



## Part J BCA Report

Project name:

# Proposed Boarding House 12 Anthony Crescent, Kingswood, 2747 Content



1. **SUMMARY FOR COMPLIANCE**
2. **SECTION J REPORT**
3. **CONSTRUCTION DIAGRAM**
4. **GLAZING CALCULATORS**
5. **LIGHTING CALCULATOR**

## SUMMARY OF SOLUTIONS TO COMPLY WITH SECTION J PERFORMANCE REQUIREMENTS

The following table is a summary of the requirements for compliance with the Section J.

<b>Part J1 - Building Fabric Building Element</b>	Required	Additional Insulation
<b>ROOF:</b>		
<b>Metal roof</b>	R3.20 (downwards) *for surface solar absorptance value 0.4-0.6	R2.66 (downwards)
<b>Ceiling Insulation Assumption</b> *Fireproof covers to be use above the down-lights and prevent any loss of insulation (If IC rated down lights are used then there is no loss of insulation) *The reduced insulation must be compensated with additional insulation according the Table J1.3b		
<b>External WALLS</b>		
<b>Brick Veneer</b>	R2.80	R2.49
<b>Lightweight walls /Metal Cladding/</b>	R2.80	R2.58
<b>Walls against the unconditioned spaces</b> <i>lagainst the corridors, bathrooms with windows etc./</i>	R1.80	R1.80
<b>FLOOR</b> <i>/ * Applicable to the floors above the open air, above the carpark and above the unconditioned spaces/</i>		
<b>Suspended concrete floors</b>	R2.0	R 1.75
<b>Suspended Timber floor</b>	R2.0	R 1.42

- (for details see the main assessment and the construction diagrams)

- **\*Note: Where the insulation goes in the air space and the R-value of the air space is lost the R value of the required insulation should be increased for the lost R-value**

<b>Part J2 -Glazing</b>	U-value maximum	SHGC maximum
<b>WINDOWS</b>		
<b>Windows</b>		
<b>Ground floor W</b>	<b>6.70</b>	<b>0.70</b>
<b>Ground floor E</b>	<b>4.60</b>	<b>0.45</b>
<b>Ground floor N</b>	<b>4.60</b>	<b>0.45</b>
<b>Ground floor S -Slid. Door</b>	<b>2.40</b>	<b>0.51</b>
<b>Ground floor S -All others</b>	<b>3.80</b>	<b>0.65</b>
<b>First floor W</b>	<b>4.60</b>	<b>0.45</b>
<b>First floor E</b>	<b>4.60</b>	<b>0.45</b>
<b>First floor N</b>	<b>4.60</b>	<b>0.45</b>
<b>First floor S</b>	<b>3.80</b>	<b>0.65</b>

- *(for details and where shading devices are used- see the glazing calculators)*
- **Note: Where the glazing calculator shows “Device” an external shading device to be provided**
- **The window requirements are applicable only to the conditioned space windows**

<b>Part J3 - Building Sealing Building Element</b>	Comment
<b>Doors and open-able windows or the like forming part of the envelope of a conditioned space</b>	Weather seals to be installed on all doors and open able windows (other than aluminium), of the envelope of the conditioned space. <i>(for exceptions see the detailed assessment).</i>
<b>All External doors leading to a condition space</b>	All door leading to a condition space must have an airlock, /self-closing device/ <i>(for exceptions see the detailed assessment).</i>
<b>New Exhaust Fans</b>	Must have self-closing dampers.
<b>Roofs, Walls &amp; Floor</b>	Minimise air leakage by enclosed or internal lining systems that is close fitted at the ceiling, the wall and the floor junctions. Also to be sealed by caulking, skirting, architraves, cornices or the like.
<b>Part J5 - Air Conditioning and Ventilation Systems Building Element</b>	Comment
<b>New Air Conditioning Certification</b>	Required if the size of the air-conditioner is greater than <b>35kW<sub>r</sub></b> .
<b>New A/C System</b>	Must have the ability to be inactive when the area is not occupied. <i>(for exceptions see the detailed assessment)</i>

<p><b>Space heating</b></p> <p><b>New Ventilation System</b></p>	<p>When an air-conditioning system is deactivated, any motorised outside air and return dampers must close</p> <p>A heater used for air-conditioning or as part of an air-conditioning system must comply with Specification J5.2d</p> <p>The outdoor air economy cycles to be provided for the air-conditioning system when the capacity is more than 35 kW<sub>r</sub> (<i>for exceptions see the detailed assessment</i>)</p> <p>The controls are required to deactivate the mechanical ventilation system when the area is not occupied</p> <p>The fans of a mechanical ventilation system must comply with Specification J5.2a.</p>
<p><b>Time Switch</b></p>	<p>A time switch complying with <b>Specification J6</b> must be provided to control—</p> <ul style="list-style-type: none"> <li>• an <i>air-conditioning</i> system of more than 10 kW<sub>r</sub>;</li> <li>• a heater of more than 10 kW heating used for air-conditioning</li> <li>• 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 <i>for exclusions see detailed report/</i></li> </ul>
<p><b>New Ductwork</b></p> <p><b>Class 3 – A/C Energy efficiency requirement</b></p>	<p>Must be insulated to a minimum <b>R-value</b> of <b>R1.20</b> within a conditioned space, <b>R3.0</b> in direct sunlight, and <b>R2.0</b> in other locations or R1.0, for flexible ductwork (Flexible ductwork of a maximum length of 3m at each outlet must achieve a minimum material R-Value of 1.0.)</p> <p>The flexible ductwork must also comply with fire hazard properties set out in AS 4254-2012 Parts 1 and 2</p> <p>The A/C (Class 3 building) must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than</p>



	one minute.
--	-------------

<b>Part J6 - Artificial Lighting and Power Building Element</b>	<b>Comment</b>
<b>New Lighting</b>	Must not exceed the “maximum lighting wattage” in the lighting calculations table in <b>Lighting Calculators</b>
<b>Artificial Lighting Switch</b>	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. An artificial lighting switch or other control device must not operate lighting for an area of more than 250 m <sup>2</sup>
<b>Artificial Lighting</b>  <b>Class 3 Building- Artificial Lighting requirement</b>	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 <sup>2</sup> and which can turn it off out-of-hours ( <i>for exceptions see the detailed assessment</i> ). An occupant activated device, such as a room security device or a motion detector, must be provided for each sole-occupancy unit in class 3 building
<b>Interior Decorative &amp; Display Lighting</b>	Controlled separately from other artificial lighting by a manual switch for each area. Controlled by a time switch where display lighting exceeds 1kW. ( <i>for exceptions see the detailed assessment</i> ).
<b>Window Display Lighting</b>	Must be controlled separately from other display lights. ( <i>for exceptions see the detailed assessment</i> ).
<b>Artificial Lighting Perimeter</b>	Must be controlled by a daylight sensor or programmable time switch control, use high efficacy lamps (min.60 Lumens/W) or a motion detector if the total load exceeds 100W and have a separate time switch, in accordance with Specification J6, when used for decorative purposes ( <i>for exceptions see the detailed assessment</i> ).
<b>Decorative External Lighting</b>	Must have a separate time switch. ( <i>for exceptions see the detailed assessment</i> ).

<b>Boiling Water &amp; Chilled Water Storage Units</b>	Must be controlled by a time switch. <i>(for exceptions see the detailed assessment).</i>
--	---

<u>Specification</u>	<u>Comment</u>
<b>Specification J6</b>	All time switches, motion detectors, occupant sensing devices & daylight sensors must meet <b>Specification J6</b> standards.

<u>Part J7 - Hot Water Supply Building Element</u>	<u>Comment</u>
<b>Heated water supply</b>	All HWS must comply with NCC Volume Three B2.4 Water heater in a heated water supply system If there are any New Hot Water Taps - Must have a minimum WELS rating of 3 stars (9L/min) Compliance for a heated water supply system is verified when the annual greenhouse gas intensity of the water heater does not exceed 100 g CO <sub>2</sub> e/MJ of thermal energy load determined in accordance with AS/NZS 4234.
<b>New Hot Water Taps</b>	Must have a minimum rating of <b>3 stars</b> .

<u>Part J8 - Access for Maintenance and Facilities for Monitoring Maintenance /Monitoring</u>	<u>Comment</u>
<b>Access</b>	Must be provided to all plant, equipment and components that require maintenance.
<b>Energy Monitoring</b>	The building is of more than 500 m <sup>2</sup> . Therefore, it needs to have devices to record the consumption of gas and electricity. (monitoring system that keeps track of electricity and gas consumption) The building is of not more than 2500 m <sup>2</sup> and therefore, it doesn't need devices to record, individually the energy consumption of: the air-conditioning plant, artificial lighting, appliances power, central hot water supply, internal transport devices including lifts, escalators and travellers where there is more than one serving the building; and other ancillary plants

**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 BCA that were identified during the design phase.

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

**Assessor: Zoran Cvetkovski**  
**BSc.(B.Eng.)**



# Part J BCA Report

Project name:

## Proposed Boarding House 12 Anthony Crescent, Kingswood, 2747

### 1. DESCRIPTION

The proposed boarding house is located at 12 Anthony Crescent, Kingswood, 2747. It consists of a basement, a ground floor and a first floor. The building is a brick veneer construction on the ground floor and metal cladding on the first floor, with metal roof.

### 2. PURPOSE OF THE ASSESSMENT

The purpose of this report is to assess the design proposal against the Deemed-to-Satisfy provisions of Section J of the BCA, and to clearly outline those areas where compliance has not been achieved. Deemed-to-Satisfy Solution as a Performance Solution is used to satisfy the Performance Requirements of the NCC-2016.

This Report addresses ONLY matters relevant to Section 'J' of Volume 1 of the BCA pertaining to the Class 3 and the Class 7a portions of the building.

### 3. DEEMED-TO-SATISFY PROVISIONS (BCA)

This report is based on the Deemed-to-Satisfy Provisions of Section J of the National Construction Code (NCC) – 2016 Volume 1, incorporating the State variations where applicable. Please note that the version of the BCA applicable is the version applicable at the time of the Construction Certificate Application.

The intent of the report is to facilitate the efficient use of energy appropriate for Class 2 to 9 buildings (or part of the buildings) that are conditioned or likely to be conditioned.

### 4. PERFORMANCE REQUIREMENTS

Performance Requirements specify the minimum level of performance that all buildings must have. They must have, to the degree necessary, features that facilitate the efficient use of energy appropriate to the function and use of the building and its services, the



internal environment, heating and cooling, and the building fabric. This also includes relevant materials, components, design factors, and construction methods. Deemed-to-Satisfy Solution as a Performance Solution is used to satisfy the Performance Requirements in this report. The requirements JP1 and JP3 are satisfied by complying with: J0.1 to J0.3, J1.1 to J1.6, J2.1 to J2.5, J3.1 to J3.7, J5.1 to J5.4, J6.1 to J6.6, J7.1 to J7.4 and J8.1 to J8.3.

## 5. PROJECT LIMITATIONS

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

- (a) Sections B, C, D, E, F, G, H, and I of the BCA;
- (b) The structural adequacy or design of the building;
- (c) The inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
- (d) 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 1992, including the Disability (Access to Premises – Buildings) Standards 2010;
- (c) Demolition Standards not referred to by the BCA;
- (d) Occupational Health and Safety Act;

## 6. ASSESSMENT DATA

The following Architectural Plans for the proposed 12 Anthony Crescent, Kingswood, 2747 are supplied for assessment according the Section J of the BCA:

- Site Plan
- Floor Plans
- Elevations
- Elevations and sections

## 7. ASSUMPTIONS

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

1. The North point marked as True North is taken from the Site plan
2. The building classifications are: Building Class 3 and Class 7a

3. The bathrooms of the sole occupancy units, without windows, are considered as conditioned spaces
4. The circulation-corridors are non-conditioned spaces
5. The basement and all other unconditioned spaces are with ventilation of more than 1.5 air changes per hour

## 8. BUILDING CHARACTERISTICS

The significant spaces in the proposed design have been classified in accordance with the requirements of Clause A3.2 of the BCA and are summarized in the table below. Floor areas have been calculated from the plan.

### Basement

Basement (Carpark)	326	m2
Garage/Entry (Gr.Floor)	34.5	m2

### Ground Floor

Room 1	24.9	m2
Bathroom (Room 1)	7.81	m2
Room 2	17.9	m2
Bathroom (Room 2)	4.17	m2
Room 3	17.9	m2
Bathroom (Room 3)	4.17	m2
Room 4	17.9	m2
Bathroom (Room 4)	4.17	m2
Common Living	20.04	m2
Room 5	18.73	m2
Bathroom (Room 5)	4.38	m2
Room 6	18.73	m2
Bathroom (Room 6)	4.38	m2
Room 7	18.73	m2
Bathroom (Room 7)	4.38	m2
Room 8	18.73	m2
Bathroom (Room 8)	4.38	m2
Hallway (Gr.Floor)	43.72	m2
WC 1 (Gr.Floor)	1.98	m2
WC 2 (Gr.Floor)	1.98	m2

### First Floor

Room 9	16.9	m2
Bathroom (Room 9)	4.96	m2
Room 10	16.9	m2
Bathroom (Room 10)	4.96	m2
Room 11	16.9	m2
Bathroom (Room 11)	4.96	m2
Room 12	16.9	m2
Bathroom (Room 12)	4.96	m2
Room 13	16.9	m2
Bathroom (Room 13)	4.96	m2
Room 14	16.9	m2
Bathroom (Room 14)	4.96	m2
Room 15	16.9	m2
Bathroom (Room 14)	4.96	m2
Room 16	16.9	m2
Bathroom (Room 16)	4.96	m2
Room 17	16.9	m2
Bathroom (Room 17)	4.96	m2
Room 18	16.9	m2
Bathroom (Room 18)	4.96	m2
Room 19	16.9	m2
Bathroom (Room 19)	4.96	m2
Hallway	41.7	m2

## 9. BUILDING CLASSIFICATION

According to the BCA Part A3 (CLASSIFICATION OF BUILDINGS AND STRUCTURES), the major classification of the building is Class 3.

***Class 3: a residential building, other than a building of Class 1 or 2, which is a common place of long term or transient living for a number of unrelated persons, including—***

- (a) a boarding house, guest house, hostel, lodging house or backpackers accommodation; or***
- (b) a residential part of a hotel or motel; or***
- (c) a residential part of a school; or***
- (d) accommodation for the aged, children or people with a disability; or***
- (e) a residential part of a health-care building which accommodates members of staff; or***
- (f) a residential part of a detention centre.***

***Class 7a: A building which is a car park.***

## 10. CLIMATE ZONE

The proposed project is located at: 12 Anthony Crescent, Kingswood, 2747. In accordance with Figure A1.1 and Table A1.1 of the BCA, the development is in the Climate Zone 6.

## Building Code of Australia

This report is based on the Deemed-to-Satisfy Solutions of Section J of the National Construction Code Series Volume 1 - Building Code of Australia, NCC 2016 incorporating the State variations where applicable. Deemed-to-Satisfy Solution as a Performance Solution is used to satisfy the Performance Requirements of the NCC 2016.

This Section of the report presents a clause-by-clause assessment of the proposed design against the DtS Solutions of NSW Subsection J of the BCA. The performance requirements JP1 and JP3 are satisfied by complying with: J0.1 to J0.3, J1.1 to J1.6, J2.1 to J2.5, J3.1 to J3.7, J5.1 to J5.4, J6.1 to J6.6, J7.1 to J7.4 and J8.1 to J8.3.

## PART J1 – BUILDING FABRIC

Clause	Description	Status	Comments
J1.1	<p><b>Application of Part</b></p> <p>The Deemed-to-Satisfy Provisions of this Part apply to building elements forming the envelope of a Class 2 to 9 building.</p>	Applicable	<p>The building is classified as Class 3 and Class 7a.</p> <p>The intent of this part is to facilitate the efficient use of energy for the building (or part of the building) that is conditioned or likely to be conditioned</p>
J1.2	<p><b>J1.2 Thermal construction — general</b></p> <p>(a) Where <i>required</i>, insulation must comply with AS/NZS 4859.1 and be installed so that it—</p> <p>(i) abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must be against the member; and</p> <p>(ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to</p>	Applicable	<p>The insulation used, to insulate the building fabric must comply with AS/NZS 4859.1. The products must be valid and tested in accordance with AS/NZS 4859.1</p> <p>Subclause J1.2 (a) requires any mandatory insulation, when installed in a building, to form a consistent and continuous barrier other than at supporting members. Wall insulation</p>



	<p>the thermal barrier; and  (iii) does not affect the safe or effective operation of a <i>service</i> or fitting.  (b) Where <i>required</i>, <i>reflective insulation</i> must be installed with—  (i) the necessary airspace to achieve the <i>required R-Value</i> between a reflective side of the <i>reflective insulation</i> and a building lining or cladding; and  (ii) the <i>reflective insulation</i> closely fitted against any penetration, door or <i>window</i> opening; and  (iii) the <i>reflective insulation</i> adequately supported by framing members; and  (iv) each adjoining sheet of roll membrane being—  (A) overlapped not less than 50 mm; or  (B) taped together.  (c) Where <i>required</i>, bulk insulation must be installed so that—  (i) it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and  (ii) in a ceiling, where there is no bulk insulation or <i>reflective insulation</i> in the wall beneath, it overlaps the wall by not less than 50 mm.</p> <p>(d) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in <b>Specification J1.2</b>.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>should be closely fit within a wall frame to achieve the desired overall level.</p> <p>When installing a reflective insulation an air space is needed. Because the presence of an airspace at the reflective surface is critical. Without this airspace, the reflection will not occur.</p> <p>The depth of the insulation is critical because of the need to retain the air pockets within the material. If the insulation is compressed, it will reduce its capacity to achieve the tested R-Value.</p> <p>The insulation used in the building must be of negligible fire hazard by complying with the non-combustibility, flammability, and spread of flame and smoke development requirements of this Clause. The performance of the insulation used should be validated by test reports and these reports should form part of the building approval documentation. The properties must be in accordance with the <b>Specification J1.2</b>.</p>
<p><b>J1.3</b></p>	<p><b>Roof and ceiling construction</b></p>		<p>A roof or ceiling that is part</p>

	<p>(a) A roof or ceiling that is part of the <i>envelope</i>, other than of a <i>sole-occupancy unit</i> of a Class 2 building or a Class 4 part of a building, must achieve the <i>Total R-Value</i> specified in <b>Table J1.3a</b> for the direction of heat flow. For compliance with <b>Table J1.3a</b>, roof and ceiling construction is deemed to have the thermal properties listed in <b>Specification J1.3</b>.</p> <p>(b) For compliance with <b>Table J1.3a</b>, roof and ceiling construction is deemed to have the thermal properties listed in <b>Specification J1.3</b>.</p> <p>(c) Where, for operational or safety reasons associated with exhaust fans, flues or recessed downlights, the area of <i>required</i> ceiling insulation is reduced, the loss of insulation must be compensated for by increasing the <i>R-Value</i> of the insulation in the remainder of the ceiling in accordance with <b>Table J1.3b</b>.</p> <p>(d) A roof that—</p> <p>(i) is <i>required</i> to achieve a minimum <i>Total R-Value</i>; and</p> <p>(ii) has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and</p> <p>(iii) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see <b>Specification J1.3 Figure 2(c)</b> and <b>(f)</b>), must have a thermal break, consisting of a material with an <i>R-Value</i> of not less than R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Not Applicable</b></p>	<p>of the envelope (with surface solar absorptance value &gt;0.6 Dark), must achieve the Total R Value of R3.2 The construction diagrams are attached giving one possible option how to meet the requirements.</p> <p>Any reduction in the ceiling insulation (around down-lights or exhaust fans) must be compensated in accordance with the <b>Table J1.3b</b>. If IC rated down lights are used then there will be no loss of the insulation.</p> <p>A thermal break may be provided by materials such as 20 mm thick timber or 12 mm thick expanded polystyrene strips, plywood or bulk insulation. The material used as a thermal break must separate the metal purlins or metal battens from the metal sheet roofing and achieve an R-Value of not less than 0.2. Reflective insulation alone is not suitable for use as a thermal break because it requires an adjoining airspace to achieve the specified R-Value</p>
<p><b>J1.4</b></p>	<p><b>Roof lights</b></p> <p><i>Roof lights</i>, including any associated shaft and diffuser, that form part of the <i>envelope</i>, other than of a <i>sole-occupancy unit</i> of a Class 2 building</p>	<p><b>Not Applicable</b></p>	<p>The plans don't show roof lights for the conditioned spaces. The skylights on the</p>

	<p>or a Class 4 part of a building, must—</p> <p>(a) if the <i>roof lights</i> are not required for compliance with <b>Part F4</b>, comply with <b>Table J1.4</b>; or</p> <p>(b) if the <i>roof lights</i> are required for compliance with <b>Part F4</b>—</p> <p>(i) have an area not more than 150% of the minimum area <i>required</i> by <b>F4.6</b>; and</p> <p>(ii) have transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of not more than—</p> <p>(A) 0.29 SHGC; and</p> <p>(B) 2.9 Total U-Value.</p>	<p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p>first floor are over the corridor, which is unconditioned space. Therefore, this clause is not applicable.</p>
<p><b>J1.5</b></p>	<p><b>Walls</b></p> <p>(a) Each part of an <i>external wall</i> that is part of the <i>envelope</i>, other than of a <i>sole-occupancy unit</i> of a Class 2 building or a Class 4 part of a building, must satisfy one of the options in <b>Table J1.5a</b> except for—</p> <p>(i) opaque non-glazed openings in <i>external walls</i> such as doors (including garage doors), vents, penetrations, shutters and the like; and</p> <p>(ii) <i>glazing</i>; and</p> <p>(b) Any wall, other than an <i>external wall</i>, that is part of the <i>envelope</i> must achieve the <i>Total R-Value</i> in <b>Table J1.5b</b>.</p> <p>(c) A wall that—</p> <p>(i) is required to achieve a minimum Total R-Value; and</p> <p>(ii) has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame; and</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Applicable</b></p>	<p>For Climate zone 6 According the Table J1.5a the total R value of <b>R2.8</b> is required. The total R value is reduced by 0.5 where the surface density exceeds 220 kg/m<sup>2</sup>.</p> <p>(The construction details are attached for additional insulation required)</p> <p>According the Table J1.5b AN ENVELOPE WALL OTHER THAN AN EXTERNAL WALL – MINIMUM TOTAL R-VALUE of <b>R1.8</b> is required They are the walls between the rooms and the corridors, and the rooms and the bathrooms (with windows)</p> <p>If there are such walls a thermal break of min R0.2 must be provided between the external cladding and the metal frame</p>



	<p>(iii) does not have a wall lining or has a wall lining that is fixed directly to the same metal frame, must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the external cladding and the metal frame.</p> <p>(d) For compliance with Table J1.5a and Table J1.5b, wall construction is deemed to have the thermal properties listed in Specification J1.5.</p>		
<b>J1.6</b>	<p><b>Floors</b></p> <p>(a) A floor that is part of the <i>envelope</i> of a building, other than a <i>sole-occupancy unit</i> of a Class 2 building or a Class 4 part of a building, including a floor above or below a <i>carpark</i> or a plant room—</p> <p>(i) must achieve the <i>Total R-Value</i> specified in <b>Table J1.6</b>; and</p> <p>(ii) with an in-slab or in-screed heating or cooling system, must be insulated around the vertical edge of its perimeter with insulation having an <i>R-Value</i> of not less than 1.0.</p> <p>(b) In <i>climate zones</i> 1 to 6, the minimum <i>Total R-Value required</i> in <b>(a)</b> may be reduced by R0.5 provided R0.75 is added to the <i>Total R-Value required</i> for the roof and ceiling construction.</p> <p>(c) A concrete slab-on-ground—</p> <p>(i) with an in-slab or in-screed heating or cooling system; or</p> <p>(ii) located in <i>climate zone</i> 8, must have insulation installed around the vertical edge of its perimeter.</p> <p>(d) Insulation <i>required</i> by <b>(c)</b> must—</p> <p>(i) have an <i>R-Value</i> of not less than 1.0; and</p> <p>(ii) be water resistant; and</p> <p>(iii) be continuous from the adjacent finished ground level—</p> <p>(A) to a depth of not less than 300 mm; or</p> <p>(B) for the full depth of the vertical edge of the concrete slab-on-ground.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p>This building is other than a sole-occupancy unit of a Class 2 building or a Class 4</p> <p>A suspended floor without an in-slab or in-screed heating or cooling system where the uncondition space will be ventilated by more than 1.5 air changes of outside air, requires R2.0 system value (Applicable for the floors above the carpark, above the open air and above the unconditioned spaces)</p>



	<p>(e) The requirements of <b>(a)(ii)</b> and <b>(c)(i)</b> do not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like.</p> <p>(f) Floor construction is deemed to have the thermal properties listed in <b>Specification J1.6</b>.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>The construction diagram shows the requirements</p>
<p><b>PART J2</b> <b>J2.1</b></p>	<p><b>GLAZING</b></p> <p><b>Application of Part</b></p> <p><b>Application of Part</b></p> <p>The <i>Deemed-to-Satisfy Provisions</i> of this Part apply to elements forming the <i>envelope</i> of a building other than a <i>sole-occupancy unit</i> of a Class 2 building or a Class 4 part of a building.</p>	<p><b>Applicable</b></p>	<p>The building is classified as Class 3 with conditioned space. The intent of this part is to facilitate the efficient use of energy appropriate for the building or parts of the building that are conditioned or likely to be conditioned. This part aims to reduce the air-conditioning energy consumption attributable to glazing.</p>
<p><b>J2.4</b></p>	<p><b>Glazing</b></p> <p>(a) The <i>glazing</i> in each <i>storey</i>, including any <i>mezzanine</i>, of a building must be assessed separately in accordance with <b>(b)</b> and <b>(c)</b> for—</p> <p>(i) <i>glazing</i> in the external <i>fabric</i> facing each orientation; and</p> <p>(ii) <i>glazing</i> in the internal <i>fabric</i>.</p> <p>(b) The aggregate <i>air-conditioning</i> energy value attributable to the <i>glazing</i> must not exceed the allowance obtained by multiplying the facade area that is exposed to the <i>conditioned space</i> for the orientation by the energy index in <b>Table J2.4a</b>.</p> <p>(c) The aggregate <i>air-conditioning</i> energy value must be calculated by adding the <i>air-conditioning</i> energy value through each <i>glazing</i> element in accordance with the following formula:  <math display="block">A1[SHGC1(CAxSH1+CBxSC1)+CCxU1] +</math></p>		<p><b>Glazing Calculator</b></p> <p>The glazing design has been analyzed using the NCC 2014 Volume One Glazing Calculator (Published: 30 April 2014). The window sizes and the facade areas are measured from the plan. The window numbers used, are as per the plans and the room number.</p>

	<p><math>A2[SHGC2(CAxSH2+CBxSC2)+CCxU2] + \dots</math>  where—  A1, 2, etc = the area of each <i>glazing</i> element; and  CA, B and C = the energy constants A, B and C for the specific orientation  from Table J2.4b; and SHGC1, 2, etc = the <i>Total System SHGC</i> of each <i>glazing</i> element; and  shading multiplier for each <i>glazing</i> element obtained from <b>Table J2.4c</b>;  and SC1, 2, etc = the cooling shading multiplier for each <i>glazing</i> element obtained from <b>Table J2.4d</b>;  and U1, 2, etc = the <i>Total System U-Value</i> of each <i>glazing</i> element.</p> <p>(d) For the purposes of (c)—  (i) where the <i>air-conditioning</i> energy value of a <i>glazing</i> element is calculated to be negative, it must be taken to be zero; and  (ii) where <i>glazing</i> is in the internal <i>fabric</i>, the aggregate <i>air-conditioning</i> energy value must be calculated using—  (A) the energy constants A, B and C for the south orientation sector in <b>Table J2.4b</b>; and  (B) the shading multipliers in <b>Table J2.4e</b>.</p>		
<p><b>J2.5</b></p>	<p><b>Shading</b> Where shading is <i>required</i> to comply with <b>J2.4</b>, it must—</p> <p>(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 <i>glazing</i> for the same projection distance P in <b>Figure J2.4</b>; or  (ii) provides the equivalent shading to (i) with a reveal or the like; or  (b) be provided by an external shading device, such as a  (i) is capable of restricting at least 80% of summer solar radiation; and  (ii) if adjustable, is operated automatically in response to the level</p>	<p><b>Applicable</b></p>	<p>Shading is calculated as it is given on the plans. Where necessary devices are used.</p>

	of solar radiation.		
<b>PART J3</b>	<b>BUILDING SEALING</b>		
<b>J3.1</b>	<p><b>Application of Part</b></p> <p>The <i>Deemed-to-Satisfy Provisions</i> of this Part apply to elements forming the <i>envelope</i> of a Class 2 to 9 building, other than—</p> <p>(a) a building in <i>climate zones</i> 1, 2, 3 and 5 where the only means of <i>air-conditioning</i> is by using an evaporative cooler; or</p> <p>(b) a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or</p> <p>(c) a building or space where the mechanical ventilation <i>required</i> by <b>Part F4</b> provides sufficient pressurisation to prevent infiltration.</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	The building is classified as Class 3 with conditioned space
<b>J3.2</b>	<p><b>Chimneys and flues</b></p> <p>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.</p>	<b>Applicable</b>	No Chimneys and flues of an open solid-fuel burning appliance
<b>J3.3</b>	<p><b>Roof lights</b></p> <p>(a) A <i>roof light</i> must be sealed, or capable of being sealed, when serving—</p> <p>(i) a <i>conditioned space</i>; or</p> <p>(ii) a <i>habitable room</i> in <i>climate zones</i> 4, 5, 6, 7 or 8.</p> <p>(b) A <i>roof light</i> <i>required</i> by (a) to be sealed, or capable of being sealed, must be constructed with—</p> <p>(i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or</p> <p>(ii) a weatherproof seal; or</p> <p>(iii) a shutter system readily operated</p>	<p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	There are no roof lights, shown on the plans, associated with the conditioned space

	either manually, mechanically or electronically by the occupant.		
<b>J3.4</b>	<p><b>Windows and doors</b></p> <p>(a) A seal to restrict air infiltration must be fitted to each edge of a door, openable <i>window</i> or the like forming part of—</p> <p>(i) the <i>envelope</i> of a <i>conditioned space</i>; or</p> <p>(ii) the external fabric of a <i>habitable room</i> or public area in <i>climate zones</i> 4, 5, 6, 7 or 8.</p> <p>(b) The requirements of (a) do not apply to—</p> <p>(i) a <i>window</i> complying with AS 2047; or</p> <p>(ii) a fire door or smoke door; or</p> <p>(iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.</p> <p>(c) A seal <i>required</i> by (a)—</p> <p>(i) for the bottom edge of an external swing door, must be a draft protection device; and</p> <p>(ii) for the other edges of an external door or the edges of an openable <i>window</i> or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.</p> <p>(d) An entrance to a building, if leading to a <i>conditioned space</i> must have an airlock, <i>self-closing</i> door, revolving door or the like, other than—</p> <p>(i) where the <i>conditioned space</i> has a <i>floor area</i> of not more than 50 m<sup>2</sup>; or</p> <p>(ii) where a café, restaurant, open front shop or the like has—</p> <p>(A) a 3 m deep un-conditioned zone between the main entrance, including an open front, and the <i>conditioned space</i>; and</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p>Weather seals to be installed on all doors and open able windows (other than aluminum, fire doors or security doors /used out of operating hours/), of the envelope of the conditioned space.</p> <p>All windows that are aluminum windows complying with AS 2047 are exempt from this clause. (Requirements of (a) don't apply to the these windows)</p> <p>This clause also doesn't apply to the fire doors</p> <p>The roller shutter doors are exempt only if they are installed only for the purpose of security</p> <p>Ext. Doors must have a draft protection device on the bottom edge</p> <p>Other edges seals may be compression type</p> <p>All entrances to the condition spaces require an airlock or a self-closing device (Self closing doors)</p> <p>The rooms with conditioned floor area of less than 50 m2 are exempt</p>



	(B) at all other entrances to the café, restaurant, open front shop or the like, <i>self-closing</i> doors.		
<b>J3.5</b>	<p><b>Exhaust fans</b></p> <p>A miscellaneous exhaust fan, such as a bathroom or domestic kitchen exhaust fan, must be fitted with a sealing device such as a self-closing damper or the like when serving—</p> <p>(a) a <i>conditioned space</i>; or</p> <p>(b) a <i>habitable room</i> in <i>climate zones</i> 4, 5, 6, 7 or 8.</p>	<b>Applicable</b>	If there are any miscellaneous exhaust fans serving a conditioned space must be fitted with self-closing dampers or the like.
<b>J3.6</b>	<p><b>Construction of roofs, walls and floors</b></p> <p>(a) Roofs, ceilings, walls, floors and any opening such as a <i>window</i> frame, door frame, <i>roof light</i> frame or the like must be constructed to minimise air leakage in accordance with <b>(b)</b> when forming part of—</p> <p>(i) the <i>envelope</i>; or</p> <p>(ii) the external <i>fabric</i> of a <i>habitable room</i> or a public area in <i>climate zones</i> 4, 5, 6, 7 or 8.</p> <p>(b) Construction <i>required</i> by <b>(a)</b> must be—</p> <p>(i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or</p> <p>(ii) sealed by caulking, skirting, architraves, cornices or the like.</p> <p>(c) The requirements of <b>(a)</b> do not apply to openings, grilles or the like <i>required</i> for smoke hazard management.</p>	<b>Applicable</b>	The fabric forming the envelope must be constructed to be capable of minimizing air leakage by using lining systems or caulking, skirting, architraves or the like, except for openings and grilles required for smoke hazard management.
<b>J3.7</b>	<p><b>Evaporative coolers</b></p> <p>An evaporative cooler must be fitted with a self-closing damper or the like when serving—</p> <p>(a) a heated space; or</p> <p>(b) a <i>habitable room</i> or a public area of a building in <i>climate zones</i> 4, 5, 6, 7 or 8.</p>	<b>Not Applicable</b>	The plans don't show any evaporative coolers installed but if there will be any then the evaporative cooler must be fitted with a self-closing damper
<b>PART J4</b>	*****		
<b>PART</b>	<b>AIR-CONDITIONING</b>		<b>Because the A/C plans are</b>

<b>J5</b>	<b>AND VENTILATION SYSTEMS</b>		<b>not supplied in this section are assessed only the general solutions</b>
<b>J5.1</b>	<p><b>Application of Part</b></p> <p>The <i>Deemed-to-Satisfy Provisions</i> of this Part do not apply to a Class 8 electricity network substation.</p>	<b>Applicable</b>	This clause sets minimum energy efficiency requirements for air-conditioning systems and its components.
<b>J5.2</b>	<p><b>Air-conditioning systems</b></p> <p>(a) Control —</p> <p>(i) An <i>air-conditioning system</i>—</p> <p>(A) must be capable of being deactivated when the building or part of a building served by that system is not occupied; and</p> <p>(B) when serving more than one <i>air-conditioning zone</i> or area with different heating or cooling needs, must—</p> <p>(aa) thermostatically control the temperature of each zone or area; and</p> <p>(bb) not control the temperature by mixing actively heated air and actively cooled air; and</p> <p>(cc) limit reheating to not more than—</p> <p>(AA) for a fixed supply air rate, a 7.5 K rise in temperature; and</p> <p>(BB) for a variable supply air rate, a 7.5 K rise in temperature at the</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>This Sub-clause requires controls to deactivate the air-conditioning unit when the area is not occupied. The operational arrangements should be designed on logical building areas and segments. (Zones)</p> <p>Accordingly, each sole occupancy unit should be able to be deactivated without compromising the needs of air-conditioning in the adjacent spaces. When the zones have different heating or cooling needs then the temperature in each zone should be thermostatically controlled. A suitable location of the temperature control devices may be in the ductwork supplying the different spaces or the air volume dampers. Additionally, all supply and return ductwork must be insulated and sealed in accordance with Specification J5.2b in order to minimise the amount of energy lost through the ductwork</p> <p>This Clause requires the temperature control of the air-conditioning system not to depend on mixing heated and cooled air streams that have been actively conditioned by the plant. This requirement allows the air-conditioning system to use no more energy than is necessary</p>

<p>nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or increased; and</p> <p>(C) which provides the <i>required</i> mechanical ventilation, other than in process-related applications where humidity control is needed, must have an <i>outdoor air economy cycle</i>—  (aa) in <i>climate zones</i> 2 or 3, when the <i>air-conditioning</i> system capacity is more than 50 kW<sub>r</sub>; or  (bb) in <i>climate zones</i> 4, 5, 6, 7 or 8, when the <i>air-conditioning</i> system capacity is more than 35 kW<sub>r</sub>; and</p> <p>(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</p> <p>(E) except for a packaged <i>air-conditioning</i> system, must have a variable speed fan when its supply air quantity is capable of being varied; and</p> <p>(F) when serving a <i>sole-occupancy unit</i> in a Class 3 building, must not operate when any external door of the <i>sole-occupancy unit</i> that opens to a balcony or the like, is open for more than one minute.</p> <p>(ii) When an <i>air-conditioning</i> system is deactivated, any motorised outside</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>The outdoor air economy cycles to be provided where it can cost-effectively provide free cooling, however the area needing humidity control for process applications is exempt.</p> <p>The outdoor air economy cycles to be provided when the air-conditioning system capacity is more than 35 kW<sub>r</sub>;</p> <p>The water flow through major items such as boilers and chillers to be stopped when the item is not needed, usually by an automatic valve. This will reduce the amount of water being circulated and the pump energy needed, as well as thermal loss through the additional components like piping. This requirement is intended to reduce pump energy consumption to its minimum level.</p> <p>A variable speed fan must be used when the supplied air quantity is capable of being varied. This is because a variable speed fan is a more energy efficient method of reducing energy consumption than throttling the air supply with dampers. A packaged air-conditioning system is exempt.</p> <p>The A/C (Class 3 building) must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute. This clause requires any motorised outside air or return dampers to close when the system is deactivated. It does</p>
---	---	---



	<p>air and return dampers must close.</p> <p>(iii) Compliance with (i) must not adversely affect—  (A) smoke hazard management measures <i>required</i> by <b>Part E2</b>; and  (B) Ventilation <i>required</i> by <b>Part E3</b> and <b>Part F4</b>.</p> <p>(b) <b>Fans</b> — Fans of an <i>air-conditioning</i> system must comply with <b>Specification J5.2a</b>.</p> <p>(c) <b>Pumps</b> —  (i) An <i>air-conditioning</i> system, where water is circulated by pumping at more than 2 L/s, must be designed so that the maximum <i>pump power</i> to the pump complies with <b>Table J5.2</b>.</p> <p>(ii) An <i>air-conditioning</i> system pump that is rated at more than 3 kW of <i>pump power</i> and circulates water at more than 2 L/s must be capable of varying its speed in response to varying load.</p> <p>(iii) A spray water pump of an <i>air-conditioning</i> system's closed circuit cooler or evaporative condenser must not use more than 150 W of <i>pump power</i> for each L/s of spray water circulated.</p> <p>(d) <b>Insulation</b> —  (i) The ductwork of an <i>air-conditioning</i> system must be insulated and sealed in accordance with <b>Specification J5.2b</b>.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>not require that the dampers be motorised, only that they close if motorised dampers are installed.</p> <p>This is a linking clause that requires fans that are part of an air-conditioning system to comply with Specification J5.2a</p> <p>This aims to limit the overall energy consumption of the pumps used to circulate water at greater than 2 L/s in an air-conditioning system and the intention is for the pumps to circulate the required amount of water using no more energy than necessary. The maximum pump power values in the Table J5.2 are included to allow a cost effective balance to be met.</p> <p>This requires the pump speed, where the pump uses more than 3 kW of pump power, to be capable of being lowered to meet a change in duty. This will allow a lowering the pump's energy use.</p> <p>This states the requirements for the spray water pumps of a closed circuit cooler or evaporative condenser where part of an air-conditioning system. Any relevant standard can be used to determine the performance and may be part of the tests for closed circuit coolers and evaporative condensers.</p> <p>This is a linking clause and specifies that the ductwork of an air-conditioning system must be sealed and insulated in accordance with <b>Specification J5.2b</b>.</p>
--	--	---	---



			<p><i>Table 3 DUCTWORK AND FITTINGS - MINIMUM MATERIAL R-VALUE Location of ductwork and fittings</i></p>	<p><i>Climate zone 1, 2, 3, 4, 5, 6 and 7</i></p>
			<p><i>Within a conditioned space</i></p>	<p>1.2</p>
			<p><i>Where exposed to direct sunlight</i></p>	<p>3.0</p>
			<p><i>All other locations</i></p>	<p>2.0</p>
			<p>Or</p> <p>R1.0, for flexible ductwork with a length to an outlet or from an inlet of not more than 3 m.</p> <p>The Insulation must be protected against the effects of weather and sunlight; and be installed so that it:</p> <ol style="list-style-type: none"> <li>1) abuts adjoining insulation to form a continuous barrier; and</li> <li>2) maintains its position and thickness, other than at flanges and supports; and</li> </ol> <p>The ductwork insulation requirements do not apply to:</p> <ol style="list-style-type: none"> <li>1) ductwork and fittings located within the only or last room served by the system;</li> <li>2) fittings that form part of the interface with the <i>conditioned space</i>;</li> <li>3) return air ductwork in, or passing through, a <i>conditioned space</i>;</li> <li>4) ductwork for outside air and exhaust air associated with an <i>air-conditioning</i> system;</li> <li>5) the floor of an in-situ air-handling unit; or packaged <i>air-conditioning</i> equipment complying with MEPS; or (vI) flexible fan connections.</li> </ol> <p>This is a linking clause and requires piping, vessels, heat</p>	

<p>(ii) <i>Piping</i>, vessels, heat exchangers and tanks containing heating or cooling fluid that are part of an <i>air-conditioning</i> system, other than those with insulation levels covered by MEPS, must be insulated in accordance with <b>Specification J5.2c</b>.</p>	<p><b>Applicable</b></p>	<p>exchangers and tanks that contain heating and cooling fluids that are part of an air-conditioning system to be insulated to meet the requirements of Specification J5.2c</p>
<p>(e) <b>Space heating</b> — A heater used for <i>air-conditioning</i> or as part of an <i>air-conditioning</i> system must comply with <b>Specification J5.2d</b>.</p>	<p><b>Applicable</b></p>	<p>This is a linking clause and specifies standalone heaters used for air-conditioning or heaters used as part of an air-conditioning system such as a boiler, must comply with the requirements of Specification J5.2d</p>
<p>(f) <b>Energy efficiency ratios</b> —  (i) refrigerant chillers used as part of an <i>air-conditioning</i> system; and  (ii) packaged <i>air-conditioning</i> equipment, must comply with <b>Specification J5.2e</b>.</p>	<p><b>Applicable</b></p>	<p>The plans don't show but if there are any refrigerant chillers as part of an air-conditioning system, as well as packaged air-conditioning equipment, must have an energy efficiency ratio in accordance with Specification J5.2e...</p>
<p>(g) <b>Time switches</b> —  (i) A time switch complying with <b>Specification J6</b> must be provided to control—  (A) an <i>air-conditioning</i> system of more than 10 kW<sub>r</sub>; and  (B) a heater of more than 10 kW<sub>heating</sub> used for <i>air-conditioning</i>.</p>	<p><b>Applicable</b></p>	<p>This clause specifies the requirements for the time switch controlling the power supply to the air-conditioning systems. The intent is to reduce unnecessary energy consumption attributable to the system when it is not being used. Air-conditioning systems and heaters greater than 10 kW must be provided with a time switch in accordance with the Specification J6 that can activate and de-activate the respective system. The automatic nature of the switch removes dependency on actions by occupants or plant operators to turn off the equipment when they are not needed, thereby increasing energy savings</p>

	<p>(ii) The requirements of (i) do not apply to—</p> <p>(A) an <i>air-conditioning</i> system that serves— (aa) only one <i>sole-occupancy unit</i> in a Class 2 or 3 building; or (bb) a Class 4 part of a building; or</p> <p>(cc) only one <i>sole-occupancy unit</i> in a Class 9c building; or</p> <p>(B) a building where <i>air-conditioning</i> is needed for 24 hour occupancy.</p>	<p><b>Applicable to Class 3</b></p>	<p>A time switch complying with Specification J6 is not required if the air-conditioning system serves only one sole-occupancy unit in Class 3</p>
<p><b>J5.3</b></p>	<p><b>Mechanical ventilation systems</b></p> <p>(a) <b>Control</b> —</p> <p>(i) A mechanical ventilation system, including one that is part of an air-conditioning system, except where the mechanical system serves only one sole-occupancy unit in a Class 2 building or serves only a Class 4 part of a building, must—</p> <p>(A) be capable of being deactivated when the building or part of the building served by that system is not occupied; and</p> <p>(B) when serving a conditioned space—</p> <p>(aa) not exceed the minimum outdoor air quantity required by Part F4, where relevant, by more than 20%; and</p> <p>(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—</p> <p>(AA) an energy reclaiming system that preconditions outside air; or</p> <p>(BB) the ability to automatically modulate the mechanical ventilation required by Part F4 in proportion to the number of occupants.</p> <p>(ii) The requirements of (a)(i)(B)(aa) do not apply where—</p> <p>(A) additional unconditioned outside air is supplied for free cooling or to balance process exhaust; or</p> <p>(B) additional exhaust ventilation is needed to balance the required mechanical ventilation; or</p> <p>(C) an energy reclaiming system preconditions all the outside air.</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>BCA cannot mandate operational or administrative matters such as the pre-programmed times for time switches, nor would it be practical to do so. It can only require that time switches be installed.</p> <p>This Sub-clause requires controls to deactivate the mechanical ventilation system when the area is not occupied. This requires the mechanical ventilation system where the building or space has a high density of people and consequently a high rate of outdoor air required by <b>Part F4</b>, to have facilities to either reclaim energy from the building's exhaust or reduce the outdoor air rate to minimum required by <b>Part F4</b>. This must be done in proportion to the number of people in the building. This requirement does not apply to mechanical ventilation systems in climate zone 2 as it would not be cost effective in a climate where the outside air is so temperate.</p>

(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.

**Applicable**

This Clause is a linking clause that requires mechanical ventilation system fans covered by J5.3(a) to comply with Specification J5.2a

If the air flow rate of the mechanical ventilation system is more than 1000 L/s, the system must have a fan motor power to air flow rate ratio in accordance with

<i>Air-conditioning sensible heat load (W/m<sup>2</sup> of the floor area of the conditioned space)</i>	<i>Maximum fan motor power (W/m<sup>2</sup> of the floor area of the conditioned space)</i>	
	<i>For an air-conditioning system serving not more than 500 m<sup>2</sup></i>	<i>For an air-conditioning system serving more than 500 m<sup>2</sup></i>
Up to 100	5.3	8.3
101 to 150	9.5	13.5
151 to 200	13.7	18.3
201 to 300	22.2	28.0
301 to 400	30.7	37.0
More than 400	See Note	

**Note:** Where the *air-conditioning* sensible heat load is more than 400 W/m<sup>2</sup>, the maximum *fan motor power*



	<p>(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.  (ii) The requirements of (i) do not apply to—</p> <p>(A) a mechanical ventilation system that serves— (aa) only one sole-occupancy unit in a Class 2 or 3 building; or (bb) a Class 4 part of a building; or  (cc) only one sole-occupancy unit in a Class 9c building; or  (B) a building where mechanical ventilation is needed for 24 hour occupancy.</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p>must be determined— (a) in a building of not more than 500 m<sup>2</sup> floor area, using 0.09 W of fan motor power for each Watt of air-conditioning sensible heat load; and (b) in a building of more than 500 m<sup>2</sup> floor area, using 0.12 W of fan motor power for each Watt of air-conditioning sensible heat load.</p> <p>A time switch controlling of power supply to mechanical ventilation systems needs to be installed. The reason is to reduce the unnecessary energy consumption attributable to the system when it is not being used.  If the mechanical ventilation system is with an air flow rate of more than 1000 L/s, then needs to be provided with time switches in accordance with Specification J6 which can activate and de-activate the respective system.</p>
<p><b>J5.4</b></p>	<p><b>Miscellaneous exhaust systems</b></p> <p>(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.</p>	<p><b>Applicable (if there are any miscellaneous exhaust system)</b></p>	<p>This clause sets the requirements for miscellaneous exhaust system.</p> <p>This Sub-clause requires controls to stop the motor when the area is not occupied. Alternatively a variable speed fan is required</p>

	<p>(b) The requirements of (a) do not apply—</p> <p>(i) to a miscellaneous exhaust system in—</p> <p>(A) a <i>sole-occupancy unit</i> in a Class 2, 3 or 9c building; or</p> <p>(B) a Class 4 part of a building; or</p> <p>(ii) where additional exhaust ventilation is needed to balance the <i>required</i> outside air for ventilation.</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p>	<p>This clause show when clause (a) doesn't apply. The clause don't apply to Class 3 buildings.</p>
<b>PART J6</b>	<b>ARTIFICIAL LIGHTING AND POWER</b>		
<b>J6.1</b>	<p><b>Application of Part J6.2, J6.3 and J6.5(a)(ii)</b> do not apply to a Class 8 <i>electricity network substation</i>.</p>	<b>Applicable</b>	<p>The building is classified as Class 3. The intent of this part is to set the minimum requirements for the level of interior artificial lighting and power.</p>
<b>J6.2</b>	<p><b>Artificial lighting</b></p> <p>(a) In a <i>sole-occupancy unit</i> of a Class 2 building or a Class 4 part of a building—</p> <p>(i) the <i>lamp power density</i> or <i>illumination power density</i> of artificial lighting must not exceed the allowance of—</p> <p>(A) 5 W/m<sup>2</sup> within a <i>sole-occupancy unit</i>; and</p> <p>(B) 4 W/m<sup>2</sup> on a verandah, balcony or the like attached to a <i>sole-occupancy unit</i>; and</p> <p>(ii) the illumination power density allowance in (i) may be increased by dividing it by the illumination power density adjustment factor for a control device in Table J6.2b as applicable; and</p> <p>(iii) when designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires; and</p> <p>(iv) halogen lamps must be separately switched from fluorescent lamps.</p>	<b>Not Applicable</b>	<p>This is not Class 2 or Class 4 Building</p>

<p>(b) In a building other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building—</p> <p>(i) for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density in Table J6.2a; and</p> <p>(ii) the aggregate design illumination power load in (i) is the sum of the design illumination power loads in each of the spaces served; and</p> <p>(iii) in determining the design illumination power load for (ii) the following must be used:</p> <p>(A) Where there are multiple lighting systems serving the same space—</p> <p>(aa) the total illumination power load of all systems; or (bb) for a control system that permits only one system to operate at a time, the design illumination power load is—</p> <p>(AA) based on the highest illumination power load; or</p> <p>(BB) determined by the formula—  <math display="block">[H \times T/2 + P \times (100 - T/2)] / 100</math> Where: H = the highest illumination power load; and T = the time for which the maximum illumination power load will occur, expressed as a percentage; and P = the predominant illumination power load.</p> <p>(B) Where there is adjustable position lighting such as trapeze lighting or track lighting other than trunking systems that accept fluorescent lamps—</p> <p>(aa) the rating of the circuit breaker protecting the track; or (bb) of extra low voltage, 80% of the power rating of the transformer; or</p> <p>(cc) of mains voltage, 100 W per metre of track.</p> <p>(c) The requirements of (a) and (b) do not apply to the following:</p> <p>(i) Emergency lighting in accordance with Part E4.</p> <p>(ii) Signage and display lighting within cabinets and display cases that are fixed in place.</p> <p>(iii) Lighting for accommodation within the residential part of a detention centre.</p>	<p><b>Applicable</b></p>	<p>Lighting (BCA) Calculator Version 2_30_Excel2007- Published: 30 April 2014 is used for illumination power load allowance</p> <p>(The calculation is attached to the report)</p>
	<p><b>Applicable</b></p>	<p>All this cases described in (c) are exempted from the calculation (Emergency lighting, Signage and display lighting, A heater where the heater also emits light, such as in bathrooms, Lighting for the permanent display and</p>

	<p>(iv) A heater where the heater also emits light, such as in bathrooms.</p> <p>(v) Lighting of a specialist process nature such as in an operating theatre, fume cupboard or clean workstation.</p> <p>(vi) Lighting of performances such as theatrical or sporting.</p> <p>(vii) Lighting for the permanent display and preservation of works of art or objects in a museum or gallery other than for retail sale, purchase or auction.</p>		<p>preservation of works of art other than for retail sale, purchase or auction)</p>
<p><b>J6.3</b></p>	<p><b>Interior artificial lighting and power control</b></p> <p>(a) Artificial lighting of a room or space must be individually operated by a switch or other control device.</p> <p>(b) An occupant activated device, such as a room security device, a motion detector in accordance with <b>Specification J6</b>, or the like, must be provided in the <i>sole-occupancy unit</i> of a Class 3 building, other than where providing accommodation for people with a disability or the aged, to cut power to the artificial lighting, air-conditioner, local exhaust fans and bathroom heater when the <i>sole-occupancy unit</i> is unoccupied.</p> <p>(c) An artificial lighting switch or other control device in (a) must—</p> <p>(i) if an artificial lighting switch, be located in a visible position—</p> <p>(A) in the room or space being switched; or</p> <p>(B) in an adjacent room or space from where the lighting being switched is visible; and</p>	<p><b>Applicable</b></p> <p><b>Applicable</b></p> <p><b>Applicable</b></p>	<p>This subclause (a) requires the electrical design for lighting in each room or space within a building to be operated separately from other rooms or spaces. In simple terms, the lighting in each space must be switched by its own light switch or group of switches. The Clause prevents the use of a master light switch to operate all lights in a number of rooms or areas.</p> <p>An occupant activated device, such as a room security device or a motion detector, must be provided for each sole-occupancy unit in the class 3 building</p> <p>The Electrical design according Subclause (c) should provide lighting switch be in a visible position in the room where the lighting is being switched or in an adjacent room that offers a view of the lighting being switched. (As per <b>Specification J6</b>)</p>



<p>(ii) for other than a single functional space such as an auditorium, theatre, <i>swimming pool</i>, sporting stadium or warehouse—  (A) not operate lighting for an area of more than 250 m<sup>2</sup> if in a Class 5 building or a Class 8 laboratory; or  (B) not operate lighting for an area of more than— (aa) 250 m<sup>2</sup> for a space of not more than 2000 m<sup>2</sup>; or (bb) 1000 m<sup>2</sup> for a space of more than 2000 m<sup>2</sup>, if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building.</p>	<p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p>An artificial lighting switch or other control device must not operate lighting for an area of more than 250 m<sup>2</sup></p>
<p>(d) 95% of the light fittings in a building or <i>storey</i> of a building, other than a Class 2 or 3 building or a Class 4 part of a building, of more than 250 m<sup>2</sup> must be controlled by—  (i) a time switch in accordance with <b>Specification J6</b>; or  (ii) an occupant sensing device such as—  (A) a security key card reader that registers a person entering and leaving the building; or  (B) a motion detector in accordance with <b>Specification J6</b>.</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p>	<p>Sub clause (d) requires that 95% of the lighting in a building or storey of Class 5 to 9 which is larger than 250 m<sup>2</sup> be controlled by devices which can turn it off out-of-hours. The devices can include a time switch, security card reader or a motion detector complying with in Specification J6.</p>
<p>(e) In a Class 5, 6 or 8 building of more than 250 m<sup>2</sup>, artificial lighting in a natural lighting zone adjacent to <i>windows</i> must be separately controlled from artificial lighting not in a natural lighting zone in the same <i>storey</i> except where—  (i) the room containing the natural lighting zone is less than 20 m<sup>2</sup>; or  (ii) the room's natural lighting zone contains less than 4 luminaires; or  (iii) 70% or more of the luminaires in the room are in the natural lighting zone.</p>	<p><b>Not Applicable</b></p>	<p>Artificial lighting in a natural lighting zone adjacent to windows must be separately controlled from the artificial lighting not in a natural lighting zone</p>
<p>(f) The requirements of (a), (b), (c), (d) and (e) do not apply to the following:  (i) Emergency lighting in accordance with <b>Part E4</b>.  (ii) Where artificial lighting is needed for 24 hour occupancy such as for a manufacturing process, parts of a</p>	<p><b>Applicable</b></p>	<p>This clause sets out where the requirements of (a), (b), (c), (d) and (e) do not apply. The emergency lighting and the 24 hour required lighting doesn't need to be operated as per Subclause (a) (See</p>

	<p>hospital, an airport control tower or within a <i>detention centre</i>.</p> <p>(g) The requirements of <b>(d)</b> do not apply to the following:</p> <p>(i) Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as in a <i>patient care area</i> in a Class 9a building or in a Class 9c building.</p> <p>(ii) A heater where the heater also emits light, such as in bathrooms.</p>	<p><b>Not Applicable</b></p> <p><b>Not Applicable</b></p>	<p><b>Specification J6.)</b></p>
<p><b>J6.4</b></p>	<p><b>Interior decorative and display lighting</b></p> <p>(a) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled—</p> <p>(i) separately from other artificial lighting; and</p> <p>(ii) by a manual switch for each area other than when the operating times of the displays are the same in a number of areas such as in a museum, art gallery or the like, in which case they may be combined; and</p> <p>(iii) by a time switch in accordance with <b>Specification J6</b> where the display lighting exceeds 1 kW.</p> <p>(b) Window display lighting must be controlled separately from other display lighting.</p>	<p><b>Applicable if there are any interior decorative and display lighting</b></p> <p><b>Applicable</b></p>	<p>The provisions of this Clause cover decorative and display lighting inside a building and window display lighting. The interior lighting, such as used for a foyer mural or art display, must be (i) be separately controlled from other artificial lighting, (ii) have separate manual switching for each area that operates during different periods, except where operating times coincide such as in a museum or art gallery, and (iii) have a separate time switch, in accordance with Specification J6, for display lighting uses more than 1 kW.</p> <p>Sub-Clause (b) requires window display lighting, usually on the perimeter of the building, to be controlled separately from other display lighting.</p>
<p><b>J6.5</b></p>	<p><b>Artificial lighting around the perimeter of a building</b></p> <p>(a) Artificial lighting around the perimeter of a building, must—</p> <p>(i) be controlled by—</p> <p>(A) a daylight sensor; or</p> <p>(B) a time switch that is capable of switching on and off electric power to the system at variable pre-programmed times and on variable pre-programmed days; and</p> <p>(ii) when the total perimeter lighting load exceeds 100 W—</p>	<p><b>Applicable</b></p>	<p>The provisions of this Clause cover external lighting around the perimeter of a building, which must (i) be controlled by a <u>daylight sensor</u> or <u>programmable time switch control</u>, (ii) use high efficacy lamps (min.60 Lumens/W) or a motion detector if the total load exceeds 100W and (iii) have a</p>

	<p>(A) have an average <i>light source efficacy</i> of not less than 60 Lumens/W; or</p> <p>(B) be controlled by a motion detector in accordance with <b>Specification J6</b>; and</p> <p>(iii) when used for decorative purposes, such as facade lighting or signage lighting, have a separate time switch in accordance with <b>Specification J6</b>.</p> <p>(b) The requirements of (a)(ii) do not apply to the following:</p> <p>(i) Emergency lighting in accordance with <b>Part E4</b>.</p> <p>(ii) Lighting around a <i>detention centre</i>.</p>		<p>separate time switch, in accordance with Specification J6, when used for decorative purposes.</p> <p>Sub clause J6.5(b) exempts emergency lighting required by Part E4 or around detention centre <b>(See Specification J6.)</b> LIGHTING AND POWER CONTROL DEVICES (BCA )</p>
<b>J6.6</b>	<p><b>Boiling water and chilled water storage units</b></p> <p>Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with <b>Specification J6</b>.</p>	<b>Applicable if there are any boiling water or chilled water storage unit</b>	The power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6. The requirement does not apply to instantaneous heating units without storage that do not operate or lose heat when are not in use.
<b>PART J7</b>	<p><b>HEATED WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT</b></p>		
<b>J7.2</b>	<p><b>Heated water supply</b></p> <p>A heated water supply system for food preparation and sanitary purposes must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia</p>	<b>Applicable</b>	<p>All HWS must comply with NCC Volume Three B2.4 Water heater in a heated water supply system</p> <p>If there are any New Hot Water Taps - Must have a minimum WELS rating of 3 stars (9L/min)</p> <p>Compliance for a heated water supply system is verified when the annual greenhouse gas intensity of the water heater does not exceed 100 g</p>



<p><b>J7.3</b></p>	<p><b>Swimming pool heating and pumping</b></p> <p>(a) Heating for a <i>swimming pool</i> must be by—</p> <p>(i) a solar heater not boosted by electric resistance heating; or</p> <p>(ii) a heater using reclaimed energy; or</p> <p>(iii) a gas heater; or</p> <p>(iv) a heat pump; or</p> <p>(v) a combination of (i) to (iv).</p> <p>(b) Where some or all of the heating <i>required</i> by (a) is by a gas heater or a heat pump, the <i>swimming pool</i> must have—</p> <p>(i) a cover unless located in a <i>conditioned space</i>; and</p> <p>(ii) a time switch in accordance with <b>Specification J6</b> to control the operation of the heater.</p> <p>(c) A time switch must be provided in accordance with <b>Specification J6</b> to control the operation of a circulation pump for a <i>swimming pool</i>.</p> <p>(d) For the purpose of <b>J7.3</b>, a <i>swimming pool</i> does not include a spa pool.</p>	<p><b>Not Applicable</b></p>	<p>CO<sub>2</sub>e/MJ of thermal energy load determined in accordance with AS/NZS 4234.</p> <p>There are no any swimming pools shown on the plan</p>
<p><b>J7.4</b></p>	<p><b>Spa pool heating and pumping</b></p> <p>(a) Heating for a spa pool that shares a water recirculation system with a <i>swimming pool</i> must be by—</p> <p>(i) a solar heater; or</p> <p>(ii) a heater using reclaimed energy; or</p> <p>(iii) a gas heater; or</p> <p>(iv) a heat pump; or</p> <p>(v) a combination of (i) to (iv).</p> <p>(b) Where some or all of the heating <i>required</i> by (a) is by a gas heater or a heat pump, the spa pool must</p>	<p><b>Not Applicable</b></p>	



	<p>have—</p> <p>(i) a cover; and</p> <p>(ii) a push button and a time switch in accordance with <b>Specification J6</b> to control the operation of the heater.</p> <p>(c) A time switch must be provided in accordance with <b>Specification J6</b> to control the operation of a circulation pump for a spa pool having a capacity of 680 L or more.</p>		
<b>PART J8</b>	<b>FACILITIES FOR ENERGY MONITORING</b>		
<b>J8.1</b>	<p><b>Application of Part</b></p> <p>The Deemed-to-Satisfy Provisions of this Part do not apply—</p> <p>(a) within a sole-occupancy unit of a Class 2 building or a Class 4 part of a building; or</p> <p>(b) to a Class 8 electricity network substation</p>	<b>Applicable</b>	The building is classified as Class 3
<b>J8.3</b>	<p><b>Facilities for energy monitoring</b></p> <p>(a) A building or <i>sole-occupancy unit</i> with a <i>floor area</i> of more than 500 m<sup>2</sup> must have the facility to record the consumption of gas and electricity.</p> <p>(b) A building with a <i>floor area</i> of more than 2,500 m must have the facility to record individually the energy consumption of—</p> <p>(i) <i>air-conditioning</i> plant including, where appropriate, heating plant, cooling plant and air handling fans; and</p> <p>(ii) artificial lighting; and</p> <p>(iii) appliance power; and</p> <p>(iv) central hot water supply; and</p> <p>(v) internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and</p> <p>(vi) Other ancillary plant.</p>	<p><b>Applicable</b></p> <p><b>Not Applicable</b></p>	<p>The building is with a total area of more than 500 m<sup>2</sup>. Therefore, it needs to have devices to record the consumption of the gas and the electricity. (monitoring system that keeps track of electricity and gas consumption)</p> <p>The building doesn't need to have devices to record individually the energy consumption of: air-conditioning plant, artificial lighting, appliance power, central hot water supply, internal transport devices including lifts, escalators and travellers where there is more than one serving the building; and other ancillary plants</p>

	(c) The provisions of <b>(b)</b> do not apply to a Class 2 building with a <i>floor area</i> of more than 2,500 m <sup>2</sup> where the total area of the common areas is less than 500 m <sup>2</sup> .		
--	---	--	--

## STATEMENT OF COMPLIANCE

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



# Construction Diagrams

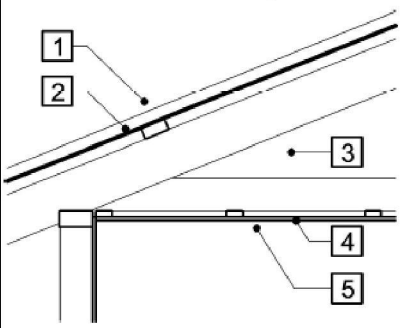
Project name:

## Proposed Boarding House

### 12 Anthony Crescent, Kingswood, 2747

#### I) ROOF

##### Metal Roof- Flat ceiling

Roof construction description	Item	Item description	<i>R-Value</i> Unventilated		<i>R-Value</i> Ventilated	
			Up	Down	Up	Down
			(a) Roof – Horizontal ceiling – Metal cladding	1.	Outdoor air film (7 m/s)	0.04
	2.	Metal cladding	0.00	0.00	0.00	0.00
	3.	Roof airspace (non-reflective)	0.18	0.28	0.00	0.46
	4.	Plasterboard, gypsum (10 mm, 880 kg/m <sup>3</sup> )	0.06	0.06	0.06	0.06
	5.	Indoor air film (still air)	0.11	0.16	0.11	0.16
	<i>Total R-Value</i>			0.39	0.54	0.21

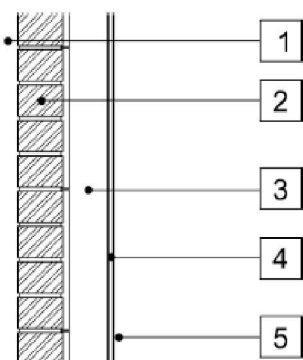
Required total R value 3.2 -Additional insulation of R2.66

**\*Note:** Any reduction in the ceiling insulation (around down-lights or exhaust fans) must be compensated in accordance with the Table J1.3b

II) **EXTERNAL WALLS**

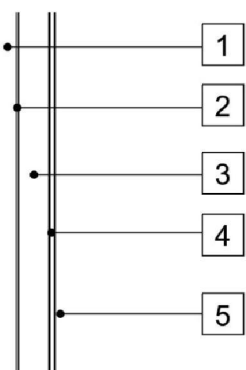
A) Brick Veneer

**Figure 2 TYPICAL R-VALUES FOR WALL CONSTRUCTION**

External wall construction description	Item	Item description	R-Value
(a) Masonry veneer – 25 mm to 50 mm cavity, 10 mm internal plaster on 90 mm stud frame  	1.	Outdoor air film (7 m/s)	0.04
	2.	Masonry (See Notes 3 and 4)	0.09
	3.	Cavity and airspace (115 to 140 mm, made up of 90 mm stud + 25 mm to 50 mm airspace non-reflective and unventilated)	0.17
	4.	Plasterboard, gypsum (10 mm, 880 kg/m <sup>3</sup> )	0.06
	5.	Indoor air film (still air)	0.12
	<i>Total R-Value</i>		

Required R2.8-Additional insulation of R2.49

B) Metal Cladding walls

(e) Lightweight wall structure: Metal cladding - stud wall-plasterboard internally  	1.	Outdoor air film (7 m/s)	0.04
	2.	Metal Cladding	-
	3.	Airspace (90 mm nonreflective and unventilated)	0.17
	4.	Plasterboard, gypsum (10 mm, 880 kg/m <sup>3</sup> )	0.06
	5.	Indoor air film (still air)	0.12
	<i>Total R-Value</i>		

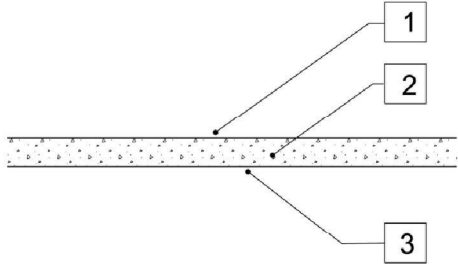
Required R2.8-Additional insulation of R2.58

**\*Note: Where the insulation goes in the air space and the R-value of the air space is lost the R value of the required insulation should be increased for the lost R-value**

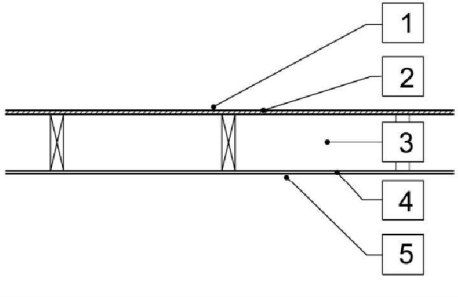


#### IV) FLOORS

\* Applicable for the floors above the open air, above the carpark and above the unconditioned spaces

(c) Solid concrete suspended slab 	1.	Indoor air film (still air)	0.11	0.16
	2.	Solid concrete (150 mm, 2400 kg/m <sup>3</sup> )	0.10	0.10
	3.	Outdoor air film (7 m/s)	0.04	0.04
	<i>Total R-Value</i>		0.25	0.30

Required R2.0-Additional Insulation R1.75

Floor construction description	Item	Item description	R-Value	
			Up	Down
(a) Timber internal floor, 10 mm internal plaster 	1.	Indoor air film (still air)	0.11	0.16
	2.	Particleboard flooring (19 mm, 640 kg/m <sup>3</sup> )	0.15	0.15
	3.	Floor airspace, 100 mm to 300 mm (non reflective)	0.15	0.22
	4.	Plasterboard, gypsum (10 mm, 880 kg/m <sup>3</sup> )	0.06	0.06
	5.	Indoor air film (still air)	0.11	0.16
	<i>Total R-Value</i>		0.58	0.75

Required R2.0-Additional Insulation R1.42

**\*Note: Where the insulation goes in the air space and the R-value of the air space is lost the R value of the required insulation should be increased for the lost R-value**

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

Building name/description

**Proposed Boarding House- 12 Anthony Crescent, Kingswood, 2747**

Application

**Class 3**

Climate zone

**6**

Storey

**Ground**

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
20.9m <sup>2</sup>		68m <sup>2</sup>		30m <sup>2</sup>		52.5m <sup>2</sup>		
								n/a

Option A

Option B

Glazing area (A) 6.2m<sup>2</sup> ..... 9.18m<sup>2</sup> ..... 15.6m<sup>2</sup> ..... 6.48m<sup>2</sup>

Number of rows preferred in table below

**15** (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 (m <sup>2</sup> )	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S <sub>H</sub> )	Cooling (S <sub>C</sub> )	Area used (m <sup>2</sup> )	Element share of % of allowance used
1	WR1	W		1.20	1.80		6.7	0.70				0.00	1.00	1.00	2.16	33% of 95%
2	WR2-1	W		1.20	1.80		6.7	0.70				0.00	1.00	1.00	2.16	33% of 95%
3	WR2-2	S		1.20	1.21		3.8	0.65				0.00	1.00	1.00	1.45	14% of 100%
4	WR3-1	W		1.20	1.80		6.7	0.70				0.00	1.00	1.00	2.16	33% of 95%
5	WR3-2	N		1.20	1.21		4.6	0.45	Device		2.00	0.00	0.00	0.30	1.45	16% of 78%
6	WR4	S		2.40	1.06		3.8	0.65	0.600	2.400	0.25	0.00	0.91	0.88	2.54	26% of 100%
7	W-Comm.Liv-1 Slid Door	S		2.40	4.21		2.4	0.51	0.600	2.400	0.25	0.00	0.91	0.88	10.10	47% of 100%
8	W-Comm.Liv-2	E		1.20	0.85		4.6	0.45				0.00	1.00	1.00	1.02	11% of 75%
9	W-Comm.Liv-3	N		1.20	1.21		4.6	0.45	Device		2.00	0.00	0.00	0.30	1.45	16% of 78%
10	WR5	E		1.20	1.70		4.6	0.45				0.00	1.00	1.00	2.04	22% of 75%
11	WR6	E		1.20	1.70		4.6	0.45				0.00	1.00	1.00	2.04	22% of 75%
12	WR7-1	E		1.20	1.70		4.6	0.45				0.00	1.00	1.00	2.04	22% of 75%
13	WR7-2	S		1.20	1.21		3.8	0.65				0.00	1.00	1.00	1.45	14% of 100%
14	WR8-1	E		1.20	1.70		4.6	0.45				0.00	1.00	1.00	2.04	22% of 75%
15	WR8-2	N		2.75	1.20		4.6	0.45	0.850	2.750	0.31	0.00	0.88	0.72	3.30	68% of 78%

## 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*



Copyright © 2014 – Australian Government, State and Territory Governments of Australia. All Rights Reserved

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

Building name/description

**Proposed Boarding House- 12 Anthony Crescent, Kingswood, 2747**

Application

**Class 3**

Climate zone

**6**

Storey

**First**

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	32.5m <sup>2</sup>		69m <sup>2</sup>		19.3m <sup>2</sup>		57.2m <sup>2</sup>		
Option B									n/a

Glazing area (A) 7.74m<sup>2</sup> ..... 8.69m<sup>2</sup> ..... 5.81m<sup>2</sup> ..... 8.69m<sup>2</sup>

Number of rows preferred in table below

**15** (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 (m <sup>2</sup> )	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S <sub>H</sub> )	Cooling (S <sub>C</sub> )	Area used (m <sup>2</sup> )	Element share of % of allowance used
1	WR13-1	N		2.60	1.21		4.6	0.45	Device		2.00	0.00	0.00	0.30	3.15	26% of 66%
2	WR13-2	W		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 79%
3	WR12	W		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 79%
4	WR11	W		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 79%
5	WR10-1	W		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 79%
6	WR10-2	S		1.20	1.21		3.8	0.65				0.00	1.00	1.00	1.45	23% of 90%
7	WR9-1	N		1.20	1.21		4.6	0.45				0.00	1.00	1.00	1.45	36% of 66%
8	WR9-2	S		2.06	1.06		3.8	0.65	0.600	2.100	0.29	0.04	0.90	0.86	2.18	38% of 90%
9	WR19	S		2.06	1.06		3.8	0.65	0.600	2.100	0.29	0.04	0.90	0.86	2.18	38% of 90%
10	WR18	E		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 70%
11	WR17	E		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 70%
12	WR16	E		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 70%
13	WR15	E		1.20	1.81		4.6	0.45				0.00	1.00	1.00	2.17	25% of 70%
14	WR14	N		2.60	1.21		4.6	0.45	1.230	2.600	0.47	0.00	0.74	0.58	3.15	38% of 66%
15																

### 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*



Copyright © 2014 – Australian Government, State and Territory Governments of Australia. All Rights Reserved



Main Menu

LIGHTING CALCULATOR FOR USE WITH J6.2(b) VOLUME ONE (First issued with NCC 2014)

Multiple Lighting Systems Calculator

Help screen

Building name/description

Proposed boarding house: 12 Anthony Crescent, Kingswood, 2747

Classification

Class 7a

Number of rows preferred in table below

10 (as currently displayed)

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Adjustment Factor One			Adjustment Factor Two			OVERALL DESIGN PASSES			
							Adjustment Factor One	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
							Adjustment	% Area	% of full power	Adjustment	% Area	% of full power				
1	Basement (Carpark)	326	84.3	2.45	1956	Carpark - general							1956 W	83% of 73%		
2	Garage/Entry (Gr.Floor)	34.5	23.5	2.7	414	Carpark - entry zone (first 20 m of travel)							1269 W	17% of 73%		
3																
4																
5																
6																
7																
8																
9																
10																

Total 2370 W

Total 3225 W

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE LIGHTING CALCULATOR

The Lighting Calculator has been developed by the ABCB to assist in developing a better understanding of lighting energy efficiency parameters. While the ABCB believes that the Lighting Calculator, if used correctly, will produce accurate results, the calculator 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 Lighting Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid



Copyright © 2014 - Australian Government, State and Territory Governments of Australia. All Rights Reserved



Main Menu

**LIGHTING CALCULATOR FOR USE WITH J6.2(b) VOLUME ONE (First issued with NCC 2014)**

Multiple Lighting Systems Calculator

Help screen

Building name/description

Proposed boarding house: 12 Anthony Crescent, Kingswood, 2747 (Ground Floor)

Classification

Class 3

Number of rows preferred in table below

20 (as currently displayed)

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Adjustment Factor One			Adjustment Factor Two			OVERALL DESIGN PASSES			
							Adjustment Factor One	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
							Adjustment	% Area	% of full power	Adjustment	% Area	% of full power				
1	Room 1	24.9	24.4	2.7	174.3	Sole-occupancy unit of a Class 3 building							198 W	9% of 73%		
2	Bathroom (Room 1)	7.81	11.9	2.7	39.05	Toilet, locker room, staff room, rest room and the like							81 W	2% of 73%		
3	Room 2	17.9	20.9	2.7	143.2	Sole-occupancy unit of a Class 3 building							148 W	7% of 73%		
4	Bathroom (Room 2)	4.17	9.3	2.7	20.85	Toilet, locker room, staff room, rest room and the like							45 W	1% of 73%		
5	Room 3	17.9	20.9	2.7	143.2	Sole-occupancy unit of a Class 3 building							148 W	7% of 73%		
6	Bathroom (Room 3)	4.17	9.3	2.7	20.85	Toilet, locker room, staff room, rest room and the like							45 W	1% of 73%		
7	Room 4	17.9	20.9	2.7	143.2	Sole-occupancy unit of a Class 3 building							148 W	7% of 73%		
8	Bathroom (Room 4)	4.17	9.3	2.7	20.85	Toilet, locker room, staff room, rest room and the like							45 W	1% of 73%		
9	Common Living	20.04	17.93	2.7	160.32	An illuminance more than 240 lx to 320 lx							344 W	8% of 73%		
10	Room 5	18.73	19.6	2.7	149.84	Sole-occupancy unit of a Class 3 building							152 W	8% of 73%		
11	Bathroom (Room 5)	4.38	9.08	2.7	21.9	Toilet, locker room, staff room, rest room and the like							46 W	1% of 73%		
12	Room 6	18.73	19.6	2.7	149.84	Sole-occupancy unit of a Class 3 building							152 W	8% of 73%		
13	Bathroom (Room 6)	4.38	9.08	2.7	21.9	Toilet, locker room, staff room, rest room and the like							46 W	1% of 73%		
14	Room 7	18.73	19.6	2.7	149.84	Sole-occupancy unit of a Class 3 building							152 W	8% of 73%		
15	Bathroom (Room 7)	4.38	9.08	2.7	21.9	Toilet, locker room, staff room, rest room and the like							46 W	1% of 73%		
16	Room 8	18.73	19.6	2.7	149.84	Sole-occupancy unit of a Class 3 building							152 W	8% of 73%		
17	Bathroom (Room 8)	4.38	9.08	2.7	21.9	Toilet, locker room, staff room, rest room and the like							46 W	1% of 73%		
18	Hallway (Gr.Floor)	43.72	63.4	2.7	349.76	Corridors							593 W	18% of 73%		
19	WC 1 (Gr.Floor)	1.98	5.8	2.7	9.9	Toilet, locker room, staff room, rest room and the like							22 W	1% of 73%		
20	WC 2 (Gr.Floor)	1.98	5.8	2.7	9.9	Toilet, locker room, staff room, rest room and the like							22 W	1% of 73%		
<b>Total</b>						1922 W							<b>Total</b>	2631 W		

Main Menu

LIGHTING CALCULATOR FOR USE WITH J6.2(b) VOLUME ONE (First issued with NCC 2014)

Multiple Lighting Systems Calculator

Help screen

Building name/description

Proposed boarding house: 12 Anthony Crescent, Kingswood, 2747 (Ground Floor)

Classification

Class 3

Number of rows preferred in table below 20 (as currently displayed)

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Adjustment Factor One			Adjustment Factor Two			OVERALL DESIGN PASSES			
							Adjustment Factor One	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
							Adjustment	% Area	% of full power	Depreciation Factor	Adjustment	% Area	% of full power	Depreciation Factor		

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE LIGHTING CALCULATOR

The Lighting Calculator has been developed by the ABCB to assist in developing a better understanding of lighting energy efficiency parameters. While the ABCB believes that the Lighting Calculator, if used correctly, will produce accurate results, the calculator 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 Lighting Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid



Copyright © 2014 - Australian Government, State and Territory Governments of Australia. All Rights Reserved

Main Menu

**LIGHTING CALCULATOR FOR USE WITH J6.2(b) VOLUME ONE (First issued with NCC 2014)**

Multiple Lighting Systems Calculator

Help screen

Building name/description

Proposed boarding house: 12 Anthony Crescent, Kingswood, 2747 (First Floor)

Classification

Class 3

Number of rows preferred in table below

23 (as currently displayed)

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Adjustment Factor One			Adjustment Factor Two			OVERALL DESIGN PASSES			
							Adjustment Factor One	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
							Adjustment	% Area	% of full power	Adjustment	% Area	% of full power				
1	Room 9	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
2	Bathroom (Room 9)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
3	Room 10	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
4	Bathroom (Room 10)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
5	Room 11	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
6	Bathroom (Room 11)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
7	Room 12	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
8	Bathroom (Room 12)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
9	Room 13	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
10	Bathroom (Room 13)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
11	Room 14	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
12	Bathroom (Room 14)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
13	Room 15	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
14	Bathroom (Room 14)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
15	Room 16	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
16	Bathroom (Room 16)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
17	Room 17	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
18	Bathroom (Room 17)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
19	Room 18	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		
20	Bathroom (Room 18)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
21	Room 19	16.9	20.3	2.7	135.2	Sole-occupancy unit of a Class 3 building							142 W	6% of 77%		

Main Menu

LIGHTING CALCULATOR FOR USE WITH J6.2(b) VOLUME ONE (First issued with NCC 2014)

Multiple Lighting Systems Calculator

Help screen

Building name/description

Proposed boarding house: 12 Anthony Crescent, Kingswood, 2747 (First Floor)

Classification

Class 3

Number of rows preferred in table below

23 (as currently displayed)

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design Illumination Power Load	Space	Adjustment Factor One			Adjustment Factor Two			OVERALL DESIGN PASSES			
							Adjustment Factor One	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
							Adjustment	% Area	% of full power	Adjustment	% Area	% of full power				
22	Bathroom (Room 19)	4.96	9.68	2.7	24.8	Toilet, locker room, staff room, rest room and the like							54 W	1% of 77%		
23	Hallway (First Floor)	41.7	59.75	2.7	333.6	Corridors							566 W	16% of 77%		

Total 2094 W

Total 2722 W

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE LIGHTING CALCULATOR

The Lighting Calculator has been developed by the ABCB to assist in developing a better understanding of lighting energy efficiency parameters. While the ABCB believes that the Lighting Calculator, if used correctly, will produce accurate results, the calculator 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 Lighting Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid



Copyright © 2014 - Australian Government, State and Territory Governments of Australia. All Rights Reserved