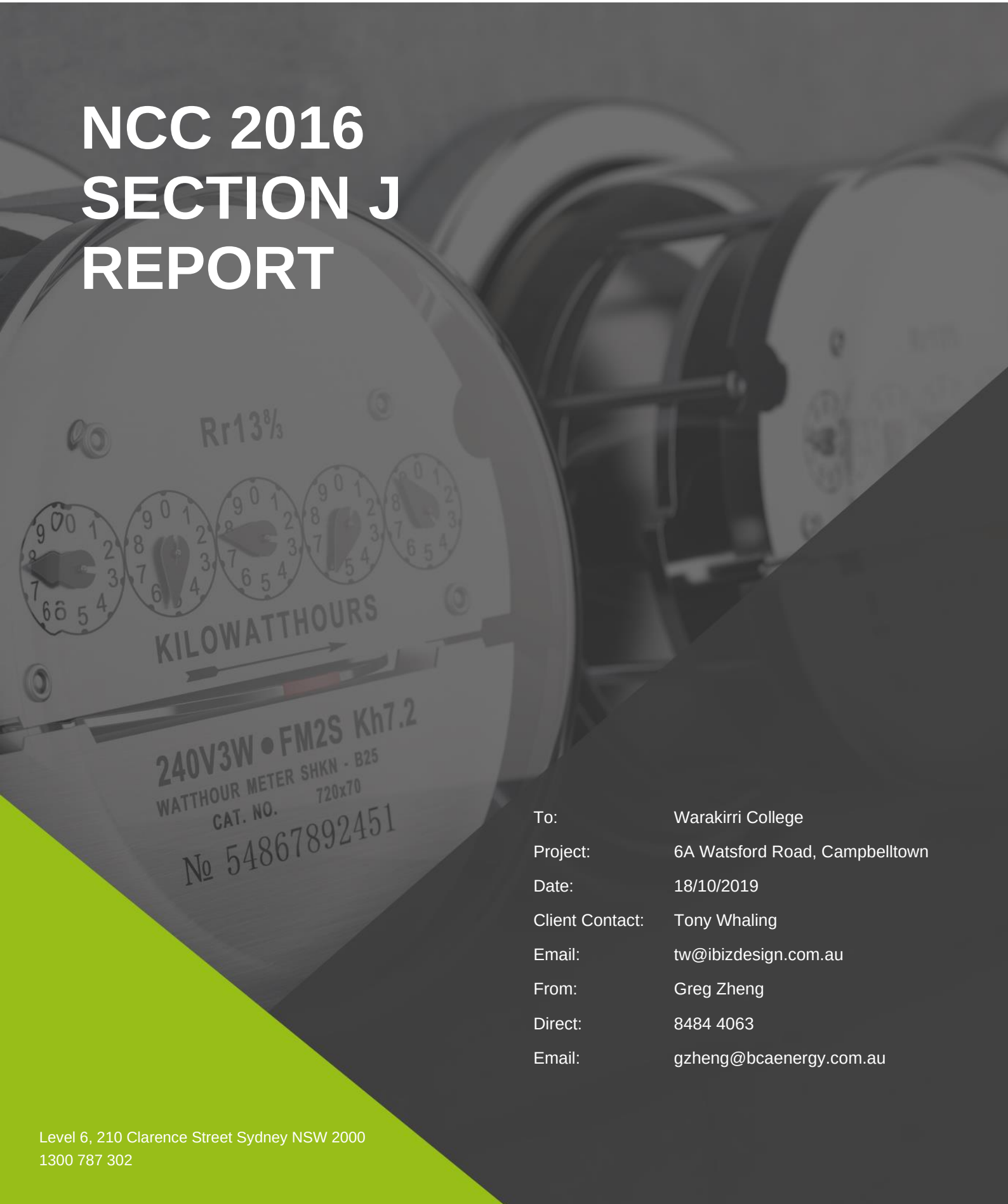
BCA ENERGY PTY LTD
Sustainable Design Consultants

NCC 2016 SECTION J REPORT



To:	Warakirri College
Project:	6A Watsford Road, Campbelltown
Date:	18/10/2019
Client Contact:	Tony Whaling
Email:	tw@ibizdesign.com.au
From:	Greg Zheng
Direct:	8484 4063
Email:	gzheng@bcaenergy.com.au

Level 6, 210 Clarence Street Sydney NSW 2000
1300 787 302

DOCUMENT CONTROL

Revision	Issue Date	Report Details		
2347-r1/gz	18/10/2019	NCC Section J Assessment Report		
		Prepared by	Checked by	Approved by
		Greg Zheng	Rob Romanous	Greg Zheng
		Sustainable Design Consultant	ESD Manager	Sustainable Design Consultant
				

Table of Contents

1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 6A Watsford Campbelltown and consists of New Learning Centre.

1.2 Purpose

The purpose of this report is to assess the design proposal against the Deemed-to-Satisfy provisions of Section J of the NCC 2016, and to clearly outline those areas where compliance is not achieved.

The Report addresses ONLY matters relevant to Section 'J' of Volume 1 of the NCC pertaining to the **Class** 9b portion of the building.

1.3 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of Section J of the National Construction Code Series Volume 1 - Building Code of Australia, 2016 Edition incorporating the State variations where applicable. Please note that the version of the NCC applicable is the version applicable at the time of the Construction Certificate Application is dated as received by the certifying authority.

1.4 Limitations

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

Sections B, C, D, E, F, G, H and I of the NCC;

The structural adequacy or design of the building;

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

The design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

a) The National Construction Code - Plumbing Code of Australia Volume 3
b) The Disability Discrimination Act;
c) The Premises Standard;
d) Demolition Standards not referred to by the NCC;
e) Occupational Health and Safety Act;
f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, RTA, Council and the like; and
g) Conditions of Development Consent

1.5 Design Documentation

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

2 BUILDING DESCRIPTION

For the purpose of the NCC the development may be described as follows.

2.1 Classification (Clause A3.2)

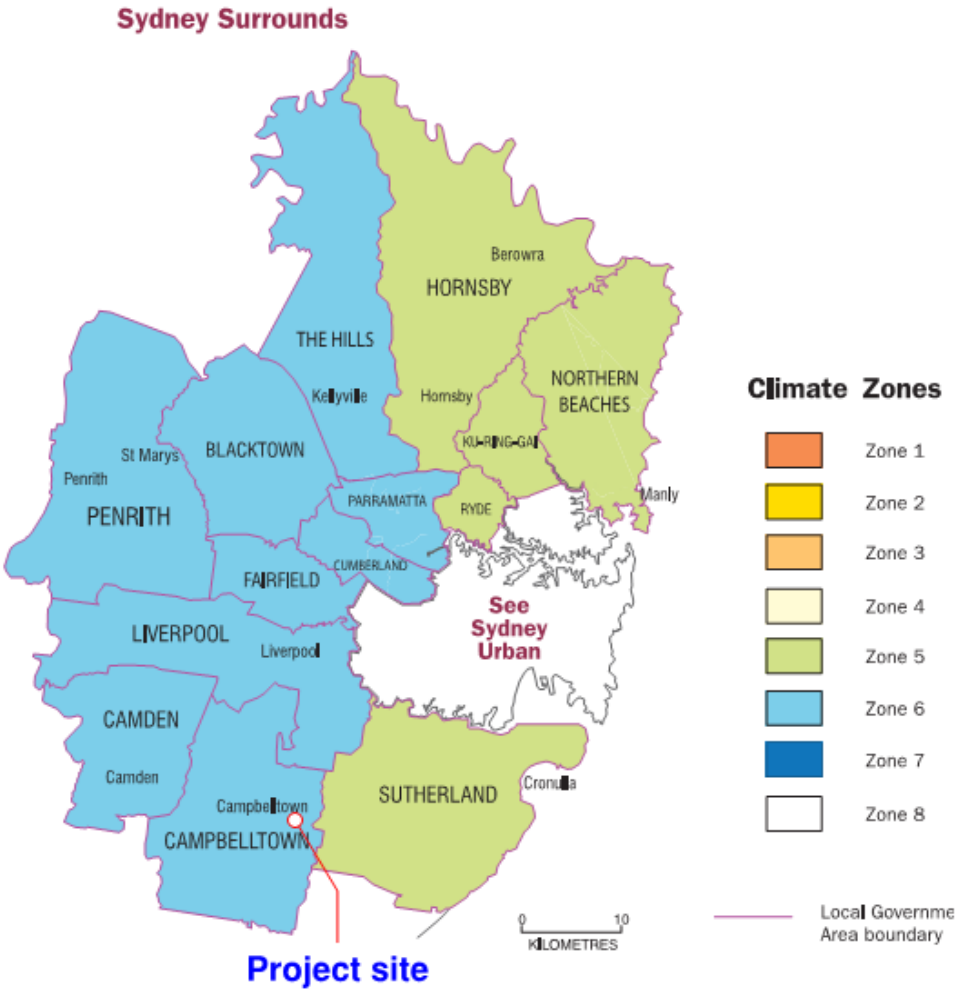
The Building has been classified as follows:

Class	Level	Description
9b	All	All spaces within Floor-G & L1, and Floor-LG indoor sport area
7a	LG	Floor-LG carpark

This Report addresses ONLY matters relevant to Section 'J' of Volume 1 of the NCC pertaining to the Class 9b & 7a portion/s of the building.

2.2 Climate Zone (Clause A1.1)

The building is located within Climate Zone 6. Any reference to 'this climate zone' throughout the report is referring to Climate Zone 6.



3 SUMMARY OF PROVISIONS TO COMPLY WITH SECTION J

The following is a summary of the requirements for compliance for Section J to be achievable, for full details of the assessment see Part 4 of this report:

3.1 Part J1 - Building Fabric

Building Element	Required	Proposed	Compliance Achievable	Possible Solution
New Metal Roof	R3.20 (downwards)	R4.48 (downwards)	Yes	Adding 55mm R1.3 reflective (0.9-0.05) insulating blanket & R2.0 ceiling batts.
New External Cladded Walls	R2.80	R2.92	Yes	Adding R2.50 wall batts to the stud wall.
New Internal Walls	R1.80	R2.03	Not Applicable	Adding R1.50 wall batt to the stud wall system.
New Suspended Concrete Slab	R2.0*	R2.03	Yes	Adding 40mm reflective (0.9-0.05) rigid board of thermal conductivity 0.023.
Wall Sarking	R0.20	R0.20	Yes	Adding R0.20 wall sarking if light weight metal frames are used.

NB Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

* A JV3 Alternative Solution offers opportunity to remove floor insulation beneath the Ground floor to basement along with specifying single clear glazing throughout the building (this is only applicable for suspended carpark)

Ceiling Assumption	The loss of insulation area because of exhaust fans, flues or down-lights is less than 0.5% of the ceiling area.

3.2 Part J2 – Glazing

Orientation	U-value maximum	SHGC* maximum	Possible Glazing Solution
LG_North West	2.6	0.36	Double, tinted
LG_North East	7.5	0.55	Single, neutral/clear
LG_South East	3.3	0.80	Double, clear
LG_South West	5.8	0.80	Single, low-E, clear
L1_North West	3.1	0.35	Double, tinted
L1_North East	7.5	0.65	Single, neutral/clear
L1_South East	4.4	0.80	Single, low-E, clear
L1_South West	3.8	0.80	Double, clear

**SHGC - Solar Heat Gain Coefficient - % of solar radiation transmitted through glass*

N.B. – A JV3 Alternative Solution will aim to remove the need for high performance glazing and specify one type of glass throughout the building.

3.3 Part J3 - Building Sealing

Building Element	Comment
New Entry Doors	Must be self-closing provided with weather seals.
New Exhaust Fans	Must have self-closing dampers.
Bi-Fold Doors	Any bi-fold doors must be interlocked to ensure the air-conditioning system is inactive when these doors are open.
Open Shop Front	Not Applicable
Roof Lights	Not Applicable
Roof, Walls & Floor	Minimise air leakage by enclosed or internal lining systems that are close fitting at ceiling, wall and floor junctions or sealed by caulking, skirting, architraves, cornices or the like.

3.4 Part J5 - Air Conditioning and Ventilation Systems

Building Element	Comment
New Air Conditioning Certification	Required if the size of the air-conditioner is greater than 35kWr.
New A/C System	Must have the ability to be inactive when the area is not occupied.
New Ductwork	Must be insulated to a minimum R-value of R1.20 within a conditioned space, R3.0 in direct sunlight, and R2.0 in other locations.

3.5 Part J6 - Artificial Lighting and Power

Building Element	Comment
New Lighting	Must not exceed the “maximum lighting wattage” in the lighting calculations table in Appendix 3.
Artificial Lighting Switch	Must be located in a visible position in the room being switched or located in an adjacent room where the lighting being switched can be seen. Not operate lighting for an area more than 250m^2 for a space not more than 2000m^2 or 1000m^2 for a space of more than 2000m^2 in a class 3,6,7,8 (non laboratory) & 9 building except for single function spaces.
Artificial Lighting	A time switch or an occupant sensing device such as a security key card reader or a motion detector in accordance with Spec J6 must control 95% of artificial lighting in a building or storey of a building of more than 250m^2 (for exceptions see J6.3(f),(g) in the detailed assessment).
Artificial Lighting Adjacent To Windows	Not Applicable
Interior Decorative & Display Lighting	Controlled separately from other artificial lighting by a manual switch for each area. Controlled by a time switch where display lighting exceeds 1kW.
Window Display Lighting	Must be controlled separately from other display lights.
Artificial Lighting Perimeter	Controlled by a daylight sensor or time switch. When the total perimeter lighting load exceeds 100W, have an average light source efficiency of not less than 100 lumens/W or to be

	controlled by a motion detector (for exceptions see J6.5 (b) in the detailed assessment).
Decorative External Lighting	Must have a separate time switch.
Boiling Water & Chilled Water Storage Units	Must be controlled by a time switch.
Specification	**Comment**
Specification J6	All time switches, motion detectors, occupant sensing devices & daylight sensors must meet Specification J6 standards.

3.6 Part J7 - Hot Water Supply

Building Element	Comment
New Hot Water Taps	Specifying all new hot water taps with a minimum rating of 3 stars and timeclocks to zip type instantaneous water heaters.

3.7 Part J8 - Facilities for Energy Monitoring

Monitoring	Comment
Energy Monitoring	Standard electricity and gas metering is sufficient.

4 DETAILED ASSESSMENT

4.1 Part J1 - Building Fabric

J1.1 Application - All new parts of the new building envelope need to comply.

The deemed-to-satisfy provisions of this part apply to building elements forming the envelope of a Class 2 to 9 building.

Building Envelope

The building envelope for the purpose of this Section J is described as the external walls, floors and roof of any conditioned space within the proposed Class 9b & 7a premises, as well as any internal walls or floors of the premises exposed to an unconditioned space. Please see Appendix 1 for building envelope insulation mark-up.

J1.2 Thermal Construction General - Builder is to ensure compliance, during construction.

- Insulation must comply with AS/NZS 4859.1.
- Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels where the insulation must be against the member.
- Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that contribute to the thermal barrier.
- Does not affect the safe or effective operation of a service or fitting.
- Reflective insulation must be installed with the necessary airspace between the reflective side of the insulation and the lining or cladding.
- Reflective insulation must be installed closely against any penetration, door or window opening.
- Each adjoining sheet of roll membrane being overlapped not less than 50mm or taped together.
- Bulk insulation must be installed so that it maintains its position and thickness.
- When selecting insulation caution should be taken to clearly identify the total R-value of the installed roofing and ceiling system or wall system.

J1.3 Roof & Ceiling Construction

a) In this Climate Zone 6, Table J1.3 requires a minimum total R-value of R3.20 (downwards).

b) Where the area of ceiling insulation is reduced by more than 0.5% because of exhaust fans, flues or downlights, the loss of insulation must be compensated for by increasing the R-value of the insulation.

Compliance can be met by:

- Ensuring the loss of insulation area because of exhaust fans, flues or down lights is less than 0.5% of the ceiling area.

c) A metal roof with metal purlins or metal battens, to which the ceiling lining is fixed directly underneath must have a thermal break, consisting of a material with an R-value of not less than R0.20, installed between the metal sheet roofing and it's supporting metal purlins, metal rafters or metal battens.

The reflective insulation blanket provides the required thermal break, in this instance.

R-Value: R3.2

The roof & ceiling system that is a metal roof with plasterboard ceiling has an un-insulated R-value of R1.18 (>15-45°) (downwards). The roof & ceiling system is a skillion metal roof with 10mm plaster below rafters with un-insulated R-value of 1.18 (5-15°). Additional insulation is required to achieve a minimum total R-value of R3.20.

Roof & Ceiling Element	**R-Value Unventilated-Down**
Outside air film	0.04
Metal roof	0.00
55mm Reflective Blanket R1.30	*1.30*
Reflective Airspace (E0.9-E0.05)(>10º)	0.92
Ceiling Batts	Additional minimum 0.72
Plasterboard	0.06
Internal air film	0.16
Total R-value	**3.20 minimum**

Compliance can be met by:

- Installing 55mm R1.30 reflective insulating blanket & R2.0 ceiling batts. This will achieve a total 'R-value' of R4.48 (downwards), which exceeds the required minimum of R3.20.
- Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

Colour	Solar Absorptance	BCA Classification	BASIX Classificatio
Classic Cream™	0.32	L	L
Surfmist®	0.32	L	L
Paperbark®	0.42	M	L
Evening Haze®	0.43	M	L
Shale Grey™	0.43	M	L
Sandbank®	0.46	M	L
Dune®	0.47	M	L
Windspray®	0.58	M	M
Pale Eucalypt®	0.60	M	M
Bushland®	0.62	D	M
Headland®	0.63	D	M
Wilderness®	0.65	D	M
Jasper®	0.68	D	M
Manor Red®	0.69	D	M
Woodland Grey®	0.71	D	D
Loft®	0.71	D	D
Monument®	0.73	D	D
Ironstone®	0.74	D	D
Cottage Green®	0.75	D	D
Deep Ocean®	0.75	D	D

J1.4 Roof lights - Not Applicable

a) If the total area of roof lights must not exceed 5% of the floor area of the room or space they serve and must comply with Table J1.4.

b) The total area of roof lights may exceed 5% of the floor area of the room or space they serve, where -
   i. They do not exceed 150% of the minimum area required by Part F4,
   ii. and
   iii. The transparent and translucent elements of the roof lights, including any imperforate ceiling diffuser achieves an SHGC of not more than 0.29; and a Total U-Value of not more than 2.90.

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

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	*Total System SHGC*	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	Total System U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
0.5 to less than 1.0	*Total System SHGC*	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	Total System U-Value	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	*Total System SHGC*	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	Total System U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and more	*Total System SHGC*	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	Total System U-Value	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)**.

J1.5 External Walls

a) Each part of an external wall that is part of an envelope other than a sole-occupancy of a Class 2 building or Class 4 part of a building, must meet the following NCC thermal performance requirements except for -
   i. Opaque non-glazed openings in external walls such as garage doors, vents, penetrations, shutters and the like;
   ii. Glazing
   iii. An earth retaining wall or earth-berm, except in Climate Zone 8.

b) For external walls in this Climate Zone (4,5,6), Table J1.5a requires a minimum total R-value of R2.80, which can be reduced by R0.5 if the wall surface density is greater than 220kg/m^2, and by another R0.5 if the wall is south facing or is shaded between 30 and 60 degrees.
OR

c) For external walls in this Climate Zone (1,2,3,4,5,6) where the only space for insulation is provided by furring channels, top hat sections or battens, Table J1.5a requires a minimum total R-value of R1.40 and satisfy the glazing energy index Option B in Table J2.4a.

The wall system that is external cladding with internal plasterboard has an un-insulated R-value of R0.42. Additional insulation is required in order to achieve a minimum total R-value of R2.80.

Wall Element	**R-Value**
Outside air film	0.04
Cladding	0.03
Airspace (non-reflective and unventilated)	0.17
Additional insulation	*2.38 minimum*
Plasterboard	0.06
Internal air film	0.12
Total R-value	**2.80 minimum**

Compliance can be met by:

- Adding R2.50 wall batts to the cladding wall system. This will achieve a total '**R-value' of R2.92,** which exceeds the required minimum of R2.80.
- Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

J1.5 Internal Walls

a) For internal walls that form part of the envelope in this Climate Zone (4,5,6), Table J1.5b requires a minimum total R-value of R1.80.

The internal wall system that is a stud wall lined with plasterboard has an un-insulated R-value of R0.45. Additional insulation is required to achieve a total R-value of R1.80.

Wall Element	**R-Value**
Outside air film	0.04
Plasterboard	0.06
Additional insulation	*1.35 minimum*
Airspace (non-reflective and unventilated)	0.17
Plasterboard	0.06
Internal air film	0.12
Total R-value	**1.80 minimum**

Compliance can be met by:

- Adding R1.50 wall batt to the stud wall system. This will achieve a total '**R-value' of R1.95** which exceeds the required R-value of R1.80.

b) A light weight wall that is part of the envelope on a metal frame must have thermal break using a material with an R-value of not less than R0.20 installed between the metal frame and the external cladding.

Compliance can be met by:

- Installing wall sarking with **R-value of R0.20** where metal frames are used.

J1.6 Floors

a) For a slab on ground in this Climate Zone (1,2,3,4,5,6), Table J1.6 does not require any additional insulation in the floor.
b) For a suspended floor with an enclosed subfloor in this Climate Zone (1,2,5,6), Table J1.6 requires a Total R-value of R1.0 to be achieved.
c) For a suspended floor with an open subfloor in this Climate Zone (1,2,3,4,5,6), Table J1.6 requires a Total R-value of R2.0 to be achieved.
d) In climate zones 1 to 6, by increasing the roof/ceiling insulation by R0.75 above the required value would allow the floor insulation to be reduced by R0.50.

The concrete suspended slab floor has an un-insulated R-value of R0.30. Additional insulation is required where it abuts out/overhangs from the building to achieve a total R-value of R2.00.

Floor Element	**R-Value**
Indoor air film	0.16
150mm Concrete Slab	0.10
Additional insulation	*1.70 minimum*
Outdoor air film	0.04
Total R-value	**2.00 minimum**

Compliance can therefore be met by the following:

- Adding 40mm rigid board with a thermal conductivity of 0.023 or better to the concrete slab which provides an added R-value of R1.73. This will achieve a **total** '**value' of R2.03 which exceeds the required R-value of R2.0**

4.2 Part J2 - Glazing

J2.1 Application

The deemed-to-satisfy provisions apply to elements forming the envelope of a building other than:

i. A sole-occupancy unit of a Class 2 building or Class 4 part of a building.
ii. A Class 7, 8 or 9b building that does not have a conditioned space.
iii. An atrium or solarium that is not a conditioned space & is separated from the remainder of the building by an envelope.

J2.4 Glazing

The building must comply with glazing requirements, which satisfy Method 2 calculations of the NCC Vol. 1, 2016. In this instance the Glazing Calculator Spreadsheet developed by the ABCB has been employed and all results are attached in Appendix 2.

NOTE: The glazing characteristics referred to are the new NFRC-100 characteristics, any glazing system which has either a 'U value' or 'SHGC value' EQUAL TO OR LESS THAN that specified, is acceptable.

Appendix 2 contains these calculations.

Compliance can be met by:

Orientation	U-value maximum	SHGC* maximum	Possible Glazing Solution
LG_North West	2.6	0.36	Double, tinted
LG_North East	7.5	0.55	Single, neutral/clear
LG_South East	3.3	0.80	Double, clear
LG_South West	5.8	0.80	Single, low-E, clear
L1_North West	3.1	0.35	Double, tinted
L1_North East	7.5	0.65	Single, neutral/clear
L1_South East	4.4	0.80	Single, low-E, clear
L1_South West	3.8	0.80	Double, clear

It is important to note that it is the system U-value and SHGC characteristics which are the determining factors for compliance NOT the glazing description.

J2.5 Shading

When shading is required, 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.
   ii. Provides the equivalent shading with a reveal or the like.
b) Be provided by an external shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats which -
   i. Is capable of restricting at least 80% of summer solar radiation.
   ii. If adjustable, is operated automatically in response to the level of solar radiation.

4.3 Part J3 - Building Sealing

J3.1 Application

Applies to elements forming the envelope of a Class 2 to 9 building other than -

i. A building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler.
ii. A permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance.
iii. A class 6, 7, 8 and 9b building that does not have a conditioned space.

iv. A building or space where the mechanical ventilation required provides sufficient pressurisation to prevent infiltration.
v. An atrium or solarium that is not a conditioned space and is separated from the remainder of the building by an envelope.

J3.2 Chimneys and Flues

The chimney or flue of an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.

J3.3 Roof Lights – (Not Applicable)

A roof light must be sealed when serving a conditioned space and must be constructed with an imperforate ceiling diffuser or a weatherproof seal if it is a roof window, or a readily operable shutter system (manual, mechanical or electronic).

J3.4 Windows and doors

All external doors and windows must either have seals to restrict air infiltration or the windows must comply with AS 2047.

An entrance to a building must have an airlock, self-closing door, revolving door or the like…where the conditioned space has a floor area greater than 50m^2.

Compliance can be met by the following:

- All new entry doors must be self-closing.
- All bi-fold doors must be interlocked to ensure the air-conditioning system is inactive when these doors are open.

J3.5 Exhaust Fans

All exhaust fans fitted in a conditioned space must have a sealing device such as a self-closing damper or the like.

Compliance can be met by:

- Any new exhaust fans to have self-closing dampers, including “miscellaneous exhaust fans”.

J3.6 Constructions of roofs, walls and floors

Roofs, ceilings, walls and floors and any opening such as a window or door must be constructed to minimise air leakage by -

- Enclosed or internal lining systems that are close fitting at ceiling, wall and floor junctions or
- Sealed by caulking, skirting, architraves, cornices or the like.

J3.7 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper when serving -

i. A heated space; or
ii. A habitable room or a public area of a building in Climate Zones 4, 5, 6, 7 & 8.

4.4 Part J4 - Air Movement - Not Applicable

4.5 Part J5 - A/C & Ventilation Systems

The air-conditioning system requires certification by a Mechanical Engineer, where the size of the air-conditioner is greater than **35kWr** in **Climate 4, 5, 6 or 7**. For smaller package or split systems the motor efficiency performance is controlled under the Australian Governments Minimum Energy performance Scheme (MEPS).

A mechanical ventilation system will require certification by a Mechanical Engineer.

General provisions include:

J5.2 Air-conditioning systems

a) Control -
   i. An air-conditioning system -
      (A) must be capable of being deactivated when the building or part of a building served by that system is not occupied; and
      (B) when serving more than one air-conditioning zone or area with different heating or cooling needs, must -
         (aa) thermostatically control the temperature of each zone of area; and
         (bb) not control the temperature by mixing actively heated air and actively cooled air; and
         (cc) limit reheating to not more than -
            (AA) for a fixed supply air rate, a 7.5 K rise in temperature; and
            (BB) for a variable supply air rate, a 7.5 K rise in temperature at the nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or increased; and
      (C) which provides the required mechanical ventilation, other than in process-related applications where humidity control is needed, must have an outdoor air economy cycle -
         (aa) in climate zones 2 or 3, when the air-conditioning system capacity is more than 50 kWr; or (Not Applicable)
         (bb) in climate zones 4, 5, 6, 7 or 8, when the air-conditioning system capacity is more than 35 kWr; and
      (D) which contains more than one water heater, chiller or coil, must be capable of stopping the flow of water to those not operating; and
      (E) except for a packaged air-conditioning system, must have a variable speed fan when its supply air quantity is capable of being varied; and
   ii. When an air-conditioning system is deactivated, any motorised outside air and return dampers must close.
   iii. Compliance with (i) must not adversely affect-
      (A) smoke hazard management measures required by Part E2; and
      (B) ventilation required by Part E3 and Part F4.

b) Fans - Fans of an air-conditioning system must comply with Specification J5.2a.

c) Pumps -
   i. An air-conditioning system, where water is circulated by pumping at more than 2 L/s, must be designed so that the maximum pump power to the pump complies with Table J5.2.
   ii. An air-conditioning system pump that is rated at more than 3 kW of pump power and circulates water at more than 2 L/s must be capable of varying its speed in response to varying load.
   iii. A spray water pump of an air-conditioning system's closed circuit cooler or evaporative condenser must not use more than 150 W of pump power for each L/s of spray water circulated.

d) Insulation -
   i. The ductwork of an air-conditioning system must be insulated and sealed in accordance with Specification J5.2b.
   ii. Piping, vessels, heat exchangers and tanks containing heating or cooling fluid that are part of an air-conditioning system, other than those with insulation levels covered by MEPS, must be insulated in accordance with Specification J5.2c.

e) Space Heating - A heater used for air-conditioning or as part of an air-conditioning system must comply with Specification J5.2d.
f) Energy Efficiency Ratios -
   i. refrigerant chillers used as part of an air-conditioning system; and
   ii. packaged air-conditioning equipment, must comply with Specification J5.2e
g) Time switches -
   i. A time switch complying with Specification J6 must be provided to control -
      (A) an air-conditioning system of more than 10 kWr; and
      (B) a heater of more than 10 $kW_{heating}$ used for air-conditioning.

J5.3 Mechanical ventilation systems

a) Control -
   i. A mechanical ventilation system, including one that is part of an air-conditioning system, must -
      (A) be capable of being deactivated when the building or part of the building served by that system is not occupied; and
      (B) when serving a conditioned space
         (aa) not exceed the minimum outdoor air quantity required by Part F4, where relevant, by more than 20%; and
         (bb) in other than climate zone 2, where the number of square metres per person is not more than 1 as specified in D1.13 and the air flow rate is more than 1000 L/s, have -
            (AA) an energy reclaiming system that preconditions outside air; or
            (BB) the ability to automatically modulate the mechanical ventilation required by Part F4 in proportion to the number of occupants.
   ii. The requirements of (a)(i)(B)(aa) do not apply where -
      (A) additional unconditioned outside air is supplied for free cooling or to balance process exhaust; or
      (B) additional exhaust ventilation is needed to balance the required mechanical ventilation; or
      (C) an energy reclaiming system preconditions all the outside air.
   iii. Compliance with (a)(i) must not adversely affect -
      (A) smoke hazard management measures required by Part E2; and
      (B) ventilation required by Part E3 and Part F4

b) Fans - Fans of a mechanical ventilation system covered by (a) must comply with Specification J5.2a.
c) Time switches -
   i. A time switch complying with Specification J6 must be provided to control a mechanical ventilation system with an air flow rate of more than 1000 L/s.

J5.4 Miscellaneous exhaust systems

a) A miscellaneous exhaust system with an air flow rate of more than 1000 L/s, that is associated with equipment having a variable demand, must -
   i. be capable of stopping the motor when the system is not needed; and
   ii. have a variable speed fan or the like.
b) The requirements of (a) do not apply -
   i. to a miscellaneous exhaust system in -
      (A) a sole-occupancy unit in a Class 2, 3 or 9c building; or
      (B) a Class 4 part of a building; or
   ii. where additional exhaust ventilation is needed to balance the required outside air for ventilation.

4.6 Part J6 - Artificial Lighting and Power

J6.1 Application

J6.2, J6.3 and J6.5 (a)(ii) do not apply to a Class 8 electricity network substation.

J6.2 Interior artificial lighting

a) All artificial lighting for the whole building must not exceed the aggregated maximum Illumination Power Density (IPD) specified in Table J6.2b. (refer Appendix 4).

NOTE: Illumination Power Density is not just the wattage of the lamps but of the entire installation. E.g. typically a 2 x 36W fluorescent fitting is not 72 watts BUT 80 watts, to allow for energy losses in the control equipment and particularly the ballast. For LV lights, the transformer and control gear must be considered. For example a 50W LV dichroic light is rated at 65W. When purchasing or specifying lighting equipment, the full energy use data for the equipment should be obtained from the supplier.

Compliance can be met by:

- Not exceeding the "Max. Lighting Wattage" for any new lighting in each of the areas in the lighting calculations table in **Appendix 3**.
- The maximum lighting wattage for the building must not exceed **23,942 watts.**

In calculating the number of such lamps required -

A 2 x 36W triphosphor fluorescent fitting will generate 80 Lm/W, resulting in a lighting output of 5,760 Lm per fitting.

This fitting will use 80W of electricity, therefore to comply with 10 W/ m^2 IPD, for an area of 100 m^2, the maximum number of these fittings permissible is: 10 x 100 W = 1,000W / 80 = 12 fittings, and this will produce 69,000 Lm or 690 Lux. (i.e. more than twice that required for an Office).

b) The lighting limits do not apply to the following -
- Emergency Lighting
- Signage and display lighting
- A heater where it emits light
- Lighting for a specialised process nature
- Lighting for performances such as theatrical or sporting
- Lighting of permanent displays in museums or galleries

J6.3 Interior artificial lighting and power control

a) Artificial lighting of a room or space must be individually operated by a switch or other control device.

b) An artificial lighting switch must -
   i. Be located in a visible position in the room being switched or in an adjacent room or space from where the lighting being switched is visible.
   ii. Not operate lighting for an area more than 250m^2 for a space of not more than 2000m^2 or 1000m^2 for a space of more than 2000m^2 in a Class 3,6,7,8 (other than a laboratory) or 9 building, except for single function spaces.

c) 95% of artificial lighting in a building or storey of a building of more than 250m^2 in floor area must be controlled by -
   i. A time switch in accordance with Specification J6; or
   ii. An occupant sensing device such as a security key card reader or a motion detector in accordance with Specification J6.

d) These lighting requirements do not apply to Emergency lighting requirements or where lighting is required for 24 hours occupancy situations.

e) The requirements of (c) do not apply to the following -
   i. Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as in a patient care in a Class 9a building or in a Class 9c aged care building.

ii. A heater where the heater also emits light, such as in bathrooms.

J6.4 Interior decorative and display lighting

a) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled -
   i. Separately from other artificial lighting; and
   ii. By a manual switch for each area ……; and
   iii. By a time switch in accordance with Specification J6 where display lighting exceeds 1 kW.
b) Window display lighting must be controlled separately from other display lighting.

J6.5 Artificial lighting around the perimeter of a building

a) Artificial lighting around the perimeter of a building, must -
   i. Be controlled by either a daylight sensor or a time switch in accordance with Specification J6.
   ii. When the total perimeter lighting load exceeds 100W, have an average light source efficacy of not less than 60 Lumens/W, or be controlled by a motion detector in accordance with Specification J6.
   iii. When used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification J6.
b) The requirements of (a) (ii) do not apply to the following -
   i. Emergency lighting in accordance with Part E4.
   ii. Lighting around a detention centre.

J6.6 Boiling water and chilled water storage units

Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.

NOTE:

- That for smaller rooms a greater Illumination Power Density can be achieved by using a Motion Detector.
- All areas have had the Room Aspect Ration applied.
- Low Voltage Halogen lights only have efficacy of approx. 20 Lm/W and Compact Fluorescent lamps have an efficacy of approx. 70 Lm/W.
- That for stairwells and corridors the provisions of Part E4 overrides this Section.

Specification J6

This section contains the requirements for lighting control devices should they be used in the building.

Spec J6.3 Time Watch

a) A time switch must be capable of switching on and off electric power at variable pre-programmed times and on variable pre-programmed days.
b) A time switch for internal lighting must be capable of being overridden by -
   i. A means of turning lights on by a manual switch or an occupant sensing device that can override the time switch for a period of up to two hours after which there is no further presence detected, the time switch must resume control.
   OR
   ii. A means of turning lights on by an occupant sensing device that overrides the time switch upon a person's entry and returns control to the time switch upon the person's exciting, such as a security card reader; and
   iii. A manual "off" switch.
c) A time switch for external lighting must be capable of -
   i. Limiting the period the system is switched on to between 30 minutes before sunset and 30 minutes after sunrise is determined or detected including any pre-programmed period between these times; and
   ii. Being overridden by a manual switch or a security access system for a period of up to 30 minutes, after which the time switch must resume control.

d) A time switch for boiling water and chilled water storage units must be capable of being overridden by a manual switch or a security access system that senses a person's presence, overrides for a period of up to 2 hours, after which if there is no further presence detected, the time switch must resume control.

Spec J6.4 Motion Detectors

a) In a Class 5, 6, 7, 8, 9a or 9b building, a motion detector must -
   i. Be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
   ii. Be capable of detecting a person before they have entered 1m into the space, and movement of 500mm within the useable part of the space; and
   iii. Not control more than, in other than a carpark, an area of 500m^2 with a single sensor or group of parallel sensors and 75% of the lights in spaces using high intensity discharge; and
   iv. Be capable of maintaining the artificial lighting when activated for a maximum of 30 minutes unless it is reset, and without interruption if the motion detector is reset by movement; and
   v. Not be overridden by a manual switch to permanently leave the lights on.

b) When outside a building, a motion detector must -
   i. Be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
   ii. Be capable of detecting a person within a distance of twice the mounting height or 80% of the ground area covered by the lights beam, and
   iii. Not control more than 5 lights and
   iv. Be operated in series with a photoelectric cell or astronomical time switch so that the lights will not operate in daylight hours, and
   v. Be capable of maintaining the artificial lighting when the switch is turned on for a maximum of 10 minutes unless it is reset, and
   vi. Have a manual override switch which is reset after a maximum period of 4 hours.

Spec J6.4 Daylight sensor and dynamic lighting control device

A daylight sensor and dynamic lighting control device for artificial lighting must -

a) For switching on and off -
   i. Be capable of having the switching level set point adjusted between 50 and 1000 lux; and
   ii. Have a delay of more than 2 minutes or a differential of more than 50 lux, and

Have a manual override switch which enables the lighting in an area to be turned off but is not able to switch the lights permanently on or bypass the lighting controls.

4.7 Part J7 - Hot Water Supply, Swimming Pool, Spa Pool

J7.2 Hot Water Supply

Builder to generally ensure all provisions of NCC are complied with. However, specifically ALL hot water outlets must be fitted with a minimum 3 star water fittings, in this new section of the building. The water supply system needs to be stored and delivered the conditions which prevent the likelihood of the growth of Legionella bacteria.

Should 'Zip' type instantaneous water heaters be installed over sinks they must have time clocks installed.

Compliance can be met by:

- Specifying all new hot water taps with a minimum rating of **3 stars**.

J7.3 Swimming Pool Heating and Pumping - Not Applicable

J7.4 Spa Pool Heating and Pumping - Not Applicable

4.8 Part J8 - Facilities for Energy Monitoring

J8.1 Application

The provisions of this part do not apply to a sole-occupancy unit of a Class 2 building, a Class 4 part of a building or to a Class 8 electricity network substation.

J8.2 *******

J8.3 Facilities for Energy Monitoring

a) A building with a floor area greater than 500m^2 must have the facility to record the consumption of gas and electricity.

Compliance can be met by:

- The building must have separate facilities for recording the electricity used (standard electricity supply authority metering is sufficient in this case).

5 STATEMENT OF COMPLIANCE

The design documentation as referred to in this report has been assessed against the applicable provisions of Section J of the National Construction Code (NCC) and it is considered that such documentation complies or is capable of complying (as outlined above) with that Code.

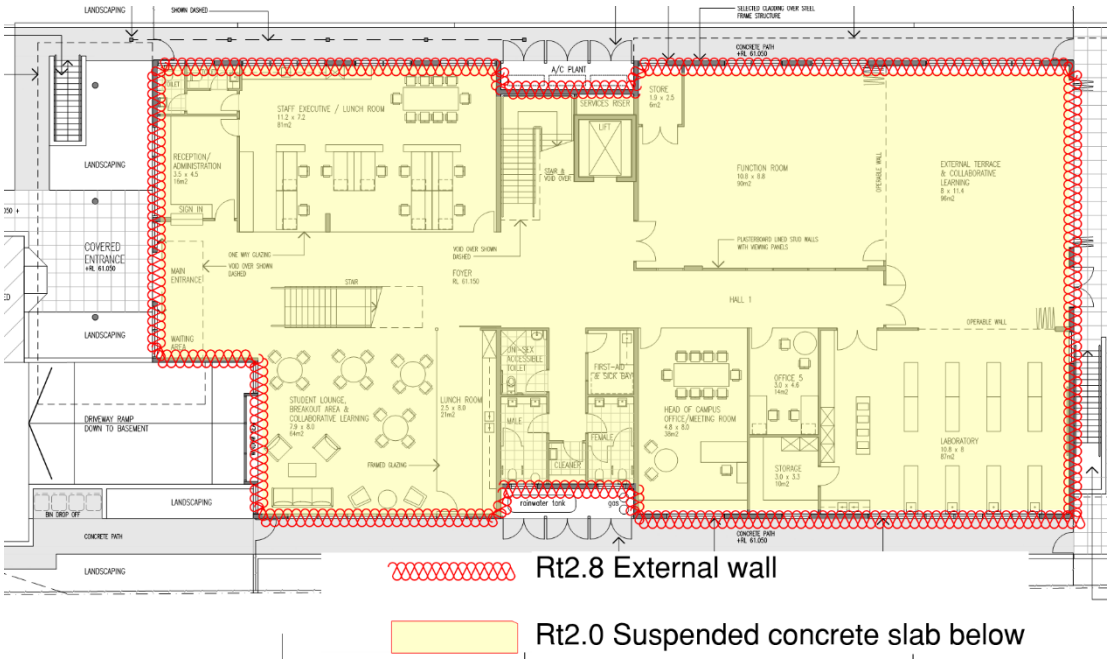
ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

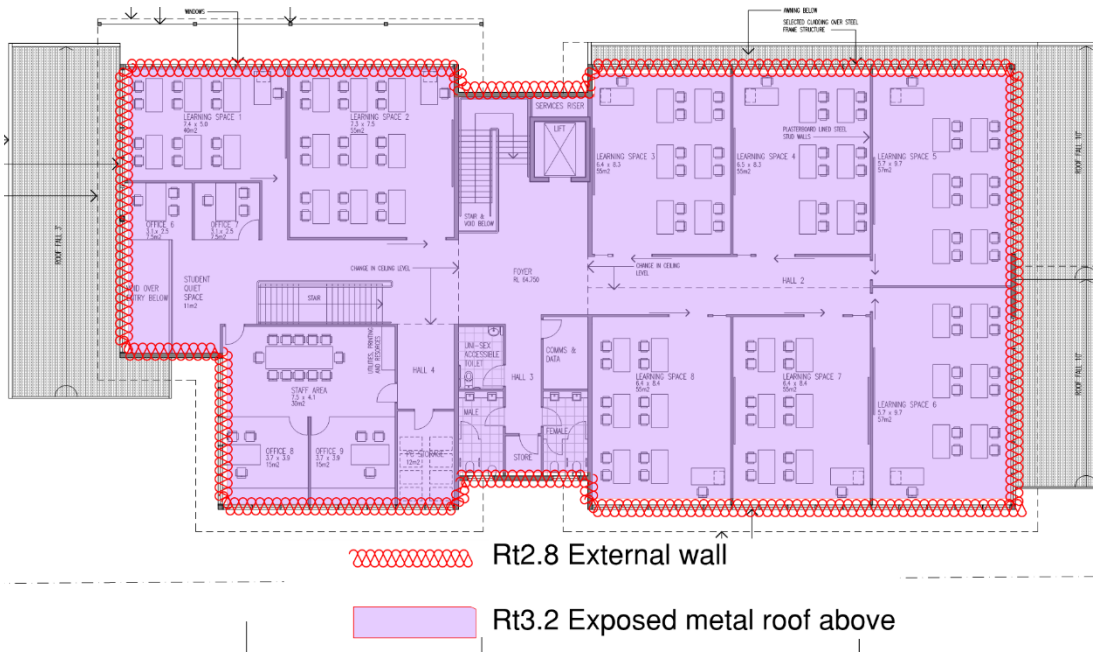
Architectural Plans Prepared by		
Drawing Number	**Revision**	**Title**
A-01	Amdt-D (Preliminary Issue)	Site plan
A-02	Amdt-D (Preliminary Issue)	Lower ground floor plan
A-03	Amdt-D (Preliminary Issue)	Ground floor plan
A-04	Amdt-D (Preliminary Issue)	First floor plan
A-05	Amdt-C (Preliminary Issue)	Roof plan
A-06	Amdt-C (Preliminary Issue)	Elevations
A-07	Amdt-C (Preliminary Issue)	Sections

APPENDIX 1 – BUILDING ENVELOPE

LEVEL - GROUND FLOOR



LEVEL - ONE



APPENDIX 2 - GLAZING CALCULATIONS

LEVEL - GROUND FLOOR

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014) HELP

Building name/description: 6a Watford Rd, Campbelltown | Application: other | Climate zone: 6

Storey: G

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A		136m²		76.8m²		136m²		85.6m²	
Option B									n/a
Glazing area (A)		26.3m²		25.6m²		28m²		40m²	

Number of rows preferred in table below: 21 *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance		P&H or device		Shading	Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating g (S_H)	Cooling g (S_C)	Area used (m²)	Element share of % of allowance used
1	G_NW1	NW		1.40	6.60		2.6	0.36	1.000	5.900	0.00	4.50	1.00	1.00	9.24	32% of 100%
2	G_NW2	NW		4.70		18.90	2.6	0.36	4.900	4.600	1.07	-0.10	0.12	0.37	18.90	44% of 100%
3	G_NW_d	NW		2.60	2.20		2.6	0.36	4.900	2.200	2.23	-0.40	0.00	0.29	5.72	13% of 100%
4	G_NW3	NW		1.40	4.40		2.6	0.36	4.900	3.100	1.58	1.70	0.78	0.58	6.16	12% of 100%
5	G_NE7	NE		1.40	5.00		7.5	0.55	1.000	2.500	0.40	1.10	0.98	0.94	7.00	26% of 100%
6	G_NE6	NE		1.40	2.50		7.5	0.55	1.000	2.500	0.40	1.10	0.98	0.94	3.50	13% of 100%
7	G_NE5	NE		1.40	2.50		7.5	0.55	1.000	2.500	0.40	1.10	0.98	0.94	3.50	13% of 100%
8	G_NE4	NE		1.40	1.20		7.5	0.55	1.000	2.500	0.40	1.10	0.98	0.94	1.68	6% of 100%
9	G_NE3	NE		1.40	5.00		7.5	0.55	2.000	4.950	0.00	3.55	1.00	1.00	7.00	28% of 100%
10	G_NE2	NE		0.60	3.60		7.5	0.55	2.000	4.270	0.00	3.67	1.00	1.00	2.16	9% of 100%
11	G_NE1	NE		0.60	2.40		7.5	0.55	2.000	4.270	0.00	3.67	1.00	1.00	1.44	6% of 100%
12	G_SE_d1	SE		2.60	7.30		3.3	0.80	6.500	4.700	0.00	2.10	1.00	1.00	18.98	76% of 98%
13	G_SE_d2	SE		2.60	1.80		3.3	0.80	6.500	3.800	1.71	1.20	0.67	0.59	4.68	16% of 98%
14	G_SE1	SE		1.40	1.40		3.3	0.80	6.500	3.200	0.00	1.80	1.00	1.00	1.96	8% of 98%
15	G_SW1	SW		1.40	7.70		5.8	0.80	1.000	5.800	0.00	4.40	1.00	1.00	10.78	38% of 100%
16	G_SW6	SW		0.60	1.20		5.8	0.80				0.00	1.00	1.00	0.72	3% of 100%
17	G_SW5	SW		0.60	1.20		5.8	0.80				0.00	1.00	1.00	0.72	3% of 100%
18	G_SW4	SW		1.40	2.50		5.8	0.80	1.000	7.300	0.00	5.90	1.00	1.00	3.50	12% of 100%
19	G_SW5	SW		1.40	1.30		5.8	0.80	1.000	7.300	0.00	5.90	1.00	1.00	1.82	6% of 100%
20	G_SW6	SW		1.40	7.50		5.8	0.80	1.000	7.300	0.00	5.90	1.00	1.00	10.50	37% of 100%
21																

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters. While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all. Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

LEVEL - ONE

NCC VOLUME ONE GLAZING CALCULATOR (first issued with NCC 2014) HELP

Building name/description: 6a Watford Rd, Campbelltown
Application: other
Climate zone: 6
Storey: 1

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A		104.3m²		88m²		154.1m²		69.91m²	
Option B									n/a
Glazing area (A)		*47m²*		*23.2m²*		*29.7m²*		*33.5m²*	

Number of rows preferred in table below: 12 *(as currently displayed)*

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS								SHADING		CALCULATED OUTCOMES OK (if inputs are valid)					
Glazing element		Facing sector		Size			Performance		P&H or device	Shading		Multipliers		Size	Outcomes
ID	Description (optional)	Option A facades	Option B facades	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	1_NW1	NW		1.40	6.60		3.1	0.35	1.000	1.700	0.59	0.30	0.86	0.69	9.24	26% of 100%
2	1_NW2	NW		3.00		15.00	3.1	0.35	1.000	3.000	0.33	0.00	0.84	0.73	15.00	47% of 100%
3	1_NW3	NW		1.40	6.60		3.1	0.35	1.000	1.700	0.59	0.30	0.86	0.69	9.24	26% of 100%
4	1_NE1	NE		1.40	14.80		7.5	0.65	2.000	1.600	1.25	0.20	0.48	0.43	20.72	46% of 100%
5	1_NE2	NE		1.40	18.80		7.5	0.65	2.000	1.200	1.67	-0.20	0.00	0.30	26.32	54% of 100%
6	1_SE1	SE		1.40	8.30		4.4	0.80	1.000	1.700	0.59	0.30	0.82	0.77	11.62	50% of 99%
7	1_SE2	SE		1.40	8.30		4.4	0.80	1.000	1.700	0.59	0.30	0.82	0.77	11.62	50% of 99%
8	1_SW1	SW		1.40	1.40		3.8	0.80	1.000	2.200	0.45	0.80	0.95	0.92	1.96	7% of 50%
9	1_SW2	SW		0.60	1.20		3.8	0.80				0.00	1.00	1.00	0.72	2% of 50%
10	1_SW3	SW		0.60	1.20		3.8	0.80				0.00	1.00	1.00	0.72	2% of 50%
11	1_SW4	SW		1.40	18.80		3.8	0.80	1.000	2.200	0.45	0.80	0.95	0.92	26.32	89% of 50%
12																

if inputs are valid

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters. While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all. Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

APPENDIX 3 - LIGHTING CALCULATIONS TABLE

AREA DESCRIPTION	FLOOR DIMENSIONS		PERIMETER	AREA	LIGHT ALLOW	MAX. LIGHTING WATTAGE
	L	B	P (m)	(m^2)	(W/m^2)	(W)
LG_carpark			91.00	370.00	6	**2,369**
LG_carpark entry	8.50	5.30	27.60	45.05	25	**1,667**
LG_store	2.90	4.20	14.20	12.18	6	**123**
LG_indoor sport	17.50	17.50	70.00	306.25	10	**3,156**
G_entry	4.40	6.00	20.80	26.40	15	**622**
G_Offices			34.80	43.90	9	**622**
G_staff			38.40	46.50	6	**443**
G_reception	4.50	3.50	16.00	15.75	10	**260**
G_lab	11.00	8.00	38.00	88.00	12	**1,410**
G_store	2.70	8.00	21.40	21.60	6	**213**
G_kitchen	5.00	8.00	26.00	40.00	8	**481**
G_learning	8.10	11.50	39.20	93.15	8	**986**
G_function	11.00	9.30	40.60	102.30	10	**1,327**
G_general &breakout			100.70	207.80	8	**2,303**
G_WC			34.70	31.20	6	**300**
1_SE_learning1	5.70	19.50	50.40	111.15	8	**1,180**
1_SE_learning2	13.00	8.40	42.80	109.20	8	**1,101**
1_SE_learning3	13.00	8.40	42.80	109.20	8	**1,101**
1_NW_learning1	14.90	7.60	45.00	113.24	8	**1,201**
1_staff	8.00	7.50	31.00	60.00	6	**508**
1_PC store	4.20	2.90	14.20	12.18	6	**124**
1_WC			35.70	31.00	6	**300**
1_transition			108.30	165.00	8	**2,145**
Total Sum				**2161.05**		**23,942**

APPENDIX 4 - TABLE OF MAXIMUM ILLUMINATION POWER DENSITY

Space	Maximum illumination power density (W/m^2)
Auditorium, church and public hall	10
Board room and conference room	10
Car park – general	6
Car park – entry zone (first 20m of travel)	25
Common rooms, spaces and corridors	8
Control room, switch room, and the like	9
Corridors	8
Courtroom	12
Entry Lobby	15
Health-care – Children's ward	10
Health-care – Examination room	10
Health-care – Patient ward	7
Health-care – All patient care	13
Kitchen and food preparation area	8
Laboratory	12
Library – reading room	10
Museum and gallery – circulation, cleaning and service lighting	8
Office – artificially lit to an ambient level of 200 lux or more	9
Office – artificially lit to an ambient level of less than 200 lux	7
Plant room	5
Restaurant, café, bar, hotel lounge and a space for serving and consumption of food or drinks	18
Retail space including a museum and gallery whose purpose is the sale of objects	22
School – general purpose learning area	8
Storage with shelving no 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	5
Toilet, locker room, staff room, rest room and the like	6
Wholesale storage and display area	10

Notes:

1. In areas not listed above, the maximum illumination power density is:
   For an illuminance of less than 80 Lux, 7.5 W/m2
   For an illuminance of less than 80 to 160 Lux, 9 W/m2
   For an illuminance of less than 160 to 240 Lux, 10 W/m2
   For an illuminance of less than 240 to 320 Lux, 11 W/m2
   For an illuminance of less than 320 to 400 Lux, 12 W/m2
   For an illuminance of less than 400 to 480 Lux. 13 W/m2

For an illuminance of less than 480 to 540 Lux, 14 W/m2 For an illuminance of less than 540 to 620 Lux, 15 W/m2 For an illuminance of more than 620 Lux, the light source efficacy must not be less than 80 Lumens/W

APPENDIX 5 - EVIDENCE OF COMPLIANCE CHECK LIST

The purpose of this checklist is to itemise the evidence that should be collected during the construction phase of the project that will demonstrate how the final building complies with the Energy Efficiency requirements of Section J of the NCC that were identified during the design phase.

Generally evidence should take the form of delivery receipts, photographs, or signed and dated statements from installers.

This following check list is a generic list and some elements may not be applicable to a particular project.

Part J1 - Building Fabric

Element	Applicable (Y or N)	Evidence
Roof & ceiling insulation		Delivery receipts for roof/ceiling insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Roof Colour	NA	Delivery receipts for roof material and colour or pictures of the roof colour naming the roof colour.
Roof Lights	NA	Delivery receipts for any roof lights nominating the number, size and solar characteristics (U-value and SHGC-value).
Wall insulation		Delivery receipts for wall insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Floor		Delivery receipts for floor insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.

Or a signed and dated statement from the builder/contractor that the Building Fabric insulation was installed as per the authorised plans and the Energy Efficiency Report.

Part J2 – Glazing

Element	Applicable (Y or N)	Evidence
Glazing		Delivery receipts for the glazing installed on site including the thermal characteristics of the glazing (U-value and SHGC-value)

Or a signed and dated statement from the builder/contractor that the Glazing was installed with the thermal characteristics as per the authorised plans and the Energy Efficiency Report.

Part J3 – Building Sealing

Element	Applicable (Y or N)	Evidence
Infiltration prevention		Delivery receipts for the number of self-closing doors installed.
Open shop front	NA	Pictures of the A/C outlet being at least 3 metres from the open shop front.
Exhaust fans		Delivery receipts for the self-closing dampers on exhaust fans or pictures showing their installation.

Or a signed and dated statement from the builder/contractor that the self-closing doors and/or A/C outlet next to the open shop front was installed as per the authorised plans, specifications and the Energy Efficiency Report.

Part J4 – A/C & Ventilation Systems

A signed and dated statement from the A/C installer will be required. This statement must indicate that the A/C system complies with MEPS and complies with all the requirements of Section J of the BCA 2016.

Part J5 – Artificial Lighting and Power

Element	Applicable (Y or N)	Evidence
Internal Lighting		Delivery receipts for the number and wattage of all the internal lights installed.
External Lighting		Delivery receipts for the number and wattage of all the external lights installed.

Or a signed and dated statement from the lighting installer indicating that the lighting was installed as per the authorised plans, specifications and the Energy Efficiency Report will comply.

Part J6 – Hot Water Supply, Swimming Pool, Spa Pool

Element	Applicable (Y or N)	Evidence
Hot water taps		Delivery receipts for the number and star rating of the hot water taps installed.
Hot Water Systems		Delivery receipts for the number and type of hot water systems installed.
Time clocks		Delivery receipts for the number and type of time clock installed to control the hot water systems.

Or a signed and dated statement from the hot water installer that the hot water system fitting and time clocks were installed as per the authorised plans, specifications and the Energy Efficiency Report.