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NCC SECTION J

Energy

Efficiency

Report

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Approved:

Bruce Carr

(Signature required)

Project:

Boarding Rooms + Cafe:

175-177 Cleveland St REDFERN NSW 2016

Job No. 1335

CONTENTS

1	Introduction	3
2	Application.....	3
3	Building details.....	4
4	SUMMARY AND CERTIFIER CHECK:	6
5	Part J1: Building Fabric	17
5.1	J1.2: THERMAL CONSTRUCTION GENERAL	17
5.2	J1.3: Roof and Ceiling Construction.....	18
5.3	J1.4: Roof Lights	19
5.4	J1.5: Walls and glazing	20
5.5	J1.6: Floors	23
6	Part J2: Glazing	25
7	Part J3: Building Sealing	26
7.1	J3.2: Chimneys and flues	26
7.2	J3.3: ROOF LIGHTS	26
7.3	J3.4: WINDOWS AND DOORS.....	26
7.4	J3.5: EXHAUST FANS.....	26
7.5	J3.6: Construction of CEILINGS, walls and floors	26
7.6	J3.7: EVAPORATIVE COOLERS.....	26
8	Part J4	27
9	Part J5: Air conditioning and ventilation systems	27
10	Part J6: Artificial lighting and power	28
10.1	J6.2 Artificial Lighting	28
10.2	J 6.3 Interior Artificial Lighting and Control.....	29
10.3	J 6.4 Interior DECORATIVE AND DISPLAY LIGHTING	29
10.4	J6.5 ARTIFICIAL LIGHTING AROUND THE PERIMETER OF A BUILDING	29
10.5	J6.6 BOILING WATER AND CHILLED WATER STORAGE UNITS	30
10.6	J6.7 LIFTS	30
10.7	J6.8 ESCALATORS AND MOVING WALKWAYS.....	30
11	Part J7: Heated WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT	31
11.1	J7.2: HEATED WATER SUPPLY	31
11.2	J7.3: SWIMMING POOL HEATING AND PUMPING	31
11.3	J7.4: SPA POOL HEATING AND PUMPING	31
12	PART J8: FACILITIES FOR ENERGY MONITORING	31
12.1	J8.3: FACILITIES FOR ENERGY MONITORING.....	31
13	Definitions.....	32

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27 Jan 2021	Draft 1 Version 1	Issued to client	Bruce Carr
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1 INTRODUCTION

This report assesses the proposed development for its compliance with Section J energy efficiency provisions of the National Construction Code (NCC) 2019 Volume 1. These provisions will apply to all new (and altered) construction work.

This report will detail the measures required to achieve compliance and will be required as part of the submission to the council or the consent authority for the Construction Certificate application.

2 APPLICATION

NSW J(B) states that Class 3 and Class 5 to 9 building must comply with the provisions of the national Section J. Therefore, the Section J Deemed-to-Satisfy (DTS) provisions of the NCC 2019 (Volume One) have been applied for the assessment of this project and this report will outline what measures are required for this building to comply.

The DTS provisions consist of 5 Parts.

This report is concerned with the following parts:

- Part J1: Building Fabric
- Part J3: Building Sealing
- Part J6: Artificial Lighting and Power
- Part J7: Heated Water Supply and Swimming Pool and Spa Pool Plant
- Part J8: Facilities for Energy Monitoring

The following section will not form part of this report, as they will require the expertise of specialist service consultants:

- Part J5: Air-conditioning and Ventilations Systems

Note:

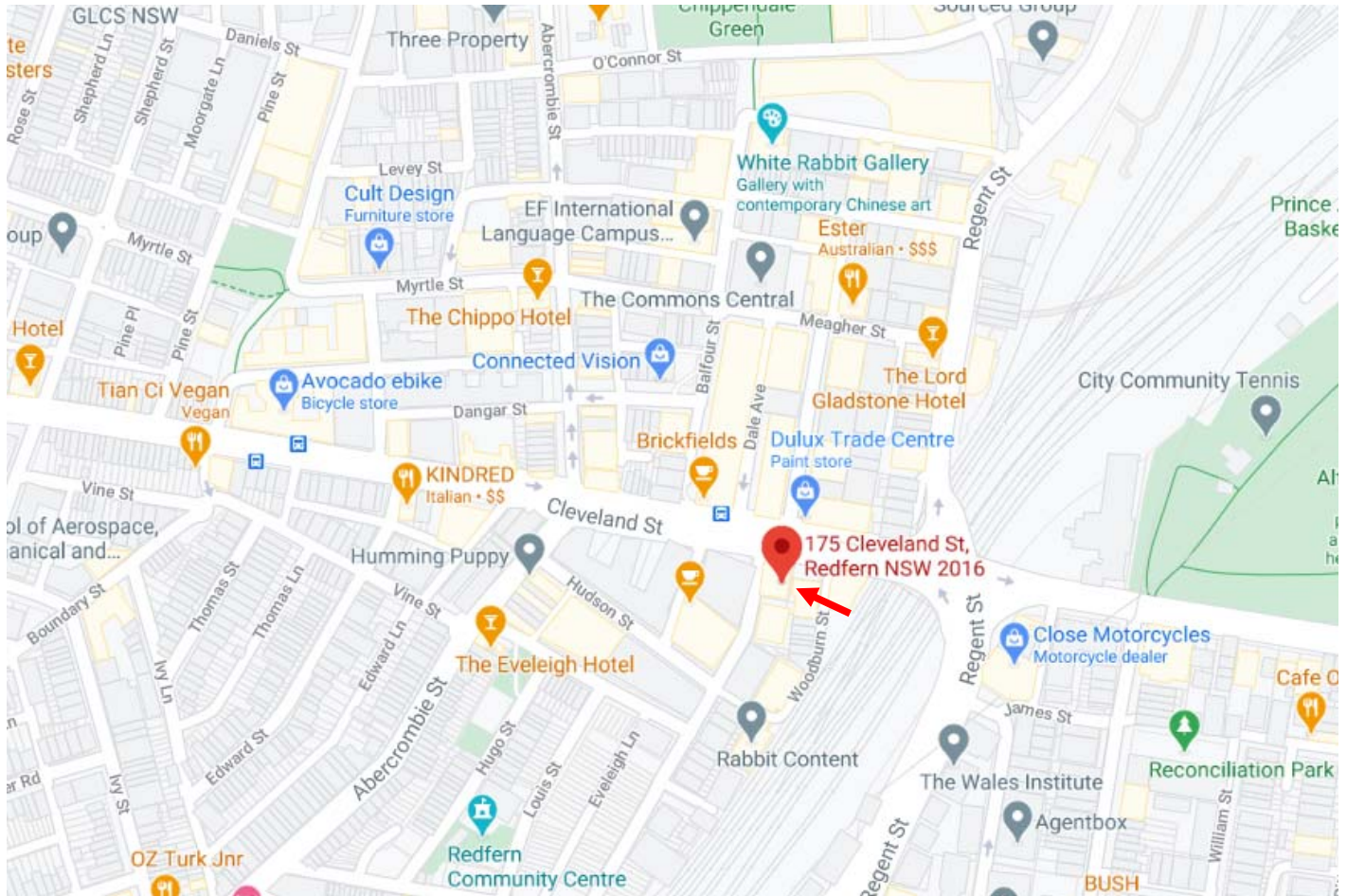
Part J4 has been removed from the NCC since 2010

Part J2 has been removed from the NCC since 2019 which existed in the NCC 2016. Glazing provisions are now included in Part J1.

3 BUILDING DETAILS

The title, address and location details for the project are as follows:

Project: Boarding House + Cafe
Address: 175-177 Cleveland St REDFERN NSW 2016
Authority: Sydney City Council



Climate zone: 5 (Warm Temperate)

- This climate zone is characterised by low diurnal temperatures near the coast to high diurnal ranges inland.
- Four distinct seasons: Summer and winter can exceed human comfort range, spring and autumn are ideal for human comfort
- Mild winters with low humidity, hot to very hot summers with moderate humidity

Description:

A new 6 level Boarding House development is proposed. This will consist of 120 self-contained Boarding rooms. There are also Common Rooms and a single level basement carpark below ground level. There will be new glazing on the north, east and west facades. There will also be a new Café (Class 6) on the ground floor.

The following construction materials are being proposed in the building design in accordance to the plans and design documentation referenced below:

- External Walls:
 - o Brick veneer on steel stud frame lined internally with plasterboard
 - o Other Walls: Insulated steel stud walls lined internally with plasterboard.
- Party walls (separating conditioned and non-conditioned): steel stud frame lined internally with plasterboard
- Floors: 200mm Concrete Slab
- Windows: Single glazed low-e clear
- Skylights: N/A
- Lighting: LED or compact fluorescent

Building class:

Class 6: *“A shop or other building for the sale of goods by retail or the supply of services direct to the public eg. Café, restaurant, kiosk, hairdressers, showroom or service station”.*

Class 3: *“a residential building, other than a building of Class 1 or 2, which is a common place of long term or transient living for a number of unrelated persons eg. boarding house, hostel, backpacker’s accommodation or residential part of a hotel, motel, school or detention centre.”*

References:**a) Plans:**

Mark Shapiro Architects. Received by STS on 1 March 2021

Project Number: 20008 (Revision A – 26/2/21)

Drawing Numbers: DA0000, DA1000, DA1200, DA2000 - DA2015, DA2300, DA2301, DA2302, DA2303, DA2304, DA2400, DA2401, DA2402, DA2403, DA2404, DA9000, DA9001, DA9002, DA9003, DA9004, DA9005, DA9100, DA9101, DA9102, DA9103, DA9104, DA9105, DA9200, DA9201.

b) National Construction Code 2019 Vol. 1

4 SUMMARY AND CERTIFIER CHECK:

Below is a summary of the energy efficiency actions required to meet the requirements of the NCC. Details are available in each relevant section.

Element	Insulation Requirements	Action	Certifier Check
Ceiling/Roof	Insulation is required in the concrete ceilings below any concrete walking surface above.	Add R3.05 (or 3.27 if insulation fills the air space).	
External Walls	Insulation is required in the 'envelope' walls: <ul style="list-style-type: none">- Brick veneer on steel frame, lined internally with plasterboard- Corridor Walls: steel stud lined internally with plasterboard	Add minimum insulation of R2.0 Add minimum insulation of R2.0	
Walls other than External: (dividing conditioned & non-conditioned space)	<ul style="list-style-type: none">- Walls separating rooms with fire stairs: steel stud lined internally with plasterboard	Add minimum insulation of R2.0	
Floor	Insulation is required in concrete slab: <ul style="list-style-type: none">i) Level 1 Floor (over open air or non-conditioned spaceii) Café floor (over basement car park):	Add minimum insulation of R1.24 Add minimum insulation of R1.48	
External Glazing	Cafe: Ground floor: Single glazed low-e clear: U-Value=5.8/SHGC=0.55 Boarding Rooms: Levels 1 - 5: Single glazed low-e clear: U-Value=5.8/SHGC=0.55	Ensure that a certificate of compliance is supplied with the windows.	

J3: Building Sealing

Sealing of new doors and windows is required. Refer to the relevant sections below for details.

J5: Air Conditioning and Ventilation Systems:

Refer to the design and installation requirements of the Mechanical Engineer or trade contractor's specifications.

J6: Artificial Lighting and Power:

See Section 10 further requirements on interior lighting and control.

J7: Heated Water Supply & Swimming Pool & Spa Pool Plant:

Hot water system to be installed in accordance with Part B2 of NCC Volume 3 – Plumbing Code of Australia.

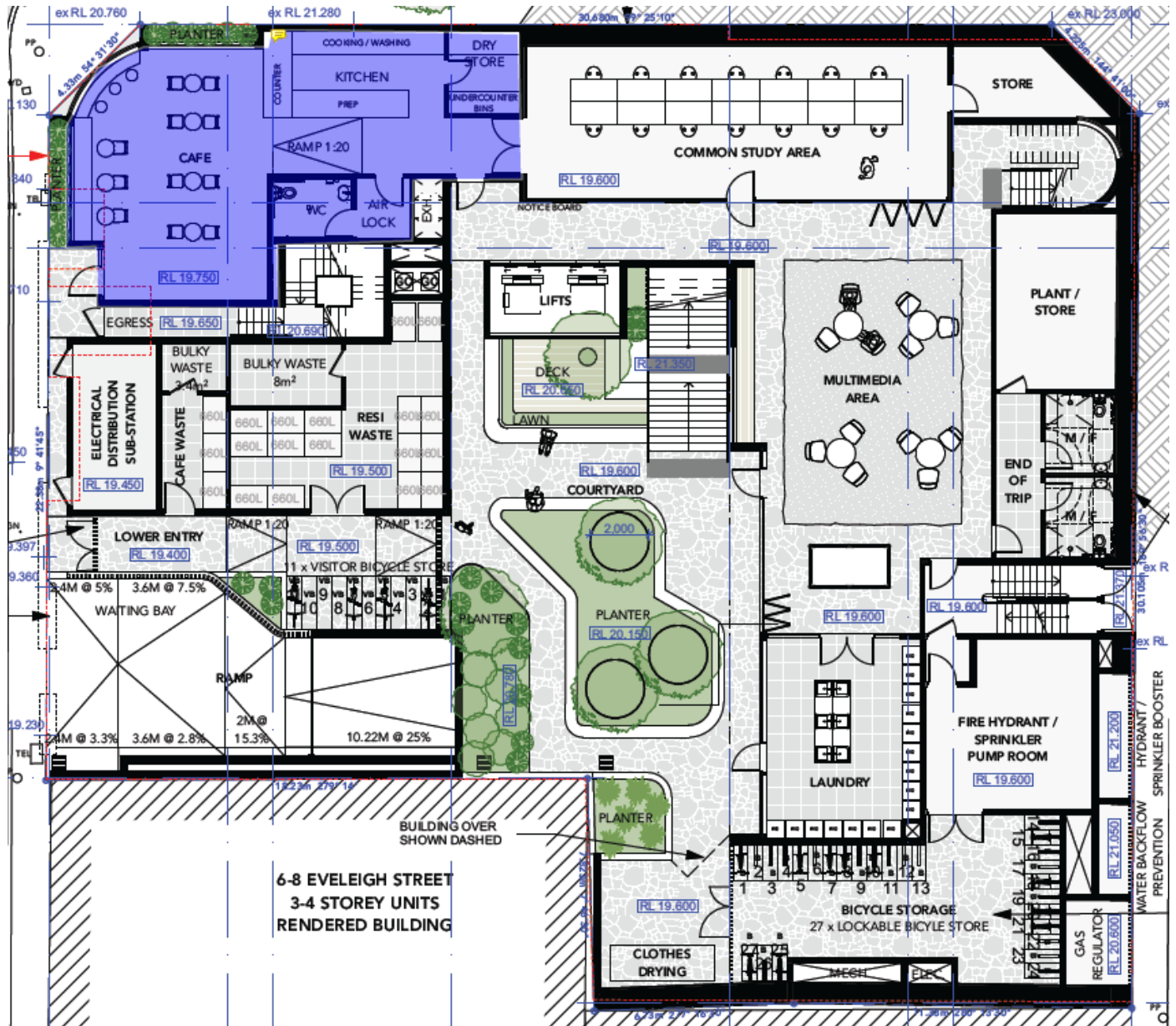
J8: Facilities for Energy monitoring:

A building with a floor area of more than 2500 m² must have energy meters configured to enable individual time-of-use energy consumption data recording, in accordance with (c), of the energy consumption of appliances, lighting, A/C, central hot water, lifts and other plant equipment.

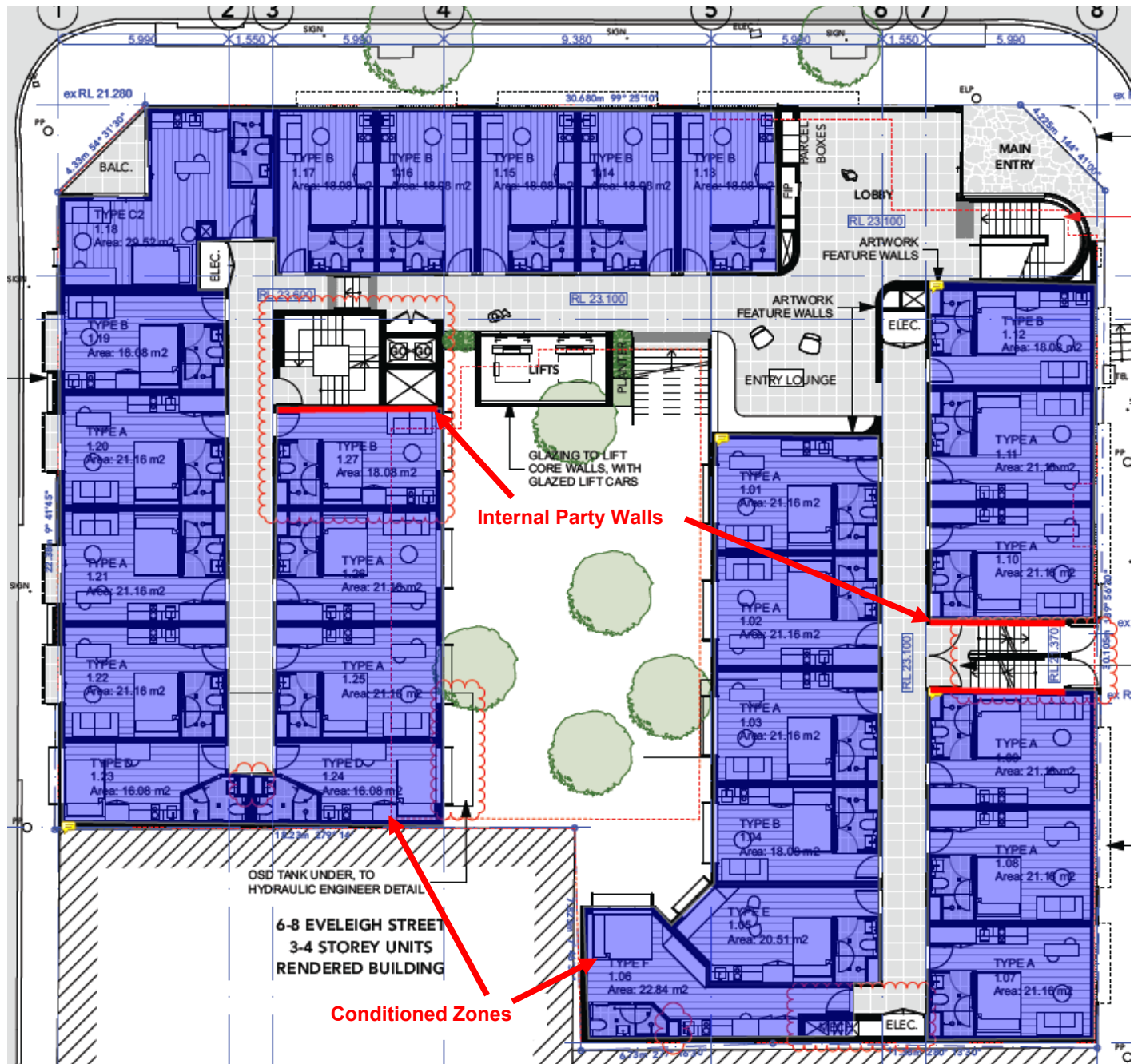
Figure 5.1 (Floor Plan):



Ground Floor:



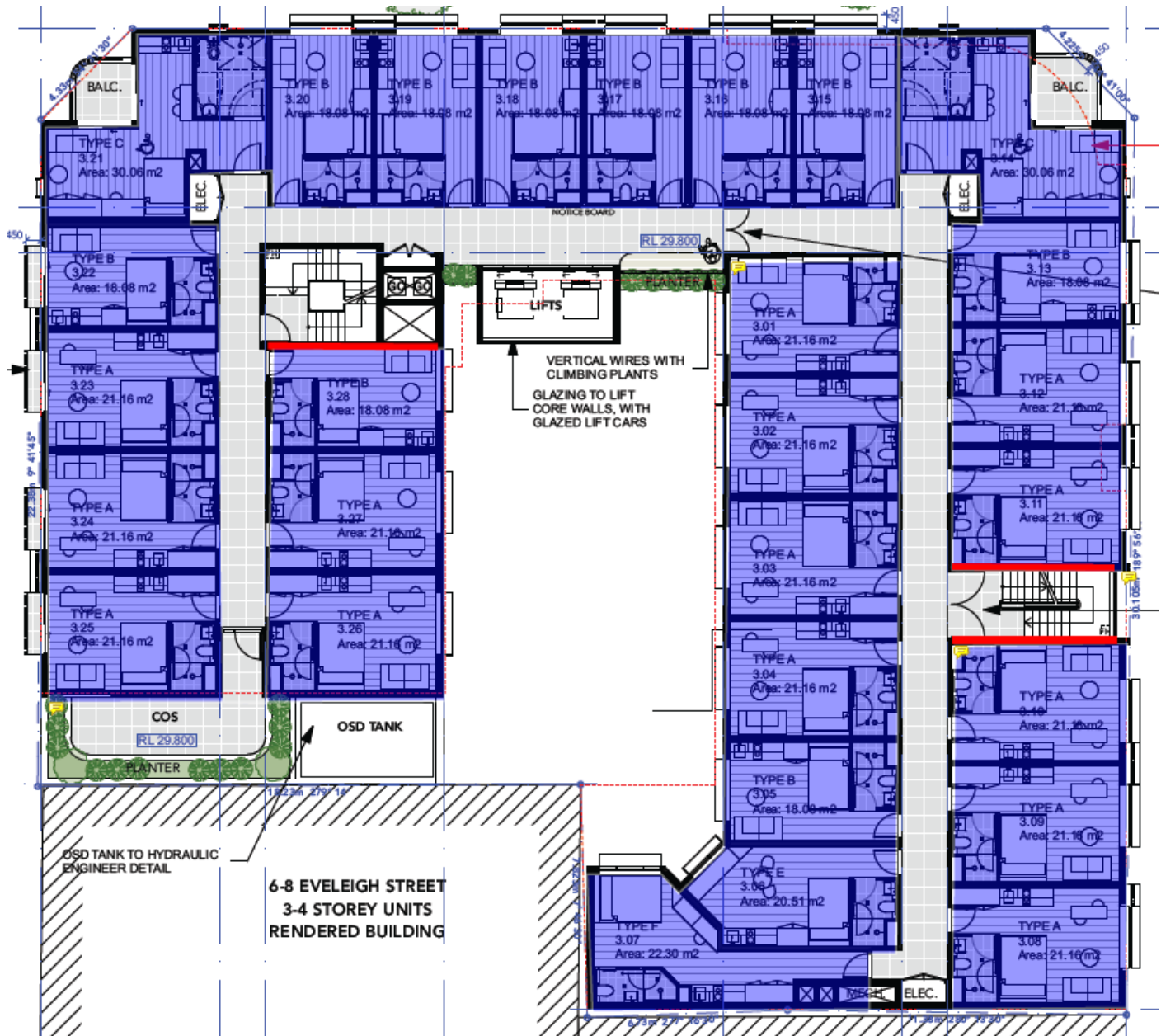
Level 01:



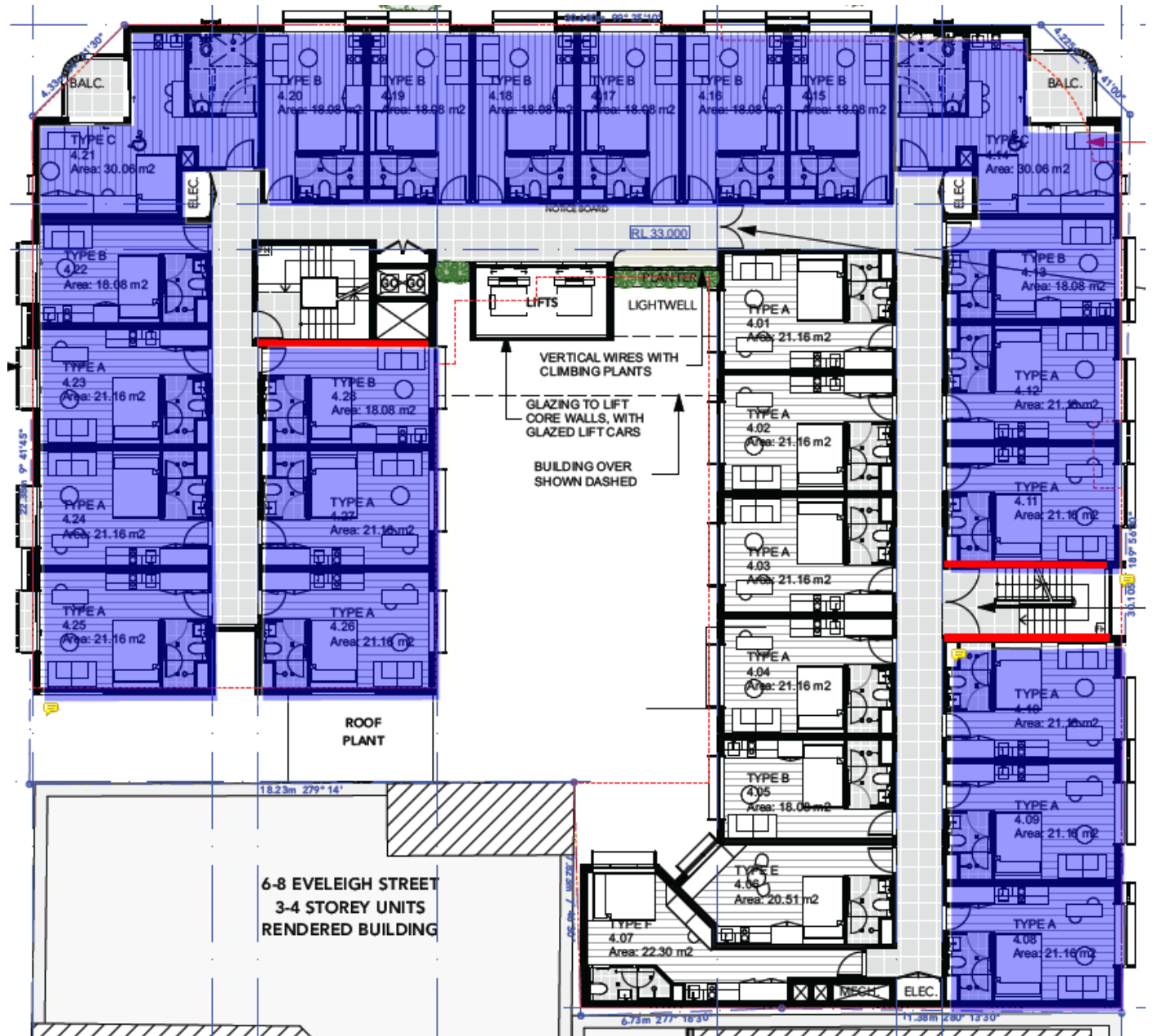
Architectural floor plan of a 3-storey rendered building at 6-8 Eveleigh Street. The plan shows various unit types (A, B, C) with their respective areas in square meters. Key features include a central lift core with stairs, a planter area, and a notice board. The building is surrounded by a hatched area representing the ground level. The plan is detailed with room layouts, furniture, and structural elements.

6-8 EVELEIGH STREET
3-4 STOREY UNITS
RENDERED BUILDING

Level 03:



Level 04:



Level 05:

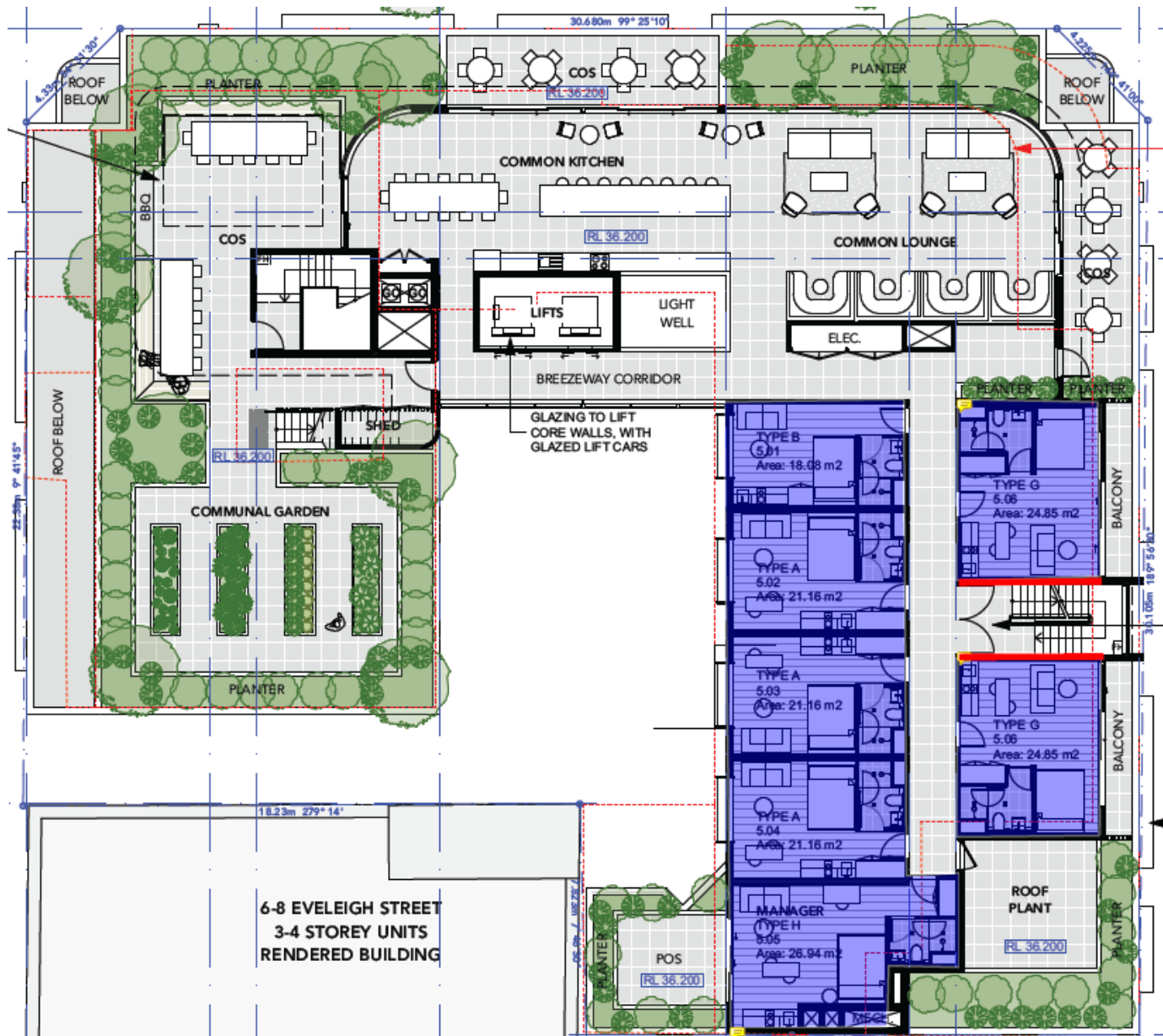


Figure 5.2 (Elevations):

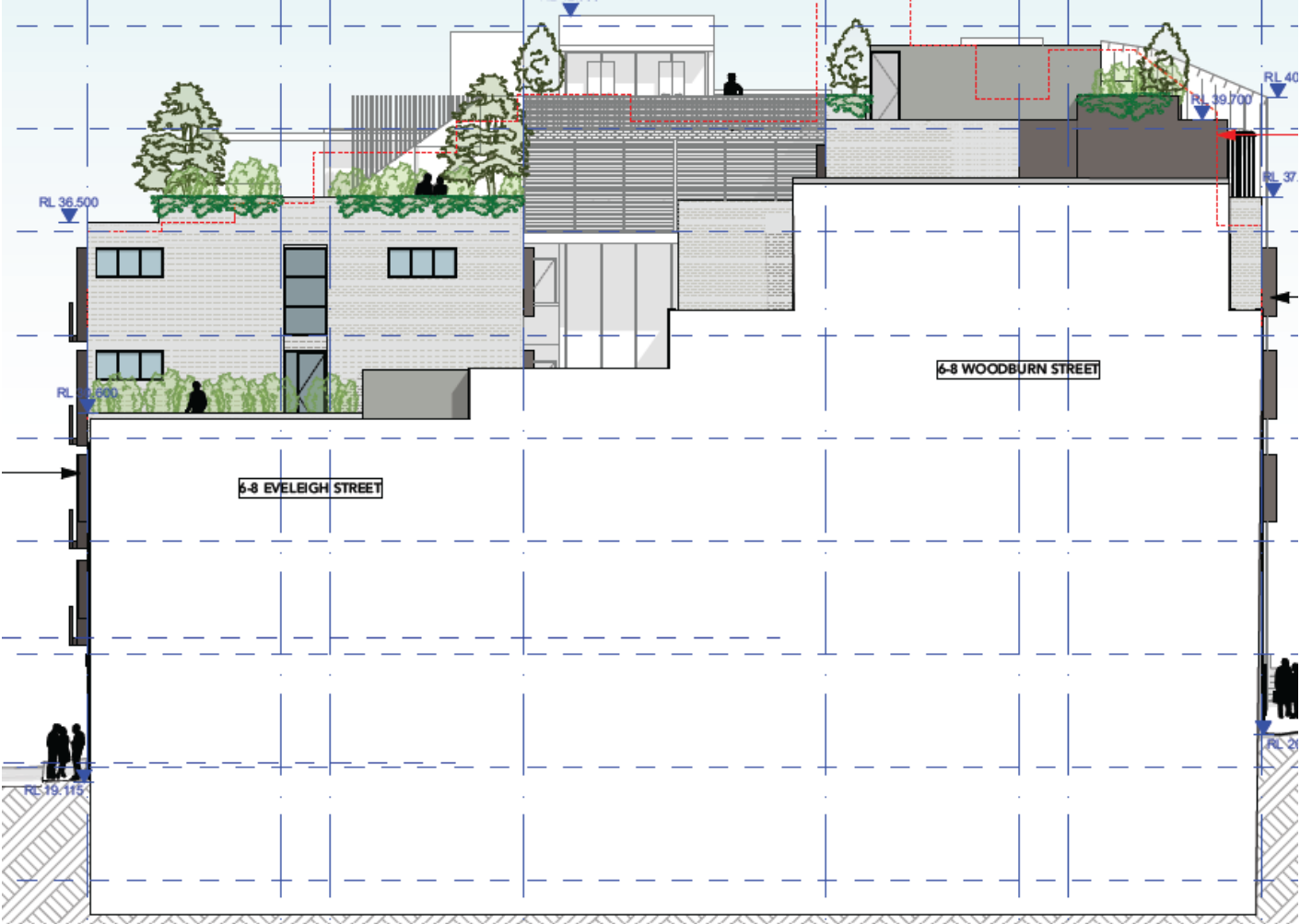
North:



East:



South:



West:



Following is the detail of each part of Section J of the NCC:

Part J1 is applicable only to NEW or ALTERED building works forming part of the external envelope around conditioned areas and the envelope separating the conditioned space from non-conditioned space.

5 PART J1: BUILDING FABRIC

The NCC Part J1 is concerned with the following 4 provisions:

- J1.3 – Roof and ceiling construction
- J1.4 – Roof lights
- J1.5 – Walls
- J1.6 – Floors

The provisions in Part J1 apply to the conditioned spaces in the proposed development. The NCC uses the term 'envelope' to demarcate the conditioned space from non-conditioned space and the exterior of the building. A space is deemed to be conditioned if the air contained will be actively heated or cooled by an air-conditioning service (see definitions at the end of this report).

The diagram above shows the building envelope (Figure 5.1) which is shaded in blue. This is the boundary between the conditioned and non-conditioned zones (or outdoor space).

5.1 J1.2: THERMAL CONSTRUCTION GENERAL

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

5.2 J1.3: ROOF AND CEILING CONSTRUCTION

5.2.1 Roof and ceiling insulation requirement

As per Part J1.3(a), a building's roof & ceiling in climate zone 5 that is part of the 'envelope' is required to achieve a total R-Value of **R3.7** in a downwards direction.

In climate zone 5, the solar absorptance of the upper surface of a roof must not be more than **0.45**.

The following Rooms contain a ceiling/roof below a concrete walking surface above and are required to be insulated:

- Level 2: 2.26-2.27
- Level 4: All rooms except 4.02-4.06
- Level 5: All rooms

This ceiling and roof achieves the following R-Values:

Roof Type: Solid concrete roof to 5°, suspended plaster ceiling		R-Value (heat flow direction: downwards)
1	Outdoor air film (7m/s)	0.04
2	Waterproof membrane, rubber synthetic (4mm, 961 kg/m ³)	0.03
3	Solid Concrete (200mm, 2400 kg/m ³)	0.14*
4	Ceiling Air Space (100mm to 300mm, non-reflective)	0.22
5	Plasterboard (10mm)	0.06
6	Indoor air film (still air)	0.16
Total R-Value		0.65[#]

NB:

*This is calculated from table 2a in Specification J1.2 of the NCC 2019 Vol1 where the thermal conductivity of solid concrete is 1.44.

#This R-Value calculation has assumed there will be no thermal bridging between the concrete and plasterboard ceiling as there will be no studs.

Table 5.2a:

R-Value for Roof & Ceiling Construction	Insulation R-Value Requirements	Action to Achieve Compliance
0.65	3.7 required: Additional insulation needed is: $3.7 - 0.65 = \mathbf{3.05}$	Add minimum insulation of R3.05 to the ceiling below the concrete tiled walking surface above
Assuming the insulation fills the air space between the concrete and plasterboard (air space = 0.22). $0.65 - 0.22 = 0.43$	3.7 Required. Additional R-Value is $3.7 - 0.43 = \mathbf{3.27}$	Addition minimum insulation of R3.27 to the ceiling below the concrete tiled walking surface above

5.3 J1.4: ROOF LIGHTS

5.1.1 Roof light performance requirement

This section of the NCC is not applicable as there are no roof lights being installed directly over the conditioned zones.

5.4 J1.5: WALLS AND GLAZING

5.4.1 Requirement

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

The total system U-Value of wall-glazing construction must not be greater than:

- 2.0 for a Class 6 (retail) building in climate zone 5
- 2.0 for a Class 3 (boarding room) building in climate zone 5

The 'conditioned' areas are indicated in Figure 5.1 with purple shading. The walls surrounding this 'conditioned' space are the building 'envelope'. These walls therefore need to comply with the NCC.

The internal party walls dividing the conditioned space (of the rooms) with enclosed non-conditioned space (ie. Fire stairs) is also required to be insulated.

The following option in table 5.4a below will achieve compliance:

Table 5.4a:

External Wall Insulation:

i) Class 3 (Boarding Rooms):

Required Total Wall Construction R-Value	Typical Construction Specifications	*Required Added Insulation
North, East & West: R1.0 South: R1.4	External Walls: - Brick Veneer on a steel stud frame lined internally with plasterboard -Corridor Party Walls: Steel stud wall lined internally with plasterboard Internal Party Wall: - Party wall with fire stairs: Steel stud wall lined internally with plasterboard	Add minimum insulation of R2.0 Add minimum insulation of R2.0 Add minimum insulation of R2.0

ii) **Commercial Space: Café (Ground Floor):**

Required Total Wall Construction R-Value	Typical Construction Specifications	*Required Added Insulation
South & North: R1.4 West: R1.0 .	External Walls: - Brick Veneer on a steel stud frame lined internally with plasterboard Internal Party Wall: - Party wall with fire stairs: Steel stud wall lined internally with plasterboard	Add minimum insulation of R2.0 Add minimum insulation of R2.0

Table 5.4b: Glazing Requirements:

		*Minimum Requirements (incl. frame)		Additional Shading Devices Required	
Level/Description	Orientation	U-Value (≤)	SHGC (±10%)		#Typical Glazing
Ground: Commercial	N & W	5.8	0.55	None	Single glazed low-e clear
Boarding Rooms: Levels 1 to 4	All	5.8	0.55	None	Single glazed low-e clear

See **Appendix 1** at the end of this report for a façade report summary generated by the ABCB Façade Calculator for confirmation of compliance of the U-Value and solar admittance for each façade. Compliance was achieved with Method 2.

The performance figures & specifications are indicative only and may vary depending on the chosen manufacturer & supplier.

***The glazing manufacturer must provide performance data to show that the selected glazing complies with the values in the table through the WERS certification.**

NB: The following links to the WERS website provides information on the window manufacturers which are certified under WERS and the energy rating of each of their glazing products: <http://www.wers.net/>

5.5 J1.6: FLOORS

5.5.1 Floor insulation requirement

A floor over non-conditioned air or on ground that is part of the 'envelope' must achieve the minimum Total R-Value in a downwards and upwards direction or satisfy one of the options as specified in Table J1.6.

As per table J1.6, this floor is required to achieve a minimum R-Value of **R2.0** in the downwards direction in climate zone 5.

The new floor of the conditioned cafe on the ground level is over the non-conditioned car park entry below and the ground floor over the basement car park is suspended over the non-enclosed and non-conditioned space of the ground floor.

iii) Café: Ground Floor (over car park):

Floor type: Suspended concrete slab		R-Value
1	Indoor air film	0.16
2	Concrete (200mm)	0.14
3	Sub-floor air space R-Value	0.22
Total R-Value		0.52

The following options in table 5.3a below will achieve compliance:

Table 5.3a:

Insulation Provided by Construction	Required R-Value	Required Action to Achieve Compliance
0.52	R2.0 Required. Additional R-Value is $2.0 - 0.52 = 1.48$	Addition minimum insulation of R1.48

iv) Boarding Rooms: Level 1 (over non-conditioned space/air):

Floor type: Suspended concrete slab		R-Value
1	Indoor air film	0.16
2	Concrete (200mm)	0.14
3	Sub-floor air space R-Value	0.46
Total R-Value		0.76

The following options in table 5.3a below will achieve compliance:

Table 5.3a:

Insulation Provided by Construction	Required R-Value	Required Action to Achieve Compliance
0.76	R2.0 Required. Additional R-Value is $2.0 - 0.76 = \mathbf{1.24}$	Addition minimum insulation of R1.24

6 PART J2: GLAZING

This part is blank as it was removed by the NCC in the 2019 version and integrated into Part J1 (Building Fabric).

7 PART J3: BUILDING SEALING

7.1 J3.2: CHIMNEYS AND FFLUES

Not applicable

7.2 J3.3: ROOF LIGHTS

Not applicable

7.3 J3.4: WINDOWS AND DOORS

A seal to restrict air infiltration must be fitted to each edge of a new door, openable window or the like forming part of the envelope of a conditioned space in climate zones 4, 5, 6, 7 or 8.

Above requirements do not apply to:

- a) Windows complying with AS2047 (Windows in Buildings – Selection and Installation) or
- b) A fire door or smoke door or
- c) A roller shutter door, roller shutter grill or other security or device installed only for out-of-hours security

The seal on the bottom of an external swing door must be a draft protection device and for the other edges of an external door or edges of an openable window or other such opening, may be foam or rubber compression strip, fibrous seal or the like.

As per Clause J3.4d, an entrance to a building, if leading to a conditioned space must have an air lock, self-closing door, rapid roller door, revolving door or the like, other than:

- i) where the conditioned space has a floor area of not more than 50m²; or
- ii) where a café, restaurant, open front shop or the like has-
 - a. a 3m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and
 - b. At all other entrances to the café, restaurant, open front shop or the like, self-closing doors.
- iii) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like

7.4 J3.5: EXHAUST FANS

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

7.5 J3.6: CONSTRUCTION OF CEILINGS, WALLS AND FLOORS

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 when forming part of the envelope or in climate zones 4, 5, 6, 7 or 8. This must be constructed by:

- enclosing by internal lining systems that are close fitting at ceiling, wall and floor junctions or,
- sealed by caulking, skirting, architraves, cornices, expanding foam, rubber strips or the like.

The above requirements do not apply to openings, grilles or the like required for smoke hazard management.

7.6 J3.7: EVAPORATIVE COOLERS

Not applicable.

8 PART J4

This part is blank as it was removed by the NCC in a previous version.

9 PART J5: AIR CONDITIONING AND VENTILATION SYSTEMS

Refer to the Mechanical Engineer's documentation for compliance requirements for air-conditioning.

10 PART J6: ARTIFICIAL LIGHTING AND POWER

10.1 J6.2 ARTIFICIAL LIGHTING

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 adjusted 'illumination power density' (IPD) – see last column on the following page for the total maximum Watts allowable for each room. This excludes any emergency lighting, signage or display cabinet lighting or a heater where the heater also emits light.

The aggregate design illumination power load is the sum of the design illumination power loads in each of the spaces served. In determining this design illumination power load, where there are multiple lighting systems serving the same space;

- i) The total illumination power load of all systems must be used; or
- ii) For a control system that permits only one system to operate at a time, the design illumination power load is:
 - a. Based on the highest illumination power load; or
 - b. Determined by the formula:

$$(H \times T/2 + P \times (100 - T/2))/100$$

Where:

H=the highest illumination power load; and

T=the time for which the maximum illumination power load will occur, expressed as a percentage; and

P=the predominant illumination power load.

Table A:

Room	Levels	Unadjusted IPD	Area	Adjusted IPD	*Control Factor	#Max Power (W) Per Unit
Café	Ground	14	51.30	20.9	1.0	1073
Cafe Kitchen	Ground	4	31.80	6.2	1.0	198
Dry Store Room	Ground	1.5	6.30	2.7	1.0	17
Café WC	Ground	3	5.10	5.4	1.0	28
Café Waste Room	Ground	1.5	11.70	2.6	1.0	31

NB:

- *Any control devices such as lighting timers, motion detectors, daylight sensors or dynamic lighting control devices used for any zones listed in the table above must comply with Specification J6 of the NCC Volume 1 2019.
- Only the maximum power output requirements for the commercial areas have been included in the table above as the lighting requirements for the Boarding rooms and related common spaces were covered under BASIX (see the 'Energy' section of the BASIX Report).

10.2 J 6.3 INTERIOR ARTIFICIAL LIGHTING AND CONTROL

Artificial lighting of a room or space must be individually operated by a switch or other control device or a combination of both. An artificial lighting switch must be located in a visible and easily accessible position in the room or space being switched or in an adjacent room or space from where 90% of the lighting being switched is visible.

An occupant activated device such as a room security device, a motion detector in accordance with Specification J6, or the like, must be provided in sole occupancy units of Class 3, other than where the accommodation is for people with a disability or the aged, in order to cut power of the artificial lighting, air conditioning, local exhaust fans and bathroom heaters when the sole occupancy unit is unoccupied.

An artificial lighting switch or other control device must, for other than a single functional space such as an auditorium, theatre, swimming pool, sporting stadium or warehouse:

- Not operate lighting for an area of more than 250 m² if in a Class 5 or 8 building, or
- Not operate lighting for an area of more than 250 m² for a space of not more than 2000 m²

Artificial lighting in a fire-isolated stairway, fire-isolated passageway or fire-isolated ramp, must be controlled by a motion detector in accordance with Specification J6.

Artificial lighting for daytime travel in the first 19m of travel in a carpark entry zone must be controlled by a daylight sensor in accordance with Specification J6.

Artificial lighting in a foyer, corridor and other circulation spaces of more than 250 W within a single zone and adjacent to windows must be controlled by a daylight sensor and dynamic control device in accordance with Specification J6.

10.3 J 6.4 INTERIOR DECORATIVE AND DISPLAY LIGHTING

Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled-

- a) Separately from other artificial lighting; and
- b) By a manual switch for each area other than when the operating times of the displays are the same in an area, in which case they may be combined.
- c) By a time switch in accordance with Specification J6 where the display exceeds 1Kw.

Window display lighting must be controlled separately from other display lighting.

10.4 J6.5 ARTIFICIAL LIGHTING AROUND THE PERIMETER OF A BUILDING

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 loads exceeds 100W:

- a) use LED luminaires for 90% of the total lighting load, or
- b) be controlled by a motion detector in accordance with Specification J6, or
- c) when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification with J6.

The requirements in ii) above do not apply to emergency lighting in accordance with Part E4.

10.5 J6.6 BOILING WATER AND CHILLED WATER STORAGE UNITS

Not applicable

10.6 J6.7 LIFTS

Lifts must be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes and achieve the idle and standby energy performance level in Table 6.7a and achieve the energy efficiency class in Table 6.7.

10.7 J6.8 ESCALATORS AND MOVING WALKWAYS

Not applicable

11 PART J7: HEATED WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT

11.1 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.

11.2 J7.3: SWIMMING POOL HEATING AND PUMPING

Not applicable

11.3 J7.4: SPA POOL HEATING AND PUMPING

Not applicable

12 PART J8: FACILITIES FOR ENERGY MONITORING

12.1 J8.3: FACILITIES FOR ENERGY MONITORING

- a) A building or sole occupancy unit with a floor area of more than 500 m² must have an energy meter configured to record the time-of-use consumption of gas and electricity.
- b) A building with a floor area of more than 2500 m² must have energy meters configured to enable individual time-of-use energy consumption data recording, in accordance with (c), of the energy consumption of:
 - a. Air conditioning plant including, where appropriate, heating plant, cooling plant and air handling & fans,
 - b. Artificial lighting &
 - c. Appliance power &
 - d. Central hot water supply &
 - e. Internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building &
 - f. Other ancillary plant
- c) Energy meters required by (b) must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed.

13 DEFINITIONS

The following definitions from the 2019 NCC (Volume 1) are relevant to this Section J Report:

Envelope

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.

Habitable room

Means a room used for normal domestic activities, and:

- (a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom; but
- (b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.

Conditioned space

Means a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by air-conditioning, but does not include:

Air-conditioning

A service that actively cools or heats the air within a space, but does not include a service that directly cools or heats cold or hot rooms or; maintains specialised conditions for equipment or processes, where this is the main purpose of the service.

Bulk Insulation

Has a high resistance to the flow of heat by conduction. It includes Fibreglass, Rockwool, Glass Wool, Polyester, expanded or extruded polystyrene or other similar materials.

R-Value (m². K/W)

Means the thermal resistance of a component calculated by dividing its thickness by its thermal conductivity.

End of report

Appendix 1



Façade

Report



Calculator

Project Summary

Date
19/02/2021

Name
Bruce Carr

Company
Sustainable Thermal Solutions

Position
Owner Operator

Building Name / Address
CAFE: 175-177 Cleveland St Redfern NSW
0

Building State
NSW

Climate Zone
Climate Zone 5 - Warm
temperate

Building Classification
Class 6 - restaurants, cafes,
bars

Storeys Above Ground
1

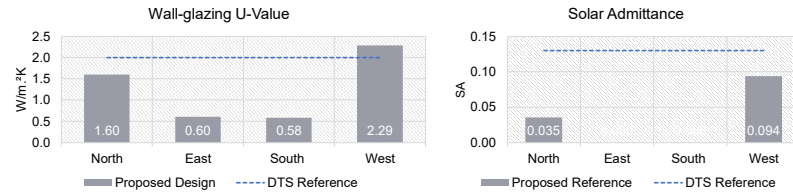
Tool Version
1.1 (April 2020)

The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Aspects).

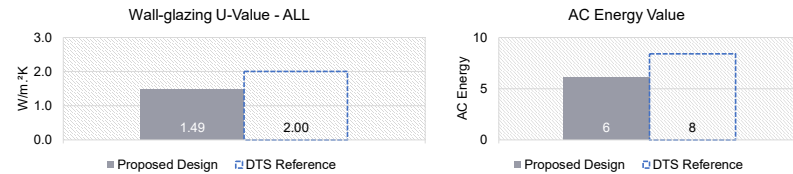
Compliant Solution =
Non-Compliant Solution =

	North	East	Method 1 South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.60	0.60	0.58	2.29	1.49
Solar Admittance	0.04			0.09	
AC Energy Value					6

Method 1



Method 2



Project Details

	North	East	South	West
Glazing Area (m²)	13.675348	0	0	12.058
Glazing to Façade Ratio	20%	0%	0%	33%
Glazing References	W1 W2			W1 W2
Glazing System Types	Sliding Door	Sliding Door		Sliding Door
Glass Types	Single Glazing - low-E coating			Single Glazing - low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	5.80			5.80
Average Glazing SHGC	0.21	0.00	0.00	0.33
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	55.77	14.57	25.67	24.87
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Brick Veneer (steel frame)-R2.0 Internal Party Walls-Steel stud (R2.0)	Internal Party Walls-Steel stud (R2.0)	Brick Veneer (steel frame)-R2.0 Internal Party Walls-Steel stud (R2.0)	Brick Veneer (steel frame)-R2.0 Internal Party Walls-Steel stud (R2.0)
Wall Thickness	210 100	100	210 100	210

	Average Wall R-value (m².K/W)	1.77	1.66	1.72	1.72
	Solar Absorptance	0.7	0.7	0.7	0.7



Façade

Report



Calculator

Project Summary

Date
27/01/2021

Name
Bruce Carr

Company
Sustainable Thermal Solutions

Position
Owner Operator

Building Name / Address
Boarding House: 175-177 Cleveland St Redfern NSW
0

Building State

NSW

Climate Zone
Climate Zone 5 - Warm
temperate

Building Classification
Class 3 - student
accommodation

Storeys Above Ground
6

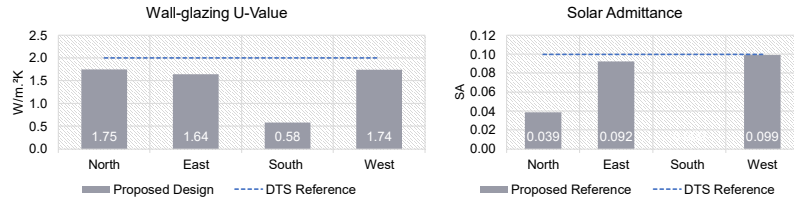
Tool Version
1.1 (April 2020)

The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Aspects).

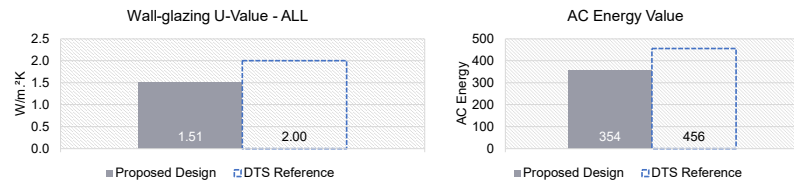
Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.75	1.64	0.58	1.74	1.51
Solar Admittance	0.04	0.09		0.10	
AC Energy Value					354

Method 1



Method 2



Project Details

	North	East	South	West
Glazing Area (m²)	171.9	211.28	0	228.93
Glazing to Façade Ratio	22%	20%	0%	22%
Glazing References	w1 w2 w3 w4 w5 w6 w7	w1 w2 w3 w4 w5		w1 w2 w3 w4 w5 w6 w7 w8
Glazing System Types	Awning	Awning		Awning
Glass Types	Single Glazing - low-E coating	Single Glazing - low-E coating		Single Glazing - low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	5.80	5.80		5.80
Average Glazing SHGC	0.26	0.51	0.00	0.51
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	597.62	834.1	598.7	803.22
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
	Brick Veneer (steel frame)-R2.0 Steel cladding to steel	Brick Veneer (steel frame)-R2.0 Steel cladding to steel	Brick Veneer (steel frame)-R2.0 Steel cladding to steel	Brick Veneer (steel frame)-R2.0

	Wall Construction	frame (R2.0) Corridor Stud Wall (R2.0) Firestairs Stud Wall	R2.0 Steel cladding to steel frame (R2.0) Corridor Stud Wall (R2.0)	R2.0 Steel cladding to steel frame (R2.0) Corridor Stud Wall (R2.0)	Steel cladding to steel frame (R2.0) Corridor Stud Wall (R2.0)
	Wall Thickness	210 100	210 100	210 100	210
	Average Wall R-value (m².K/W)	1.72	1.71	1.73	1.71
	Solar Absorptance	0.7	0.7	0.7	0.7