BCA LOGIC PTY LTD

BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project: **157-163 CLEVELAND STREET, CHIPPENDALE**

Report: **BCA ASSESSMENT REPORT**

Date: 5th March 2010

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DOCUMENT CONTROL

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102235-r1/jd	**20th February 2010**	**Description:**	157-165 Cleveland Street, Chippendale BCA Assessment Report	
102235-r2/jd	**5th March 2010**	**Description:**	157-163 Cleveland Street, Chippendale BCA Assessment Report	
		Prepared by:	**James Deters** Accredited Certifier Grade A1, No BPB0089	Signature

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PART 1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 157-165 Cleveland Street, Chippendale. The proposed building is a four storey building with a basement level carpark, ground, first and second floor commercial and the student accommodation to the third floor.

It is noted that the proposed works will include the rebuilding of the existing carpark ramp to the neighbouring property at 136-144 Abercrombie Street, Chippendale. This will be further discussed later in this report.

1.2 Purpose

The purpose of this report is to assess the design proposal against the Deemed-to-Satisfy provisions of the BCA, and to clearly outline those areas where compliance is not achieved.

1.3 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the Building Code of Australia, 2009 Edition incorporating the State variations where applicable.

1.4 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any existing structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any existing or proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the Disability Discrimination Act;

(b) Demolition Standards not referred to by the BCA;

(c) Occupational Health and Safety Act;

(d) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, RTA, Council and the like; and

(e) Conditions of Development Consent.

1.5 Design Documentation

This report has been based on the Design plans listed in Annexure A of this Report.

PART 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

2.1 Rise in Storeys (Clause C1.2)

The building has a rise in storeys of four (4).

2.2 Classification (Clause A3.2)

The building has been classified as follows.

Class	Level	Description
3	Third Floor	Student Accommodation
5	Ground, First and Second Floors	Commercial Areas
7a	Basement Level	Carparking

2.3 Effective Height (Clause A1.1)

The building has an effective height of less than 25.0 metres.

2.4 Type of Construction Required (Table C1.1)

Type A Construction.

2.5 Floor Area and Volume Limitations (Table C2.2)

The building is subject to maximum floor area and volume limits of:-

- Class 3 - The Class 3 portions of the building are not subject to floor area and volume limitations of C2.2 as Table 3 of Specification C1.1 and Clause C3.11 of the BCA regulates the compartmentation and separation provisions applicable to buildings, or building portions, of Class 3 classifications.

- Class 5 - Maximum Floor Area 8 000m^2
  Maximum Volume 48 000m^3

- Class 7a - Maximum Floor Area 5 000m^2
  Maximum Volume 30 000m^3

2.6 Climate Zone (Clause A1.1)

The building is located within Climate Zone 5.

PART 3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures are potentially required to be installed in the building.

Item No.	Possible Essential Fire Safety Measure	Minimum Standard of Performance
1.	Access panels, doors and hoppers to fire resisting shafts	BCA2009 Clause C3.13
2.	Automatic fire detection and alarm system	BCA2009 Clause E2.2a, AS1670.1-2004, AS3786-1993
3.	Emergency lighting	BCA2009 Clauses E4.2 & E4.4, AS2293.1-2005
4.	Sound systems and intercom systems for emergency purposes (formerly EWIS)	BCA2009 Clause E4.9, AS1670.4-2004
5.	Exit signs	BCA2009 Clauses E4.5, E4.6 & E4.8, AS2293.1-2005
6.	Fire dampers	AS/NZS1668.1-1998
7.	Fire doors	BCA2009 Spec C3.4, AS1905.1-2005
8.	Fire hydrant system	BCA2009 Clause E1.3, AS2419.1-2005
9.	Fire seals protecting openings in fire resisting components of the building	BCA2009 Clause C3.15, Manufacturer's Specification
10.	Fire shutters	BCA2009 Spec C3.4, AS1905.2-2005
11.	Fire windows	BCA2009 Spec C3.4
12.	Fire hose reel system	BCA2009 Clause E1.4, AS2441-2005
13.	Lightweight construction	Manufacturer's Specification
14.	Paths of travel, stairways, passageways or ramps	BCA2009 Section D
15.	Portable fire extinguishers	BCA2009 Clause E1.6, AS2444-2001
16.	Required (automatic) exit doors	BCA2009 Clause D2.19, AS1670.1-2004
17.	Wall wetting sprinkler and drencher system	BCA2009 Clause C3.4
18.	Warning and operational signs	BCA2009 Clause D2.23, EP&A Reg. 2000 Clause 183

PART 4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) required for the various structural elements of the building, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Item	Class 3	Class 5, 7a or 9b
Loadbearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 90/90/90 90/60/60 90/60/30	 120/120/120 120/90/90 120/60/30
Non-Loadbearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 -/90/90 -/60/60 -/-/-	 -/120/120 -/90/90 -/-/-
External Columns External Columns	90/-/- -/-/-	120/-/- -/-/-
Fire Walls	90/90/90	120/120/120
Stair and Lift Shafts • Loadbearing • Non loadbearing	90/90/90 -/90/90	120/120/120 -/120/120
Internal walls bounding sole occupancy units • Loadbearing • Non loadbearing	90/90/90 -/60/60	120/-/- -/-/-
Internal walls bounding public corridors, hallways and the like: • Loadbearing • Non loadbearing	90/90/90 -/60/60	120/-/- -/-/-
Ventilating, pipe garbage and the like shafts: • Loadbearing • Non loadbearing	90/90/90 -/90/90	120/90/90 -/90/90
Other loadbearing internal walls, beams trusses and columns	90/-/-	120/-/-
Floors	90/90/90	120/120/120
Roofs	90/60/30	120/60/30

PART 5 STATEMENT OF COMPLIANCE

The architectural design documentation as referred to in this report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying (as outlined in Annexure B) with that Code with the following noted.

5.1 Separation of Buildings – Clause C2.7

It is proposed that the subject building will be constructed with the carpark ramp for the neighbouring building located on 136-144 Abercrombie Street, Chippendale passing through a portion of ground and first floors of the subject building.

It is proposed that a fire wall be used to separate the buildings for the purposes of BCA Sections C “Fire Resistance”, D “Access and Egress” and E “Services and Equipment”, however under Clause C2.7 the fire wall is required to extend through all storeys and spaces and carried to the underside of the roof covering of the higher roof.

As the fire wall separating the two buildings would not travel directly up the wall line along the boundary due to the fire wall needing to travel around the car park ramp for 136-144 Abercrombie Street an Alternate Solution will be needed to justify the path of the fire wall between the buildings. It is our opinion that an Alternate Solution could be justified in regards to this matter.

An Alternate Solution in regards to this matter will be required at the construction certificate (CC) stage of the development to justify the path of the fire wall around the carpark ramp.

ANNEXURE A

Design Documentation

This report has been based on the following design documentation.

Architectural Plans Prepared by Forley + Grant Architecture		
Drawing Number	**Revision**	**Title**
DA-01	A	Site Plan
DA-02	A	Basement 1 Plan
DA -03	A	Ground Floor & Landscape Plan
DA -04	A	First Floor Plan
DA -05	A	Second Floor Plan
DA -06	A	Third Floor Plan
DA -07	A	Roof Plan
DA -08	A	Elevations
DA -09	A	Sections

ANNEXURE B

DETAILED ASSESSMENT OF THE DEEMED-TO-SATISFY PROVISIONS OF BCA2009

BUILDING ASSESSMENT

Outlined below is a detailed assessment of the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following tables.

N/A	-	Not Applicable. The Deemed-to-Satisfy clause does not apply to the subject building.
Complies	-	The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.
CRA	-	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved. This information may be included in other documentation, which was not forwarded to this office for assessment, such as door schedules, electrical, mechanical and hydraulic design documentation or architectural specifications.
FI	-	Further Information is necessary to determine the compliance potential of the building design.
AS	-	Alternative Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.
DNC	-	Does Not Comply

DEEMED TO SATISFY CLAUSE ASSESSMENT SUMMARY

Clause	Comment	Status
SECTION B: STRUCTURE		
PART B1 – STRUCTURAL PROVISIONS		
B1.0: Deemed-to-Satisfy Provisions	Noted	-
B1.1: Resistance to Actions	For Information Only – Structural Engineer to certify.	CRA
B1.2: Determination of Individual Actions	No details of loads imposed upon the building – Structural Engineer to certify at CC stage.	CRA
B1.3 Loads	No details of loads imposed upon the building – Structural Engineer to certify at CC stage.	CRA
B1.4: Determination of Structural Resistance of Materials and Forms of Construction	No details of materials and forms of construction – Structural Engineer, Architect and Manufacturers to certify at CC stage.	CRA
SECTION C: FIRE RESISTANCE		
PART C1 – FIRE RESISTANCE AND STABILITY		
C1.0: Deemed-to-Satisfy Provisions	Noted	-
C1.1: Type of Construction Required	The building is required to be of Type A Construction.	CRA
C1.2: Calculation of Rise in Storeys	The building has a rise in storeys of four.	Noted
C1.3: Buildings of Multiple Classification	The building is required to be of Type A Construction.	Noted
C1.4: Mixed Types of Construction	The building is required to be of Type A Construction.	Noted
C1.8: Lightweight Construction	Lightweight construction may be used to achieve required fire resistance levels. Should lightweight construction be proposed it is to comply with Specification C1.8.	CRA
C1.10: Fire Hazard Properties	No details of the fire hazard properties of the materials and assemblies in the proposed building. Fire hazard indices to comply with Specification C1.10a for floor materials, floor coverings, wall and ceiling linings and Specification C1.10 for other materials within the building.	CRA
C1.12: Non-combustible Materials	Information only.	Noted
PART C2 - COMPARTMENTATION AND SEPARATION		
C2.0: Deemed-to-Satisfy Provisions	Noted	-
C2.1: Application of Part	Noted	-
C2.2: General Floor Area and Volume Limitations	With each floor forming its own fire compartment the building complies with this clause.	Complies
C2.6: Vertical Separation of Openings in External Walls	Vertical separation is required to be provided to the building. Confirmation of satisfactory vertical separation is to be provided at the CC stage of the development.	CRA
C2.7: Separation by Fire Walls	The separation of the new and the existing building is to be via a fire wall extending through all storeys and around the rebuilt carpark ramp.	**AS See Part 5.2 of this Report**
C2.8: Separation of Classifications in the Same Storey	Each storey is of a single classification.	Noted
C2.9: Separation of Classifications in Different Storeys	The floors separating the storeys are to have the FRL relative to the storey below, for example the floor above the Class 5 area is required to have a FRL of not less than 120/120/120.	CRA
C2.10: Separation of Lift Shafts	The lift shafts are to have the FRL as required by Table 3 of Specification C1.1 of the BCA. See Part 4 of this report for further information.	CRA
C2.11: Stairways and Lifts in One Shaft	As required the lifts and the fire-isolated stairways are located within their own shafts.	Complies
C2.12: Separation of Equipment	Insufficient details on the proposed location of equipment required within the building. All lift motor rooms and any boilers, or battery rooms contained within the building are to be enclosed in construction possessing a minimum FRL of 120/120/120.	CRA
C2.13: Electricity Supply System	Insufficient information. If the main switch room sustains emergency equipment required to operate in emergency mode, the room is required to be separated from the building with construction having a FRL of 120/120/120.	CRA

C2.14: Public Corridors in Class 2 and 3 Buildings	The public corridor in the Class 3 portion of the building exceeds 40m in length and smoke proof walls and doors are indicated.	CRA
PART C3 – PROTECTION OF OPENINGS		
C3.0: Deemed-to-Satisfy Provisions	Noted	-
C3.1: Application of Part	Noted	-
C3.2: Protection of Openings in External Walls	Openings where not protected by blade walls or other construction that are within 3m of the boundary are required to be provided with protection against the spread of fire from the neighbouring property.	CRA
C3.3: Separation of External Walls and Associated Openings in Different Fire Compartments	No openings between the proposed building and the neighbouring building required under this clause as they are considered to be separate buildings for the purposes of Part C.	Noted
C3.4: Acceptable Methods of Protection	Information only.	Noted
C3.5: Doorways in Fire Walls	No doorways proposed in the fire wall separating the existing or proposed building.	Noted
C3.6: Sliding Fire Doors	No doorways proposed in the fire wall separating the existing or proposed building.	Noted
C3.7: Protection of Doorways in Horizontal Exits	No horizontal exits proposed.	Noted
C3.8: Openings in Fire-isolated Exits	The doorways opening into the fire isolated exits are required to be protected by -/60/30 self-closing fire doors,	CRA
C3.9: Service Penetrations in Fire-isolated Exits	Fire-isolated exits may not be penetrated by any services except electrical wiring for lighting, intercom, and water supply pipes for fire services.	CRA
C3.10: Openings in Fire-isolated Lift Shafts	The lift doors are to have a FRL of no less than -/60/- and are to be in accordance with AS1735.11.	CRA
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	The doorways from the public corridors into the units, formed by the suite of rooms, and any other rooms, such as the common laundries, that open into a residential public corridor, are to be self-closing -/60/30 fire doors.	CRA
C3.12: Openings in Floors and Ceilings for Services	All services shafts are to have a FRL as specified in Part 4 of this report.	CRA
C3.13: Openings in Shafts	Access to any service shafts is to be through an access panel, or self-closing fire door, having a FRL of not less than -/60/30.	CRA
C3.15: Openings for Service Installations	Installations through fire rated walls, floors and other elements are to be protected via a method having a FRL relative to the wall they are penetrating.	CRA
C3.16: Construction Joints	Joints are to have the required FRL with respect to integrity and insulation relative to the building element they are joining. Structural Engineer to certify.	CRA
C3.17: Columns Protected with Lightweight Construction to Achieve an FRL	It is considered that all columns will be of concrete construction and therefore will have sufficient fire resistance without the need for light weight construction to provide a FRL. Structural Engineer to certify.	Noted
SPECIFICATION C1.1 – FIRE-RESISTING CONSTRUCTION		
2.0: General Requirements	Noted	-
2.1: Exposure to Fire-Source Features	The building is exposed to the western boundary. The remainder of the building is not exposed to any fire source features as the remaining boundaries are shared with streets that are more than 6m wide. Regardless of the level of exposure to a fire source feature all load-bearing elements are to have a FRL as the building is required to be of Type A Construction.	Noted
2.2: Fire Protection for a Support of Another Part	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 not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself; and for the part it supports.	Noted

2.3: Lintels	A lintel must have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m wide if the masonry is non- loadbearing; or not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall or is located in a non-loadbearing part of the Class 3 portion of the building.	CRA
2.4: Attachments Not to Impair Fire-resistance	All attachments proposed to the external façade of the building are to be of non combustible materials that are permitted by this clause. Insufficient details of the attachments to the external façade shown on design documentation at this stage.	CRA
2.5: General Concessions	Concessions noted.	Noted
2.7: Enclosure of Shafts	Fire rated shafts are required to be enclosed, at the top and bottom, with construction having a FRL identical to that of the shaft, unless the shaft extends beyond the roof covering (with the exception of fire isolated stair and lift shafts that are to have lids with a FRL of not less than -/120/120).	CRA
2.8: Carparks in Class 2 and 3 Buildings	Concession not available as building has Class 5 uses.	Noted
3.0: Type A Fire-resisting Construction	Noted	-
3.1: Fire-resistance of Building Elements	Insufficient details on the proposed fire resistance levels of the building elements see Part 4 of this report for details on required FRL's.	CRA
3.2: Concessions for Floors	The basement floor which is directly on the ground does not required a FRL.	Noted
3.3: Floor Loading of Class 5 and 9b Buildings: Concession	It is assumed the floors to the Class areas will be designed for a live load exceeding 3kPa and therefore this concession is not applicable.	N/A
3.4: Roof Superimposed on Concrete Slab: Concession	If the roof is super imposed on a concrete slab it will not need a FRL if the superimposed roof is non-combustible and the concrete slab roof complies with Table 3 of Specification C1.1.	Noted
3.5: Roof: Concession	The roof does not require a FRL if its covering is non-combustible as the top floor is a Class 3 portion of the building and the walls between and bounding the class 3 units extend fully to the underside of the roofing material. It is assumed that the slab forming the roof of the second floor and the floor of the courtyard areas will achieve a FRL of not less than 120/60/30	Noted
3.6: Rooflights	The rooflights to the third floor are satisfactory as the rooflights are more than 3m from any other rooflight or boundary and the rooflights represent less than 20% of the area of the roof to the third floor.	Complies
3.7: Internal Columns and Walls: Concession	The loadbearing internal columns and walls, except fire walls and shaft walls, to the areas of building immediately below a roof may have a reduced FRL of 60/60/60 if the roof above complies with the concession granted by Clause 3.5 of Specification C1.1	CRA
3.9: Carparks	This concession is not available as the carpark is not open deck, nor is it proposed to be sprinkler protected.	Noted

SECTION D: ACCESS AND EGRESS		
PART D1 – PROVISION FOR ESCAPE		
D1.0: Deemed-to-Satisfy Provisions	Noted	-
D1.1: Application of Part	Noted	-
D1.2: Number of Exits Required	Sufficient exits are proposed.	Complies
D1.3: When Fire-Isolated Stairways and Ramps are Required	The stairs descending from the upper levels are required to be fire isolated. The stairs rising from the basement level are not required to be fire-isolated however they have been shown in a shaft and have been assumed to be fire-isolated to assist in egress travel distance measurements.	Noted

SECTION D: ACCESS AND EGRESS		
D1.4: Exit Travel Distances	The exit travel distance to the building is satisfactory based on the open plan nature of the commercial levels.	CRA
D1.5: Distance Between Alternative Exits	The distance between the alternative exits is satisfactory.	Complies
D1.6: Dimensions of Exits and Paths of Travel to Exits	The widths of the exits to the basement, ground and third floors are satisfactory. It is noted that the exit stairways to the first and second floors have been measured to be 2m in clear width each and as such 8m of exit width are available at these levels which caters for 920 people per storey.	Complies
D1.7: Travel via Fire-Isolated Exits	Travel via the fire-isolated exits is satisfactory based on the open plan layout of the first and second floors.	Complies
D1.9: Travel by Non Fire-Isolated Stairways or Ramps	No non-fire-isolated stairways proposed. The stairways to the basement level have been considered as fire-isolated exits.	Noted
D1.10: Discharge from Exits	The discharge points of the exits are satisfactory.	Complies
D1.13: Number of Persons Accommodated	Based on the floor area of the ground, first and second floors (commercial levels) and the ratios given in Table D1.13 the ground floor will accommodate no more than 185 people and the first and second floor will accommodate 230 people. The third floor (residential level) will accommodate less than 100 people. The basement level carpark will accommodate only a transitory population assumed to be less than 100 people.	Noted
D1.14: Measurement of Distances	Information only.	Noted
D1.15: Method of Measurement	Information only.	Noted
D1.16: Plant Rooms and Lift Motor Rooms: Concession	Plant rooms are located on floor levels therefore this concession is not required.	N/A
D1.17: Access to Lift Pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	CRA
PART D2 – CONSTRUCTION OF EXITS		
D2.0: Deemed-to-Satisfy Provisions	Noted	-
D2.1: Application of Part	Noted	-
D2.2: Fire-Isolated Stairways and Ramps	It is assumed that the stairways will be constructed of reinforced concrete and therefore comply. The structural engineer is to certify that the shaft will withstand a local failure, further details will be required to be assessed at CC stage	CRA
D2.4: Separation of Rising and Descending Stair Flights	The rising and descending stairways are separated at the ground floor level.	Complies
D2.7: Installations in Exits and Paths of Travel	Electrical and comms cupboards located in corridors are to be enclosed in non-combustible construction and smoke sealed, further details will be required to be assessed at CC stage	CRA
D2.8: Enclosure of Space Under Stairs and Ramps	No enclosures proposed.	Complies
D2.9: Width of Stairways	Stairways are capable of complying, further details will be required to be assessed at CC stage	CRA
D2.10: Pedestrian Ramps	The two ramps to the ground floor are to comply with AS1428.1, further details will be required to be assessed at CC stage	CRA
D2.11: Fire-Isolated Passageways	The fire-isolated passageways at the bottom of the fire-isolated stairways are to have a FRL of no less than that required for the fire-isolated stairway that they serve. The FRL may be measured from the outside of the passageway only, further details will be required to be assessed at CC stage	CRA
D2.12: Roof as Open Space	No areas of roof are considered open space.	Noted
D2.13: Goings and Risers	Stair geometry to all stairs throughout the development to comply with Table D2.13, further details will be required to be assessed at CC stage	CRA
D2.14: Landings	Landings are to have a non-slip finish, further details will be required to be assessed at CC stage	CRA
D2.15: Thresholds	Thresholds are to comply with this clause, further details will be required to be assessed at CC stage.	CRA

D2.16: Balustrades or Other Barriers	Balustrades are required to be 1m above the floor of any balcony, path or the like, further details will be required to be assessed at CC stage.	CRA
D2.17: Handrails	Handrails are to be provided to a least one side of all stairways. The four exit stairways from the upper levels being 2m wide are to be provided with handrails to both sides, however to ensure the exit width required for the population the stairways are to be measured as being 2m in clear width between the handrails, further details will be required to be assessed at CC stage.	CRA
D2.18: Fixed Platforms, Walkways Stairways and Ladders	Plant rooms are located on floor levels therefore this concession is not required.	Noted
D2.19: Doorways and Doors	Exit doors as shown are either swinging doors which are satisfactory or are sliding doors (to the ground floor) which are to comply with this clause, further details will be required to be assessed at CC stage.	CRA
D2.20: Swinging Doors	Swinging doors forming exits swing in the direction of egress.	Complies
D2.21: Operation of Latch	Latching to comply with this clause, further details will be required to be assessed at CC stage.	CRA
D2.22: Re-entry from Fire-Isolated Exits	The doors from within the fire-isolated stairways, except the final egress doors may be locked from within the stairway, further details will be required to be assessed at CC stage.	CRA
D2.23: Signs on Doors	Signs in accordance with this clause are to be provided, further details will be required to be assessed at CC stage.	CRA
PART D3 - ACCESS FOR PEOPLE WITH DISABILITIES		
D3.0: Deemed-to-Satisfy Provisions	Noted	-
D3.1: Application of Part	Noted	-
D3.2: General Building Access Requirements	Access for people with disabilities is required to all levels. Further access for people with disabilities is required to all common areas of the third floor and to at least 4 beds.	CRA
D3.3: Parts of Buildings to be Accessible	Access for people with disabilities is required to all levels. Further access for people with disabilities is required to all common areas of the third floor and to at least 4 beds.	CRA
D3.4: Concessions	No concessions applicable to this design.	Noted
D3.5: Car Parking	One carparking space is required to be accessible; three carparking spaces are indicated as being available for people with disabilities. The carparking spaces are to comply with AS2890.1.	CRA
D3.6: Identification of Accessible Facilities, Services and Features	Braille and tactile signage complying with Specification D3.6 and incorporating the international symbols as appropriate must identify each sanitary facility and all accessible entrances where an entrance is not accessible.	CRA
D3.8: Tactile Indicators	Tactile indicators are to be located at the top and bottom of all stairways and ramps, except fire-isolated stairways.	CRA

SECTION E: SERVICES AND EQUIPMENT		
PART E1 – FIRE FIGHTING EQUIPMENT		
E1.0: Deemed-to-Satisfy Provisions	Noted	-
E1.3: Fire Hydrants	The building is required to be provided with a fire hydrant system complying with AS2419.1-2005.	CRA
E1.4: Fire Hose Reels	The building is required to be provided with a fire hose reel system complying with this clause and AS2441-2005.	CRA
E1.5: Sprinklers	The building is not required to be sprinkler protected.	Noted
E1.6: Portable Fire Extinguishers	The building is to be provided with extinguishers in accordance with this clause and AS2444.	CRA
E1.8: Fire Control Centres	The building is not required to be provided with a fire control centre.	N/A

E1.9: Fire Precautions During Construction	Information only. Whilst the building is under construction there is to be not less than one fire extinguisher provided at all times to each storey. Once the building has reached an effective height of over 12m the hydrants and hose reels and booster connections must be operational to all levels except the 2 uppermost storeys under construction.	Noted
PART E2 – SMOKE HAZARD MANAGEMENT		
E2.0: Deemed-to-Satisfy Provisions	Noted	-
E2.1: Application of Part	Noted	-
E2.2: General Requirements (including Tables E2.2a and E2.2b)	The commercial and residential portions of the building are to be provided with an automatic smoke detection and alarm system complying with BCA Specification E2.2a. Mechanical ventilation to the basement level is to comply with this clause.	CRA
PART E3 – LIFT INSTALLATIONS		
E3.0: Deemed-to-Satisfy Provisions	Noted	-
E3.2: Stretcher Facility in Lifts	The lift to the third floor is required to have a stretcher facility.	CRA
E3.3: Warning Against Use of Lifts in Fire	Warnings against using the lifts in the event of a fire must be provided in accordance with this clause.	CRA
E3.5: Landings	Lift landing dimensions are satisfactory.	Complies
E3.6: Facilities for People with Disabilities	The lifts are required by the BCA to comply with AS1735.12 for disabled access.	CRA
E3.7: Fire Service Controls	Fire services controls are required to the residential lifts.	CRA
PART E4 – EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS		
E4.0: Deemed-to-Satisfy Provisions	Noted	-
E4.2: Emergency Lighting Requirements	Emergency lighting is to be installed in every exit, every public corridor and lobbies on all levels in accordance with this clause.	CRA
E4.3: Measurement of Distance	Information only.	Noted
E4.4: Design and Operation of Emergency Lighting	Emergency lighting is to comply with AS 2293.1-2005.	CRA
E4.5: Exit Signs	Exits signs are to be provided above or adjacent to a door providing egress to a required exit.	CRA
E4.6: Direction Signs	Where an exit is not readily apparent a directional sign is to be installed indicating the direction of egress.	CRA
E4.7: Class 2 and 3 Buildings and Class 4 Parts: Exemptions	The doorways to each SOU are exempt from E4.5 of the BCA.	Noted
E4.8: Design and Operation of Exit Signs	Exit and directional signage is to comply with AS 2293.1-2005.	CRA
E4.9: Sound Systems and Intercom Systems for Emergency Purposes	A SSISEP is required to be provided to the residential portions of the building.	CRA

SECTION F: HEALTH AND AMENITY		
PART F1 – DAMP AND WEATHERPROOFING		
F1.0: Deemed-to-Satisfy Provisions	Noted	-
F1.1: Stormwater Drainage	Stormwater drainage to comply with AS 3500.3.2.	CRA
F1.5: Roof Coverings	The concrete rooves are to comply with Part B of the BCA, metal rooves to comply with AS1562.1.	CRA
F1.6: Sarking	The sarking is to comply with AS 4200.	CRA
F1.7: Water Proofing of Wet Areas in Buildings	Waterproofing to wet areas to comply with AS 3740.	CRA
F1.9: Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	CRA
F1.10: Damp-proofing of Floors on the Ground	A vapour barrier in accordance with AS 2870 must be installed.	CRA
F1.11: Provision of Floor Wastes	In the residential units the bathrooms are to be graded to a floor waste.	CRA
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047 and AS 1288.	CRA

PART F2 – SANITARY AND OTHER FACILITIES		
F2.0: Deemed-to-Satisfy Provisions	Noted	-
F2.1: Facilities in Residential Buildings (including Table F2.1)	The residential portion of the building has sufficient facilities with the employees of the manager's office have access to the ground floor sanitary facilities.	Complies
F2.2: Calculation of Number of Occupants and Facilities	Based on the floor area of the ground, first and second floors (commercial levels) and the ratios given in Table D1.13 the ground floor will accommodate no more than 185 people and the first and second floor will accommodate 230 people. The third floor (residential level) will accommodate less than 100 people. The basement level carpark will accommodate only a transitory population assumed to be less than 100 people.	Noted
F2.3: Facilities in Class 3 to 9 Buildings (including Table F2.3)	The proposed sanitary facilities are sufficient for the population listed above.	Complies
F2.4: Facilities for People with Disabilities (including Table F2.4)	Insufficient details of the number and layout of the sanitary facilities have been provided. Accessible sanitary facilities are to comply with AS1428.1.	CRA
F2.5: Construction of Sanitary Compartments	Where the pans to the bathroom areas are within 1.2m of the doorway with the doorway swinging inwards. In these instances the doors are to be removable from outside the bathroom.	CRA
F2.6: Interpretation: Urinals and Washbasins	Information only.	Noted
PART F3 – ROOM SIZES		
F3.0: Deemed-to-Satisfy Provisions	Noted	-
F3.1: Height of Rooms and Other Spaces	Ceiling heights to be not less than 2.4m generally and 2.1m in corridors and other locations as permitted by this clause, further details will be required to be assessed at CC stage.	CRA
PART F4 – LIGHT AND VENTILATION		
F4.0: Deemed-to-Satisfy Provisions	Noted	-
F4.1: Provision of Natural Light	Natural light is required to be provided to all bedrooms.	Noted
F4.2: Methods and Extent of Natural Lighting	Each bedroom is to be provided with natural light through openings that have a light transmitting area of not less than 10% of the floor area of the room, further the windows providing natural light to the bedrooms are not be less than a horizontal distance from the adjacent wall of the building of the greater of 1m or 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill, further details will be required to be assessed at CC stage, however based on the elevations it appears that sufficient window openings are proposed.	CRA
F4.3: Natural Light Borrowed From Adjoining Room	Natural light may be borrowed within a SOU.	Noted
F4.4: Artificial Lighting	Lighting to all areas is to comply with AS 1680.0.	CRA
F4.5: Ventilation of Rooms	Natural or mechanical ventilation, complying with AS1668.1, will be provided to the residential areas and mechanical ventilation is assumed to be provided to the ground floor level shops to comply with AS 1668.2.	CRA
F4.6: Natural Ventilation	Natural ventilation where proposed is to be provided via windows having an aggregate opening of not less than 5% of the floor area of the room.	CRA
F4.7: Ventilation Borrowed From Adjoining Room	Ventilation may be borrowed from adjoining rooms.	Noted
F4.8: Restriction on Position of Water Closets and Urinals	It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted.	CRA
F4.9: Airlocks	It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted.	CRA
F4.11: Carparks	Ventilation complying with AS 1668.2-1991 is to be provided to the carpark.	CRA

PART F5 – SOUND TRANSMISSION AND INSULATION		
F5.0: Deemed-to-Satisfy Provisions	Noted	-
F5.1: Application of Part	Noted	-
F5.2: Determination of Airborne Sound Insulation Ratings	This part is applicable to the Class 3 portions of the building.	Noted
F5.3: Determination of Impact Sound Insulation Ratings	Information only	Noted
F5.4: Sound Insulation Rating of Floors	A wall requiring an impact sound insulation rating is to be of non-continuous construction in the Class 3 portions of the building. To be certified the acoustic engineer at CC stage.	Noted
F5.5: Sound Insulation Rating of Walls	The floors must have a $R_w + C_{tr}$ (airborne) not less than 50 and an $L_{n,w} + C_1$ (impact) of not more than 62. To be certified the acoustic engineer at CC stage.	CRA
F5.6: Sound Insulation Rating of Services	The walls separating the units must have a $R_w + C_{tr}$ (airborne) not less than 50 and where a kitchen backs onto a habitable room the wall is to comply with Clause F5.3, to be specified on the drawings. To be certified by an acoustic engineer at CC stage.	CRA
F5.7: Sound Isolation of Pumps	If a soil or waste pipe passes through more than one unit the pipe must be separated from the rooms with construction that has a $R_w + C_{tr}$ (airborne) not less than 40 if adjacent to a habitable room, or 25 if adjacent to a kitchen or other room. To be certified the acoustic engineer at CC stage.	CRA
	A flexible coupling must be used at the point of connection between the service pipes and any circulation or other pump. To be certified the acoustic engineer at CC stage.	CRA

SECTION G: ANCILLARY PROVISIONS		
PART G1 - MINOR STRUCTURES AND COMPONENTS		
G1.0: Deemed-to-Satisfy Provisions	Noted	-
NSW G1.101: Provision for Cleaning of Windows	Provision for the safe cleaning of the windows is required to be provided to levels 3 and above.	CRA

SECTION I: MAINTENANCE		
PART I1 – EQUIPMENT AND SAFETY INSTALLATIONS		
I1.0: Deemed-to-Satisfy Provisions	Noted	-
NSW I1.1: Essential Fire Safety Measures	Essential fire or other safety measures must be maintained and certified on an ongoing basis.	Noted

SECTION J: ENERGY EFFICIENCY (Class 3 and 5-9)		
PART J1 – BUILDING FABRIC		
J1.0: Deemed-to-Satisfy Provisions	Noted	-
J1.1: Application of Part	This part is applicable to all areas of the building with the exception of the basement level carpark.	Noted
J1.2: Thermal Construction General	No details insulation must comply with AS4859.1 and be installed as per this clause.	CRA
J1.3: Roof and Ceiling Construction	No details, the R-value as specified in Table J1.3 to be provided to the rooves and ceilings (r-value 2.7 to the residential areas and 3.2 to the commercial areas). To be confirmed at the CC stage of the development.	CRA
J1.4: Roof Lights	No rooflights proposed.	Complies
J1.5: Walls	The walls forming part of the thermal envelope are to comply with Table J1.5a for the residential areas (r-value 1.4) and Table J1.5b for the commercial areas(r-value 1.8). To be confirmed at the CC stage of the development.	CRA
J1.6: Floors	No R-values are required to the floors.	Noted

PART J2 – GLAZING		
J2.0: Deemed-to-Satisfy Provisions	Noted	-
J2.1: Application of Part	This part is applicable to all areas of the building with the exception of the basement level carpark.	Noted
J2.2: Applicable Glazing Provisions	The provisions of Clause J2.3 are applicable to the Class 3 portions of the building. The provisions of Clause J2.4 are applicable to the commercial areas.	Noted
J2.3: Glazing – Method 1	Glazing to the residential units to comply with this clause. Please note that Units 3.01, 3.03, 3.06, 3.08 and 3.12 were not assessed at this stage as there are insufficient details of the window openings on the assessed plans.	CRA
J2.4: Glazing – Method 2	Glazing to the commercial areas to comply with this clause.	CRA
J2.5: Shading	Shading considered where relevant.	Noted
PART J3 – BUILDING SEALING		
J3.0: Deemed-to-Satisfy Provisions	Noted	-
J3.1: Application of Part	This part is applicable to all areas of the building with the exception of the basement level carpark.	Noted
J3.2: Chimneys and Flues	No chimneys or flues proposed.	N/A
J3.3: Roof Lights	No rooflights proposed.	N/A
J3.4: External Windows and Doors	The windows and doors must be sealed, or the windows may comply with AS2047. To be confirmed at the CC stage of the development. Main entry doors to the residential lobby and the commercial areas are to be self-closing. To be confirmed at the CC stage of the development.	CRA
J3.5: Exhaust Fans	The exhaust fans to the sanitary and any other miscellaneous exhaust fans to other conditioned spaces, are to pre-fitted with a sealing device, such as a self-closing damper of the like. To be confirmed at the CC stage of the development.	CRA
J3.6: Construction of Roofs, Walls and Floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like. To be confirmed at the CC stage of the development.	CRA
J3.7: Evaporative Coolers	Evaporative coolers are not proposed to be used in these buildings.	CRA
PART J4 – AIR MOVEMENT		
J4.0: Deemed-to-Satisfy Provisions	Noted	-
J4.1: Application of Part	Not applicable in NSW.	Noted
PART J5 – AIR-CONDITION AND VENTILATION SYSTEMS		
J5.0: Deemed-to-Satisfy Provisions	Noted	-
J5.2: Air-conditioning and Ventilation Systems	Air-conditioning to comply with this clause, certification to be provided by mechanical engineer at the CC stage of the development.	CRA
J5.3: Time Switch	Air-conditioning to comply with this clause, certification to be provided by mechanical engineer at the CC stage of the development.	CRA
J5.4: Heating and Chilling Systems	Air-conditioning to comply with this clause, certification to be provided by mechanical engineer at the CC stage of the development.	CRA
J5.5: Miscellaneous Exhaust Systems	Exhaust systems to comply with this clause, certification to be provided by mechanical engineer at the CC stage of the development.	CRA

PART J6 – ARTIFICIAL LIGHTING AND POWER		
J6.0: Deemed-to-Satisfy Provisions	Noted	-
J6.1: Application of Part	This part applies to the entire building.	Noted
J6.2: Interior Artificial Lighting	Interior artificial lighting is to comply with this clause. Electrical engineer to certify at the CC stage of the development.	CRA
J6.3: Interior Artificial Lighting and Power Control	Lighting controls are to be in accordance with this clause, which sets requirements on location of switching and sets limits on floor areas controlled by a switch. Electrical engineer to certify at the CC stage of the development.	CRA
J6.4: Interior Decorative and Display Lighting	Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch. Electrical engineer to certify at the CC stage of the development.	CRA
J6.5: Artificial Lighting Around the Perimeter of a Building	Perimeter lighting is to be controlled by a daylight sensor or time switch and where it exceeds 100W have an average light source density of 60 Lumens/W or be controlled by a motion sensor complying with Specification J6. Electrical engineer to certify at the CC stage of the development.	CRA
J6.6: Boiling Water and Chilled Water Storage Units	The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6. Electrical engineer to certify at the CC stage of the development.	CRA
PART J7 – HOT WATER SUPPLY		
J7.0: Deemed-to-Satisfy Provisions	Noted	-
J7.2: Hot Water Supply	The hot water supply systems must be designed and installed in accordance with Section 8 of AS3500.4. To be confirmed at the CC stage of the development.	CRA
PART J8 – ACCESS FOR MAINTENANCE		
J8.0: Deemed-to-Satisfy Provisions	Noted	-
J8.1: Application of Part		
NSW J8.2: Access for Maintenance	Access for maintenance must be provided to all services and their components including time switches, motion detectors, thermostats, outside air dampers, reflectors, lenses and diffusers of light fittings, heat transfer equipment and adjustable or motorised shading devices. To be confirmed at the CC stage of the development.	CRA
NSW PART J(B) – ENERGY EFFICIENCY – CLASS 3 BUILDINGS		
NSW J(B)1.0: Compliance with BCA Provisions	Noted	-
NSW J1.6: Floors	No floors requiring a r-value due to the climate zone.	Noted
NSW J3.1: Application of Part	Information only.	Noted
NSW J8.2: Access for Maintenance	Access for maintenance must be provided to all services and their components including time switches, motion detectors, thermostats, outside air dampers, reflectors, lenses and diffusers of light fittings, heat transfer equipment and adjustable or motorised shading devices. To be confirmed at the CC stage of the development.	CRA

ANNEXURE C

SECTION J INFORMATION

ANNEXURE C - ENERGY EFFICIENCY – SECTION J

C1 Introduction

BCA 2006 (now BCA2009) introduced requirements for Energy Efficiency for all buildings that contain conditioned spaces (heating or cooling).

This has an impact on the insulation of walls and ceilings in particular, and many existing standard types of construction no longer comply without insulation.

There are also controls on heating and cooling loads, and electrical loads.

The following is a summary of an assessment of the proposed building against the DTS provisions of the BCA, and outlines where further consideration is required by the designers or where specialised input from mechanical and electrical engineers is required.

The BCA does outline two verification methods being JV1 and JV3 (JV2 was deleted in the 2008 BCA update) which can also be used to demonstrate compliance with the performance requirements in lieu of the DTS provisions. These verification methods require detailed energy modelling to be carried out, however many of the items contained below may still be required to be satisfied.

C2 General Assessment Criteria

The building has been assessed against Section J based on the following assumptions.

(a) Climate Zone – The building is assumed to be Climate Zone 5 based on the BCA Climate Zone map.

(b) Conditioned Space – The conditioned space for the subject building includes all occupied floor areas provided with active heating and cooling.

Please note that a building is considered conditioned even if in the base building construction active heating or cooling is not proposed but it is likely to be conditioned in the future

(c) 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.

C3 Part J1 – Building Fabric

(a) J1.2 – Thermal Construction

Insulation must comply with AS/NZS 4859.1 and be installed so that it overlaps adjoining insulation, forms a continuous barrier and does not affect the safe or effective operation of services or fittings.

Reflective insulation must be installed with the necessary airspace required to achieve the R value and be closely fitted against doors and windows and adequately supported by framing members.

Reflective insulation must be overlapped not less than 50mm and taped together.

Bulk insulation must be installed so that it maintains its position and thickness, and overlaps walls by 50mm where no insulation is provided in the walls.

(b) R Values Required

The subject building is required, under Clauses J1.3, J1.5 and J1.6 to obtain the following R Values for the elements as listed.

Item	R Value	Comment
Commercial Roof	3.2	--
Residential Roof	2.7	--
Commercial Walls	1.8	--
Residential Walls	1.4	--
Floors	Nil	--

Notes:

1. A thermal break, using a material with an R-value of no less than 0.2 is required to be installed between the metal roof sheet and any metal framing where metal roof sheeting is fixed to metal roof framing and there is either no ceiling lining or the ceiling lining is fixed directly to metal purlins, rafters or battens.

(c) J1.4 – Rooflights
No rooflights proposed.

C4 Part J2 – Glazing

An assessment of the glazing has been carried out using the Australian Building Codes Board (ABCB) glazing calculators of each unique storey. As designed the glazing as proposed is capable of complying with the BCA subject to the glazing achieving the u-values and SHGC's as detailed in the attached glazing calculators.

C5 Part J3 – Building Sealing

It has been considered that the building will not be air-conditioned using only an evaporative cooler and as such the building is to be provided with the following (with the exception of permanent ventilation openings for the safe use of gas appliances):

(a) The roof light(s) must be sealed or be capable of being sealed.

(b) A seal to restrict air infiltration must be fitted to each edge of an external door, openable window or the like.

This does not apply to windows complying with AS 2047, louvred openings, fire doors, or shutters used only for security.

(c) The main entrance to the building must have an airlock, self closing door, revolving door or the like.

(d) Miscellaneous exhaust fans must be fitted with a sealing device such as a self closing damper or the like.

(e) Roofs, ceilings, walls, floors and any openings such as windows and doors and the like must be constructed to minimise air leakage when forming part of the thermal envelope of the building. Linings and the like are to be tight fitting or sealed by caulking, skirting, architraves, cornices or the like.

(f) An evaporative cooler must be fitted with a self closing damper or the like.

C6 Part J4 – Air Movement

Not applicable to in NSW.

C7 Part J5 – Air Conditioning and Ventilation Systems

The mechanical engineer/designer is to certify that the air-conditioning and ventilation systems, including any carpark ventilation systems, comply with Part J5 of the BCA at the CC stage, which includes the following requirements:

(a) An air conditioning unit or system must be capable of being inactivated when the sole occupancy unit (tenancy) or part of the building is not occupied, and where motorised outside air and return dampers are provided, they must close when the system is inactivated (Clause J5.2 (a) (i)).

(b) All supply and return ductwork must be insulated and sealed in accordance with Specification J5.2 (Clause J5.2 (a) (ii)).

(c) When serving more than one sole occupancy unit (SOU) the system must thermostatically control the temperature of each SOU and not mix actively heated air with actively cooled air, and limit reheating to not more than a 7.5K rise in temperature (Clause J5.2 (a) (iii)).

(d) Must have an outdoor air economy cycle if the capacity is over 50kWr (Clause J5.2 (a) (iv).

(e) When the air flow is greater than 1,000 l/s be designed so that the total motor shaft power of the fans does not exceed 12w/m² for buildings less than 500m², or 15w/m² for a building of more than 500m² (Clause J5.2 (a) (v)).

(f) Any other mechanical ventilation system must be capable of being inactivated when the building or part is not occupied, and if serving a conditioned space, must comply with the requirements of Clause J5.2 (b).

(g) A time switch must be provided in accordance with Specification J6 when the power supply to:

- An air conditioning system is more than 10kWr; or
- A ventilation system with an air flow of more than 1000 l/s; or
- Heating systems of more than 10kW.

(h) Heating and chilling systems must comply with the energy efficiency requirements and pumping limitations outlined in Clause J5.4 of the BCA.

(i) Miscellaneous exhaust systems (e.g. kitchen exhaust) with a flow rate of more than 1000 l/s must have a variable speed fan and capable of being controlled or turned off by the operator (Clause J5.5).

C8 Part J6 – Artificial Lighting and Power

The electrical engineer/designer is to certify the design of the lighting and power systems to Part J6 of the BCA at the CC stage, which includes the following requirements and is applicable to all areas of the building including the non-conditioned areas:

(a) The aggregate design illumination power load must not exceed that specified in Table J6.2a for the Class 3 portions of the building and Table J6.2b for the Class 5, 6, 7, 8, 9a or 9b portions of the building unless adjustment factors are applicable due to dimming or motion detection as outlined in table J6.2C. These include:

Location	Maximum Lamp Power Density (W/m²)
Within a Class 3 building SOU	10
Within a dormitory of a Class 3 building used only for sleeping	5
Within another area of a Class 3 building that are frequently occupied such as a lounge or dining room	8
Within public corridors, stairways and the like in a Class 3 building	7
Service areas such as plant and storerooms in a Class 3 building	6
Employees' work areas in a Class 3 building	10

Location	Maximum Illumination Power Density (W/m²)
Board room and conference room	8
Carpark - general	6
Carpark – entry zone (first 20m of travel)	25
Circulation space and corridor	8
Control Room, switch room, and the like	10
Entry Lobby	15
Kitchen and food preparation area	8
Office – artificially lit to an ambient level of 200 lux or more	10
Office – artificially lit to an ambient level of less than 200 lux	7
Plant room	5
Public toilet	5
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	20
Retail space including a museum and gallery whose purpose is the sale of objects	25
School – general purpose learning area	10
Storage with shelving no higher than 75% of the height of the aisle lighting	8
Storage with shelving higher than 75% of the height of the aisle lighting	10
Service area, locker room, staff room, cleaner's room, rest room and the like	3

The requirement for the maximum lamp/illumination power density does not apply to emergency lighting and signage and display lighting within cabinets and display cases.

(b) Where a shop is not more than 100m², lamps must provide an average artificial light source energy of not less than 40 lumens/w (Clause J6.2 (b)).

(c) Artificial lighting switches must be located in a visible position from the room being switched, and not operate an area of more than 250m² if the floor area is not more than 2,000m², or 1,000m² if the floor area of the space is more than 2,000m² (Clause J6.3 (c)).

(d) Artificial lighting in a building with a floor area of more than 250m² must be controlled by a time switch, or an occupant sensing device such as a security key card reader, or motion detector (Clause J6.3 (d)).

(e) Artificial lighting adjacent windows must be switched separately from other internal lighting (Clause J6.3 (e)).

(f) Interior decorative and display lighting to foyers or displays must be separately controlled by a manual switch and by a time switch if the lighting exceeds 7kW (Clause J6.4 (a)).

(g) Window display lighting must be controlled separately from other display lighting (Clause J6.4 (b)).

(h) Artificial lighting around a building must be controlled by either a daylight sensor or time switch in accordance with Specification J6, and when the total perimeter lighting load exceeds 100w, have a light source efficiency of not less than 60 lumens/w or be controlled by a motion detector in accordance with Specification J6 (Clause J6.5)).

(i) Power supply to any fixed boiling or chilled water storage units must be controlled by a time switch in accordance with Specification J6 (Clause J6.6)).

C9 Part J7 – Hot Water Supply

The hot water system must be designed and installed in accordance with Section 8 of AS/NZS 3500.4, which details requirements for the insulation of piping, heat traps, water storage containers and water flow rate efficiency.

C10 Part J8 – Access for Maintenance

Access for maintenance must be provided to all services and their components including time switches, thermostats, dampers, light fittings, heat transfer equipment and the like, and to adjustable or motorised shading devices.

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.4, BCA VOLUME ONE (METHOD 2)

Building name/description

157-165 Cleveland Street, Chippendale - Ground Floor - 3.7m floor to soffit height assumed - 6.38mm clear lam in Alumin. Frame

Climate zone **5**

Storey **Gnd**

Facade areas	N	NE	E	SE	S	SW	W	NW
Option A	194m²		192m²		218m²			
Option B								
Glazing area (A)	*91.8m²*		*14.4m²*		*96.2m²*			

Number of rows preferred in table below **9** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES - OK (if inputs are valid)				
Glazing element		Sector faced		Size			Performance		P&H or device		Shading		Multipliers		Size
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Window	N		4.00	2.60		4.6	0.41	0.900	4.800	0.19	0.80	1.00	0.97	10.40	12% of 81%
2	Window & Door	N		4.00	5.40		4.6	0.41	1.300	4.800	0.27	0.80	1.00	0.95	21.60	24% of 81%
3	Window	N		2.40	23.40		4.6	0.41	1.200	3.200	0.38	0.80	0.99	0.91	56.16	60% of 81%
4	Window	N		1.80	2.00		4.6	0.41	0.500	2.600	0.19	0.80	1.00	0.97	3.60	4% of 81%
5	Window	S		3.00	1.20		6.4	0.73				0.00	1.00	1.00	3.60	4% of 69%
6	Window	S		3.00	18.80		6.4	0.73	1.200	3.700	0.32	0.70	0.98	0.96	56.40	58% of 69%
7	Door	S		3.50	1.60		6.4	0.73	1.600	4.200	0.38	0.70	0.97	0.95	5.60	6% of 69%
8	Window	S		3.00	10.20		6.4	0.73				0.00	1.00	1.00	30.60	32% of 69%
9	Windows	E		0.80	18.00		6.4	0.73	0.500	1.600	0.31	0.80	0.98	0.96	14.40	100% of 24%

if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.4, BCA VOLUME ONE (METHOD 2)

Building name/description: **157-165 Cleveland Street, Chippendale - 1st & 2nd Floors - 3.7m floor to soffit height assumed - 6.38mm clear lam in Alumin. Frame**

Climate zone: **5**

Storey: **1st/2nd**

Facade areas	N	NE	E	SE	S	SW	W	NW
Option A	194m²		211m²		241m²			
Option B								
Glazing area (A)	*89.4m²*		*74m²*		*109m²*			

Number of rows preferred in table below: **6** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATED OUTCOMES - OK (if inputs are valid)				
Glazing element		Sector faced		Size			Performance		P&H or device		Shading		Multipliers		Size	
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Large Windows	N		3.00	13.80		4.6	0.41				0.00	1.00	1.00	41.40	46% of 87%
2	Smaller Windows	N		2.00	24.00		4.6	0.41				0.00	1.00	1.00	48.00	54% of 87%
3	Larger Windows	S		3.00	13.80		6.4	0.73				0.00	1.00	1.00	41.40	38% of 72%
4	Smaller Windows	S		2.00	34.00		6.4	0.73				0.00	1.00	1.00	68.00	62% of 72%
5	Larger Windows	E		3.00	10.00		4.6	0.41				0.00	1.00	1.00	30.00	28% of 94%
6	Smaller Windows	E		2.00	22.00		6.4	0.73				0.00	1.00	1.00	44.00	72% of 94%

if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.02**

Unit no.: **3.02**

Storey: **3rd**

Area of floor: **111m²**

Glazing area 30.0m² ..... (27% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**210.9**	
C_{SHGC} x Area	**15.5**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance				P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)			P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge Window	N		3.00	4.00		4.6	0.50						0.82	12.00	55.4	40% of 66%	4.9	40% of 79%
2	Bedroom Windows	N		2.00	9.00		4.6	0.50						0.82	18.00	83.2	60% of 66%	7.4	60% of 79%

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if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.04**

Unit no.: **3.04**

Storey: **3rd**

Area of floor: **112m²**

Glazing area 30.0m² ..... (27% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**212.8**	
C_{SHGC} x Area	**15.7**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance				P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)			P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge Window	N		3.00	4.00		4.6	0.50						0.82	12.00	55.4	40% of 65%	4.9	40% of 78%
2	Bedroom Windows	N		2.00	9.00		4.6	0.50						0.82	18.00	83.2	60% of 65%	7.4	60% of 78%

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if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.05**

Unit no.: **3.05**

Storey: **3rd**

Area of floor: **96m²**

Glazing area 32.6m² ..... (34% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**182.4**	
C_{SHGC} x Area	**13.4**	

Number of rows preferred in table below: **3** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge + Bed Windo	N		3.00	6.20		4.0	0.37				0.82	18.60	74.4	57% of 71%	5.6	56% of 76%
2	Bedroom Windows	N		2.00	6.00		4.0	0.37				0.82	12.00	48.0	37% of 71%	3.6	36% of 76%
3	Bed Window	E		2.00	1.00		4.0	0.37				1.19	2.00	8.0	6% of 71%	0.9	9% of 76%

if inputs are valid

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GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.07**

Unit no.: **3.07**

Storey: **3rd**

Area of floor: **115m²**

Glazing area 32.0m² ..... (28% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**218.5**	
C_{SHGC} x Area	**16.1**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS													CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		SHADING P&H or device				Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)			P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	E		3.00	4.00		4.0	0.37						1.19	12.00	48.0	38% of 59%	5.3	38% of 88%
2	Bedroom Windows	E		2.00	10.00		4.0	0.37						1.19	20.00	80.0	63% of 59%	8.8	63% of 88%

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if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.09**

Unit no.: **3.09**

Storey: **3rd**

Area of floor: **114m²**

Glazing area 32.0m² ..... (28% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**216.6**	
C_{SHGC} x Area	**16.0**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS													CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		SHADING P&H or device				Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)			P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	E		3.00	4.00		4.0	0.37						1.19	12.00	48.0	38% of 59%	5.3	38% of 88%
2	Bedroom Windows	E		2.00	10.00		4.0	0.37						1.19	20.00	80.0	63% of 59%	8.8	63% of 88%

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if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.10**

Unit no.: **3.10.**

Storey: **3rd**

Area of floor: **112m²**

Glazing area 34.0m² ..... (30% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**212.8**	
C_{SHGC} x Area	**15.7**	

Number of rows preferred in table below: **3** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	S		3.00	4.00		4.6	0.64				0.68	12.00	55.1	35% of 73%	5.2	34% of 99%
2	Bedroom Windows	S		2.00	10.00		4.6	0.64				0.68	20.00	91.8	59% of 73%	8.7	56% of 99%
3	Bed window	E		2.00	1.00		4.6	0.64				1.19	2.00	9.2	6% of 73%	1.5	10% of 99%

if inputs are valid

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GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.11**

Unit no.: **3.11**

Storey: **3rd**

Area of floor: **124m²**

Glazing area 34.0m² ..... (27% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**235.6**	
C_{SHGC} x Area	**17.4**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS											SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance				P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)			P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	S		3.00	4.00		6.4	0.73						0.68	12.00	76.8	35% of 92%	6.0	35% of 97%
2	Bedroom Windows	S		2.00	11.00		6.4	0.73						0.68	22.00	140.8	65% of 92%	10.9	65% of 97%

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if inputs are valid

GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.13**

Unit no.: **3.13**

Storey: **3rd**

Area of floor: **123m²**

Glazing area 34.0m² ..... (28% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**233.7**	
C_{SHGC} x Area	**17.2**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS													CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		SHADING P&H or device				Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)			P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	S		3.00	4.00		6.4	0.73						0.68	12.00	76.8	35% of 93%	6.0	35% of 98%
2	Bedroom Windows	S		2.00	11.00		6.4	0.73						0.68	22.00	140.8	65% of 93%	10.9	65% of 98%

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GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.14**

Unit no.: **3.14**

Storey: **3rd**

Area of floor: **79m²**

Glazing area 22.0m² ..... (28% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**150.1**	
C_{SHGC} x Area	**11.1**	

Number of rows preferred in table below: **2** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS													CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		SHADING P&H or device				Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)			P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	N		3.00	4.00		6.4	0.59						0.82	12.00	76.2	55% of 93%	5.8	55% of 96%
2	Bedroom Windows	N		2.00	5.00		6.4	0.59						0.82	10.00	63.5	45% of 93%	4.8	45% of 96%

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GLAZING CALCULATOR FOR USE WITH CLAUSE J2.3, BCA VOLUME ONE (METHOD 1)

Climate zone: **5**

Building name/description: **157-165 Cleveland Street, Chippendale - Unit 3.15**

Unit no.: **3.15**

Storey: **3rd**

Area of floor: **100m²**

Glazing area 32.0m² ..... (32% of area of floor - Storey: 3rd)

CONSTANTS and ALLOWANCES (per storey)

	3rd	not used
C_U / C_{SHGC}	1.9 / 0.14	
C_U x Area	**190.0**	
C_{SHGC} x Area	**14.0**	

Number of rows preferred in table below: **3** *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION, SIZE and PERFORMANCE CHARACTERISTICS									SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Sector faced		Size			Performance		P&H or device		Exposure		Size	Conductance - PASSED		Solar heat gain - PASSED	
ID	Description (optional)	Storey: 3rd	Storey: not used	Height (m)	Width (m)	Area (m²)	*Total U-Value* (NFRC)	*SHGC* (NFRC)	P (m)	H (m)	P/H	E factor	Area used (m²)	U x area	Element share of % of allowance used	SHGC x E x area	Element share of % of allowance used
1	Lounge	N		3.00	4.00		4.6	0.50				0.82	12.00	55.4	38% of 78%	4.9	39% of 90%
2	Bedroom Windows	N		3.00	4.00		4.6	0.50				0.82	12.00	55.4	38% of 78%	4.9	39% of 90%
3	Bedroom Windows	S		2.00	4.00		4.6	0.50				0.68	8.00	37.0	25% of 78%	2.7	22% of 90%

if inputs are valid

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