NCC SECTION J ENERGY EFFICIENCY DTS COMPLIANCE REPORT



EnergyRatingGroup

Part J NCC 2022 Energy Efficiency Deemed to Satisfy Assessment

Ref No: ERG791

Date:03/02/2025

For Proposed: Class 2 Common Areas, Class 5 Offices & Class 6 Retail

Address:47 The Corso, Manly NSW 2095

Drawings by: Sandbox Studio

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1 INTRODUCTION

The following report has been prepared by to assess compliance with Sections J of the National Construction Code of Australia (NCC) for the proposed **Extension/Renovation.** The report presents the findings of a review of the proposed building design compared with the relevant Deemed-to-Satisfy (DTS) clauses of Section J and outlines the requirements related to the design of the building services. The areas of non-compliance are analysed and recommendations are made and reviewed to obtain compliance.

1.1 NCC SECTION J COMPLIANCE

Section J of the NCC sets regulations for energy efficiencies for all types of buildings with respect to the building's construction, design and activity. The NCC offers two compliance methods that differ in complexity and flexibility. The two compliance methods are:

- Deemed-to-Satisfy Compliance
- JV3 Verification using a referenced building

This report will provide an assessment of building fabric and glazing according to DTS provisions. The following works were carried out in order to assess DTS compliance:

- Determine the applicable NCC Section J requirement for the climate zone and building class
- Undertake a desk top design review of

a) the current architectural documentation to assess compliance for envelope thermal performance

• Provide recommendations to achieve compliance with DTS provisions

1.2 BUILDING CLASSIFICATION & CLIMATE ZONE

The development is a Class 2, Class 5 & Class 6

The development is in **Manly**, **New South Wales** which falls under the NCC **Climate Zone 6 1.3 DOCUMENTATION USED IN REVIEW**

- Sandbox Studio
- NCC 2022 Volume 1
- NCC Wall & Glazing Façade Compliance Report
- NCC Lighting Compliance Report

2 SECTION J REVIEW

The objective of the NCC Section J is to reduce the greenhouse gas emissions. Section J states that a building, including its services, must have features to the degree necessary that facilitate the efficient use of energy.

2.1 DEEMED-TO-SATISY PROVISIONS

The Deemed-to-Satisfy provisions within Section J of the NCC outline the following:

• Part J1 Building Fabric – Minimum thermal performance constructions for roofs, walls, floors & glazing in the relevant climate zone.

• Part J3 Building Sealing – Provisions to reduce the loss of conditioned air and restrict unwanted infiltration to a building.

• Part J5 Air-Conditioning and Ventilation Systems – Requirements to ensure these services are used and use energy in an efficient manner.

• Part J6 Artificial Lighting and Power – Requirements for lighting and power to ensure energy is used efficiently within a building.

- Part J7 Heated water supply and swimming pool and spa pool plant
- Part J8 Facilities for Energy Monitoring

Att: To the relevant building authority,

Following review of documents prepared for proposed Extension/Renovation to Building, a report has been prepared to demonstrate the proposal related to the 'Deemed to Satisfy' Provisions of the NCC 2022, Volume 1, Section J, and Practice Notes

Existing Building

We are requesting under Part 16, Clause 233 an exemption from the RBS for existing parts that includes the following:

J0.0 Deemed to satisfy provisionsJ.1 Building fabricJ1.5 External wall & glazingJ3 Building sealingJ5 Air conditioning and ventilation systemsJ6 Artificial light and power

We suggest the following to existing areas:

- Where external roof is to be removed or is accessible, R3.0 insulation/reflective foil/thermal blanket or the like is to be installed.
- Where external walls are to be removed or is accessible, R2.5 insulation/reflective foil/ or the like is to be installed.
- Exhaust Fans to have self-closing dampers to be used in conditioned spaces / habitable room.
- Windows and external doors that are replaced are to be constructed by close fitting and sealed to restrict air infiltration and minimising air leakage.
- A seal (foam rubber strip, fibrous seal or alike) to be provided to each edge of external doors.
- Chimney or flue of an open solid fuel burning appliance must have a damper or flap that can be closed to seal it.

Proposed works - Class 2, Class 5 & Class 6

The proposed Building was assessed and meets the energy efficiency performance requirements in accordance with Deemed to Satisfy provisions of Section J NCC 2022 for new works.

Part J0 Energy Efficiency

J0.4 Roof thermal breaks

For compliance with J0.2 (c), a roof that

- Has metal sheet roofing fixed to metal purlins, metal rafters or metal battens and
- Does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal batten, must have a thermal break, consisting of a material with an R-value of not less than R0.2, installed

to all points of contact between the metal roofing and its supporting metal purlins, metal rafters or metal battens.

J0.5 Wall thermal breaks

For compliance with J0.2 (c), a wall that

- Does not have a wall lining that is fixed directly to the same metal frame and
- Has lightweight external cladding such as weatherboards, fibre cement or metal sheeting fixed to a metal frame

Must have a thermal break, consisting of a material with an R-value of not less than R0.2, installed at all points of contact between the external cladding and the metal frame.

Part J1 Building Fabric

J1.1 Application of Part - All parts of the building that form part of the building envelope of a class 2 - 9 building, other than a class 7, 8 or 9b building that does not have a conditioned space (heated & cooled); or an atrium or solarium that is not a conditioned space and is separated from the remainder of the building by an envelope.

J1.2 Thermal construction – General

Insulation must comply with AS/NZS 4859.1 and installed in accordance with NCC J1.2

- i, that it 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
- ii, forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier: and
- iii, does not affect the safe or effective operation of a service or fitting.
- (b) i, Reflective insulation must be installed with the necessary airspace to achieve the required R-Value between a reflective side of the insulation and a building lining or cladding,
- ii, the reflective insulation closely fitted against any penetration, door or window opening: and
- iii, the reflective insulation adequately supported by framing membranes:

- iv, each adjoining sheet of roll membrane being over lapped not less than 50mm or taped together.
- (c) i, Bulk insulation must be installed so that 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 or reflective insulation in the wall beneath, it overlaps the wall by not less than 50mm.
- (d) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specifications J1.2.

J1.3 Roof and ceiling construction

Each part of an external roof that is part of the envelope in a Class 2, Class 5 & Class 6 with a conditioned space (heated & cooled) building must comply with Table J1.5a of NCC

Requirements	NCC Required	Proposed structure	R Values	Total R-value of proposed structure	Compliance
Metal Roof	R3.2	 Outdoor air film Metal Cladding Roof Airspace Insulation Plasterboard Indoor air film 	$\begin{array}{c} 0.04 \\ 0.00 \\ 0.15 \\ 3.00 \\ 0.06 \\ 0.11 \end{array}$	R3.36	\checkmark
				Compliance Me	et

<u>Summary</u>

- Metal Roof: R3.0 bulk insulation to conditioned (heated/cooled) areas to new works (If applicable)
- For thermal break requirements please see J0.4 on page 5

Existing Roof: Exemption to be sought from Building Surveyor under Clause 229 & 233.

J1.3b Adjustment of minimum R Values for loss of ceiling insulation

Percentage of ceiling area uninsulated	Minimum ceiling insulation required
Required insulation	R3.0
0.5% to less than 1.0%	R3.4
1.0% to less than 1.5%	R3.6
1.5% to less than 2.0%	R3.9
2.0% to less than 2.5%	R4.2
2.5% to less than 3.0%	R4.6
3.0% to less than 4.0%	R5.7

J1.4 Roof lights

Not applicable as no new Skylights

J1.5 Walls & Glazing

Each part of an external wall that is part of the envelope in a Class 2, Class 5 & Class 6 a conditioned space (heated & cooled) building must comply with Table J1.5a of NCC

See Attached Wall & Glazing Façade Calculator showing compliance



Window Summary:

All windows to be Single Glazed with U-Value=5.20 & SHGC=0.50 All Internal Windows to be Single Glazed.

Existing windows: Exemption to be sought from Building Surveyor under Clause 233.

U value to be Equal or less and SHGC to be within 10%

Wall Summary:

New External walls to have: **R2.5 insulation plus 1 breathable wrap** External Existing walls have been estimated with **Nil Insulation**

The Wall and Glazing Façade calculator in Climate Zone 6 shows compliance to table J1.5b and the solar admittance does not exceed the required eastern aspect solar admittance of 0.13.

کے Table J1.5b Maximum wall-glazing construction solar admittance - Class 2 common area, Class 5, 6, 7, 8 or 9b کے لیارازیم ورجاعی 9a building other than a ward area

Climate zone	Eastern aspect solar admittance	Northern aspect solar admittance	Southern aspect solar admittance	Western aspect solar admittance		
1	0.12	0.12	0.12	0.12		
2	0.13	0.13	0.13	0.13		
3 0.16		0.16	0.16	0.16		
4	0.13	0.13	0.13	0.13		
5	0.13	0.13	0.13	0.13		
6	0.13	0.13	0.13	0.13		
7	0.13	0.13	0.13	0.13		
8	0.2	0.2	0.42	0.36		

J1.6 Floors in a conditioned space (heated & cooled) Class 2, Class 5 & Class 6

Summary

• No further action required to existing Concrete Slab on Ground

J3 Building Sealing

Design documentation must show compliance with NCC Specification Requirements listed below:

Requirements	Class 2, Class 5 & Class 6 with a conditioned space (heated & cooled)
J3.2 Chimneys &	Chimney or flue of an open solid fuel burning appliance must have a damper or flap that can be
Flues	closed to seal it.
J3.3 roof lights	Roof lights in a conditioned space / habitable room must be sealed and constructed with:
	• An imperforate ceiling diffuser or the like, or
	• A weatherproof seal if it is a roof window, or
	• A shutter system
J3.4 Windows	Windows and glazed doors to comply with AS 2047 and must be sealed when forming part of the
	envelope
J3.4 Doors	A seal (foam, rubber strip, fibrous seal or the like) to be provided to each edge of external doors.
J3.5 Exhaust fans	Self-closing dampers to be used in conditioned spaces / habitable room.
J3.6 Construction	Construction of all habitable rooms to be enclosed by internal lining systems that are close fitting at
of roof walls and ceiling, wall and floor junctions, or sealed by caulking, skirting, architraves, cornices, expanding	
floors	foam or the like
J3.7 Evaporative	Must be fitted with a self-closing damper or the like when serving a heated space, habitable room or
coolers	a public area of a building.

J4 Air Movement

This class is not required for compliance under Section J

J5 Air Conditioning and Ventilation Systems

- J5.2 Air-conditioning system control
- J5.3 Mechanical ventilation system control
- J5.4 Fan systems
- J5.5 Ductwork insulation
- J5.6 Ductwork sealing
- J5.7 Pump systems
- **J5.8 Pipework insulation**
- J5.9 Space heating
- J5.10 Refrigerant chillers
- J5.11 Unitary air-conditioning equipment
- J5.12 Heat rejection equipment

No information provided in regards to air conditioners and ventilation systems, therefore no assessment made.

In regards to air conditioning and mechanical ventilation systems, a Mechanical Engineer needs to be engaged to provide assessment, reporting & compliance.

J6 Artificial lighting and power

J6.2 Artificial lighting

A NCC Lighting Compliance Calculator Report provided showing compliance and maximum illumination power density for each area.

Should a more detailed assessment/report be required then an Electrical Engineer/Electrician should be engaged.

Please note: Installing motion detectors, dimmers etc does change the load allowance and lighting requirements, so compliance by electrical engineer or qualified electrician required.

Attached is lighting calculators showing compliance

Please note: As no lighting layout report provided, use the Lighting Report to advise maximum lighting load for each area.

J6.3 Interior artificial lighting and power control

Artificial lighting of a room or space must be individually operated by a switch or other controlled device or combination of both

- (a) be located in a visible & easily accessed position in the room or space being switched
- (b) in an adjacent room or space from where the lighting being switched is visible

95% of the lighting of a building or storey of more than 250 m2 must be controlled by

- (a) a time switch in accordance with Specification J6 or
- (b) an occupant sensing device such as a security key card reader or motion detector with Specification J6

J6.4 Interior decorative and display lighting

- (a) Interior decorative and display lighting, must be controlled
 - Separately from other artificial lighting, and
 - by a manual switch for each area other than the operating times of the displays are the same in a number of areas such as a museum, art gallery or the like, in which case they may be combined, and
 - by a time switch in accordance with Specification J6 where the display lighting exceeds 1Kw

(b) Window display lighting must be controlled separately from other display lighting

J6.5 Exterior artificial lighting

- (a) Exterior artificial lighting attached to or directed at the façade of a building, must
- (i) be controlled by—
- (A) a daylight sensor; or
- (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
- (ii) when the total perimeter lighting load exceeds 100 W-
- (A) Use LED luminaires for the 90% of the total lighting load, or
- (B) be controlled by a motion detector in accordance with Specification J6; or
- (iii) when used for decorative purposes, such as facade lighting or signage lighting, have a separate time switch in accordance with <u>Specification J6</u>.
- (b) The requirements of (a)(ii) do not apply to the following:
- (i) Emergency lighting in accordance with <u>Part E4</u>.
- (ii) Lighting around a <u>detention centre</u>.

J6.7 Lifts

Lifts must—

(a)be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; and

(b)achieve the idle and standby energy performance level in Table 6.7a; and

(c)achieve-

(i)the energy efficiency class in <u>Table 6.7b</u>; or

(ii)if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2.

Table 6.7a Lift idle and standby energy performance level

Rated Load	Idle and Standby energy performance level in accordance
	with
	ISO 25745-2
Less than or equal to 800kg	2
801kg to less than or equal to 2000kg	3
2001kg to less than or equal to 4000kg	4
Greater than 4000kg	5

Note to Table 6.7a: Applies to the standby power used after 30 minutes.

Table 6.7b Lift energy efficiency class

Usage category in accordance with ISO 25745-2	Energy efficiency class in accordance with ISO- 25745-2
1-4	С
>5	D

J7 Heated water supply and swimming pool and spa pool plant

J7.2 Heated water supply

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.

J8 Facilities for Energy monitoring

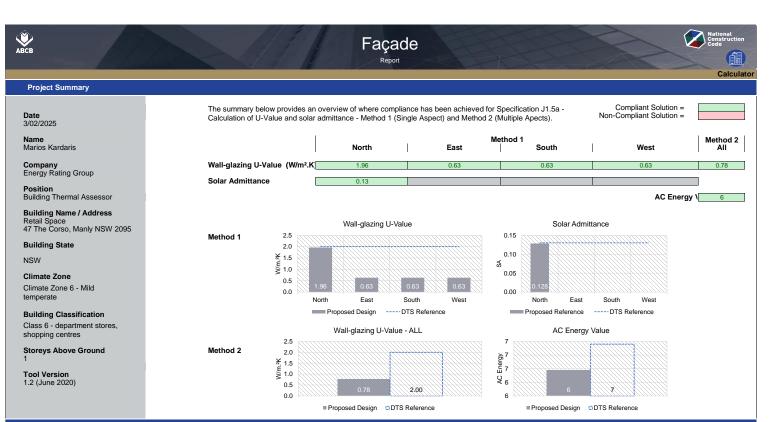
J8.3 Facilities for energy monitoring

A building with a floor area of more than 500m2 must have an energy meter configured to record the time of use consumption of gas and electricity.

If the above measures are followed, the finished building will achieve acceptable and superior levels of thermal performance thus complying with the 'Deemed to Satisfy' Provisions of the NCC 2022 volume 1 Part J and Practice Notes

Please don't hesitate to call the office for any enquiries on 0492836228 or email: <u>admin@energyratinggroup.com.au</u>

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Project Details

	North	East	South	West
Glazing Area (m ²)	7.911	0	0	0
Glazing to Façade Ratio	33%	0%	0%	0%
Glazing References	D005			
Glazing System Types	Sliding Door			
Glass Types	DEFAULTS (GENERIC)			
Frame Types	Aluminium			
Average Glazing U-Value (W/m ² .K)	5.20			
Average Glazing SHGC	0.50	0.00	0.00	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m ²)	16	90	17	90
Wall Types	Wall	Wall	Wall	Wall
Methodology		·	Wall	·
Wall Construction	Brick Walls + Ins	Existing Brick	Existing Brick	Existing Brick

Wall Thickness	250	220	220	220
Average Wall R-value (m ² .K/W)	2.79	1.58	1.58	1.58
Solar Absorptance	0.5	0.5	0.5	0.5

ABCB		Help	Multiple Liphtin	g Systems Calculator	Non-residenti Class 3 and 5-	pare -	g						Con Cod	onal struction Calcu
			Duilding						Classifientien					
				name/description					Classification					
		preferred in table below	47 The Co 12	rso, Manly NSW 2095 (as currently displayed)					Class 6					
Description	Floor area of	Perimeter of the Floor to		1	Illuminance	Adjust Adjustment	ment Factor C	Dne		ment Factor Two		r Adjustment tors	SATISFIES	PART J6.2
Description	the space	space height	Design Illumination Power Load	Space	Designed Lux Level These columns do not represent a requirement of the NCC and are suggestions only	Adjustment Factor One Adjustment Factors	Dimming I % Area		Adjustmen Factor Two Adjustment Factors		Adjustment	Light Colour Adjustment Factor Two	System Illumination Power Load Allowance	Lighting Sy Share of 9 Aggrega Allowance
Commercial Shop	40.0 m²		560 W	Retail space including a museum and gallery whose purpose is the sale of objects									560 W	45% of 10
Shop Storage Circulation	7.0 m ² 31.0 m ²		11 W 155 W	Storage Corridors									11 W 155 W	1% of 10 13% of 10
Unisex Wc	4.0 m ²		12 W	Toilet, locker room, staff room, rest									12 W	1% of 10
Bike Stoage	8.0 m ²		12 W	room and the like Storage									12 W	1% of 10
Waste Room	4.0 m ²		12 W	An illuminance more than 160 lx to 240 lx									12 W	1% of 10
Acc. Wc	7.0 m ²		21 W	Toilet, locker room, staff room, rest									21 W	2% of 10
Café Storage	5.0 m ²		8 W	room and the like Storage									8 W	1% of 10
Café	9.0 m²		126 W	Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks									126 W	10% of 1
Office Space	52.0 m²		234 W	Office - artificially lit to an ambient level of 200 lx or more									234 W	19% of 1
Acc Wc 2	7.0 m ²		21 W	Toilet, locker room, staff room, rest room and the like									21 W	2% of 10
Corridors	12.0 m ²		60 W	Corridors									60 W	5% of 10
		Total	1232 W]								Total	1232 W	

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THIS LIGHTING CALCULATOR

IMPORTANT NOTICE AND DISCLAIMENT IN GRADUATION CALCULATOR By accessing or used to be following: White care be ben taken in the preparation of this calculator, It may not be complete or up-to-date. You can ensure that you are using a complete and up-to-date version by rhecking the Australian Building Codes Board, website (<u>www.atbch.gov.mk</u>). The Australian Building Codes Board, the Commonwealth of Australia and States and Territories of Australia and States and Territories of Australia and States and Territories of Australian and australian and states and territories of australian and states and territories of australian and states and territories of australian and states and territories and territories and and australian and states and territories and territoria commands and territorian and australian and states and territorian and australian and states and territorian and australian and states and territorian and australian

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