



BCA Section J  
Deemed to  
Satisfy  
Compliance  
**report**  
**2016**

14 Manning St Kingswood NSW 2747

Proposed Specialist Disability Accommodation



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## 1 - Introduction

The term Proposed Development in this report refers to the Proposed Specialist Disability Accommodation at 14 Manning St Kingswood NSW 2747.

This report presents the findings from the design assessment of the Proposed Development against the Deemed-to-Satisfy (DTS) requirements of Section J of the Building Code of Australia 2016, ENERGY EFFICIENCY.

The purpose of this report is to provide an assessment of the design plans and documentation for the Proposed Development and to satisfy the requirements of Local Government Area of the development for issuance of Construction Certificate for construction operations in the development site.

The scope of this report is limited to the design documentation referenced in Section 2 of this report and only covers Section J of BCA 2016 provisions.

## 2 - Referenced Documents

The following documents and design plans have been referenced in compilation of this report:

- 1- National Construction Code Series, Volume 1, Building Code of Australia 2016, Class 2 to Class 9 Buildings.
- 2- Architectural Plans provided by “Kennedy Associates Architects” and received by Taylor Smith Consulting at 09/08/2018.
- 3- Email correspondence and response to information request received from the architects of the Proposed Development.

### 3 - Proposed Development

The Proposed Development in this report is the Specialist Disability Accommodation.

The development is in BCA Climate Zone 6 according to BCA Climate Map for NSW.

The Proposed Development is a class 3 building according to the BCA standard classification being a Boarding House/ Specialist Disability Accommodation.

The following construction elements are being proposed in the building design according to architectural plans and design documents referenced in this report:

**External Walls:** Cavity brick construction.

**Roof and Ceiling:** Plasterboard ceiling and metal cladding roof.

**Internal Walls:** Internal brick veneer walls of car ports of both houses.

**Floors:** Floor of first floor of both houses on top of car ports, concrete slab.

**Windows:** Standard Aluminium frame single glazed windows assumed.

**Skylights:** No skylights proposed.

**Air Conditioning System:** No design plans provided.

**Lighting System:** No design plans provided.

## 4- BCA Section J Compliance Provisions

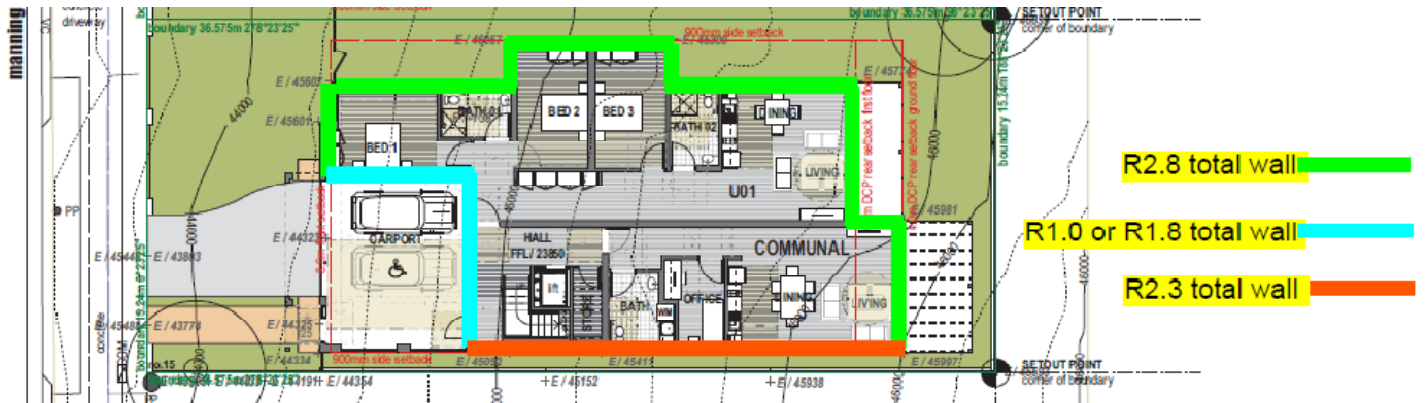
This section analyses the current elements of the of Proposed Development design against provisions of Section J of the Building Code of Australia 2016, Energy Efficiency. In case of a non complying element, advisory notes are provided to bring the building in compliance with Section J requirements.

A summary note of these provisions is provided in Section 5-Conclusions of this report that can be incorporated into specification blocks of architectural plans and, as a result, be deployed during construction. It is however the responsibility of the entity responsible for the submission of the design plans and documents to the council to ascertain each and every element of this report is clearly referenced and reflected on the submitted plans and documents.

### 4-1 Part J1 Building Fabric

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	For plasterboard ceiling and metal cladding roof of 14 Manning St, of the Proposed Development and the areas of ground floor under the balcony of first floor	Install minimum R 2.7 m <sup>2</sup> .k/w insulation or provide a roof system with total thermal resistance of R3.2 m <sup>2</sup> .k/w.	Part J1.3(a) and Table J1.3a considering the material properties from specification J1.3 Figure 2(a)
2	For metal cladding roof 14 Manning St, of the Proposed Development if the metal roof sheet and ceiling lining are attached to supporting metal framing elements like purlins, rafters or battens	Provide a thermal break consisting of an insulating material with a minimum R0.2 m <sup>2</sup> .k/w installed between the metal sheet roofing and its supporting metal frame elements	Part J1.3(d)
3	External southern cavity brick walls of the conditioned areas of 14 Manning St, of the Proposed Development (Envelope walls – No requirements for car port walls )	Install minimum R 1.6 m <sup>2</sup> .k/w insulation or provide a wall system with total thermal resistance of R 2.3 m <sup>2</sup> .k/w.	Part 1.5(a), Table J1.5a and figure J1.5 considering the material properties from specification J1.5 Figure 2(b)
4	Other/ external cavity brick walls of the conditioned areas of 14 Manning St, of the Proposed Development (Envelope Walls - No requirements for car port walls)	Install minimum R 2.1 m <sup>2</sup> .k/w insulation or provide a wall system with total thermal resistance of R 2.8 m <sup>2</sup> .k/w.	Part 1.5(a), Table J1.5a and figure J1.5 considering the material properties from specification J1.5 Figure 2(b)

5	Brick veneer envelope internal walls of car ports of 14 Manning St, of the Proposed Development	Install minimum R 0.6 m <sup>2</sup> .k/w insulation or R 1.4 m <sup>2</sup> .k/w if the adjacent unconditioned area is ventilated by more than 1.5 air change per hour of outside air during occupied hours. (Provide a wall system with total thermal resistance of R 1.0 m <sup>2</sup> .k/w or R 1.8 m <sup>2</sup> .k/w respectively)	Part J1.5(b) and Table J1.5b considering the material properties from specification J1.5 Figure 2(a)
6	Floor of level one areas on top of car port of 14 Manning St, of the Proposed Development	Install minimum R 1.7 m <sup>2</sup> .k/w insulation or provide a floor system with total thermal resistance of R 2.0 m <sup>2</sup> .k/w.	Part J1.6(a)(i) and Table J1.6 considering the material properties from specifications J1.6 Figure 2(c)



## 4-2 Part J2 Glazing

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	All Ground Floor North side elevation glazed envelope elements	Install windows with Total System U-value no more than 5.8 W/m <sup>2</sup> .k and SHGC no more than 0.74	Part J2.4(a)(i)
2	All Ground Floor East side elevation glazed envelope elements	Install windows with Total System U-value no more than 1.5 W/m <sup>2</sup> .k and SHGC no more than 0.13	Part J2.4(a)(i)
3	All Ground Floor South side elevation glazed envelope elements	Install windows with Total System U-value no more than 5.8 W/m <sup>2</sup> .k and SHGC no more than 0.74	Part J2.4(a)(i)
4	All Ground Floor West side elevation glazed envelope elements	Install windows with Total System U-value no more than 2.0 W/m <sup>2</sup> .k and SHGC no more than 0.13	Part J2.4(a)(i)
5	All First Floor North side elevation glazed envelope elements	Install windows with Total System U-value no more than 5.8 W/m <sup>2</sup> .k and SHGC no more than 0.74	Part J2.4(a)(i)
6	All First Floor East side elevation glazed envelope elements	Install windows with Total System U-value no more than 5.0 W/m <sup>2</sup> .k and SHGC no more than 0.53	Part J2.4(a)(i)
7	All First Floor South side elevation glazed envelope elements	Install windows with Total System U-value no more than 5.8 W/m <sup>2</sup> .k and SHGC no more than 0.74	Part J2.4(a)(i)
8	All First Floor West side elevation glazed envelope elements	Install windows with Total System U-value no more than 4.2 W/m <sup>2</sup> .k and SHGC no more than 0.47	Part J2.4(a)(i)

## 4-3 Part J3 Building Sealing

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	All operable windows and external doors of the conditioned areas of 14 Manning St, of the Proposed Development except for fire doors, smoke doors and roller shutter doors if any	Provide air seals on all edges or provide windows complying with AS 2047	Part J3.4 (a)
2	Entry doors to both houses from the car ports	Provide self closing mechanism, revolving door or similar system	Part J3.4(d)



3	Exhaust fans of the conditioned areas of 14 Manning St, of the Proposed Development if any	Must be equipped with a self closing damper or similar	Part J3.5
4	Roofs, ceilings, walls, floors, windows frames and doors frames of the conditioned areas of 14 Manning St, of the Proposed Development	Must be enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions OR be sealed by caulking, skirting, architraves, cornices or similar elements. These requirements do not apply to openings, grilles or the like required for smoke hazard management.	Part J3.6

### 4-4 Part J5 Air-Conditioning and Ventilation Systems

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	No Design Plans Provided	n/a	n/a

### 4-5 Part J6 Artificial Lighting and Power

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	Lighting electrical power of internal areas of 14 Manning St, of the Proposed Development	Maximum design power allowed is 5363 Watts	Part J6.2 (b)
2	For each independent unit of 14 Manning St, of the Proposed Development	Provide an occupant activated device such as a room security device, a motion detector or the like to cut power to the artificial lighting, air conditioner, local exhaust fans and bathroom heater when the sole occupancy is unoccupied. <small>Notes</small>	Part J6.3(b)
3	Windows display lighting if installed	Must be controlled separately from other display lighting.	Part J6.4(b)
4	External lighting of 14 Manning St, of the Proposed Development	Must be controlled by either a daylight sensor or a time switch which is capable of being pre-programmed for different times of the day on variable days. <small>Notes</small>	Part J6.5 (a)(i)
5	If the total perimeter lighting load of 14 Manning St, of the Proposed Development exceeds 100 Watts	Provide average light source efficacy not less than 60 Lumens/Watt or control with a motion detector device except when providing emergency lighting in accordance with Part E4 of the BCA 2011. <small>Notes</small>	Part J6.5 (a)(ii)

6	Façade lighting or signage lighting 14 Manning St, of the Proposed Development if installed	Must be provided with a separate time switch. <small>Notes</small>	Part J6.5 (a)(iii)
7	Power supply to boiling water or chilled water storage if applicable to 14 Manning St, of the Proposed Development	Must be controlled by a time switch. <small>Notes</small>	Part J6.6

### 4-5-1 Artificial Lighting and Power Notes:

- 1- A lighting timer must;
  - a. be located within 2 m of every entry door to the space; and
  - b. have an indicator light that is illuminated when the artificial lighting is off; and
  - c. not control more than
    - i. an area of 100 m<sup>2</sup> with a single push button timer; and
    - ii. 95% of the lights in spaces of area more than 25 m<sup>2</sup>; and
  - d. be capable of maintaining the artificial lighting
    - i. for not less than 5Å minutes and not more than 15 minutes unless it is reset; and
    - ii. without interruption if the timer is reset.
- 2- Time switch;
  - a. A time switch must be capable of switching on and off electric power at variable pre-programmed times and on variable pre-programmed days.
  - b. A time switch for internal lighting must be capable of being overridden by
    - i. a means of turning the lights on, either by
      1. a manual switch or an occupant sensing device that on sensing a person's presence, overrides the time switch for a period of up to 2 hours, after which there is no further presence detected, the time switch must resume control; or
      2. an occupant sensing device that overrides the time switch upon a person's entry and returns control to the time switch upon the person's exiting, such as a security card reader; and
    - ii. a manual "off" switch
  - c. A time switch for external lighting must be capable of
    - i. limiting the period the system is switched on to between 30 minutes before sunset and 30 minutes after sunrise is determined or detected including any pre-programmed period between these times; and
    - ii. being overridden by a manual switch or a security access system for a period of up to 30 minutes, after which the time switch must resume control.
  - d. A time switch for boiling water and chilled water storage units must be capable of being overridden by a manual switch or a security access system that senses a person's presence, overrides for a period of up to 2 hours, after which if there is no further presence detected, the time switch must resume control.
- 3- Motion detectors;
  - a. In a Class 2, 3 or 9c aged care building other than within a sole-occupancy unit, a motion detector must
    - i. be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
    - ii. be capable of detecting a person before they are 1Å m into the space; and
    - iii. other than within a sole-occupancy unit of a Class 3 building, not control more than
      1. an area of 100 m<sup>2</sup>; and
      2. 95% of the lights in spaces of area more than 25 m<sup>2</sup>; and
    - iv. be capable of maintaining the artificial lighting when activated
      1. for not less than 5 minutes and not more than 15 minutes unless it is reset; and
      2. without interruption if the motion detector is reset by movement.
  - b. In a Class 5, 6, 7, 8, 9a or 9b building, a motion detector must
    - i. be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
    - ii. be capable of detecting
      1. a person before they have entered 1 m into the space; and
      2. movement of 500 mm within the useable part of the space; and
    - iii. not control more than
      1. in other than a carpark an area of 500 m<sup>2</sup> with a single sensor or group of parallel sensors; and
      2. 75% of the lights in spaces using high intensity discharge; and
    - iv. be capable of maintaining the artificial lighting when activated
      1. for a maximum of 30 minutes unless it is reset; and
      2. without interruption if the motion detector is reset by movement; and
    - v. not be overridden by a manual switch to permanently leave the lights on.
  - c. When outside a building, a motion detector must
    - i. be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means; and
    - ii. be capable of detecting a person within a distance from the light equal to
      1. twice the mounting height; or
      2. 80% of the ground area covered by the light's beam; and
    - iii. not control more than five lights; and
    - iv. be operated in series with a photoelectric cell or astronomical time switch so that the light will not operate in daylight hours; and
    - v. be capable of maintaining the artificial lighting when the switch is on for a maximum of 10 minutes unless it is reset; and
    - vi. have a manual override switch which is reset after a maximum period of 4 hours.
- 4- Daylight sensor and dynamic lighting control device;
  - a. A daylight sensor and dynamic control device for artificial lighting must
    - i. for switching on and off
      1. be capable of having the switching level set point adjusted between 50 and 1000 Lux; and
      2. have a delay of more than 2 minutes; and a differential of more than 100 Lux for a sensor controlling high pressure discharge lighting, and 50 Lux for a sensor controlling other than high pressure discharge lighting; and
    - ii. for dimmed or stepped switching, be capable of reducing the power consumed by the controlled lighting in proportion to the incident daylight on the working plane either
      1. continuously down to a power consumption that is less than 50% of full power; or
      2. in no less than 4 steps down to a power consumption that is less than 50% of full power.
  - b. Where a daylight sensor and dynamic control device has a manual override switch, the manual override switch must not be able to switch the lights permanently on or bypass the lighting controls.

## 4-6 Part J7 Hot Water Supply and Swimming Pool and Spa Pool Plant

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	Hot water supply of 14 Manning St of the Proposed Development	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	Part J7.2

## 4-7 Facilities for Energy Monitoring

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	n/a For 14 Manning St of the Proposed Development	n/a	Part J8.3(a)

## 5- Conclusions

Considering the design elements nominated on 14 Manning St, of the Proposed Development provided by “Kennedy Associates Architects” the following can be concluded for the Proposed Development to meet the Deemed to Satisfy requirements of Section J of the Building Code of Australia 2016, Energy Efficiency;

1. For plasterboard ceiling and metal cladding roof of 14 Manning St, of the Proposed Development and the areas of ground floor under the balcony of first floor install minimum R 2.7 m<sup>2</sup>.k/w insulation or provide a roof system with total thermal resistance of R3.2 m<sup>2</sup>.k/w.
2. Provide a thermal break consisting of an insulating material with a minimum R0.2 m<sup>2</sup>.k/w installed between the metal sheet roofing and its supporting metal frame elements if the metal roof sheet and ceiling lining are attached to supporting metal framing elements like purlins, rafters or battens.
3. Where roof and ceiling insulation above is partially or wholly provided by ceiling insulation and where for operational or safety reasons associated with exhaust fans, flues or recessed downlights, the area of required ceiling insulation is reduced, the loss of ceiling insulation must be compensated by increasing the R-Value of the insulation in the remaining of the ceiling in accordance with table 6-1 in Appendix section of this report.
4. For external southern cavity brick walls of the conditioned areas of 14 Manning St, of the Proposed Development (Envelope walls – No requirements for car port walls ) install minimum R 1.6 m<sup>2</sup>.k/w insulation or provide a wall system with total thermal resistance of R 2.3 m<sup>2</sup>.k/w.
5. For all other external cavity brick walls of the conditioned areas of 14 Manning St, of the Proposed Development (Envelope Walls - No requirements for car port walls) install minimum R 2.1 m<sup>2</sup>.k/w insulation or provide a wall system with total thermal resistance of R 2.8 m<sup>2</sup>.k/w.

6. For brick veneer envelope internal walls of car ports of both houses install minimum R 0.6 m<sup>2</sup>.k/w insulation or R 1.4 m<sup>2</sup>.k/w if the adjacent unconditioned area is ventilated by more than 1.5 air change per hour of outside air during occupied hours. (Provide a wall system with total thermal resistance of R 1.0 m<sup>2</sup>.k/w or R 1.8 m<sup>2</sup>.k/w respectively)
7. For floor of level one areas on top of car port of both houses install minimum R 1.7 m<sup>2</sup>.k/w insulation or provide a floor system with total thermal resistance of R 2.0 m<sup>2</sup>.k/w.
8. Installed insulation must comply with AS/NZS 4859.1 and be installed in such a way to meet the following requirements:
  - a) The insulation must abut or overlap adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels and the like where the insulation must be against the member.
  - b) The installed insulation must form a continuous barrier with ceiling, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier while does not affect the safe and effective operation of a service or fitting.
  - c) The bulk insulation must maintain its position and thickness other than when it is compressed between cladding and supporting members, water pipes, electrical cabling or the like.
  - d) Reflective insulation must be installed with the necessary airspace to achieve the required R Value and be adequately supported by framing members. Each adjoining sheet of reflective membrane must be overlapped by not less than 50 mm or taped together. It must be closely fitted against any penetration, door or window opening.
9. Provide the following minimum performance requirements for new envelope windows of 14 Manning St, of the Proposed Development
  - a) All Ground Floor North side elevation glazed envelope elements, install windows with Total System U-value no more than 5.8 W/m<sup>2</sup>.k and SHGC no more than 0.74
  - b) All Ground Floor East side elevation glazed envelope elements, install windows with Total System U-value no more than 1.5 W/m<sup>2</sup>.k and SHGC no more than 0.13
  - c) All Ground Floor South side elevation glazed envelope elements, install windows with Total System U-value no more than 5.8 W/m<sup>2</sup>.k and SHGC no more than 0.74
  - d) All Ground Floor West side elevation glazed envelope elements, install windows with Total System U-value no more than 2.0 W/m<sup>2</sup>.k and SHGC no more than 0.13
  - e) All First Floor North side elevation glazed envelope elements, install windows with Total System U-value no more than 5.8 W/m<sup>2</sup>.k and SHGC no more than 0.74
  - f) All First Floor East side elevation glazed envelope elements, install windows with Total System U-value no more than 5.0 W/m<sup>2</sup>.k and SHGC no more than 0.53
  - g) All First Floor South side elevation glazed envelope elements, install windows with Total System U-value no more than 5.8 W/m<sup>2</sup>.k and SHGC no more than 0.74
  - h) All First Floor West side elevation glazed envelope elements, install windows with Total System U-value no more than 4.2 W/m<sup>2</sup>.k and SHGC no more than 0.47
10. Provide air seals on all edges or provide windows complying with AS 2047 for all external doors and openable windows of the conditioned areas of 14 Manning St, of the Proposed Development except fire doors, smoke doors and roller shutter doors if any.
11. Provide self closing mechanism, revolving door or similar system for entry doors to both houses from the car ports.
12. Exhaust fans of the conditioned areas of 14 Manning St, of the Proposed Development if any, must be equipped with a self closing damper or similar.
13. Roofs, ceilings, walls, floors, windows frames and doors frames of the conditioned areas of 14 Manning St, of the Proposed Development must be enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions OR be sealed by caulking, skirting, architraves, cornices or similar elements. These requirements do not apply to openings, grilles or the like required for smoke hazard management.
14. Air infiltration seal for bottom edge of swing doors of the car ports into the internal areas must be a draft protection device and for other edges of an external door or the edges of an openable

window or other such openings may be a foam or rubber compression strip, fibrous seal or the like.

15. Maximum design lighting power allowed for internal areas of 14 Manning St, of the Proposed Development is 5363 Watts.
16. For each independent unit of 14 Manning St, of the Proposed Development provide an occupant activated device such as a room security device, a motion detector or the like to cut power to the artificial lighting, air conditioner, local exhaust fans and bathroom heater when the sole occupancy is unoccupied.
17. Windows display lighting if installed must be controlled separately from other display lighting.
18. External lighting of 14 Manning St, of the Proposed Development if installed must be controlled by either a daylight sensor or a time switch which is capable of being pre-programmed for different times of the day on variable days.
19. If the total perimeter lighting load of 14 Manning St, of the Proposed Development exceeds 100 Watts Provide average light source efficacy not less than 60 Lumens/Watt or control with a motion detector device.
20. Façade lighting or signage lighting of 14 Manning St, of the Proposed Development if installed must be provided with a separate time switch.
21. If applicable to 14 Manning St, of the Proposed Development, power supply to boiling water or chilled water storage must be controlled by a time switch in accordance with item 2 of the guidelines and specifications outlined in section 4-5-1 Artificial Lighting and Power Notes of this report.
22. All lighting and power control devices of 14 Manning St, of the Proposed Development including timers, time switches, motion detectors and daylight control devices must follow the guidelines and specifications outlined in section 4-5-1 Artificial Lighting and Power Notes of this report.
23. 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.
24. 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.

To ascertain complete compliance with the Building Code of Australia and its regulatory standards during the construction phase of the Proposed Development, it is recommended that a site inspection is undertaken by the assessors of this Report prior to issue of an occupation certificate by the certifying authority. Thorough assessment will be made by the inspector to assist the development in securing compliance certification from the relevant PCA or Council Authority.

## 6- Appendix

This section of the report demonstrates the results of employing BCA Calculators for Glazing, Lighting Power, Natural Ventilation Calculations, Loss of Ceiling Insulation Table and other referenced calculations and plans in this report.

Table 6-1 Adjustment of minimum ceiling R Value for loss of ceiling insulation

Percentage of ceiling area uninsulated	Minimum R Value of ceiling insulation required to satisfy this report										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted R Value of ceiling insulation required to compensate for the loss of ceiling insulation area										
0.5% to less than 1.0%	1.0	1.6	2.2	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	1.1	1.7	2.3	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	1.1	1.7	2.4	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	1.1	1.8	2.5	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	1.2	1.9	2.9	3.6	4.6	5.9					
3.0% to less than 4.0%	1.2	2.0	3.0	4.2	5.7						Not Permitted
4.0% to less than 5.0%	1.3	2.2	3.4	5.0							
5% or more											
Use interpolation if the minimum R Value of required ceiling insulation is between the values stated above											

Building name/description

House 02, 14 Manning St Kingswood NSW 2747

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 Factors	% Area	% of full power		Adjustment Factors	% Area	% of full power			
1	U01 - H2 - Carport	50.6 m <sup>2</sup>	29 m	2.7 m	1 W	Carpark - general									422 W	4% of 0%
2	U01 -H2 - Bed 1	18.0 m <sup>2</sup>	19 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									174 W	4% of 0%
3	U01 - H2 - Bath 01	7.5 m <sup>2</sup>	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like									78 W	4% of 0%
4	U01 -H2 - Bed 2	17.0 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									165 W	4% of 0%
5	U01 - H2 -Bed 3	16.4 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									158 W	4% of 0%
6	U01 - H2 -Bath 02	8.3 m <sup>2</sup>	12 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like									85 W	4% of 0%
7	U01 - H2 -Living + Dining	55.6 m <sup>2</sup>	46 m	2.7 m	1 W	Sole-occupancy unit of a Class 3 building									428 W	4% of 0%
8	U01 - H2 -Hall + Store	18.2 m <sup>2</sup>	27 m	2.7 m	1 W	Storage with shelving no higher than 75% of the height of the aisle lighting									252 W	4% of 0%
9	U01 -H2 - Dining + Living + Communal	44.6 m <sup>2</sup>	36 m	2.7 m	1 W	Lounge area for communal use in a Class 3 building or Class 9c aged care building									686 W	4% of 0%
10	U01 - H2 -Office	8.6 m <sup>2</sup>	13 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping and study									133 W	4% of 0%
11	U01 - H2 -Bath 03	8.2 m <sup>2</sup>	12 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like									84 W	4% of 0%
12	U02 - H2 - Living + Dining	47.7 m <sup>2</sup>	35 m	2.7 m	1 W	Lounge area for communal use in a Class 3 building or Class 9c aged care building									712 W	4% of 0%
13	U02 - H2 - Bed 1	17.1 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									162 W	4% of 0%
14	U02 - H2 - Bed 2	17.8 m <sup>2</sup>	16 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									167 W	4% of 0%
15	U02 - H2 - Bath 01	7.3 m <sup>2</sup>	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like									76 W	4% of 0%
16	U02 - H2 - Bed 3	16.6 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									161 W	4% of 0%
17	U02 - H2 - Bath 02	6.8 m <sup>2</sup>	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like									71 W	4% of 0%
18	U03 - H2 - Living + Dining	47.7 m <sup>2</sup>	35 m	2.7 m	1 W	Lounge area for communal use in a Class 3 building or Class 9c aged care building									712 W	4% of 0%
19	U03 - H2 - Bed 1	17.1 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									162 W	4% of 0%
20	U03 - H2 - Bed 2	17.8 m <sup>2</sup>	16 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only									167 W	4% of 0%



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

House 02, 14 Manning St Kingswood NSW 2747

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 <b>Adjustment Factors</b>	Dimming Percentages		Design Lumen Depreciation Factor	Adjustment Factor Two <b>Adjustment Factors</b>	Dimming Percentages		Design Lumen Depreciation Factor	System Illumination Power Load Allowance	Lighting System Share of % of Aggregate Allowance Used
								% Area	% of full power			% Area	% of full power			
21	U03 - H2 - Bath 01	7.3 m <sup>2</sup>	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like							76 W	4% of 0%		
22	U03 - H2 - Bed 3	16.6 m <sup>2</sup>	17 m	2.7 m	1 W	Dormitory of a Class 3 building used for sleeping only							161 W	4% of 0%		
23	U03 - H2 - Bath 02	6.8 m <sup>2</sup>	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like							71 W	4% of 0%		

Total 23 W

Total 5363 W

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE LIGHTING CALCULATOR

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if inputs are valid



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

Building name/description

**House 02, 14 Manning St Kingswood NSW 2747**

Application

**Class 3**

Climate zone

**6**

Storey

**Ground**

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
20.4m <sup>2</sup>		28.5m <sup>2</sup>		16m <sup>2</sup>		12.6m <sup>2</sup>		
								n/a

Option A

Option B

Glazing area (A) 1.62m<sup>2</sup> ..... 24.3m<sup>2</sup> ..... 2.55m<sup>2</sup> ..... 5.94m<sup>2</sup>

Number of rows preferred in table below

**10** (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	Bed 1 - H2	W		2.12	1.30		2.0	0.13				0.00	1.00	1.00	2.76	46% of 99%
2	Bed 2 - H2	W		2.12	1.50		2.0	0.13				0.00	1.00	1.00	3.18	54% of 99%
3	Bath 01 - H2	N		0.90	1.00		5.8	0.74				0.00	1.00	1.00	0.90	56% of 71%
4	Bath 02 - H2	N		0.90	0.80		5.8	0.74				0.00	1.00	1.00	0.72	44% of 71%
5	Bed 3 - H2	E		2.12	1.50		1.5	0.13				0.00	1.00	1.00	3.18	19% of 100%
6	Dining & Living 1 - H2	E		2.35	4.50		1.5	0.13	2.300	2.350	0.98	0.00	0.36	0.45	10.58	40% of 100%
7	Dining & Living 2 C- H2	E		2.35	4.50		1.5	0.13	3.240	2.350	1.38	0.00	0.15	0.36	10.58	41% of 100%
8	Dining & Living 3 C - H2	S		0.85	1.00		5.8	0.74				0.00	1.00	1.00	0.85	33% of 90%
9	Office - H2	S		0.85	1.00		5.8	0.74				0.00	1.00	1.00	0.85	33% of 90%
10	Bath - H2	S		0.85	1.00		5.8	0.74				0.00	1.00	1.00	0.85	33% of 90%

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*if inputs are valid*



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

Building name/description

**House 02, 14 Manning St Kingswood NSW 2747**

Application

**Class 3**

Climate zone

**6**

Storey

**First**

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
59.1m <sup>2</sup>		56.5m <sup>2</sup>		56.4m <sup>2</sup>		61.9m <sup>2</sup>		
								n/a

Option A

Option B

Glazing area (A) 2.5m<sup>2</sup> ..... 12.5m<sup>2</sup> ..... 5m<sup>2</sup> ..... 13.2m<sup>2</sup>

Number of rows preferred in table below

**14** (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	Bath 01 - U02 - H2	N		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	50% of 38%
2	Bath 01 - U02 - H2	N		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	50% of 38%
3	Bed 3 - U03 - H2	E		1.40	1.50		5.0	0.53				0.00	1.00	1.00	2.10	24% of 98%
4	Bed 2 - U03 - H2	E		1.25	1.20		5.0	0.53	2.000	1.250	1.60	0.00	0.10	0.33	1.50	11% of 98%
5	Bed 1 - U03 - H2	E		1.25	1.20		5.0	0.53	2.000	1.250	1.60	0.00	0.10	0.33	1.50	11% of 98%
6	Living & Dining U03 - H2	E		2.10	3.50		5.0	0.53	4.000	2.100	1.90	0.00	0.03	0.30	7.35	54% of 98%
7	Living & Dining - U03 1 - H	S		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	25% of 50%
8	Living & Dining - U03 2 - H	S		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	25% of 50%
9	Living & Dining - U02 1 - H	S		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	25% of 50%
10	Living & Dining - U02 2 - H	S		1.25	1.00		5.8	0.74				0.00	1.00	1.00	1.25	25% of 50%
11	Bed 3 - U02 - H2	W		1.40	1.50		4.2	0.47				0.00	1.00	1.00	2.10	17% of 98%
12	Bed 2 - U02 - H2	W		1.25	1.20		4.2	0.47				0.00	1.00	1.00	1.50	12% of 98%
13	Bed 1 - U02 - H2	W		1.25	1.20		4.2	0.47	2.000	1.250	1.60	0.00	0.16	0.34	1.50	12% of 98%
14	Living & Dining - U02 3 - H	W		2.30	3.50		4.2	0.47	2.000	2.300	0.87	0.00	0.48	0.50	8.05	59% of 98%

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