3.6	Construction of roofs, walls and floors	Compliance Readily Achievable	Roofs, external walls, external floors and any opening must be constructed to minimise air leakage in accordance with Clause J3.6(b) when forming part of the external fabric of a conditioned space or a habitable room or a public area in climate zones 4, 6, 7 and 8.
J3.7	Evaporative coolers	Compliance Readily Achievable	An evaporative cooler must be fitted with a self closing damper or the like when serving a heated space or a habitable room or public area of a building in climate zones 4, 6, 7 and 8.
NSW J(A)3	Air-Conditioning and Ventilating Systems		
NSW J(A)3.1	Application of Part	Applicable	Applies to Class 2 and Class 4 parts of a building.
NSW J(A)3.2	Compliance with BCA Provisions	Applicable	Class 2 and 4 parts of a building must comply with the national provisions of J5.2, J5.3, J5.4 and J5.5.
J5.2	Air conditioning and ventilating systems	Compliance Readily Achievable	An air-conditioning unit or system must comply with the requirements of Clause J5.2 and Specification J5.2.
J5.3	Time switch	Compliance Readily Achievable	A time switch in accordance with Specification J6 must be provided to control: • an air-conditioning system of more than 10kW_r, or • a ventilation system with an air flow rate or more than 1000L/s, or • a heating systems of more than 10kW_{heating}
J5.4	Heating and chilling systems	Compliance Readily Achievable	Systems that provide heating or chilling for air-conditioning systems must comply with Clause J5.4 and Specification J5.4.
J5.5	Miscellaneous exhaust systems	Compliance Readily Achievable	A miscellaneous exhaust system with an air flow rate of more than 1000L/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 have the means for the operator to reduce the energy used or stop the motor when the system is not needed. It must be designed to minimise exhausting of air conditioning.
NSW J(A)4	Hot Water Supply		
NSW J(A)4.1	Application of Part	Not Applicable	Applies to Class 2 and Class 4 parts of a building.
NSW J(A)4.2	Compliance with BCA provisions	Not Applicable	Class 2 and 4 parts of a building must comply with the national provisions of J7.2
J7.2	Hot water supply	Compliance Readily Achievable	A hot water system, other than a solar hot water supply system in climate zones 1, 2 and 3, must be designed and installed in accordance with Section 8 of AS/NZS 3500.4.

Clause	Description	Status	Comments
NSW J(A)5	Access for Maintenance		
NSW J(A)5.1	Application of Part	Not Applicable	Applies to Class 2 buildings only, except within a sole occupancy unit.
NSW J(A)5.2	Access for maintenance	Compliance Readily Achievable	Access for maintenance must be provided to all services and their components as required under Clause NSW J(A)5.2.
NSW J(A)5.3	Compliance with BCA Provisions	Compliance Readily Achievable	The building must comply with the provisions of Clause J8.3.
J8.3	Facilities for energy monitoring	Compliance Readily Achievable	A building or sole-occupancy unit with a floor area of more than 500 m² must have the facility to record the consumption of gas and electricity. A building with a floor area of more than 2,500 m² must have the facility to record individually the energy consumption of A/C plant, lighting, appliances, central hot water supply, internal transport devices and other ancillary plant. The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2,500 m² where the total area of the common areas is less than 500 m²

Clause	Description	Status	Comments
NSW J(B)	Energy Efficiency - Class 3 and Class 5 to 9 Buildings	Noted	The building is located in climate zone 5
NSW J(B)1	Compliance with BCA provisions	Noted	Class 3 and Class 5 to 9 buildings must comply with all of the national provisions of Section J that are applicable to the relevant classifications, except as varied by NSW J1.6 for Class 3 buildings, NSW J3.1 and NSW J8.2 for Class 3 and Class 5 to 9 buildings.
J1.1	Application of Part	Applicable	Applies to building elements forming the envelope of a Class 3 and Class 5 to 9 building.
J1.2	Thermal construction general	Compliance Readily Achievable	Insulation must comply with AS/NZS 4859.1 and be installed in accordance with Clause J1.2. Insulation must abut or overlap adjoining insulation, form a continuous barrier with ceilings, walls, bulkheads, floors or the like and not affect the safe or effective operation of services.

Clause	Description	Status	Comments
J1.3	Roof and ceiling construction	Compliance Readily Achievable	A roof or ceiling that is part of the envelope must achieve the Total R-Value specified in Table J1.3 for the direction of heat flow. The minimum total R-Value required for roofs or ceilings are specified in Appendix E. A roof that - i. is required to achieve a minimum <i>Total R-Value</i>; and ii. has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and iii. 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 <i>R-Value</i> of not less than R0.2, installed between the metal roofing and its supporting metal purlins, metal rafters or metal battens.
J1.4	Roof lights	Compliance Readily Achievable	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. If the roof lights are required for compliance with Part F4 they must 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 0.29 Total System SHGC; and 2.9 Total System U-Value.
J1.5	Walls	Compliance Readily Achievable	Each part of an external wall that is part of the envelope must satisfy one of the options in Table J1.5a or Table J1.5b except as specified in Clause J1.5. Refer to Appendix E for required minimum R-Values and other requirements. A wall that - i. is required to achieve a minimum <i>Total R-Value</i>; and ii. has lightweight external cladding such as weatherboards, fibre cement or metal sheeting fixed to a metal frame; and iii. does not have a wall lining or has a wall lining that is fixed directly to the same metal frame, must have a thermal break, consisting of a material with an <i>R-Value</i> of not less than R0.2, installed between the external cladding and the metal frame.

Clause	Description	Status	Comments
J1.6	Floors	Compliance Readily Achievable	Floors are required to achieve a minimum R-Value in accordance with Table J1.6. A concrete slab-on-ground with an in-slab heating or cooling system; or located in climate zone 8 must have insulation installed around the vertical edge of its perimeter. The insulation must have an R-Value of not less than 1.0, be water resistant and be continuous from the adjacent finished ground level to a depth of not less than 300 mm or for the full depth of the vertical edge of the concrete slab-on-ground
J2.1	Application of Part	Applicable	
J2.2	-	-	No Provisions
J2.3	-	-	No Provisions
J2.4	Glazing	Compliance Readily Achievable	The glazing in each storey including a mezzanine must be assessed separately in accordance with Clause J2.4(b) and (c) for- i) <i>glazing</i> in the external <i>fabric</i> facing each orientation; and ii) <i>glazing</i> in the internal <i>fabric</i> using the south orientation sector energy constants in Table J2.4b and shading multipliers in Table J2.4c and Table J2.4d. The aggregate <i>air-conditioning</i> energy value attributable to the <i>glazing</i> must not exceed the allowance obtained by multiplying the facade area that is exposed to the <i>conditioned space</i> for the orientation by the energy index in Table J2.4a. The glazing calculator must be completed and submitted with the Construction Certificate application as evidence of compliance.
J2.5	Shading	Compliance Readily Achievable	Where shading is required to comply with Clause 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 of the BCA, or ii. provides the equivalent shading to that above with a reveal or the like, or b) be provided an external shading device such as a 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.
NSW J3.1	Application of Part	Applicable	Applies to elements forming the envelope of a Class 3, and Class 5 to 9 building other than as specified.

Clause	Description	Status	Comments
J3.2	Chimneys and flues	Not Applicable	
J3.3	Roof lights	Compliance Readily Achievable	A roof light must be sealed or capable of being sealed when serving a conditioned space.
J3.4	Windows and doors	Compliance Readily Achievable	A seal to restrict air infiltration must be fitted to each edge of an external door, openable external window or the like when serving a conditioned space.
J3.5	Exhaust fans	Compliance Readily Achievable	A miscellaneous exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space.
J3.6	Construction of roofs, walls and floors	Compliance Readily Achievable	Roofs, walls, floors and any opening must be constructed to minimise air leakage in accordance with Clause J3.6(b) when forming part of the external fabric of a conditioned space. These requirements do not apply to openings, grilles and the like required for smoke hazard management.
J3.7	Evaporative coolers	Not Specified	An evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space.
J4	-	-	No Provisions
J5.1	-	-	No Provisions
J5.2	Air conditioning and ventilating systems	Compliance Readily Achievable	An air-conditioning unit or system must comply with the requirements of Clause J5.2 and Specification J5.2
J5.3	Time switch	Compliance Readily Achievable	A time switch in accordance with Specification J6 must be provided to control: • an air-conditioning system of more than 10kW_r, or • a ventilation system with an air flow rate of more than 1000L/s, or • a heating systems of more than 10kW_{heating}
J5.4	Heating and chilling systems	Compliance Readily Achievable	Systems that provide heating or chilling for air-conditioning systems must comply with Clause J5.4 and Specification J5.4.
J5.5	Miscellaneous exhaust systems	Compliance Readily Achievable	A miscellaneous exhaust system with an air flow rate of more than 1000L/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 have the means for the operator to reduce the energy used or stop the motor when the system is not needed. It must be designed to minimise exhausting of air conditioning.
J6.1	Application of Part	Applicable	
J6.2	Artificial lighting	Compliance Readily Achievable	In a Class 5, 6, 7, 8, 9a or 9b the artificial lighting must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum power density in Table J6.2a.
J6.3	Interior artificial lighting and power control	Compliance Readily Achievable	The power control for artificial interior lighting must comply with the requirements of Clause J6.3. Artificial lighting of a room or space must be individually operated by a switch or other control device in accordance with Specification J6.

Clause	Description	Status	Comments
J6.4	Interior decorative and display lighting	Compliance Readily Achievable	Interior decorative and display lighting, such as for foyer mural or art displays, must be controlled separately from other artificial lighting as specified in Clause J6.4. Window display lighting must be controlled separately from other display lighting.
J6.5	Artificial lighting around the perimeter of a building	Compliance Readily Achievable	Artificial lighting around the perimeter of a building must be controlled by a daylight sensor or time switch as specified in Clause J6.5.
J6.6	Boiling water and chilled water storage units	Compliance Readily Achievable	Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.
J7.1	-	-	No provisions
J7.2	Hot water supply	Compliance Readily Achievable	A hot water supply system for food preparation and sanitary purposes, other than a solar hot water supply system in climate zones 1, 2 and 3 must be designed and installed in accordance with Section 8 of AS/NZS 3500.4
J7.3	Swimming pool heating and pumping	Not Applicable	
J7.4	Spa pool heating and pumping	Not Applicable	
J8.1	Application of Part	Applicable	
NSW J8.2	Access for maintenance	Compliance Readily Achievable	Access to service must be provided to all services and their components.

12. APPENDIX C – REFERENCED DOCUMENTATION

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

<i>Drawing No.</i>	<i>Title</i>	<i>Issue</i>	<i>Date</i>	<i>Drawn By</i>
A-2101	BASEMENT FLOOR PLANS BLDG B, C & D	-	-	JFA
A-2102	GROUND FLOOR PLANS BLDG B, C & D	-	-	JFA
A-2103	LEVEL 1 & 2 PLANS BLDG B, C & D	-	-	JFA
A-2104	LEVEL 3 & 4 PLANS BLDG B, C & D	-	-	JFA
A-2105	ROOF PLAN BUILDING B-D	-	-	JFA
A-3101	ELEVATIONS – NORTH & SOUTH BUILDING B & C	-	-	JFA
A-3102	ELEVATIONS – EAST & WEST BUILDING B & C	A	12/04/16	JFA
A-3103	ELEVATIONS – NORTH & SOUTH BUILDING D	A	12/04/16	JFA
A-3104	ELEVATIONS – EAST & WEST BUILDINGS D	A	12/04/16	JFA
A-4101	SECTION A-A & B-B BUILDING B & C	-	-	JFA
A-4102	SECTION C-C & D-D BUILDING B & C	-	-	JFA
A-4103	SECTION E-E & F-F BUILDING D	-	-	JFA

13. APPENDIX D – CONSTRUCTION DETAILS

TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS				
Building element	Class of building - FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 9 or 7a	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts-				
less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/60/60	120/ 90/ 90	180/180/120	240/240/180
3 or more	90/60/30	120/ 60/ 30	180/120/90	240/180/ 90
For non-loadbearing parts-				
less than 1.5 m	-/90/90	- /120/120	- /180/180	- /240/240
1.5 to less than 3 m	-/60/60	- / 90/ 90	- /180/120	- /240/180
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
less than 3 m	90/ - / -	120/ - / -	180/ - / -	240/ - / -
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
COMMON WALLS and FIRE WALLS	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS-				
Fire-resisting lift and stair shafts-				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120
Non-loadbearing	- /90/90	- /120/120	- /120/120	- /120/120
Bounding public corridors, public lobbies and the like-				
Loadbearing	90/90/90	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Between or bounding sole-occupancy units-				
Loadbearing	90/90/90	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Ventilating, pipe, garbage, and like shafts not used for the discharge of hot products of Combustion-				
Loadbearing	90/90/90	120/ 90/ 90	180/120/120	240/120/120
Non-loadbearing	- /90/90	- / 90/ 90	- /120/120	- /120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS	90/ - / -	120/ - / -	180/ - / -	240/ - / -
FLOORS	90/90/90	120/120/120	180/180/180	240/240/240
ROOFS	90/60/30	120/ 60/ 30	180/60/30	240/ 90/ 60

14. APPENDIX E – ENERGY EFFICIENCY R-VALUES

ROOFS AND CEILINGS - MINIMUM TOTAL R-VALUE (Table J1.3a)

Climate zone	1, 2, 3, 4 & 5	6	7	8
Direction of heat flow	Downwards		Upwards	
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of not more than 0.4	3.2	3.2	3.7	4.8
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.4 but not more than 0.6	3.7	3.2	3.7	4.8
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.6	4.2	3.2	3.7	4.8

ADJUSTMENT OF MINIMUM TOTAL R-VALUE FOR LOSS OF CEILING INSULATION (Table J1.3b)

Percentage of ceiling area uninsulated	Minimum R-Value of ceiling insulation required to satisfy J1.3(a)										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted minimum R-Value of ceiling insulation required to compensate for loss of ceiling insulation area										
0.5% to less than 1.0%	1.0	1.6	2.2	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	1.1	1.7	2.3	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	1.1	1.7	2.4	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	1.1	1.8	2.5	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	1.2	1.9	2.6	3.6	4.6	5.9	Not Permitted				
3.0% to less than 4.0%	1.2	2.0	3.0	4.2	5.7						
4.0% to less than 5.0%	1.3	2.2	3.4	5.0							
5.0% or more											

Note: Where the minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a) is between the values stated, interpolation may be used to determine the adjusted minimum *R-Value*.

ROOF LIGHTS - THERMAL PERFORMANCE OF TRANSPARENT AND TRANSLUCENT ELEMENTS (Table J1.4)

Roof light shaft index (see Note 1)	Constant	Total area of roof lights serving the room or space as a percentage of the floor area of the room or space			
		Up to 2%	More than 2% to and up to 3%	More than 3% and up to 4%	More than 4% and up to 5%
Less than 0.5	<i>Total System SHGC</i>	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	<i>Total System</i>	Not more than	Not more than 5.7	Not more than 4.3	Not more than 3.4

	<u>U-Value</u>	8.5			
0.5 to less than 1.0	<u>Total System SHGC</u>	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	<u>Total System U-Value</u>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
1.0 to less than 2.5	<u>Total System SHGC</u>	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	<u>Total System U-Value</u>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and more	<u>Total System SHGC</u>	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	<u>Total System U-Value</u>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4

Notes:

1. The [roof light](#) shaft index is determined by measuring the distance from the centre of the shaft at the roof to the centre of the shaft at the ceiling level and dividing it by the average internal dimension of the shaft opening at the ceiling level (or the diameter for a circular shaft) in the same units of measurement.
2. The total area of [roof lights](#) is the combined area for all [roof lights](#) serving the room or space.
3. The area of a [roof light](#) is the area of the roof opening that allows light to enter the building.
4. The thermal performance of an imperforate ceiling diffuser may be included in the [Total System U-Value](#) and [Total System SHGC](#) of the [roof light](#).
5. The total area of [roof lights](#) serving the room or space as a percentage of the [floor area](#) of the room or space must not exceed 5% unless allowed by [J1.4\(b\)](#).

OPTIONS FOR EACH PART OF AN EXTERNAL WALL THAT IS PART OF AN ENVELOPE

(Table J1.5a)

Climate zone	Options
1, 2 and 3	(a) (i) Achieve a minimum Total R-Value of 3.3. (ii) The minimum Total R-Value in (i) is reduced— (A) for a wall with a surface density of not less than 220 kg/m ² , by 0.5; and (B) for a wall that is— (aa) facing the south orientation as described in Figure J2.3 , by 0.5; or (bb) shaded with a projection shade angle in accordance with Figure J1.5 of— (AA) 15 degrees to not more than 45 degrees, by 0.5; or (BB) more than 45 degrees, by 1.0; and (C) if the outer surface solar absorptance value is not more than 0.6, by 0.5.
	(b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like— (i) achieve a minimum Total R-Value of 1.4; and (ii) satisfy glazing energy index Option B of Table J2.4a .
4, 5 and 6	(a) (i) Achieve a minimum Total R-Value of 2.8. (ii) The minimum Total R-Value in (i) is reduced— (A) for a wall with a surface density of not less than 220 kg/m ² , by 0.5; and (B) for a wall that is— (aa) facing the south orientation as described in Figure J2.3 , by 0.5; or (bb) shaded with a projection shade angle in accordance with Figure J1.5 of— (AA) 30 degrees to not more than 60 degrees, by 0.5; or (BB) more than 60 degrees, by 1.0.
	(b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like— (i) achieve a minimum Total R-Value of 1.4; and (ii) satisfy glazing energy index Option B of Table J2.4a .

7	(a) Achieve a minimum <u>Total R-Value</u> of 2.8. (b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like— (i) achieve a minimum <u>Total R-Value</u> of 1.4; and (ii) satisfy <u>glazing</u> energy index Option B of <u>Table J2.4a</u> .
8	(a) Achieve a minimum <u>Total R-Value</u> of 3.8. (b) Where the wall is an earth retaining wall or earth-berm, achieve a minimum <u>Total R-Value</u> of 2.0.

AN ENVELOPE WALL OTHER THAN AN EXTERNAL WALL - MINIMUM TOTAL R-VALUE (Table J1.5b)

Location		Climate zone							
		1	2	3	4	5	6	7	8
(a)	Where the adjacent enclosed non- <u>conditioned space</u> has—								
	(i) ventilation of not more than 1.5 air changes per hour of outside air during occupied hours; and	1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5
	(ii) glazing in the external <u>fabric</u> as <u>required</u> by <u>Part J2</u> ; and								
	(iii) <u>roof lights</u> in the external <u>fabric</u> as <u>required</u> by <u>J1.4</u> .								
(b)	For other than (a)	2.3	2.3	2.3	1.8	1.8	1.8	2.8	3.8
Note: When assessing the glazing and <u>roof lights</u> as <u>required</u> by <u>Part J2</u> and <u>J1.4</u> , assess the glazing and <u>roof lights</u> as if the non- <u>conditioned space</u> is the same separate <u>conditioned space</u> .									

FLOORS - MINIMUM TOTAL R-VALUE (Table J1.6)

Location		Climate zone							
		1	2	3	4	5	6	7	8
Direction of heat flow		Upwards	Downwards and upwards	Downwards					
(a)	A slab on ground:								
	(i) Without an in-slab heating or cooling system	Nil	Nil	Nil	Nil	Nil	Nil	1.0	2.0
	(ii) With an in-slab heating or cooling system	1.25	1.25	1.25	1.25	1.25	1.25	1.25	2.25
(b)	A suspended floor without an in-slab heating or cooling system where the non- <u>conditioned space</u> is—								
	(i) enclosed; and	1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5
	(ii) where mechanically ventilated by not more than 1.5 air changes per hour.								
(c)	A suspended floor with an in-slab heating or cooling system where the non- <u>conditioned space</u> is—								
	(i) enclosed; and	1.25	1.25	1.25	1.25	1.25	1.25	1.75	2.75
	(ii) where mechanically ventilated by not more than 1.5 air changes per hour								
(d)	For other than (a), (b) or (c)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.5
Note: A sub-floor space with not more than 150% of the <u>required</u> sub-floor ventilation is considered enclosed.									

15. APPENDIX F – STATUTORY FIRE SAFETY MEASURES

Schedule of Statutory Fire Safety Measures

Measure	Standard of Performance
Block B & C	
Access panels, doors and hoppers to fire resisting shafts	BCA2015 Clause C3.13 and tested prototypes (AS 1530.4 – 2005)
Automatic fire detection and alarm system (<i>smoke alarm system</i>) Residential Portions	BCA2015 Specification E2.2a and AS 3786 – 1993 and spaced in accordance with AS1670.1 in public corridors and connected to activate a building occupant warning system.
Automatic fire suppression systems (<i>Sprinklers</i>) Basement Carpark	BCA2015 Specification E1.5 and AS 2118.1 – 1999
Emergency lighting	BCA2015 Clause E4.2, E4.4 and AS 2293.1 – 2005
Exit signs	BCA2015 Clause E4.5, NSW E4.6, E4.7, E4.8 and AS 2293.1 – 2005
Fire dampers	BCA2015 Clause C3.15 and AS/NZS 1668.1 – 1998 (AS 1682.1-1990 and AS 1682.2-1990)
Fire doors	BCA2015 Specification C3.4 and AS 1905.1 – 2005
Fire hydrants systems	BCA2015 Clause E1.3 and AS 2419.1 – 2005
Fire seals protecting opening in fire resisting components of the building	BCA2015 Clause C3.15, Specification C3.15 and AS 1530.4 – 2005 and AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Hose reel system	BCA2015 Clause E1.4 and AS 2441 – 2005
Portable fire extinguishers	BCA2015 Clause E1.6 and AS 2444 – 2001
Warning and operational signs	BCA2015 Clauses D2.23 and E3.3
Block D	
Access panels, doors and hoppers to fire resisting shafts	BCA2015 Clause C3.13 and tested prototypes (AS 1530.4 – 2005)
Automatic fire detection and alarm system (<i>smoke alarm system</i>) Residential Portions	BCA2015 Specification E2.2a and AS 3786 – 1993 and spaced in accordance with AS1670.1 in public corridors and connected to activate a building occupant warning system.
Automatic fire suppression systems (<i>Sprinklers</i>) Basement Carpark	BCA2015 Specification E1.5 and AS 2118.1 – 1999
Emergency lighting	BCA2015 Clause E4.2, E4.4 and AS 2293.1 – 2005
Exit signs	BCA2015 Clause E4.5, NSW E4.6, E4.7, E4.8 and AS 2293.1 – 2005
Fire dampers	BCA2015 Clause C3.15 and AS/NZS 1668.1 – 1998 (AS 1682.1-1990 and AS 1682.2-1990)
Fire doors	BCA2015 Specification C3.4 and AS 1905.1 – 2005
Fire hydrants systems	BCA2015 Clause E1.3 and AS 2419.1 – 2005

Measure	Standard of Performance
Block B & C	
Fire seals protecting opening in fire resisting components of the building	BCA2015 Clause C3.15, Specification C3.15 and AS 1530.4 – 2005 and AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Hose reel system	BCA2015 Clause E1.4 and AS 2441 – 2005
Portable fire extinguishers	BCA2015 Clause E1.6 and AS 2444 – 2001
Warning and operational signs	BCA2015 Clauses D2.23

Note the fire safety measures listed above are to be amended to include the requirements of the fire engineered alternative solution to be approved as part of the Construction Certificate.