



IGS INTEGRATED
GROUP
SERVICES



80-88 Regent St Redfern NSW

NCC Section J Assessment Report

August 2018

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1. EXECUTIVE SUMMARY

This State Significant Development Application (SSDA) seeks approval for the development of a new student accommodation facility. Specifically, the proposal involves:

- site preparation works;
- construction and use of an 18 storey building comprising:
 - 265 student accommodation beds within 185 units, arranged as follows:
 - 163 x studio units;
 - 6 x loft units; and
 - 16 x 6-bed cluster units.
 - communal student facilities including study areas, lounge rooms, laundry facilities and a rooftop terrace;
 - three ground floor retail tenancies;
 - a single commercial tenancy;
- landscaping works including terrace planting; and
- extension and augmentation of services and infrastructure as required.

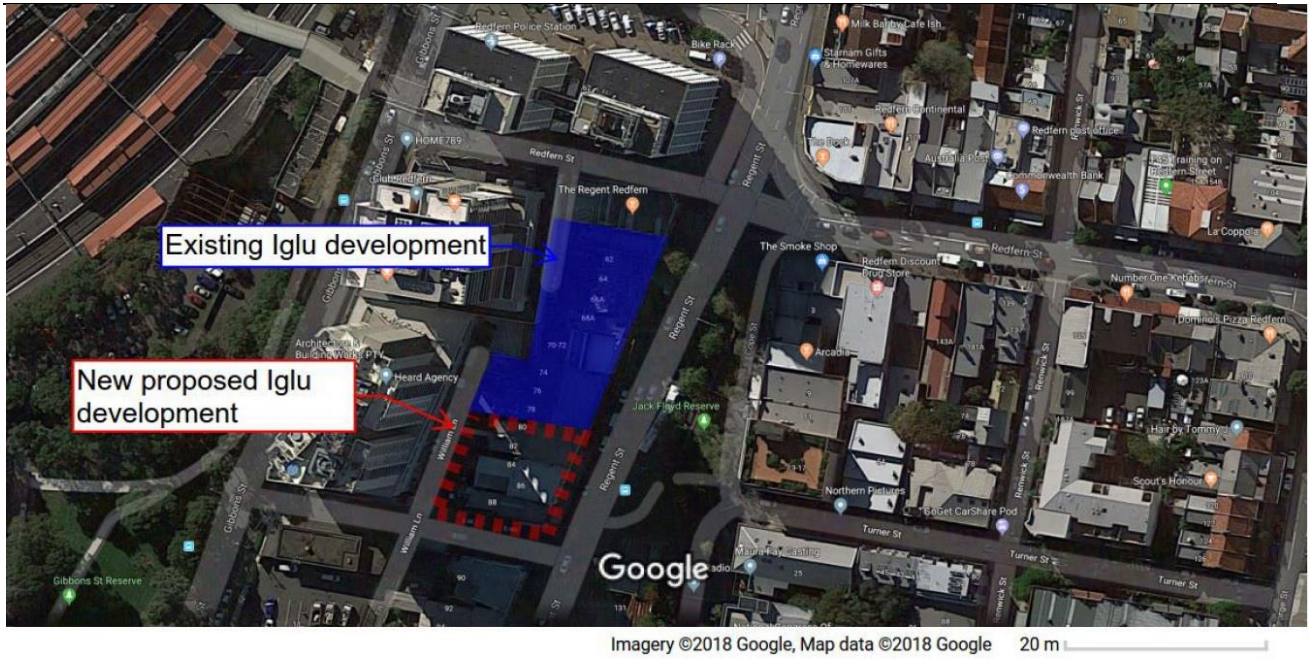
IGS has been engaged to review the proposed student accommodation development at 80-88 Regent Street Redfern NSW, against the Deemed-to-Satisfy requirements for the National Construction Code 2016 provisions for energy efficiency under Section J (NCC 2016 Volume 1).

The proposal will operate as an integrated campus with the adjoining Iglu facility adjacent at 66 Regent St Redfern which commenced operation in early 2018.

This report nominates relevant NCC Section J requirements or 'deemed to satisfy' compliance provisions and possible areas in which alternative performance-based design solutions can be adopted where compliance with the nominated prescriptive provisions may not be practically achievable.

Subject to satisfaction of the provisions outlined in this report, this development will comply with the requirements of Section J of NCC 2016.

Based on our assessment, the 'deemed to satisfy' glazing performance requirements may be prohibitive and costly to achieve. It is therefore recommended to consider achieving the NCC glazing compliance requirements through the performance-based method of verification (i.e. JV3 method, modelling, alternative method of verification). Based on our review, the JV3 assessment is very likely to simplify achieving the glazing performance requirements for the development and improve glazing consistency.



Location – 80-88 Regent St NSW – Source: Google Map

2. NATIONAL CONSTRUCTION CODE (NCC) SECTION J

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

The NCC offers two compliance methods that differ in complexity and flexibility. The two compliance methods are:

- Deemed-to-Satisfy (DTS) Compliance
- JV3 – Verification using a referenced building

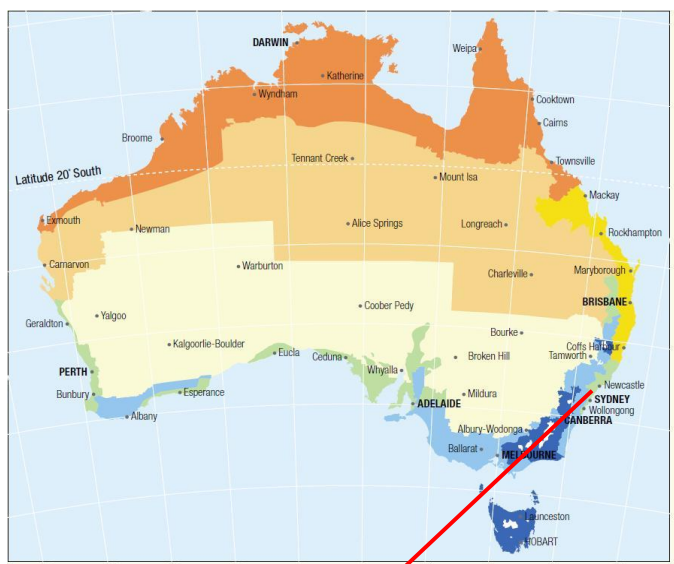
This report provides an assessment of building according to DTS provisions. The following works were carried out in order to assess DTS compliance:

- Determine the applicable NCC Section J requirement for the climate zone and building class
- Provide recommendations to achieve compliance with DTS provisions

3. NCC CLIMATE ZONE & BUILDING CLASSIFICATION

The climate zone is defined by the NCC as 'an area for specific locations, having energy efficiency provisions based upon a range of similar climatic characteristics'.

The development will be located at Redfern NSW which is within the NCC climate zone 5 (warm temperate). The main building classification for the development is Class 3 and 6 for the student accommodation and retail areas respectively.



ZONE	DESCRIPTION
1	High humid summer, warm winter
2	Warm humid summer, mild winter
3	Hot dry summer, warm winter
4	Hot dry summer, cool winter
5	Warm temperate
6	Mild temperate
7	Cool temperate
8	Alpine

3.1 Development Description

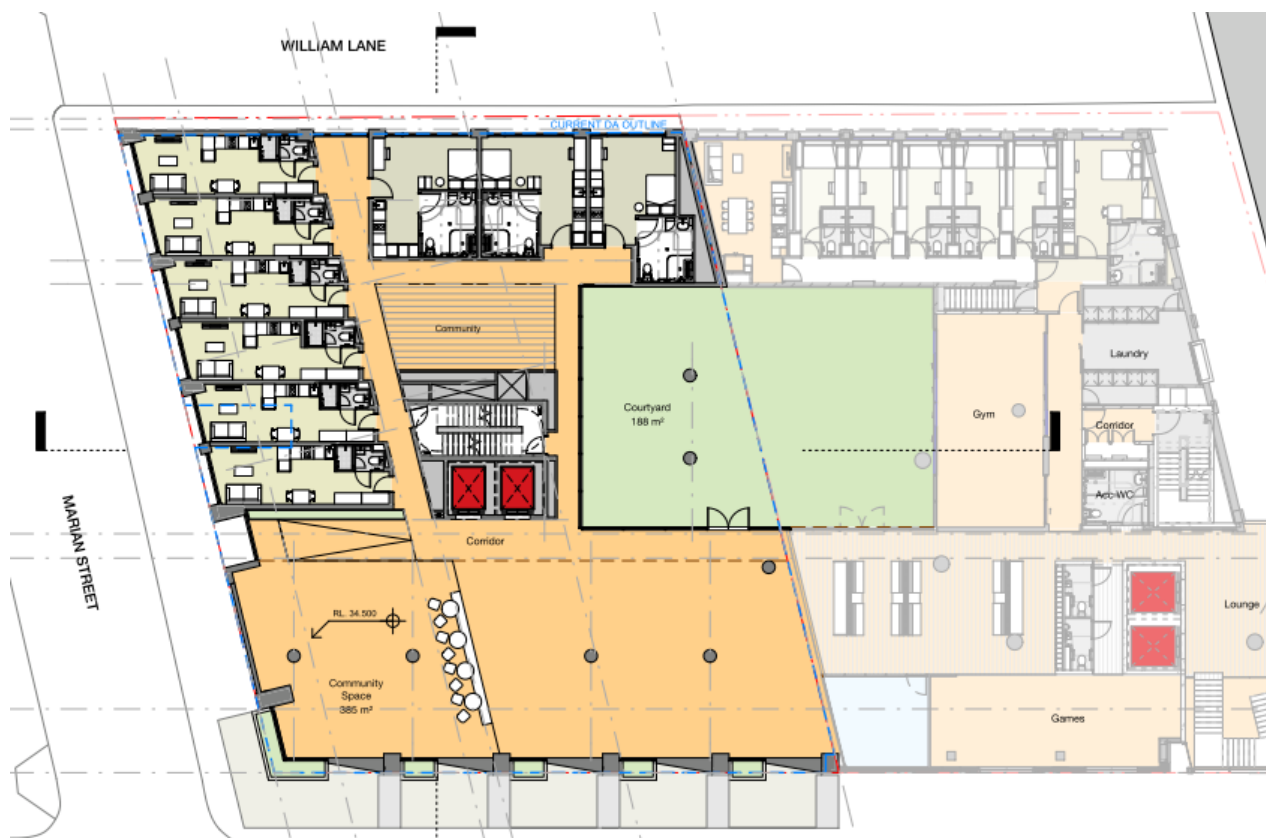
Iglu intend to redevelop the land at 80-88 Regent Street, Redfern bounded by Marian Street and William Lane into multi-level student accommodation.

3.2 Information Used

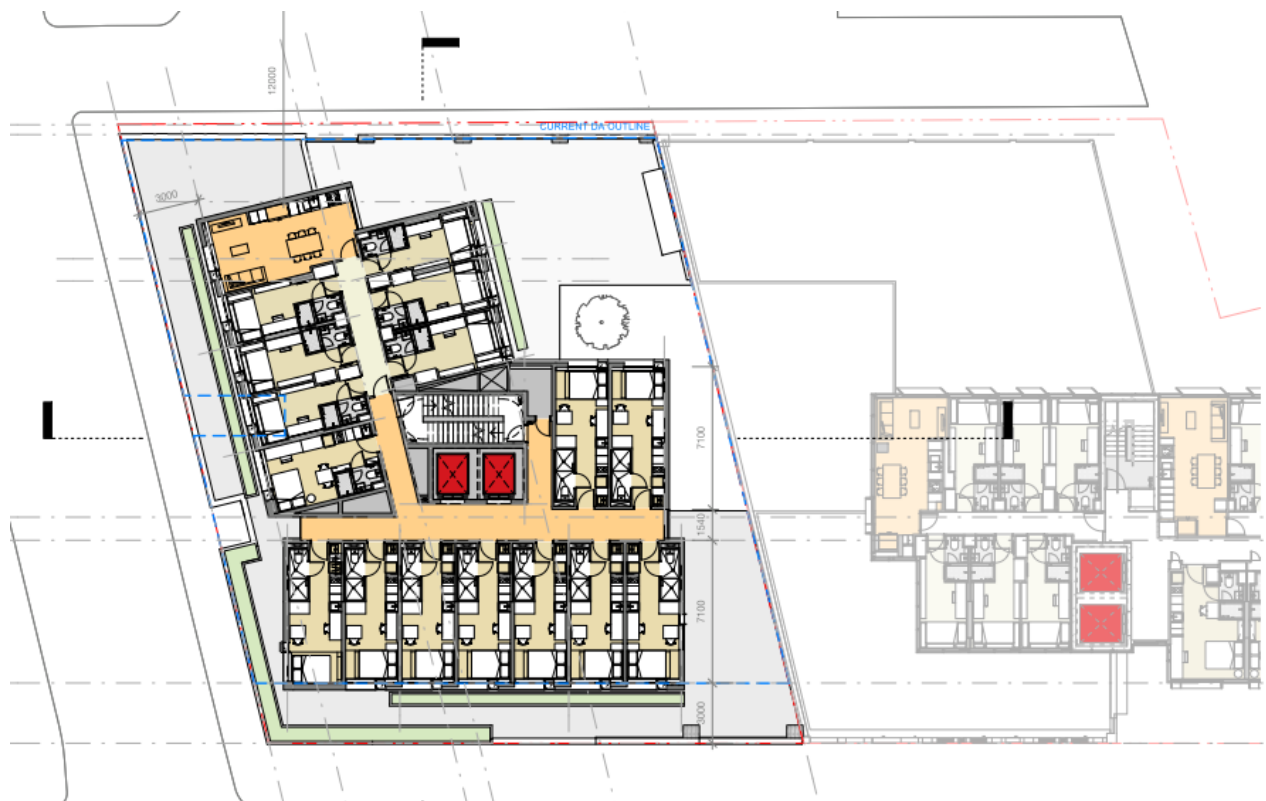
The assessment is based on the revision C of the following architectural drawings provided by Bates Smart Architects on 10th August 2018.

Drawing Name	Drawing number and details
Site Plan	A01.001 Revision: C
Ground Floor Plan	A03.101 Revision: C
Level 00 Mezzanine	A03.102 Revision: C
Level 01	A03.103 Revision: C
Level 02	A03.104 Revision: C
Levels 03, 07, 12, 13	A03.105 Revision: C
Levels 04, 08, 14	A03.106 Revision: C
Level 05, 09, 10, 15, 16, 17	A03.107 Revision: C
Level 06, 11	A03.108 Revision: C
Roof Terrace level	A03.119 Revision: C
Elevation East	A09.001 Revision C
Elevation South	A09.002 Revision C
Elevation West	A09.003 Revision C
Elevation North	A09.004 Revision C
Section A	A10.001 Revision C
Section B	A10.002 Revision C

Level 1 – Floor plan



Levels 2 – Floor plan



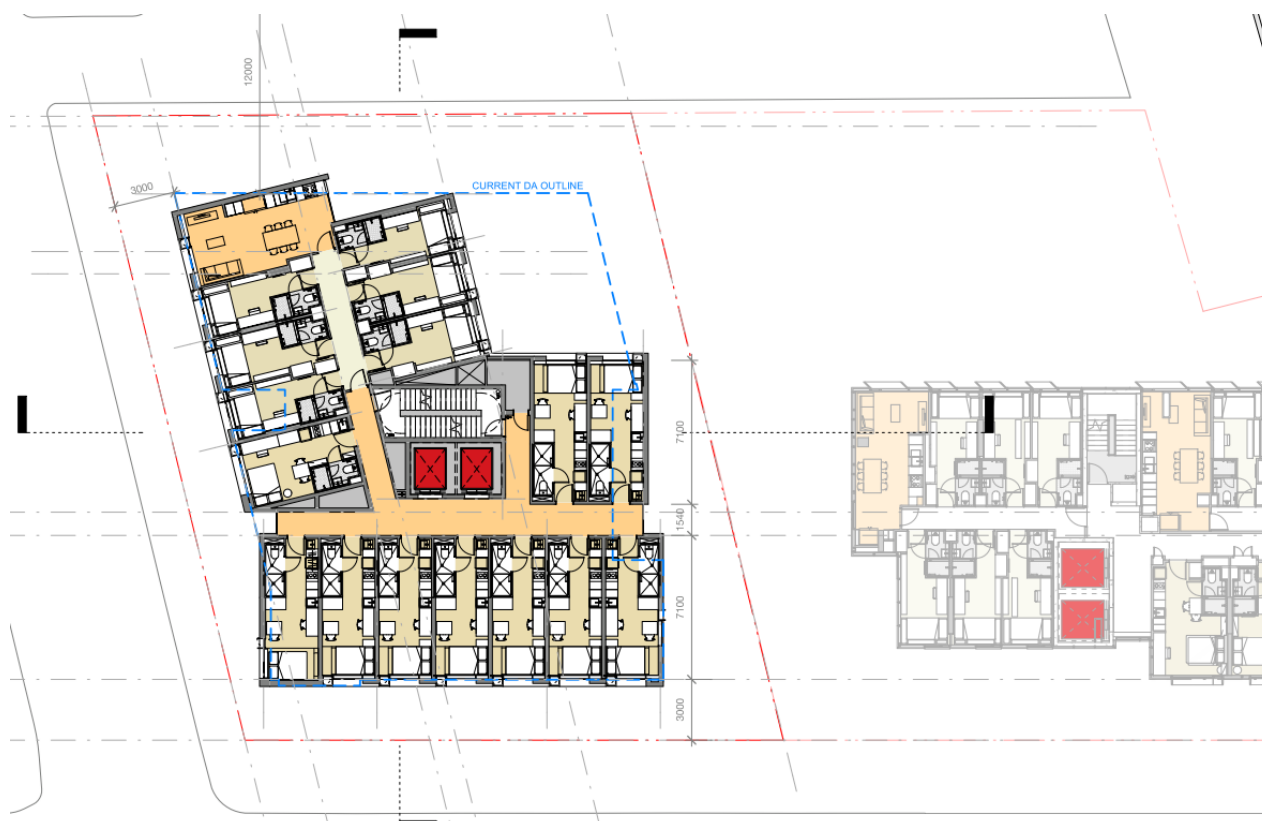
Levels 03, 07, 12 & 13 – Floor plan



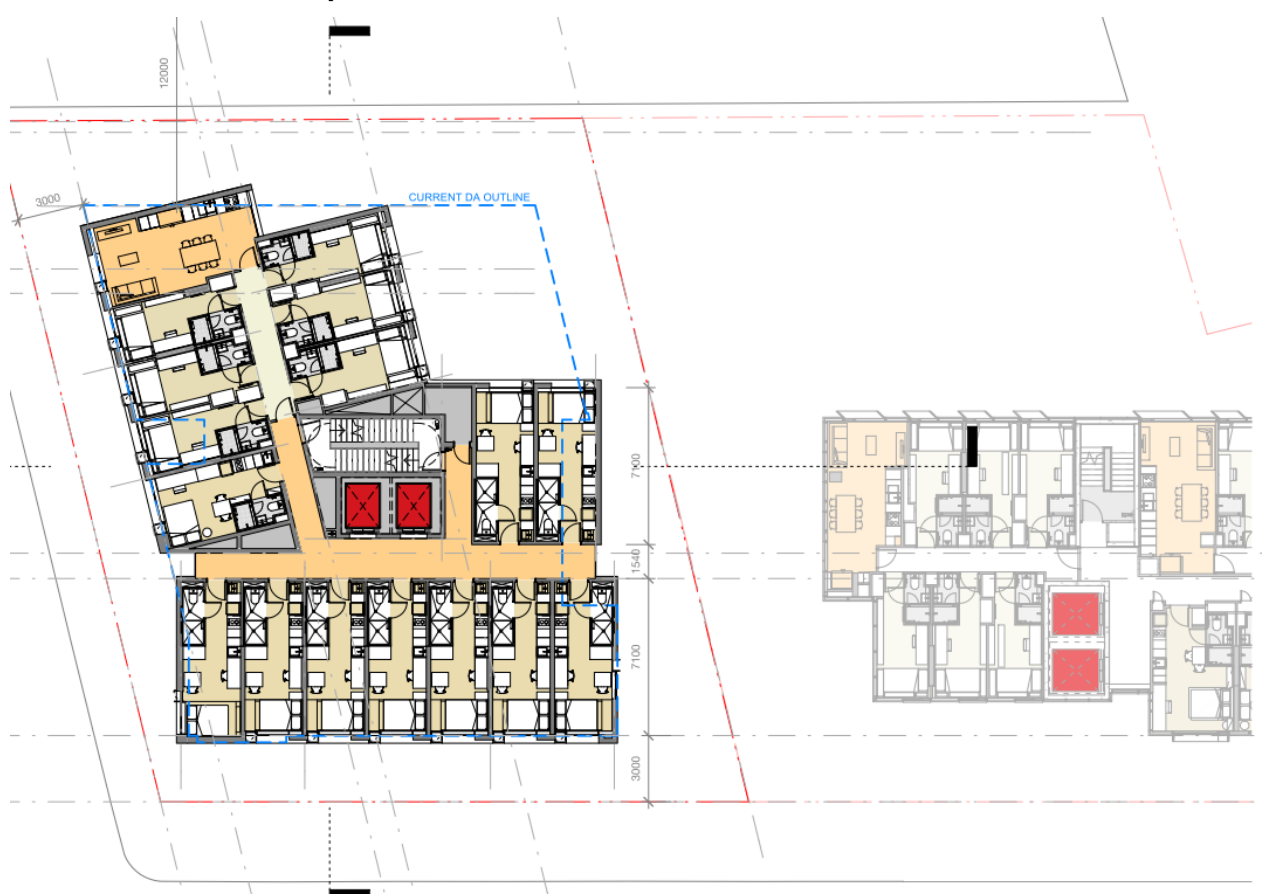
Levels 04, 08 and 14 – Floor plan



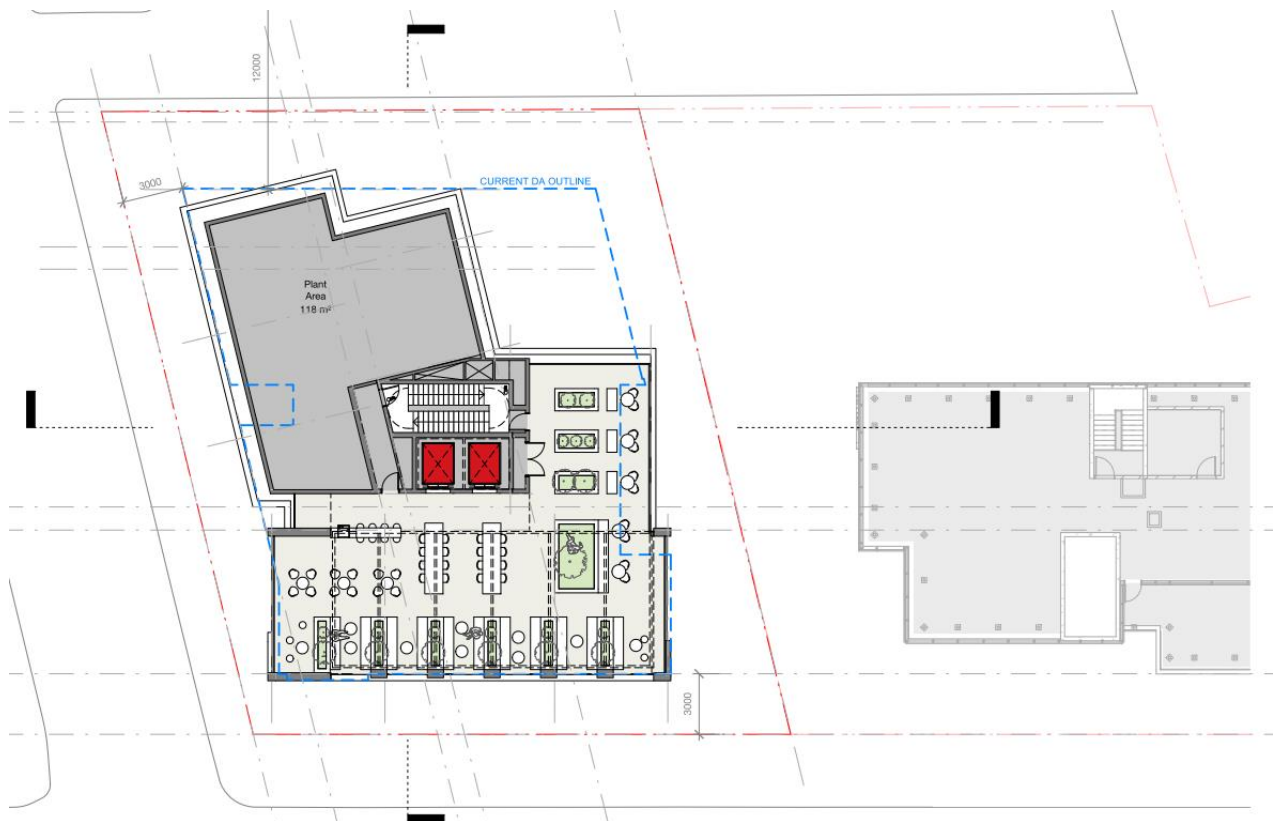
Levels 05, 09, 10, 15, 16 & 17 – Floor plan



Levels 06 & 11 – Floor plan



Roof – Floor plan

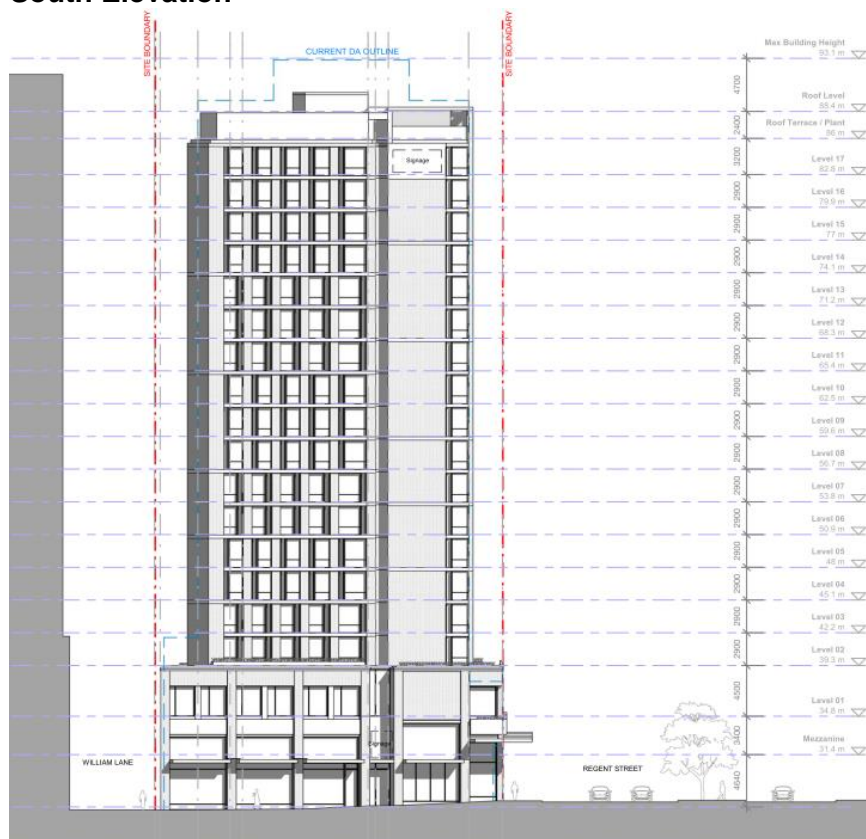




North Elevation:

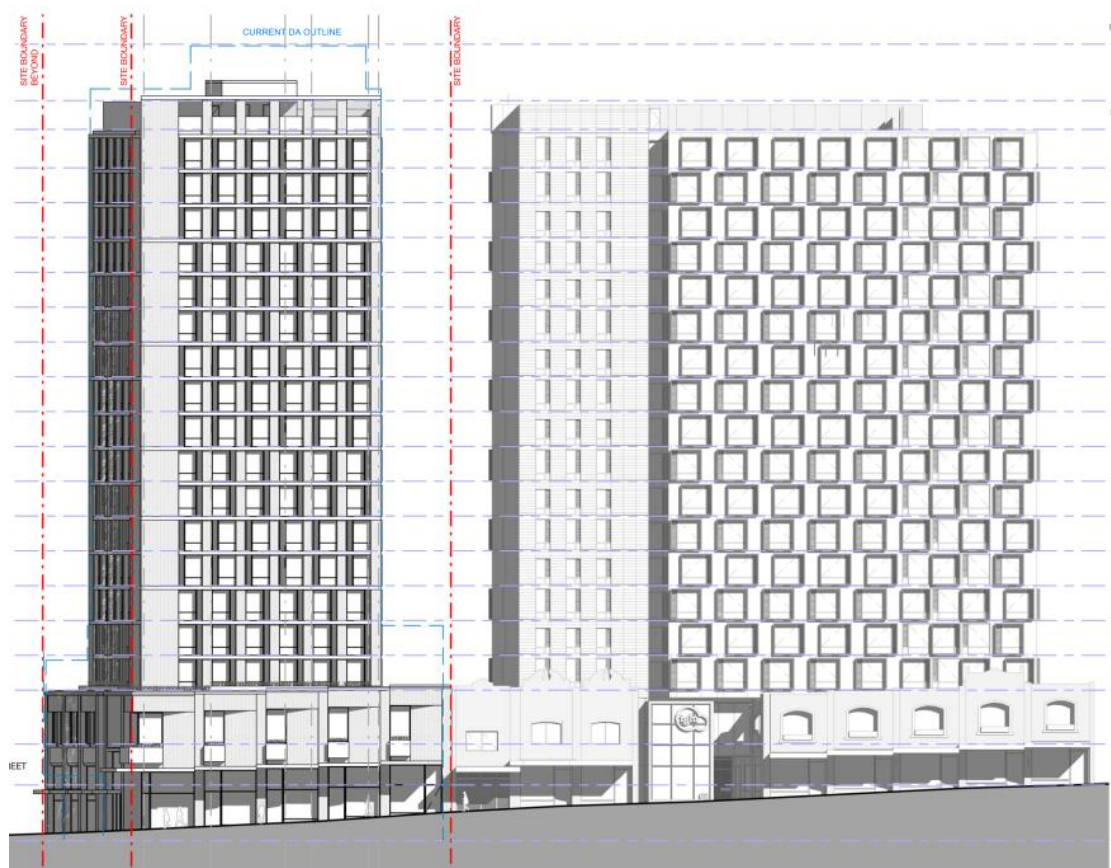


South Elevation

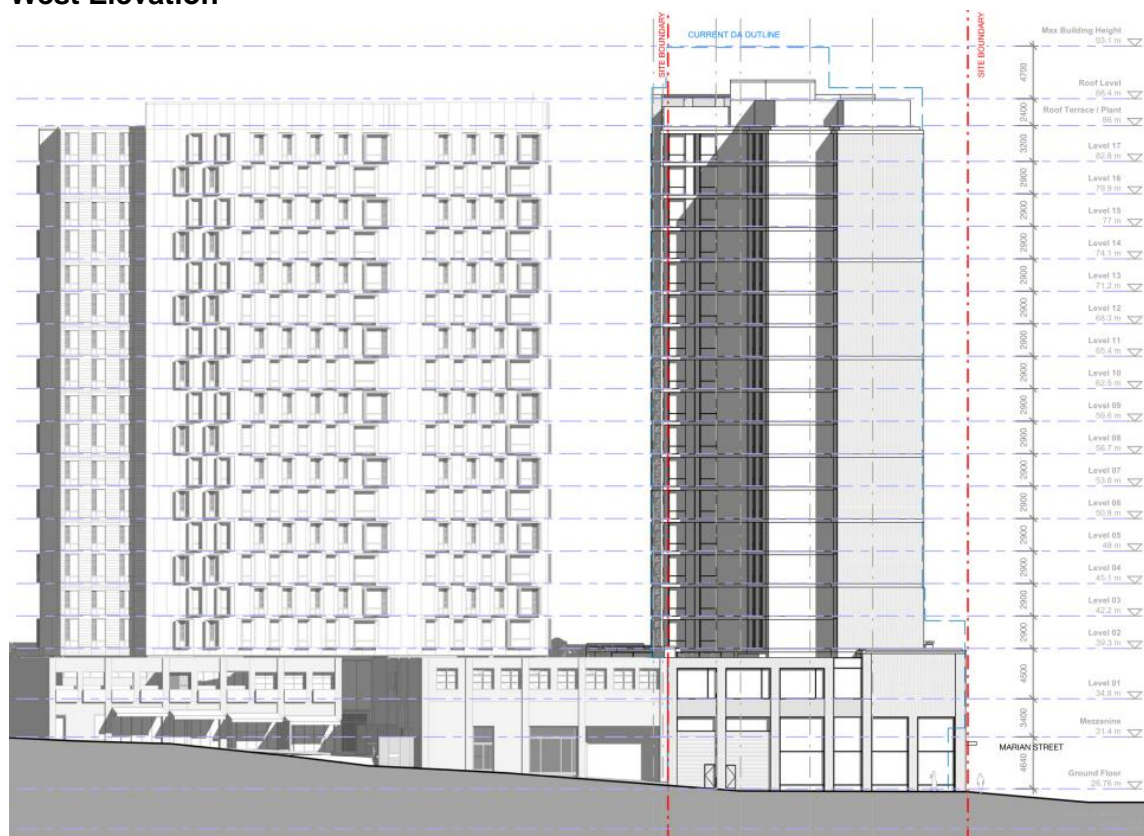




East Elevation



West Elevation



4. DEEMED-TO-SATISFY PROVISIONS

NCC 2016 requires that Class 2 to 9 buildings to achieve efficient use of energy. This requirement is defined in Volume 1 of the NCC 2016 under Section J and is titled “Energy Efficiency”. There are eight Deemed-to-Satisfy subsections, J1 to J8, which focus on separate aspects of energy efficiency. These are:

- Part J1 - Building Fabric – Minimum thermal performance constructions for roofs, ceilings, roof lights, walls, and floors in the relevant climate zone.
- Part J2 - External Glazing – Minimum thermal performance for the 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 J4 – Blank in NCC 2016
- 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 - Hot Water Supply – Restrictions for hot water supply design except for solar systems within climate zones 1, 2 and 3.
- Part J8 - Facilities for Energy Monitoring

4.1 National Construction Code – General Definitions

Envelope

This term is not limited to the building’s outer shell, but also includes parts of a building’s fabric that separate a conditioned space or habitable room from the exterior of the building or a non-conditioned space.

For example, the floor between a plant room and an office space may be part of the envelope, rather than the outer shell. A non-conditioned space may be included within the envelope under certain circumstances.

Glazing

The glazing definition needs to be read in conjunction with the definition of a window and roof light. It can include a glazed door. For the purposes of Section J, the glazing provides an aperture by which light and energy can flow into or from the conditioned space. Glazing includes the glass and any frame system.

Conditioned space

A conditioned space is one likely to be air-conditioned rather than one that is air-conditioned. In some cases, chilled and hot water may be reticulated through duct risers as part of the building design to enable conditioning to be provided as part of a later fitout. A conditioned space may include a ceiling or under-floor space that is open to the conditioned space such as a space separated by only a perforated or grille ceiling or floor where the space is a supply air or return air plenum.

Note:

The thermal insulation and glazing performance requirements outlined in this report nominate the Section J compliance requirements only. The specified performance values therefore do not consider requirements for any other disciplines such as Acoustics, Fire or Safety compliance. Where required, the development shall comply with any additional requirements related to other disciplines in addition to the Section J compliance requirements detailed in this report.

4.2 Part J1 – Building Fabric Requirements

4.2.1 Overview

Section J part J1 outlines the minimum requirements of building envelope. The envelope is defined by the NCC as parts of a building's fabric that separate a conditioned space or habitable room from the exterior of the building or a non-conditioned space.

4.2.2 Part J1.1 – Application

The deemed-to-satisfy provisions of Part J1 apply to the building elements forming the envelope of a Class 2 to 9 building. Part J1 is therefore applicable to all new works within this development.

4.2.3 J1.2 Thermal Construction General

All insulations installed are required to meet J1.2 and AS/NZS 4859.1. Builder is required to ensure compliance, during construction.

Care should be taken when installing insulation to ensure a continuous envelope between a conditioned space and either the outside environment or a non-conditioned space.

Insulation is required to be fitted tightly to each side of framing members but need not be continuous over the framing member. The total R-value requirements for roof, walls and floors are calculated for parts of the roof, walls or floor that are clear of any framing members.

The installation of insulation should not interfere with the safety or performance of domestic services and fittings such as heating flues, recessed light fittings, transformers for low voltage lighting, gas appliances and general plumbing and electrical components. This includes providing appropriate clearance as detailed in relevant legislation and referenced standards such as for electrical, gas and fuel oil installations. Low voltage lighting transformers should not be covered by insulation and be mounted above the insulation rather than on the ceiling. Expert advice may also be needed on how much bulk insulation can be placed over electrical wiring. Addition of insulation to other building elements may alter the fire properties of those elements. Re-testing or re-appraisal of these elements may be required.

For reflective insulation to achieve its tested R-value, the airspace adjoining the insulation needs to be a certain width. This width varies depending on the particular type of reflective insulation and the R-value to be achieved.

Where the width of airspace is to be achieved in a wall cavity or the like, care should be taken to ensure compliance with all other applicable NCC provisions. For example, the provisions relating to weatherproofing masonry may require a greater width of cavity.

The R-value of bulk insulation is reduced if it is compressed. The allocated space for bulk insulation is therefore required to allow the insulation to be installed so that it maintains its correct thickness unless exempted such as at wall studs. This is particularly relevant to wall and cathedral ceiling framing whose members can only accommodate a limited thickness of insulation. In some instances, larger framing members or thinner insulation material, such as polystyrene boards, may be necessary to ensure that the insulation achieves its required R-value.

4.2.4 J1.3 Roof and Ceiling Construction

Roof and ceiling construction works are required to meet J1.3 requirements. For roof and ceiling constructions that form part of the building envelope in the proposed development the NCC

minimum thermal resistance is $3.7\text{m}^2 \text{ K/W}$ (assuming a roof solar absorptance value of not more than 0.6).

To achieve NCC compliance and further improve the thermal performance of the building, **it is recommended that minimum total roof insulation of R3.7 is achieved as part the roof/ceiling construction separating a conditioned space from a non-conditioned space.**

4.2.5 J1.4 Roof Lights

Based on the architectural drawings provided, no roof lights are proposed for the building and therefore section J1.4 is not applicable.

Should this not be the case, a roof light must meet the following glazing criteria:

Roof light shaft index (see Note 2)	Constant	Total area of roof lights serving the room or space as a percentage of the floor area of the room or space			
		Up to 2%	More than 2% to and up to 3%	More than 3% and up to 4%	More than 4% and up to 5%
Less than 0.5	SHGC	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
0.5 to less than 1.0	SHGC	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
1.0 to less than 2.5	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and more	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4

Notes:

1. The total area of a roof light serving the space as a percentage of the floor area of the space must not exceed 5%.
2. The roof light shaft index is determined by measuring the distance from the centre of the shaft at the roof to the centre of the shaft at the ceiling level and dividing it by the average internal dimension of the shaft opening at the ceiling level in the same units of measurement.
3. The total area of roof lights is the combined area for all roof lights serving the room or space.
4. The area of a roof light is the area of the roof opening that allows light to enter the building.
5. The thermal performance of an imperforate ceiling diffuser may be included in the Total U-Value and SHGC of the roof light.
6. If the roof lights is required for compliance with NCC Part F4, it must
 - (i) Have an area not more than 150% of the minimum area required by F4.6; and
 - (ii) Have transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of not more than: SHGC: 0.29 and U-Value: 2.9

-
7. The performance requirements of the total glazing system (glass + frame) must be demonstrated under NFRC100-2001 conditions and using the tested NFRC values in compliance with the NCC.

4.2.6 J1.5 Walls

External Wall Construction

All wall construction should be designed to meet J1.5. For external wall constructions that form part of the building envelope in the proposed development.

NCC compliance shall be achieved with a minimum of R2.8 thermal insulation for external walls separating a conditioned space from a non-conditioned space.

Internal Wall Construction

All internal wall constructions that form part of the building envelope which separates conditioned and non-conditioned spaces in this climate zone are required to achieve a minimum thermal resistance of 1.8 m² K/W. This is assuming that the mechanical ventilation of the space is more than 1.5 air changes per hour.

NCC compliance shall be achieved with a minimum of R1.8 thermal insulation for internal walls separating a conditioned space from a non-conditioned space.

4.2.7 J1.6 Floors

There are no requirements for floor insulation for the floors which are concrete slab on ground. Should the floors incorporate in-slab heating or cooling, the insulation must:

- have a minimum R-value of 1.0m² K/W; and
- be water resistant; and
- be continuous from the adjacent finished ground level
- To a minimum depth of 300mm or for the full depth of the vertical edge of the concrete slab-on-ground.

NCC compliance shall be achieved with a minimum of R2 thermal insulation for floors that are separating a conditioned and non-conditioned space.

4.3 Part J2 – Glazing

4.3.1 Overview

Buildings that are two-storeys or greater in height will require each level to comply with the NCC requirements in Part J2. The NCC method of glazing analysis considers the area of the glass and orientation on a level by level basis.

The Australian Building Codes Board (ABCB) provides the NCC Glazing Calculator for determining the amount of glazing permitted on each storey of each building façade using proposed types of glass for the development.

Part J2 requires established minimum glazing system performance requirements, which vary depending on the climate zone and the orientation and shading of the glazing. The glazing conductance (U-value) and Solar Heat Gain Coefficient (SHGC and shading) are assessed together and calculated for each façade orientation. These are then added together to give an Air Conditioning Energy Value. To comply this must be less than the Energy Index target.

The calculation involves various factors and is typically undertaken using the glazing calculator developed by the Australian Building Codes Board (ABCB).

4.3.2 Application of Part J2 Glazing

The Deemed-to-Satisfy provisions of Part J2 are therefore applicable to the development and all the glazing works to the conditioned areas are to comply.

J.2.1 Application of Part	Applicable to all new glazing works. Please see glazing performance requirements summarised in section 4.3.4
J2.2 Blank	Not applicable.
J2.3 Blank	Not applicable.
J2.4 Glazing	Applicable to all sun-shades and glazing works to the conditioned spaces. Please see glazing performance requirements provided in section 4.3.4
J2.5 Shading	Applicable to all shading element.

Note:

The glazing performance requirements outlined in this report nominate the Section J compliance requirements only. The specified performance values therefore do not consider requirements for any other disciplines such as Acoustics, Fire or Safety compliance. Where required, the development shall comply with any additional requirements related to other disciplines in addition to the Section J compliance requirements detailed in this report.

4.3.3 Glazing Performance

IGS have reviewed the provided sections and elevations for the development to assess the Deemed to Satisfy Provisions for external glazing of the building. Please note, this glazing assessment is a preliminary assessment to indicate the estimated DTS glazing requirements and limited to the design information available at the time of the assessment.

The glazing tables provided in section 4.3.4 of the report indicate the “Deemed-To-Satisfy” glazing performance requirements for the development. Other glass types of equal or better solar performance than what’s specified (i.e. U-Value and SHGC not exceeding those listed in the following table) may also be selected for the development.

The performance of each type of glazing system (glass and frame) must be demonstrated under AFRC conditions and using the tested AFRC values.

Note:

Based on our assessment, the 'deemed to satisfy' glazing performance requirements may be prohibitive and costly to achieve. It is therefore recommended to consider achieving the NCC glazing compliance requirements through the performance-based method of verification (i.e. JV3 method, modelling, alternative method of verification). Based on our review, the JV3 assessment is very likely to simplify achieving the glazing performance requirements for the development and improve glazing consistency.

4.3.4 Glazing Performance Requirements (DTS)

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

Building name/description

80-88 Regent St Redfern - Iglu - Ground Floor & Mezzanine (Office)

Application

other

Climate zone

5

Storey

GF-Mezz(Office)

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
		136m ²		144m ²				
								n/a

Option A

Option B

Glazing area (A) 84.8m² 81.1m²

Number of rows preferred in table below

12 (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
	Office-William Lne	E		6.50	4.00		3.5	0.25	0.200	6.500	0.03	0.00	0.99	0.98	26.00	31% of 100%
	Office-William Lne	E		6.50	2.80		3.5	0.25	0.200	6.500	0.03	0.00	0.99	0.98	18.20	21% of 100%
	Office-William Lne	E		5.80	7.00		3.5	0.25	0.200	5.800	0.03	0.00	0.99	0.98	40.60	48% of 100%
	Office-Marion St	S		5.20	5.20		5.0	0.80	1.700	5.200	0.33	0.00	0.90	0.84	27.04	33% of 94%
	Office-Marion St	S		5.20	5.20		5.0	0.80	1.700	5.200	0.33	0.00	0.90	0.84	27.04	33% of 94%
	Office-Marion St	S		5.20	5.20		5.0	0.80	1.700	5.200	0.33	0.00	0.90	0.84	27.04	33% of 94%

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



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

Building name/description

80-88 Regent St Redfern - Iglu - Ground Floor & Mezzanine (Retail)

Application

shop display

Climate zone

5

Storey

GF-Mezz (Retail)

Facade areas

N	NE	E	SE	S	SW	W	NW	internal
				80m ²		165m ²		
								n/a

Option A

Option B

Glazing area (A) 35.1m² 90.1m²

Number of rows preferred in table below

12 (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 ²)	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 (m ²)	Element share of % of allowance used
	Retail D - Marion	S		4.50	3.20		6.0	0.70	3.100	4.500	0.69	0.00	0.79	0.71	14.40	41% of 63%
	Retail D - Marion	S		4.50	4.60		6.0	0.70	3.100	4.500	0.69	0.00	0.79	0.71	20.70	59% of 63%
	Retail D - West	W		4.50	8.00		6.0	0.70	3.100	4.500	0.69	0.00	0.59	0.56	36.00	41% of 94%
	Retail C - West	W		4.30	4.40		6.0	0.70	3.100	4.300	0.72	0.00	0.56	0.55	18.92	21% of 94%
	Retail B - West	W		4.10	4.40		6.0	0.70	3.100	4.100	0.76	0.00	0.54	0.53	18.04	20% of 94%
	Retail A - West	W		3.90	4.40		6.0	0.70	3.100	3.900	0.79	0.00	0.50	0.51	17.16	18% of 94%

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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



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

Building name/description

80-88 Regent St Redfern - Iglu - Level 1

Application

Class 3

Climate zone

5

Storey

L1

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	48.6m ²		112m ²		47.3m ²	74.8m ²	114m ²		
Option B									n/a

Glazing area (A) 30.5m² 26.6m² 21.6m² 45.4m² 62.1m²

Number of rows preferred in table below **25** (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 ²)	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 (m ²)	Element share of % of allowance used
1	L1 - William Lne- 1	W		2.70	3.40		2.0	0.20	0.200	2.700	0.07	0.00	0.97	0.95	9.18	18% of 99%
2	L1 - William Lne -2	W		2.70	4.00		2.0	0.20	0.200	2.700	0.07	0.00	0.97	0.95	10.80	21% of 99%
3	L1 - William Lne -3	W		2.70	4.00		2.0	0.20	0.200	2.700	0.07	0.00	0.97	0.95	10.80	21% of 99%
4	L1 - William Lne -Corridor	W		2.70	2.60		2.0	0.20	0.200	2.700	0.07	0.00	0.97	0.95	7.02	14% of 99%
5	L1 - Marion St- 1	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
6	L1 - Marion St- 2	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
7	L1 - Marion St- 3	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
8	L1 - Marion St- 4	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
9	L1 - Marion St- 5	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
10	L1 - Marion St- 6	SW		2.70	2.80		2.2	0.22	0.800	2.700	0.30	0.00	0.88	0.82	7.56	17% of 99%
11	L1 - Marion St- Corridor	S		4.30	2.50		3.0	0.30	0.500	4.300	0.12	0.00	0.97	0.94	10.75	50% of 94%
12	L1 - Marion St- Community	S		2.70	4.00		3.0	0.30	0.500	2.700	0.19	0.00	0.94	0.91	10.80	50% of 94%
13	L1 - East- Community	E		2.70	2.00		4.0	0.35	0.550	2.700	0.20	0.00	0.92	0.87	5.40	20% of 91%
14	L1 - East- Community	E		2.30	1.60		4.0	0.35	0.550	2.300	0.24	0.00	0.89	0.84	3.68	13% of 91%
15	L1 - East- Community	E		2.30	1.60		4.0	0.35	0.550	2.300	0.24	0.00	0.89	0.84	3.68	13% of 91%
16	L1 - East- Community	E		2.30	1.60		4.0	0.35	0.550	2.300	0.24	0.00	0.89	0.84	3.68	13% of 91%
17	L1 - East- Community	E		2.30	1.60		4.0	0.35	0.550	2.300	0.24	0.00	0.89	0.84	3.68	13% of 91%
18	L1 - Corridor to Crtyrd-W	W		2.70	3.60		1.8	0.15				0.00	1.00	1.00	9.72	15% of 99%
19	L1 - Corridor to Crtyrd-W	W		2.70	5.40		1.8	0.15	5.000	2.700	1.85	0.00	0.03	0.28	14.58	12% of 99%
20	L1 - Corridor to Crtyrd-N	N		2.70	6.00		2.2	0.20				0.00	1.00	1.00	16.20	95% of 90%
21	L1 - Corridor to Crtyrd-N	N		2.70	5.30		2.2	0.20	5.000	2.700	1.85	0.00	0.00	0.20	14.31	5% of 90%
22	L1 - Corridor to Crtyrd-E	E		2.70	2.40		2.2	0.35				0.00	1.00	1.00	6.48	28% of 91%
23																
24																
25																

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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

80-88 Regent St Redfern - Iglu - Levels 2-16

Application

Class 3

Climate zone

5

Storey

L2 (Typical 2-16)

Facade areas

	N	NE	E	SE	S	SW	W	NW	internal
Option A	21.1m ²		52.9m ²		35.1m ²	26.2m ²	36.7m ²		
Option B									n/a
Glazing area (A)	7.22m ²	22.2m ²	14.4m ²	7.38m ²	9.06m ²		

Number of rows preferred in table below

25 (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 ²)	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 (m ²)	Element share of % of allowance used
1	L2-16 - William Lne-W-1	W		1.85	1.50		4.0	0.35	0.350	1.850	0.19	0.00	0.92	0.88	2.78	30% of 93%
2	L2-16 - William Lne-W-2	W		1.85	1.50		4.0	0.35	0.350	1.850	0.19	0.00	0.92	0.88	2.78	30% of 93%
3	L2-16 - William Lne-W-3	W		2.70	1.30		4.0	0.35	0.200	2.700	0.07	0.00	0.97	0.95	3.51	40% of 93%
4	L2-16 - North Facing-1	N		1.85	1.30		3.0	0.28	0.350	1.850	0.19	0.00	0.96	0.82	2.41	33% of 97%
5	L2-16 - North Facing-2	N		1.85	1.30		3.0	0.28	0.350	1.850	0.19	0.00	0.96	0.82	2.41	33% of 97%
6	L2-16 - North Facing-3	N		1.85	1.30		3.0	0.28	0.350	1.850	0.19	0.00	0.96	0.82	2.41	33% of 97%
7	L2-16 - Marion St- TVRoo	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
8	L2-16 - Marion St- TVRoo	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
9	L2-16 - Marion St-South-1	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
10	L2-16 - Marion St-South-2	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
11	L2-16 - Marion St-South-3	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
12	L2-16 - Marion St-South-4	S		1.85	1.30		3.5	0.40	0.350	1.850	0.19	0.00	0.94	0.91	2.41	17% of 97%
13	L2-16 - Marion St-Corridor	SW		2.70	1.50		4.0	0.40	0.350	2.700	0.13	0.00	0.95	0.92	4.05	55% of 88%
14	L2-16 - Marion St- SW-5	SW		1.85	1.80		4.0	0.40	0.350	1.850	0.19	0.00	0.92	0.89	3.33	45% of 88%
15	L2-16 -East-1	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
16	L2-16 -East-2	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
17	L2-16 -East-3	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
18	L2-16 -East-4	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
19	L2-16 -East-5	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
20	L2-16 -East-6	E		1.85	2.00		3.0	0.22	0.350	1.850	0.19	0.00	0.92	0.88	3.70	17% of 100%
21																
22																
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24																
25																

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if inputs are valid



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4.4 Part J3 – Building Sealing

Part J3 of the NCC 2016 contains the requirements of the Deemed-to-Satisfy compliance for building sealing. The purpose of this subsection is to ensure that additional heating and cooling loads will not be introduced through building leakage.

Clause 3.1 – Part J3 is applicable to this development.

Clause J3.2 refers to chimneys and flues.

Clause J3.3 refers to roof lights.

- A. A roof light must be sealed, or capable of being sealed, when serving a conditioned space;
- B. A roof light required by (A) to be sealed, or capable of being sealed, must be constructed with—
 - i. an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or
 - ii. a weatherproof seal; or
 - iii. a shutter system readily operated either manually, mechanically or electronically by the occupant.

Clause J3.4 outlines that a seal to restrict air infiltration must be fitted to each edge of doors, openable windows or the like that separate conditioned spaces from non-conditioned spaces or external areas. This provision is not required for windows complying with Australian Standard AS2047, louvred windows or doors, and fire doors. The seal required may be a foam or rubber compressible strip, fibrous seal or the like. The main entrance to the development must have an airlock, self-closing door, revolving door or the like.

Clause J3.5 outlines that any miscellaneous exhaust systems must be fitted with a sealing device such as a self-closing damper when serving a conditioned space or habitable room.

Clause J3.6 outlines for the conditioned areas that the roofs, walls floors and any openings such as for doors and windows must be constructed to minimise air leakage. The construction must enclose conditioned spaces by close fitting internal lining systems at the ceiling, wall and floor junctions or by sealing through caulking, skirting, architraves, cornices or the like. The requirements of this clause do not apply to openings, grilles and the like necessary for smoke hazard management.

Clause J3.7 outlines that if evaporative cooling is used, the system must be fitted with self-closing non-return dampers.

All services consultants and contractors shall design and build to ensure compliance with Part J3 of the NCC Section J and all subsections associated therein.

4.5 Part J4

Part J4 of the NCC 2016 (formerly known as Air Movement) is blank and therefore not applicable to this development.

4.6 Part J5 – Air Conditioning and Ventilation Systems

Part J5 of the NCC outlines the performance requirements for air conditioning and ventilation systems to ensure these services operate in an efficient manner.

All services consultants and contractors shall design and install the air conditioning and ventilation systems to ensure compliance with Part J5 of the NCC Section J and all subsections associated therein.

4.7 Part J6 – Artificial Lighting and Power

Part J6 of the NCC outlines the performance requirements for illumination power density and the efficient use of lighting power and controls.

All services consultants and contractors shall design and install the artificial lighting systems to ensure compliance with Part J6 of the NCC Section J and all subsections associated therein with regards to power.

4.8 Part J7 – Hot Water Supply

Part J7 of the NCC outlines the provisions for the energy efficient use of hot water supply systems.

Clause J7.2 of Part J7 states that a hot water supply system for food preparation or sanitary purposes must be designed and installed in accordance with Section 8 of AS/NZS 3500.4.

All services consultants and contractors shall design and install the Hot Water supply systems to ensure compliance with Part J7 of the NCC Section J and all subsections associated therein.

4.9 Part J8 –Facilities for Energy Monitoring

Part J8 of the NCC outlines the provisions of facilities for energy monitoring. Facilities for energy monitoring shall be provided in accordance to Part J8 of the NCC.

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.

A building with a floor area of more than 2,500m² 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.

All services consultants and contractors shall design for access for maintenance and facilities for monitoring to ensure compliance with Part J8 of the NCC Section J and all subsections associated therein.

5. DISCLAIMER

This report is prepared using the information described above and inputs from other consultants. Whilst IGS has endeavoured to ensure the information used is accurate, no responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact IGS for detailed advice which will take into account that party's particular requirements.

Computer performance assessment provides an estimate of building performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all the intricacies of the building once built. As a result, simulation results only represent an interpretation of the potential performance of the building. No guarantee or warrantee of building performance in practice can be based on simulation results alone. IGS and its employees and agents shall not be liable for any loss arising because of, any person using or relying on the Report and whether caused by reason or error, negligent act or omission in the report. This assessment has been prepared as guide only using the limited architectural and building services design documents available and with the view to conduct a detailed assessment once the design is further developed.

Performance of the completed building may be significantly affected by the quality of construction; the quality of commissioning, ongoing management of the building, and the way the building is operated, monitored and maintained. Building fabric inputs require verifiable manufacturer data to confirm thermal properties.

This report is intended as a guide to assist with the application of the NCC Section J. It should be read in conjunction with the NCC 2016 and specific applications may vary during the design development of the project.