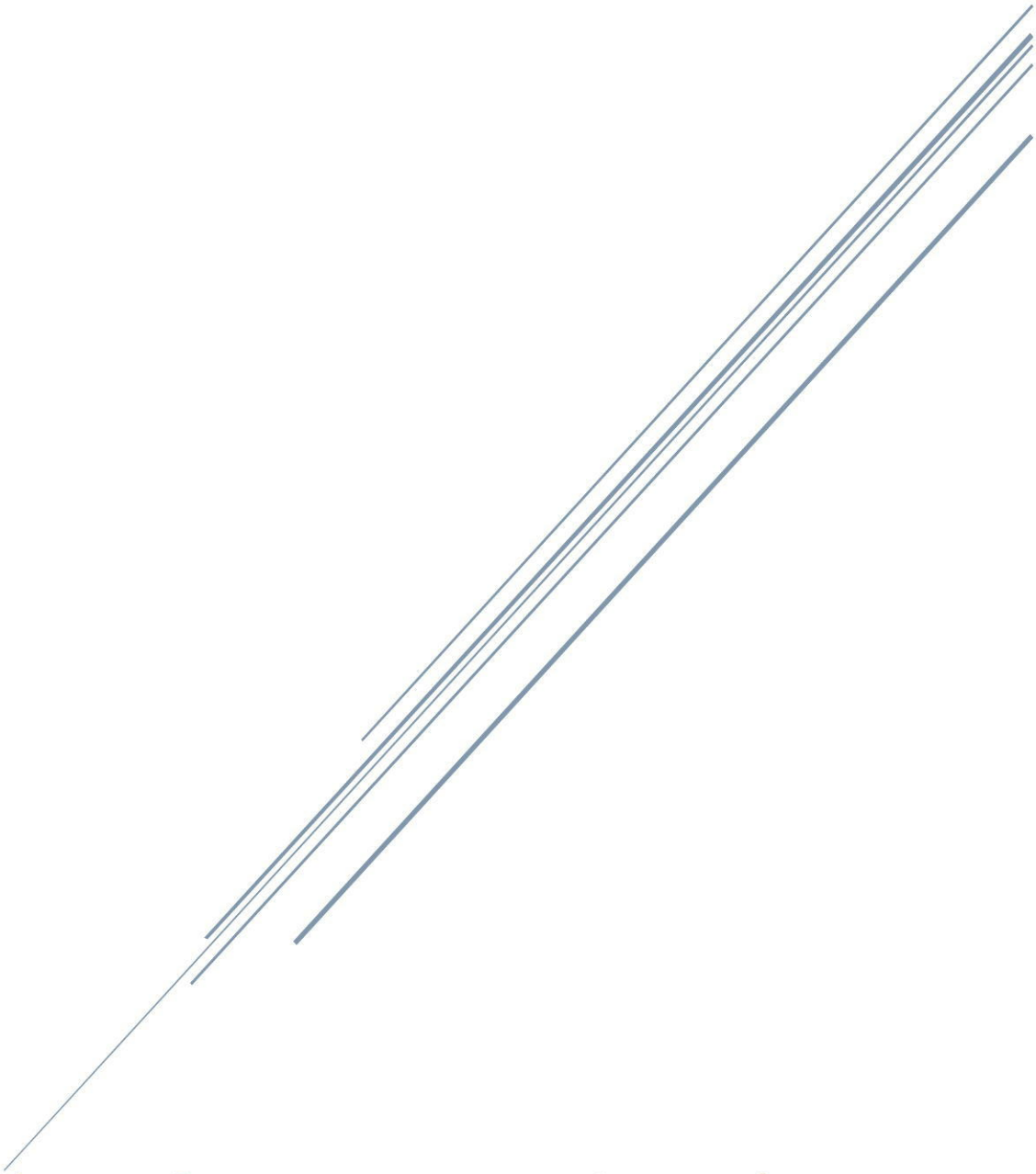
SECTION J REPORT

Proposed Mixed Use Development



38-40 Orth Street & 26 Somerset Street, Kingswood NSW 2747

Contents

Introduction

This report has been prepared by Chapman Environmental Services and will identify the relevant provisions of the Building Code of Australia (BCA) 2016, Volume 1, Section J that apply to the project as detailed below and will indicate the necessary requirements to ensure compliance. This report is valid through to the end of April 2020. Should the construction certificate be obtained after this date then the report will need to be upgraded.

Project Details

Client:	Biogiene Property Investments Pty Ltd
Site Address:	38-40 Orth Street & 26 Somerset Street, Kingswood NSW 2747
Legal Identifier:	Lot 60, 61 & 62 in DP 36728
Climate Zone:	6
BCA Classification:	Basement levels – 7a Ground and first floors – 5 Second to sixth floors – 2
Local Government Area:	Penrith City Council
Drawings:	Job 1714, 19/06/2019
Project:	A mixed use development comprising of 3 basement parking levels, 2 levels of commercials spaces and 5 levels of residential units. This report does not address the residential units as they are covered by Basix.

Assessment

J0.1 Application of Section J

Performance Requirements **JP1** and **JP3** are satisfied by complying with **Parts J1, J2, J3, J5, J6, J7** and **J8**. The proposed development can achieve compliance with all of these relevant parts.

Part J1 – Building Fabric

J1.2 Thermal construction - general

(a) Where required, insulation must 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.

(b) Where required, reflective insulation must 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 any penetration, 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.

(c) Where required, bulk insulation must be installed so that—
  (i) it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and
  (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm.

J1.3 Roof and ceiling construction

A roof and/or ceiling that is part of the envelope must achieve the total R-Value in a downward direction as specified in **Table J3.1a.**

Most of the ceilings in the commercial spaces on the ground and first floors do not form part of the building envelope. There are 2 small areas within the commercial spaces on the ground floor that have a balcony above them and likewise on the first floor there are some areas that have landscaped areas above them, and it is these areas to which the following table applies.

Element	Required Total R Value	Typical Construction Type Specification	Proposed Added Insulation	Achieved Total R Value
Roof & Ceiling (balcony over)	**R3.2**	Outdoor air film (0.04) Outdoor tiles over and sand and cement screed (0.03) Waterproof membrane (0.03) Concrete slab (0.07) 10mm plasterboard internal linings (0.06) Indoor air film (0.16) **Uninsulated R-Value is R0.39**	**R4.0**	**R4.39***
Roof & Ceiling (landscaping over)	**R3.2**	Outdoor air film (0.04) Soil at approx. 600mm deep (0.5) Waterproof membrane (0.03) Concrete slab (0.07) 10mm plasterboard internal linings (0.06) Indoor air film (0.16) **Uninsulated R-Value is R0.86**	**R3.5**	**R4.36***

* By adding 0.75 insulation to the ceiling, the floors receive a R0.5 reduction.

J1.4 Roof lights

N/A

J1.5 Walls

An external wall that is part of the envelope must achieve the total R-Value of R2.8 or satisfy one of the options as specified in **Table J1.5a.**

Element	Required Total R Value	Typical Construction Type Specification	Proposed Added Insulation	Achieved Total R Value
Hebel wall system	**R2.8**	Outdoor air film (0.04) Hebel wall panel 75mm (0.58) Airspace reflective (0.6) 10mm plasterboard internal linings (0.06) Indoor air film (0.16) **Uninsulated R-Value is R1.44**	**R1.5**	**R2.94**

Note that South facing walls receive an R0.5 credit so these only require R1.0 insulation to be installed if desired.

Any wall, other than an external wall that is part of the envelope must achieve the total R-Value in **Table J1.5b.** An example of where this is relevant is between the commercial tenancy 2 and the mechanical service room.

Element	Required Total R Value	Typical Construction Type Specification	Proposed Added Insulation	Achieved Total R Value
Hebel wall system	**R1.8**	Indoor air film (0.16) Hebel wall panel 75mm (0.58) Airspace reflective (0.6) 10mm plasterboard internal linings (0.06) Indoor air film (0.16) **Uninsulated R-Value is R1.56**	**R1.5**	**R3.06**

The lowest rated commercially available insulation batt is R1.5. Should a lower rated one be sourced then the minimum additional insulation required is R0.24.

J1.6 Floors

A floor that is part of the envelope including a floor above a carpark must achieve the total R-Value as specified in Table J1.6.

Element	Required Total R Value	Typical Construction Type Specification	Proposed Added Insulation	Achieved Total R Value
Slab on ground	n/a			
Suspended concrete over basement	**R2.0**	Indoor air film (0.16) Concrete slab (0.07) Indoor air film (0.16) Credit for increased ceiling insulation (0.5) **Uninsulated R-Value is R0.89**	**R1.2**	**R2.09**

Part J2 – Glazing

Glazing has been designed and will be installed in accordance with **Part J2.4 – Table 2.4a – Option A**

Glazing specification: The calculation used to determine the required glazing units are based on the following items which have been obtained from the WERS website. Alternative units may be substituted if the U-Value is the same or less and the SHGC is within 10% of the nominated figure.

U-Value	SHGC	Typical type	Example WERS code
1.7	0.24	Thermally broken aluminium frame Double glazed – low-e grey / argon gap / clear	ALS-017-010
3.1	0.31	Thermally broken aluminium frame Double glazed – low-e grey / argon gap / clear	ALS-017-07
4.2	0.61	Aluminium frame Double glazed – clear / air gap / clear	AWS-063-16
5.9	0.76	Aluminium frame Single glazed – clear laminate	ALS-015-08
6.3	0.32	Aluminium frame Single glazed – low-e grey	ALS-014-10

Shading devices that are required to achieve compliance with **Part J2.4** are referenced on the drawings and will be installed in compliance with **Part J2.5 (a) & (b).**

Part J3 – Building Sealing

J3.2 Chimneys and Flues

Not applicable

J3.3 Roof Light

The roof lights must be sealed in accordance with **Part J3.3 (a) & (b).**

J3.4 Windows and doors

All external doors must be fitted with air infiltration seals.
The entrance doors to a conditioned space are to be self-closing in accordance with **Clause J3.4 (d)**

J3.5 Exhaust fans

Any exhaust fans must be fitted with a sealing device such as a self-closing damper or the like when serving conditioned space or a habitable room in climate zones 4, 5, 6, 7 and 8.

J3.6 Construction of roofs, walls and floors

All roof, ceilings, walls, floors and any openings such a window frame, door frame, roof light frame or the like must be constructed to minimise air leakage

J3.7 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space or a habitable room or a public area of a building in climate zones 4, 5, 6, 7 and 8.

Part J4 – Not Applicable

Part J5 – Air-Conditioning and Ventilation Systems

Packaged air conditioning units, where installed, must be capable of being deactivated when the building or part of a building served by that system is unoccupied in accordance with **Part J.5.2 (a) (i)**.

A time switch must be provided in accordance with **Part J5.3 (a)** if the air conditioning system is larger than 10KWr.

All other air conditioning and ventilation systems and components will be designed in accordance with the DTS requirements of **Part J.5** and a separate report will be submitted by the mechanical services designer verifying compliance where required.

Part J6 – Artificial Lighting and Power

J6.2 artificial lighting

The maximum illumination power density must not exceed the values in the following table for each type of space in accordance with **Table J6.2a**.

The exact use of the ground floor commercial tenancies is unknown so both office space and retail uses have been noted below. A report will be prepared by the electrical services designer verifying compliance on completion of the building, where required.

Space	Maximum illumination power density (W/m²)
Carpark – general	6
Carpark – entry zone (first 20m, of travel)	25
Corridors	8
Entry lobby from outside a building	15
Office - artificially lit to an ambient level of 200 lx or more	9
Office - artificially lit to an ambient level of less than 200 lx	7
Retail space including a museum and gallery whose purpose is the sale of objects	22
Toilet, locker room, staff room, rest room and the like	6

J6.3 Interior artificial lighting and power control

Artificial lighting of a room or space must be individually operated by a switch or other control device in accordance with **Part J6.3**.

J6.4 Interior decorative and display lighting

(a) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled separately from other artificial lighting and be controlled by a manual / time switch for each area other than when the operating times of the displays are the same in a number of areas such as in a museum, art gallery or the like, in which case they may be combined; and

(iii) by a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW.

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

J6.5 Artificial lighting around the perimeter of a building

Artificial lighting around the perimeter of a building, where installed, must be controlled by a sensor, time switch or motion sensor as detailed in **Part J6.5**.

J6.6 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 J6.

Part J7 – Heated Water 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.

J7.3 Swimming pool heating and pumping

Not applicable.

J7.4 Spa pool heating and pumping

Not applicable.

Part J8 – Facilities for Energy Monitoring

J8.3 Facilities for energy monitoring

(a) A building or sole-occupancy unit with a floor area of more than 500 m² must have the facility to record the consumption of gas and electricity.

(b) A building with a floor area of more than 2,500 m² must have the facility to record individually the energy consumption of—

(i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and

(ii) artificial lighting; and

(iii) appliance power; and

(iv) central hot water supply; and

(v) internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and

(vi) other ancillary plant.

(c) The provisions of (b) do not apply to a Class 2 building with a floor area of more than 2,500 m² where the total area of the common areas is less than 500 m².

Conclusion of Section J Assessment

This report provides an assessment of the Deemed-To-Satisfy requirements of Section J of the Building Code of Australia.

Should the recommendations and requirements contained in this report be adopted into the building during construction, the development will comply with the Deemed-To-Satisfy requirements of Section J.

Please contact the undersigned should you have any questions on this report.

Daniel Chapman
Chapman Environmental Services
1300 004 914

Appendix 1: Glazing Calculator for the ground floor

Report from Biogiene Calculator Glazing Ground.xlsx *printed 9/07/2019*

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

Building name/description: 38-40 Orth Street & 26 Somerset Street Kingswood

Application: other

Climate zone: 6

Storey: Ground Floor

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	164m²				164m²		75m²		
Option B									n/a
Glazing area (A)	*115m²*				*40.8m²*		*46.2m²*		

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 (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Commercial space 1	N		3.50	9.50		6.3	0.32	2.000	3.500	0.57	0.00	0.64	0.51	33.25	24% of 83%
2	Lobby	N		3.50	8.20		6.3	0.32	3.700	3.500	1.06	0.00	0.01	0.34	28.70	19% of 83%
3	Commercial space 2	N		3.50	15.10		6.3	0.32	1.200	3.500	0.34	0.00	0.86	0.68	52.85	58% of 83%
4	Lobby	S		3.50	4.85		4.2	0.63				0.00	1.00	1.00	16.98	36% of 80%
5	Commercial space 1	S		3.50	6.80		4.2	0.63	3.900	3.500	1.11	0.00	0.68	0.62	23.80	64% of 80%
6	Commercial space 1	W		3.50	8.00		1.7	0.24	2.100	3.500	0.60	0.00	0.64	0.61	28.00	55% of 96%
7	Lobby	W		3.50	5.20		1.7	0.24	14.000	3.500	4.00	0.00	0.05	0.31	18.20	45% of 96%
8																
9																
10																

IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters. While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all. Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.

if inputs are valid

Appendix 1: Glazing Calculator for the first floor

Report from Biogiene Calculator Glazing First.xlsx *printed 9/07/2019*

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

Building name/description: 38-40 Orth Street & 26 Somerset Street Kingswood

Application: other

Climate zone: 6

Storey: First Floor

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	173m²		119m²		173m²		119m²		
Option B									n/a
Glazing area (A)	*46.6m²*	.....	*6m²*	.....	*38.5m²*	.....	*44.1m²*		

Number of rows preferred in table below: 20 *(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 (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	G (m)	Heating (S_H)	Cooling (S_C)	Area used (m²)	Element share of % of allowance used
1	Office 1 2.1 high doors	N		2.10	5.42		6.3	0.32	2.000	3.500	0.57	1.40	0.99	0.90	11.38	23% of 66%
2	Office 1 fixed	N		2.30	0.90		6.3	0.32				0.00	1.00	1.00	2.07	5% of 66%
3	Office 1 feature	N		3.50	3.30		6.3	0.32				0.00	1.00	1.00	11.55	27% of 66%
4	Lobby	N		2.10	2.20		6.3	0.32				0.00	1.00	1.00	4.62	11% of 66%
5	Office 2 2.1 high doors	N		2.10	7.10		6.3	0.32	2.000	3.500	0.57	1.40	0.99	0.90	14.91	30% of 66%
6	Office 2 corner window	N		3.50	0.60		6.3	0.32				0.00	1.00	1.00	2.10	5% of 66%
7	Office 1 2.1 high doors	W		2.10	2.60		3.1	0.31	2.400	3.500	0.69	1.40	0.95	0.90	5.46	12% of 99%
8	Office 1 awnings	W		2.00	1.50		3.1	0.31				0.00	1.00	1.00	3.00	7% of 99%
9	Office 1 Feature	W		2.80	3.00		3.1	0.31				0.00	1.00	1.00	8.40	19% of 99%
10	Office 1 skinny	W		3.50	0.33		3.1	0.31				0.00	1.00	1.00	1.16	3% of 99%
11	Lobby skinny	W		3.50	1.66		3.1	0.31				0.00	1.00	1.00	5.81	13% of 99%
12	Office 6 2.1 high doors	W		2.10	5.20		3.1	0.31	2.400	3.500	0.69	1.40	0.95	0.90	10.92	24% of 99%
13	Office 6 awning	W		2.00	0.75		3.1	0.31				0.00	1.00	1.00	1.50	3% of 99%
14	Office 6 feature	W		2.80	2.80		3.1	0.31				0.00	1.00	1.00	7.84	18% of 99%
15	Office 6	S		3.50	0.60		5.9	0.76				0.00	1.00	1.00	2.10	5% of 99%
16	Lobby	S		3.50	4.70		5.9	0.76				0.00	1.00	1.00	16.45	42% of 99%
17	Office 6 2.1 high doors	S		2.10	5.20		5.9	0.76	3.000	3.500	0.86	1.40	0.93	0.89	10.92	29% of 99%
18	Office 6 awnings	S		2.00	1.50		5.9	0.76				0.00	1.00	1.00	3.00	8% of 99%
19	Office 5 awnings	S		2.00	3.00		5.9	0.76				0.00	1.00	1.00	6.00	15% of 99%
20	Office 5 awnings	E		2.00	3.00		6.3	0.32				0.00	1.00	1.00	6.00	100% of 20%

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if inputs are valid