

BCA Section J Deemed to Satisfy Compliance Report

2017

31 Blue Hills Drive, Glenmore Park NSW
Proposed Childcare Centre Alterations & Additions

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This document contains commercial information which has been prepared for the attention of the Client on this project. It is confidential and no information contained in this document shall be released in part or whole to any third party without the approval of Eco Certificates Pty Ltd.

1 - Introduction

The term Proposed Development in this report refers to the Proposed Childcare Centre Alterations and Additions at 31 Blue Hills Drive, Glenmore Park NSW.

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.

According to Section J of the National Construction Code 2019 Volume 1, Energy Efficiency, from 1st May 2019 to 30th April 2020 Section J of NCC 2016 Volume One Amendment 1 may apply instead of Section J of NCC 2019. As a result the current report, at the time of its compilation, demonstrates compliance with Section J of the National Construction Code 2019, Energy Efficiency provisions.

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 "DesignCorp" and received by Eco Certificates Consultants at 05/02/20.
- 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 Proposed Childcare Centre Alterations and Additions at 31 Blue Hills Drive, Glenmore Park NSW.

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

The Proposed Development is a class 9b building according to the BCA standard classification being a childcare centre.

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

External Walls: no new envelope external walls proposed.

Roof and Ceiling: no new envelope ceiling and roof elements proposed.

Internal Walls: no new envelope internal walls proposed.

Floors: no new envelope floors proposed.

Windows: no new envelope windows or other glazed elements proposed.

Skylights: no new 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	No new building envelope elements proposed	N/A	N/A

4-2 Part J2 Glazing

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	No new glazed envelope elements proposed	N/A	N/A

4-3 Part J3 Building Sealing

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	Not applicable to the context of the Proposed Development	N/A	N/A

4-4 Part J5 Air-Conditioning and Ventilation Systems

	Building Element	Energy Efficiency Provisions	Corresponding BCA Part
1	Design Plans Not 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 the Proposed Development	Maximum design power allowed is 1677 Watts	Part J6.2 (b)
2	Artificial light switch or other lighting control devices of the internal areas of the Proposed Development	Light switch or control device must control lighting of no more than 250 m ² of area. <small>Notes</small>	Part J6.3(c)(ii)(A)
3	Windows display lighting if installed	Must be controlled separately from other display lighting.	Part J6.4(b)
4	External lighting 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. <small>Notes</small>	Part J6.5 (a)(i)
5	If the total perimeter lighting load 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 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 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 m² with a single push button timer; and
 - ii. 95% of the lights in spaces of area more than 25 m²; 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 m²; and
 2. 95% of the lights in spaces of area more than 25 m²; 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 m² 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	New hot water supply of the Proposed Development if installed	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	Not applicable for the Proposed Development	N/A	N/A

5- Conclusions

Considering the design elements nominated on the Proposed Development provided by “Design Corp” 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. Maximum design lighting power allowed for internal areas of the Proposed Development is 1677 Watts.
2. Artificial light switch or other lighting control devices of the Proposed Development must control lighting of no more than 250 m² of area.
3. Windows display lighting if installed must be controlled separately from other display lighting.
4. External lighting 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.
5. If the total perimeter lighting load 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.
6. Façade lighting or signage lighting of the Proposed Development if installed must be provided with a separate time switch.
7. If applicable to 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.

8. All lighting and power control devices 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.
9. 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.
10. If proposing 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.

As per Clause A2.2 (a) of the *Building Code of Australia*, we recommend that a site inspection is undertaken by the assessors of this Report prior to the issue of an occupation certificate by the certifying authority. This is to ascertain complete compliance with the *Building Code of Australia* and its regulatory standards during the construction phase of the Proposed Development. 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.

Building name/description

31 Blue Hills Drive, Glenmore Park NSW

Classification

Class 9b

Number of rows preferred in table below

7

(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		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	Childcare room 01	62.6 m ²	34 m	4.6 m	1 W	School - general purpose learning areas and tutorial rooms							794 W	14% of 0%	
2	Childrens bathroom	9.4 m ²	14 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like							95 W	14% of 0%	
3	Childcare room 02	30.2 m ²	25 m	4.6 m	1 W	School - general purpose learning areas and tutorial rooms							408 W	14% of 0%	
4	Cleaners room	2.2 m ²	6 m	2.7 m	1 W	Service area, cleaner's room and the like							20 W	14% of 0%	
5	Storage room	12.5 m ²	15 m	2.7 m	1 W	Storage with shelving no higher than 75% of the height of the aisle lighting							167 W	14% of 0%	
6	WC 1	7.7 m ²	11 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like							78 W	14% of 0%	
7	WC 2	11.6 m ²	14 m	2.7 m	1 W	Toilet, locker room, staff room, rest room and the like							115 W	14% of 0%	
Total						7 W							Total	1677 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