Illawarra Basix Solutions

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Energy Compliance Report – Section J

Project:	Proposed Retail Development & Entrance Lobby to Residential Apartments	**NCC Climate Zone:**	5
Address:	277 The Grand Parade, Ramsgate NSW 2217	**Building Class:**	2,6,7a
Client:	Bronxx Pty Ltd		
Building Licence Applicant:	Bronxx Pty Ltd		
Plans Assessed:	Drawing Set (18 drawings total) Job#BRAM Rev#2 Dated 8/09/2024		

Note: It is the sole responsibility of the Builder to construct this project in accordance with the NCC BCA 2022 energy requirements detailed in this Energy Report. Any changes to the orientation, construction materials, external paint colours, insulation type, insulation R-Value, shading, construction application or any element of the design has the potential to affect energy compliance. Any changes will need to be re-assessed.

Where all requirements detailed in this Energy Report have been incorporated into the design and construction of this project, then the building will comply with NCC BCA 2022 Energy Requirements.

Part J4D2 Application of Part

The Deemed-to-Satisfy Provisions of this part apply to building elements forming the building *envelope* of a Class 2 to 9 building.

Where "envelope" refers to the parts of a building's fabric that separate a conditioned space or habitable room from: (a) the exterior of the building; or (b) a non-conditioned space including (i) the floor of a rooftop plant room, lift-machine room or the like; and (ii) the floor above a carpark or warehouse; and (iii) the common wall with a carpark, warehouse or the like.

Proposed building to comply with the applicable requirements.

Part J4D3 Thermal Construction General

All insulation that is part of the building envelope will be installed in accordance with Clause J1.2, AS/NZS 4859.1 and the Manufacturer's Specification.

Insulation to comply with AS/NZS 4859.1 and be installed so that it (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 (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.

Reflective insulation to be installed with (i) the necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and (ii) the reflective insulation closely fitted against penetrations, door or window opening; and (iii) the reflective insulation 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.

Bulk insulation to 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 reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm.

Part J4D4 Roof & Ceiling Construction

A roof and/or ceiling that is part of the envelope must achieve the Total R-Value greater than or equal to-

Roof/Ceiling Construction J4D4	Roof Solar Absorptance	R-Value of Construction	Total R-Value Requirement	Minimum Insulation R-Value required for Compliance
Concrete Roof with ceiling below non-reflective airgap	<0.45	R0.69 (inclusive of airgap)	R3.7 Downward	R3.5

Part J4D5 Roof Lights

	N/A	Yes
Roof Lights must have:		
(a) A total area of not more than 5% of the floor area of the room or space served; and		Yes
(b) Transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of – (i) for Total SHGC, in accordance with Table J4D5; and (ii) for Total System U-Value, not more than U3.9.		Yes

Part J4D6 Walls & Glazing

(4) Wall components of a wall-glazing construction must achieve a minimum total R-Value of R1 where the wall is less than 80% of the area of the wall glazing construction (4(a)); and where the wall is more than 80% of the wall glazing construction must achieve an R-Value specified in Table J4D6a

(5) The solar admittance of externally facing wall-glazing construction must not be greater than values specified in Table J4D6b & J4D6c

(3) (6) The Solar Admittance and Total System U-Value of wall-glazing construction must be calculated using Specification 37

NCC ABCB 2022 Volume 1 Glazing Calculator Spreadsheet used to demonstrate compliance using the windows & wall construction specified below

External Wall Construction Table J1.5a(a)ii	R-Value of Construction	Total R-Value Required	Minimum Insulation R-Value required for Compliance	N/A	Yes
200mm Concrete with Steel Stud	R0.65 (inclusive of airspace)	Achieve a minimum Total System R-Value of R1.05 (System Value reduced due to Thermal Bridging)	R1.75 with R0.2 Thermal Break		Yes

Glazing U-Value and SHGC Specification	Glazing U-Value	Glazing SHGC Value	Window ID	Additional Shading Device for Compliance
Fixed Glazing - All	2.5	0.25	ALL	No
Hinged Doors	2.9	0.24	Residential Lobby	No
Sliding Doors	3.3	0.23	Retail 1&2	No
Sliding Doors	3.2	0.47	Coles Entry	No
Sliding Doors	4.2	0.55	Coles Carpark Entry	

Please note: only a 10% tolerance to the nominated SHGC glazing can be applied. This tolerance ONLY applies to SHGC. The U-Value can always be lower, but not higher than the values stated.

Part J4D7 Floors

Applicable to floors that are part of the envelope of a building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, including a floor above or below a carpark or a plant room. The floor must achieve the total R-Value specified in Table J4D7. Slab edge insulation must be water resistant, be continuous from the adjacent finished ground level - (A) to a depth not less than 300mm; or (B) for the full depth of the vertical edge of the concrete slab.

	Minimum System R-Value required for Compliance	N/A	Yes
Slab on ground without an in-slab heating or cooling system for climate zones 8 must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0	R1 edge insulation	N/A	
Slab on ground with an in-slab or in-screed heating or cooling system (except when used solely in a bathroom, amenity area or the like), must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0.	R1 edge insulation	N/A	
Floor without an in slab heating or cooling system in climate zone 1 (upwards heat flow)	R2	N/A	
Floor without an in slab heating or cooling system in climate zone 2 & 3 (upwards and downwards heat flow)	R2	N/A	
Floor without an in slab heating or cooling system in climate zone 4-7 (downwards heat flow). System R-Value of Concrete Floor above Basement 1: R0.57. Min additional R-Value required for compliance: R1.43	R2		Yes
Floor without an in slab heating or cooling system in climate zone 8 (downwards heat flow)	R3.5	N/A	
Floor with an in slab heating or cooling system in climate zone 1 (upwards heat flow)	R3.25	N/A	
Floor with an in slab heating or cooling system in climate zone 2 & 3 (upwards and downwards heat flow)	R3.25	N/A	
Floor with an in slab heating or cooling system in climate zone 4-7 (downwards heat flow)	R3.25	N/A	
Floor without an in slab heating or cooling system in climate zone 8 (downwards heat flow)	R4.75	N/A	

Part J5 Building Sealing

The Deemed-to-Satisfy Provisions of this Part apply to elements forming the envelope of a Class 2 to 9 building, other than—

(a)a building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or

(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

(c) a building or space where the mechanical ventilation required by Part F6 provides sufficient pressurisation to prevent infiltration.

	N/A	Yes
The chimney or flue on an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.	N/A	
All roof lights must be sealed or capable of being sealed in accordance with J5D4	N/A	
All windows and doors must be sealed to restrict air infiltration in accordance with J5D5; An entrance to a building (if leading to a conditioned space) must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than – where the conditioned space has a floor area of not more than $50m^2$		Yes

All exhaust fans must be fitted with a sealing device such as a self-closing damper or the like when serving – (a) a conditioned space; or (b) a habitable room in climate zones 4, 5, 6, 7, 8		Yes
Roofs, ceilings, walls, floors and any opening such as a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage in accordance with J5D7		Yes
An evaporative cooler must be fitted with a self-closing damper or the like – when serving a heated space, or in climate zones: 4-8.	N/A	

Part J6 Air-Conditioning and Ventilation Systems

	N/A	Yes
All air-conditioning and ventilation systems and their components will be designed and installed in accordance with the DTS requirements of Part J6.		Yes

Part J7 Artificial Lighting and Power

Artificial lighting and power will be designed in accordance with the DTS requirements of Part J7

	Space	Design Load (Watts)
(b) 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: - *refer to NCC Lighting Calculator attached to this report for individual zone loads*	Residential Lobby (Class 2)	450W
	Sum of Design Loads to zones from B3 to G Floors	72,509W
(ii) Max design load allowance for compliance: *Design Loads should be adjusted by Electrical Design Consultant once Interior Fitout design completed*		72,959 Total

J7D4 Interior Artificial Lighting and Power Control

	Project Performance	Applicable
(1) Artificial lighting of each room or space must be individually operated by a (a) switch or (b) other control device, or (iii) a combination of (a) & (b).	Light switches shall be provided for all areas and switching points shall be located in view of the lights they are controlling, as per BCA specifications	Yes
(2) An occupant activated device, such as a room security device, a motion detector in accordance with Specification J7, or the like, must be provided in the sole-occupancy unit 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 sole-occupancy unit is unoccupied.		N/A
(3) (a) Suitable location for switch	Light switches shall be provided in suitable locations as per BCA specifications	Yes
(3) (b) An artificial lighting switch must not operate lighting for an area of more than 250 m^2	Complies	Yes
(4) Time switch or occupancy sensors to be provided for 95% of lighting in a building of more than 250m^2		Yes

(5) In a Class 5, 6 or 8 building of more than 250 m2, artificial lighting in a natural lighting zone adjacent to windows must be separately controlled		Yes

J7D5 Interior Decorative and Display Lighting

	Project Performance	Applicable
Separate controls for interior decorative and display lighting, such as for a foyer mural or art display		N/A

J7D6 Artificial Lighting around Perimeter of a Building

	Project Performance	Applicable
(1)(a) Time switches or daylight sensors required for artificial lighting around the perimeter of a building		Yes
(1)(b) When total lighting load exceeds 100W – (i) LED luminaires required for 90% of the lighting load; or (ii) be controlled by a motion detector in accordance with Specification 40; or (iii) when used for decorative purposes such as façade or sign lighting, have a separate time switch in accordance with Specification 40		N/A
(c) the requirements of (1)(b) do not for Emergency lighting (in accordance with Part E4) or for a detention centre		N/A

J7D7 Boiling Water and Chilled Water Storage Units

Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification 40.

J7D8 Lifts

Lifts must –

(a) be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15mins; and
(b) achieve the idle standby energy performance level in Table J7D8a of Vol 1 NCC2022; and
(c) achieve –
  (i) the energy efficiency class in Table J7D8b of Vol 1 NCC2022; or
  (ii) if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2

J7D9 Escalators and Moving Walkways

Escalators and moving walkways must have the ability to slow to between 0.2 m/s and 0.05m/s when unused for more than 15mins.

Part J8 Hot Water Supply

	N/A	Yes
The hot water supply system must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.		Yes
Heating for a swimming pool must be designed to comply with Part J8D3	N/A	

Heating for a spa pool must be designed to comply with Part J8D4	N/A	

Part J9D3 Facilities for Energy Monitoring		
	N/A	**Yes**
(1) A building or sole-occupancy unit with a floor area of more than 500m^2 must have energy meters configured to record the time-of-use consumption of gas and electricity.		Yes
(2) A building with a floor area of more than 2,500m^2 must have energy meters configured to enable individual time-of-use energy data recording, in accordance with (3), of – (a) air-conditioning plant including, where appropriate, heating plant, cooling plant, and air handling fans; and (b) artificial lighting; and (c) appliance power; and (d) central hot water supply; and (e) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and (f) on-site renewable energy equipment; and (g) on-site electric vehicle charging equipment; and (h) on-site battery systems; and (i) other ancillary plant		Yes
(3) Energy meters required by (2) must be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed and reviewed.		Yes
(4) The provisions of (2) do not apply to energy meters serving – (a) a Class 2 building where the total floor area of the common areas is less than 500m^2; or (b) individual sole-occupancy units with a floor area of less than 2500m^2		

Part J9D4 Facilities for Electric Vehicle Charging Equipment		
	N/A	**Yes**
(1) Subject to (2), a carpark associated with a class 2, 3, 5, 6, 7b, 8 or 9 building must be provided with electrical distribution boards dedicated to electric vehicle charging – (a) In accordance with Table J9D4 (of Vol1 NCC2024) in each storey of the carpark; and (b) Labelled to indicate use for electrical vehicle charging equipment.		Yes
(2) Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must – (a) Be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand; and (b) When associated with a Class 2 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum 12kWh from 11pm to 7am daily; and (c) When associated with a Class 5 to 9 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 9:00 am to 5:00 pm daily; and (d) When associated with a Class 3 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 48 kWh from 11:00 pm to 7:00 am daily; and (e) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in— (i) 100% of the car parking spaces associated with a Class 2 building; or (ii) 10% of car parking spaces associated with a Class 5 or 6 building; or (iii) 20% of car parking spaces associated with a Class 3, 7b, 8 or 9 building; and		Yes

(f) contain space of at least 36 mm width of DIN rail per outgoing circuit for individual sub-circuit electricity metering to record electricity use of electric vehicle charging equipment; and (g) be labelled to indicate the use of the space required by (f) is for the future installation of metering equipment.		

Part J9D5 Facilities for solar photovoltaic and battery systems

	N/A	Yes
(1) The main electrical switchboard of a building must – (a) contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for – (i) a solar photovoltaic system; and (ii) a battery system; and (b) be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area		Yes
(2) At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings – (a) with installed solar photovoltaic panels on – (i) at least 20% of the roof area; or (ii) an equivalent generation capacity elsewhere on-site; or (b) where 100% of the roof area is shaded for more than 70% of daylight hours; or (c) with a roof area of not more than 55m^2; or (d) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.		Yes
Limitations (1) The requirements of J9D5(1)(a)(i) and (b) do not apply to a building with solar photovoltaic panels installed on at least 20% of the roof area. (2) The requirements of J9D5(1)(a)(ii) and (b) do not apply to a building with battery systems installed.		

NCC Volume 1 Part A2.2 Evidence of Suitability (a)(iii) Appropriately Qualified Person

Assessor:	Sian Fishwick
Qualifications:	BE(civil), GradDipEnSt, Cert IV NatHERS Assessment
Date:	20/09/2024
Email Address:	sian.illawarrabasixsolutions@gmail.com.au
Signed:	

ABCB

Non-residential Lighting

National Construction Code

Calculator

Building name/description	Classification
277 The Grand Parade	Class 6

Number of rows preferred in table below 36 *(as currently displayed)*

ID	Description	Floor area of the space	Perimeter of the space	Floor to ceiling height	Design illumination power load	Space	Illuminance: Designed lux level	Illuminance: Recommended lux level	Adjustment factor 1: Adjustment factor 1	Adjustment factor 1: Dimming % area	Adjustment factor 1: Illuminance turndown	Adjustment factor 2: Adjustment factor 2	Adjustment factor 2: Dimming % area	Adjustment factor 2: Illuminance turndown	Light colour adjustment factors: Light colour adjustment factor 1	Light colour adjustment factors: Light colour adjustment factor 2	SATISFIES PART J7D3: System illumination power load allowance	SATISFIES PART J7D3: Lighting system share of % of aggregate allowance used
							These columns do not represent a requirement of the NCC and are suggestions only.		Adjustment factors			Adjustment factors						
1	Entry to Coles	141.0 m²	100 m	4.2 m	2101 W	Entry lobby from outside the building									a) CRI ≥ 90	c) CCT ≥ 4500 K	2101 W	**3% of 100%**
2	Coles	2,308.0 m²	240 m	4.2 m	32312 W	Retail space including a museum and gallery whose purpose is the sale of objects											32312 W	**45% of 100%**
3	Retail Travelator B1	117.0 m²			234 W	Stairways, including fire-isolated stairways											234 W	**0% of 100%**
4	Retail Travelator B1	117.0 m²			234 W	Stairways, including fire-isolated stairways											234 W	**0% of 100%**
5	Retail 1	104.2 m²	50 m	4.2 m	2178 W	Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks											2178 W	**3% of 100%**
6	Retail 2	549.8 m²	111 m	4.2 m	8648 W	Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks											8648 W	**12% of 100%**
7	Plant	51.0 m²	38 m	4.2 m	251 W	Toilet, locker room, staff room, rest room and the like											251 W	**0% of 100%**
8	Goods Lift Corridor	37.0 m²	36 m	4.2 m	191 W	Toilet, locker room, staff room, rest room and the like											191 W	**0% of 100%**
9	Loading Area & Plant Deck	820.0 m²	128 m	4.2 m	1640 W	An illuminance of not more than 80 lx											1640 W	**2% of 100%**
10	Retail Travelator from G	56.0 m²			112 W	Stairways, including fire-isolated stairways											112 W	**0% of 100%**
11	Retail Lift	6.5 m²			20 W	Lift cars											20 W	**0% of 100%**
12	G Stair to Carpark 1	24.0 m²			48 W	Stairways, including fire-isolated stairways											48 W	**0% of 100%**
13	G Stair to Residential	38.0 m²			76 W	Stairways, including fire-isolated stairways											76 W	**0% of 100%**
14	Goods Lift L	9.2 m²			28 W	Lift cars											28 W	**0% of 100%**
15	Goods Lift S	6.0 m²			18 W	Lift cars											18 W	**0% of 100%**
16	Stair to Carpark 2	16.0 m²			32 W	Stairways, including fire-isolated stairways											32 W	**0% of 100%**
17	Substation	37.0 m²	24 m	4.2 m	119 W	Plant rooms with a horizontal illuminance target of 80 lx											119 W	**0% of 100%**
18	B1 Plant	173.0 m²	53 m	3.2 m	824 W	Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms											824 W	**1% of 100%**
19	B1 Services (combined)	218.0 m²			436 W	Plant rooms with a horizontal illuminance target of 80 lx											436 W	**1% of 100%**
20	B1 Storage	142.0 m²	49 m	3.2 m	266 W	Storage											266 W	**0% of 100%**
21	End of Trip Facilities	106.0 m²	42 m	3.2 m	209 W	Storage											209 W	**0% of 100%**
22	B1 Stair 1	12.5 m²			25 W	Stairways, including fire-isolated stairways											25 W	**0% of 100%**
23	B1 Stair 2	21.0 m²			42 W	Stairways, including fire-isolated stairways											42 W	**0% of 100%**
24	B1 Carpark	2,965.0 m²			5930 W	Carpark - general											5930 W	**8% of 100%**
25	Retail Store/Services	142.0 m²	61 m	3.2 m	288 W	Storage											288 W	**0% of 100%**
26	B2 Carpark	2,930.0 m²			5860 W	Carpark - general											5860 W	**8% of 100%**
27	B2 Services	195.0 m²	79 m	3.2 m	513 W	Plant rooms with a horizontal illuminance target of 80 lx											513 W	**1% of 100%**
28	Supermarket Storage	889.0 m²	162 m	3.2 m	1334 W	Storage											1334 W	**2% of 100%**

Non-residential Lighting

ABCB

National Construction Code

Calculator

Building name/description	Classification
277 The Grand Parade	Class 6

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29	B2 Stair 1	12.5 m²			25 W	Stairways, including fire-isolated stairways											25 W	0% of 100%
30	B2 Stair 2	28.0 m²			56 W	Stairways, including fire-isolated stairways											56 W	0% of 100%
31	B3 Carpark	4,010.0 m²			8020 W	Carpark - general											8020 W	11% of 100%
32	B3 Services (combined)	92.0 m²			184 W	Plant rooms with a horizontal illuminance target of 80 lx											184 W	0% of 100%
33	Residential Bin Store	58.0 m²	32 m	3.2 m	126 W	Storage											126 W	0% of 100%
34	Cleaners	33.0 m²	24 m	3.2 m	78 W	Service area, cleaner's room and the like											78 W	0% of 100%
35	B3 Stair 1	12.5 m²			25 W	Stairways, including fire-isolated stairways											25 W	0% of 100%
36	B3 Stair 2	13.0 m²			26 W	Stairways, including fire-isolated stairways											26 W	0% of 100%

Total	72509 W

Total	72509 W

if inputs are valid ✓