



Section J DTS Report President Private Hospital For Imagescape Design Studios

Revision	Date	Description	Author	Reviewer
0	24/06/20	Preliminary Issue	AS	EP

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Contents

Introduction	3
Reference Documents	3
NCC Section J Assessment	4
Section J1 Building Fabric	5
Section J3 Building Sealing	8
Appendix A – Façade Calculator	10
Appendix B – Thermal Envelope Mark-up on represented floors.....	11

Introduction

A preliminary assessment has been completed to determine the building fabric and glazing performance to achieve compliance with NCC 2019 Section J1 and J3 for the President Private Hospital (PPH) redevelopment at 369 – 381 President Avenue, Kirrawee NSW 2232.

Under NCC 2019, the NCC 2019 façade calculator is used for the assessment of Part J1.5 Building Fabric DTS provisions. The Part J1.5 assess the wall-glazing construction i.e. the combination of wall and glazing components comprising the building envelope. Hence, for works that involve new glazing replacement onto existing walls, the compliance of these new glazing will be determined by applying the performance of new walls uniformly across the existing walls of that single aspect. This approach is adopted solely for the purpose of assessing the performance of the new glazing to be installed. This assessment has been conducted on the assumption that existing fabric and glazing that are being retained would not be required to be brought up to code. The values in this report, therefore, applies only to new fabric and glazing. The building surveyor should confirm that this approach is acceptable for this development.

The NCC 2019 is applicable only to new building works portion, the parts of a new building's fabric that separate a conditioned space from exterior of the building or a non-conditioned space e.g. carpark or the like.

In this assessment, the following items will be addressed for the new building works portion:

- J1 Building Fabric (Wall and Glazing); and
- J3 Building Sealing.

The building surveyor should confirm that this approach is acceptable for this development.

Building Description

The development involves the construction of a 3-storey hospital building located at 369 – 381 President Avenue, Kirrawee NSW 2232.

BCA Classification and Climate Zone

The project is located in Kirrawee, NSW 2232, which is within the Australian Building Codes Board (ABCB) Climate zone 5, warm temperature area. The building is considered to be Class 9a. This should be confirmed by the building surveyor.

Reference Documents

Building Code of Australia

The guidelines from NCC BCA 2019 Volume 1 is used in this report.

Drawings

This report is based on the following architectural drawings received –

Architect: Imagescape Design Studios
Suite G10, 55 Miller St,
Pymont NSW 2009

The relevant documents and drawings used in compiling this report are as follows:

Project Reference	Drawing No.	Rev.	Title
MacHealth-06	A 001	54	Title Sheet
MacHealth-06	A 005	54	Perspective 1
MacHealth-06	A 006	54	Perspective 2

MacHealth-06	A 007	54	Perspective 3
MacHealth-06	A 008	54	Site Analysis
MacHealth-06	A 009	54	Site Analysis Diagrams 1
MacHealth-06	A 010	54	Site Analysis Diagrams 2
MacHealth-06	A 011	54	Transport Connections
MacHealth-06	A 012	54	Concrete Foot Paths
MacHealth-06	A 013	54	Site Wayfinding
MacHealth-06	A 014	54	Services Layout for Ground and First Floor
MacHealth-06	A 016	54	Construction Planning
MacHealth-06	A 017	54	Shadow Analysis – Winter Solstice 9AM
MacHealth-06	A 018	54	Shadow Analysis – Winter Solstice 12PM
MacHealth-06	A 019	54	Shadow Analysis – Winter Solstice 3PM
MacHealth-06	A 024	54	Existing Site Plan
MacHealth-06	A 025	54	Proposed Site Context Plan
MacHealth-06	A 026	54	Site Setout Plan
MacHealth-06	A 100	54	Existing Floor Plan
MacHealth-06	A 102	54	Basement Plan LVL 3 & 4
MacHealth-06	A 103	54	Basement Plan LVL 1 & 2
MacHealth-06	A 104	54	Ground Floor General Arrangement Plan
MacHealth-06	A 105	54	First Floor General Arrangement Plan
MacHealth-06	A 107	54	Second Floor General Arrangement Plan
MacHealth-06	A 108	54	Roof Plan General Arrangement Plan
MacHealth-06	A 114	54	Ground Floor Demolition Plan
MacHealth-06	A 300	54	South & East Elevations
MacHealth-06	A 302	54	North & West Elevations
MacHealth-06	A 401	54	East/ West Sections
MacHealth-06	A 402	54	North/ South Sections

Table 1: Reference documents

NCC Section J Assessment

The performance requirements of Section JP1 Energy use are as follows;

A building, including its services, must have features that facilitate the efficient use of energy appropriate to—

- (a) the function and use of the building; and
- (b) the level of human comfort required for the building use; and

I solar radiation being—

- (i) minimize for heating; and
- (ii) controlled to minimize energy for cooling; and

- (d) the energy source of the services; and

I the sealing of the building envelope against air leakage; and

(f) for a conditioned space, achieving an hourly regulated energy consumption, averaged over the annual hours of operation, of not more than—

- (i) for a Class 6 building, 80 kJ/m².hr; and

- (ii) for a Class 5, 7b, 8 or 9a building other than a ward area, or a Class 9b school, 43 kJ/m².hr; and
- (iii) for all other building classifications, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, 15 kJ/m².hr.

The NCC has a set of criteria under Deemed to Satisfy provisions (DTS). This allows the building to be assessed as deemed to comply with the building code if it can achieve (or exceed) those specific criteria.

For the purpose of this preliminary assessment, the building will be examined against the DTS criteria for J1 (Building Fabric) and J3 (Building Sealing) only.

Section J1 Building Fabric

Building envelope

The requirements of Section J1 apply to building elements that form part of the envelope. The envelope refers to parts of a building's fabric (i.e. roofs, walls, glazing and floors) that separates a conditioned space from a non-conditioned space or building exterior.

The thermal performance of each part of the building fabric is required to comply with the total minimum overall R-values in Table 2 below. The values are inclusive of building materials, air-gaps, insulation etc and should be utilised in conjunction with the attached thermal envelope mark-up on representative floors in Appendix B.

Building Envelope (Walls, Floor and Roof/Ceiling)	Min. DTS Total System R-Value (W/m ² K)
New roof/ ceiling – Over conditioned space (solar absorptance of upper surface of a roof must be ≤ 0.45)	R3.7 (for downward heat flow direction)
New floor – Direct contact with ground, or space below is enclosed, not-conditioned and mechanically ventilated by not more than 1.5 air changes per hour; or provided with not more than 150% of the aggregate sub-floor ventilation area required by NCC 2019 Part F1 and are not mechanically ventilated; or exposed and suspended above ground	R2.0
New walls separating conditioned from non-conditioned space or building exterior	R2.8

Table 2: Building Fabric minimum DTS Total System requirements.

Glazing

The assessment is based on the dimension of each glazing measured at each orientation of the facades in which they are indicated in the drawings.

Based on the latest version of the NCC 2019 Façade Calculator, the total system thermal performance requirements of U-Value and Solar Heat Gain Coefficient (SHGC) for each glazed component to comply with DTS conditions is as per Table 3 below. The glazing performance values are system values inclusive of frame elements.

Glazing System				
Orientation	Description	Type	U-Value (W/m ² K)	SHGC
All orientation	New glazed windows and doors	Single glazed tinted low-e unit	≤ 4.6	≤ 0.36

Table 3: System-value glazing performance requirements

Due to overall higher glazing to façade ratio (exceeding 30%) for each aspect, the Method 2 (Multiple Aspect) has been used for assessing the compliance with the DTS conditions. This will allow trading of thermal performance has been made between aspects with lower glazing to façade ratio (North and West) with the higher glazing to façade ratio facades at East and South. The nominated DTS compliant glazing performance is equivalent to a single glazed tinted low-e unit. For glazing with higher Visible Light Transmittance (VLT), the green colour range can be considered as it usually provides a higher VLT range compared to other shades of coloured glass tint.

Section J1.2 Thermal construction general

Insulation installation shall meet the following:

- 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.
- d) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification J1.2 of the Building Code of Australia Volume 1.
- e) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—
 - (i) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or
 - (ii) determined in accordance with Specification J1.5a for wall-glazing construction; or
 - (iii) determined in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.

Section J1.3 Roof and ceiling construction

New roof or ceiling that is part of the envelope must achieve the Total R-Value specified in Table 2.

Section J1.4 Roof Lights

There are no new roof lights at the conditioned space or habitable section of the building.

Section J1.5 Walls and Glazing

For the purpose of this Section, new wall and glazing components comprising the envelope of a building excluding—

- a) display glazing; and
- b) opaque non-glazed openings e.g. doors, vents, penetrations and shutters.

In assessing the thermal properties for building fabric (walls and glazing), the part of building fabric that separate a conditioned space or habitable room from the following must be considered:

- 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.

New walls and glazing that is part of the envelope must achieve the thermal performance specified in Table 2 and Table 3 respectively.

Section J1.6 Floors

New floors that is part of the envelope must achieve the Total R-Value specified in Table 2.

For the purpose of calculating the Total R-value of a floor, Table 4 details the R-values considered to be achieved by the soil for floors that are in direct contact with the ground —

Ratio of Floor area to floor perimeter (m)	Wall thickness of					
	50mm	100mm	150mm	200mm	250mm	300mm
1.0	0.4	0.5	0.5	0.6	0.7	0.8
1.5	0.6	0.7	0.7	0.8	0.9	1.0
2.0	0.7	0.8	0.9	1.0	1.1	1.3
2.5	0.9	1.0	1.1	1.2	1.3	1.5
3.0	1.0	1.2	1.3	1.4	1.5	1.7
3.5	1.2	1.3	1.5	1.6	1.7	1.9
4.0	1.3	1.5	1.6	1.7	1.9	2.2
4.5	1.5	1.7	1.8	1.9	2.1	2.4
5.0	1.6	1.8	2.0	2.1	2.3	2.6
5.5	1.8	2.0	2.1	2.2	2.4	2.8
6.0	1.9	2.1	2.3	2.4	2.6	2.9
6.5	2.0	2.3	2.4	2.6	2.8	3.1
7.0	2.2	2.4	2.6	2.7	3.0	3.3

Table 4: R-Value of soil in contact with a floor (Ref: NCC 2019 Specification 1.6, Table 2b). Where a wall thickness or ratio of floor area to floor perimeter is between the values stated above, interpolation may be used to determine the soil R-value.

For the purpose of calculating the Total R-value of a floor, Table 5 details the R-values considered to be achieved by enclosed sub-floor spaces that are —

- (i) mechanically ventilated by not more than 1.5 air changes per hour; or
- (ii) provided with not more than 150% of the aggregate sub-floor ventilation area required by Part F1 and are not mechanically ventilated.

Ratio of Floor area to floor perimeter (m)	Sub-floor space R-Value
1.0	0.10
1.5	0.15
2.0	0.20
2.5	0.25
3.0	0.30
3.5	0.35
4.0	0.40
4.5	0.45
5.0	0.50
5.5	0.55
6.0	0.60
6.5	0.65
7.0	0.70

Table 5: R-Value of sub-floor spaces (Ref: NCC 2019 Specification 1.6, Table 2a). Where the ratio to floor perimeter is between the values stated, interpolation may be used to determine the sub-floor space R-Values.

Section J3 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 F4 provides sufficient pressurisation to prevent infiltration.

This section as with the other sections in this report is applicable to new works portion only.

Section J3.2 Chimneys and flues

There are no chimneys and flues at the conditioned space or habitable section of the building.

Section J3.3 Roof lights

There are no roof lights at the conditioned space or habitable section of the building.

Section J3.4 Windows and doors

- (a) A door, openable window or the like must be sealed—
 - (i) when forming part of the envelope; or
 - (ii) in climate zones 4, 5, 6, 7 or 8.
- (b) The requirements of (a) do not apply to—
 - (i) a window complying with AS 2047; or
 - (ii) a fire door or smoke door; or
 - (iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.
- (c) A seal to restrict air infiltration—
 - (i) for the bottom edge of a door, must be a draft protection device; and
 - (ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.
- (d) 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—
 - (i) where the conditioned space has a floor area of not more than 50 m²; or
 - (ii) where a café, restaurant, open front shop or the like has—
 - (A) a 3 m 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.
- (e) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.

Section J3.5 Exhaust fans

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

Section J3.6 Construction of roofs, walls and floors

- (a) 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 (b) when forming part of—
 - (i) the envelope; or


- (ii) in climate zones 4, 5, 6, 7 or 8.
- (b) Construction required by (a) must be—
 - (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
 - (ii) sealed at junctions and penetrations with—
 - (A) close fitting architrave, skirting or cornice; or
 - (B) expanding foam, rubber compressible strip, caulking or the like.
- (c) The requirements of (a) do not apply to openings, grilles or the like required for smoke hazard management.

Section J3.7 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper or the like—


- (a) when serving a heated space; or
- (b) in climate zones 4, 5, 6, 7 or 8.

Appendix A – Façade Calculator



Façade

Report



Calculator

Project Summary

Date
24/06/2020

Name
0

Company
0

Position
0

Building Name / Address
President Private Hospital
369 - 381 President Avenue, Kirrawee NSW 2232

Building State
NSW

Climate Zone
Climate Zone 5 - Warm temperate

Building Classification
Class 9a - health-care buildings

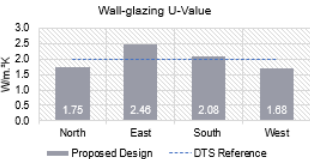
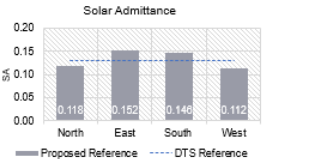
Storeys Above Ground
3

Tool Version
1.1 (April 2020)

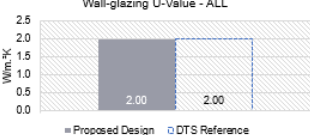
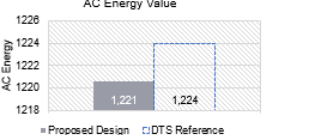
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Aspects).

	North	East	Method 1 South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.75	2.46	2.08	1.68	2.00
Solar Admittance	0.12	0.15	0.15	0.11	
AC Energy Value	1,221				

Method 1

Method 2

Project Details

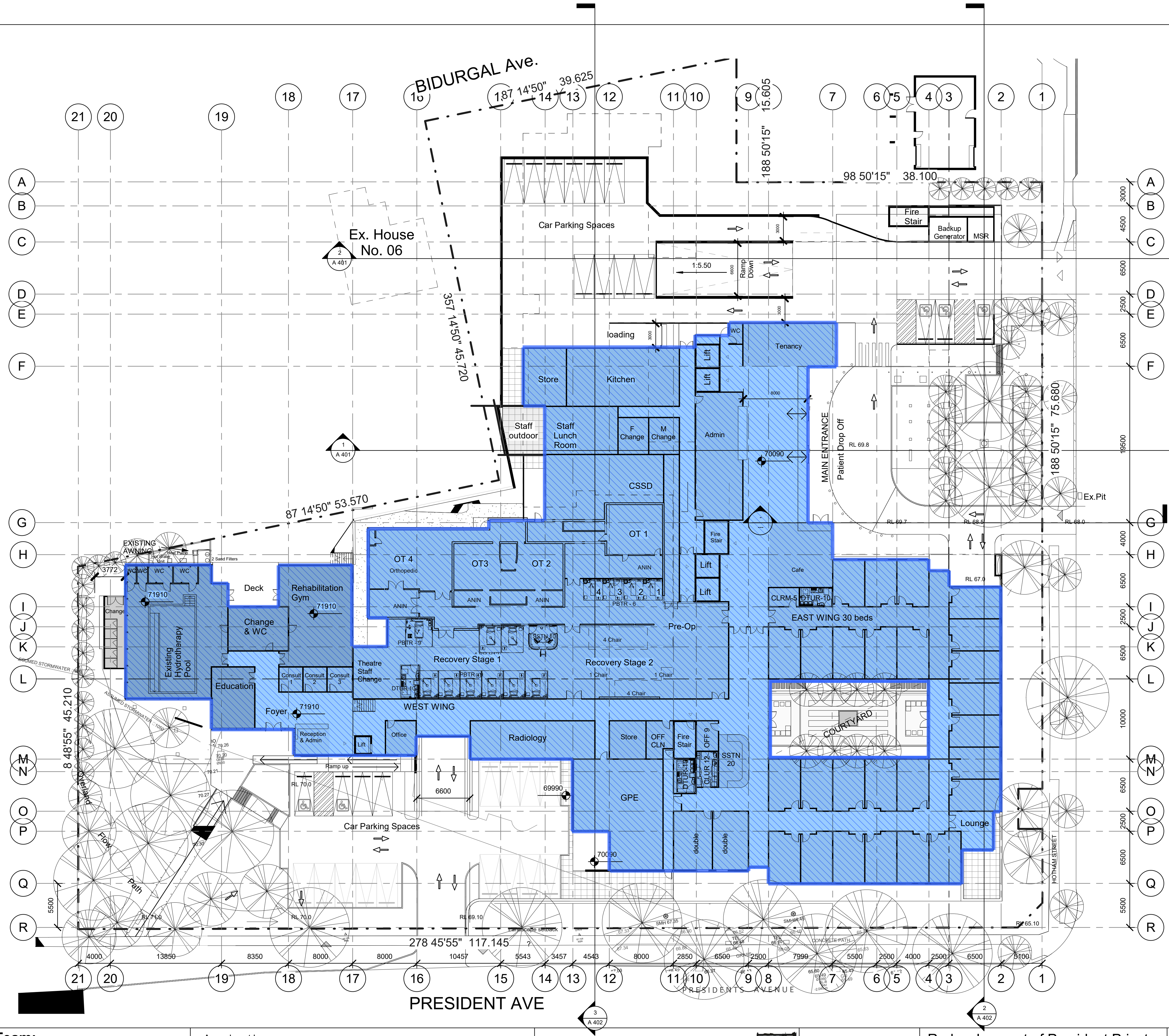
	North	East	South	West
Glazing Area (m²)	513	666.469	655.35	349.938
Glazing to Façade Ratio	33%	60%	41%	31%
Glazing References	N1-G - N4-G N1-L1-N10-L1 N1-L2 - N11-L2	E1-G - E3-G E2-G, E5-G, E7-G E4-G - E9-G E3-G - E13-G E2-L1 - E9-L1 E2- L2 - E9-L2	S1-G - S12-G S2-L1 - S11-L1 S2-L2 - S9-L2	W1-G - W5-G W2-G V1-L1 - V9- L1 V1-L2 - V9-L2
Glazing System Types	Fixed	Fixed	Fixed	Fixed Sliding Door
Glass Types	USER (DEFINED)	USER (DEFINED)	USER (DEFINED)	USER (DEFINED)
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	4.60	4.60	4.60	4.60
Average Glazing SHGC	0.36	0.36	0.36	0.36
Shading Systems				
Wall Area (m²)	1049.7933	668.5827	957.3825	769.945
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	R2.8 Wall System	R2.8 Wall System	R2.8 Wall System	R2.8 Wall System
Wall Thickness	0	0	0	0
Average Wall R-value (m².K/W)	2.80	2.80	2.80	2.80
Solar Absorbance				

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Appendix B – Thermal Envelope Mark-up on represented floors



Insulation

R-values indicated represent minimum total system R-value that are required to be achieved by the overall construction of the respective building fabric elements.

- R2.8 - New Wall portion separating from external or non-conditioned space
- R3.7 - New Roof/ ceiling portion over conditioned area (solar absorptance of upper surface of a roof must be 0.45)
- R2.0 - New Floor portion - Direct contact with ground or space below is enclosed, not-conditioned and mechanically ventilated by not more than 1.5 air changes per hour; or provided with not more than 150% of the aggregate sub-floor ventilation area required by NCC 2019 Part F1 and are not mechanically ventilated; or exposed and suspended above ground

Note: All insulation requirements as shown within the marked-up thermal boundary space is applicable to new works portion only. Floor insulations for all stairwells and lift shafts can be excluded.

Preliminary

Consultant Team:

Traffic Engineer: ML Traffic Engineers
BCA Consultant: Blackett Maguire and Goldsmith
Electrical Consultant: Erbas and Associates
Hydraulic Consultant: Erbas and Associates
Mechanical Services Engineer: Erbas and Associates
Landscape Architect: Habit 8
Surveyor: Dunlop Thorpe & Co.

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- Ph. 02 9211 7777
- Ph. 02 9437 1022
- Ph. 02 9437 1022
- Ph. 02 9437 1022
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Amendment Issue:

No.	Description	Date
44	Final for Sears Request	24/04/2019
45	Add Cafe Area	29/04/2019
47	Additional alterations	20/08/2019
51	Updated Dwg.	17/12/2019
53	For client approval	20/04/2020
54	For SSDA draft for review	20/04/2020

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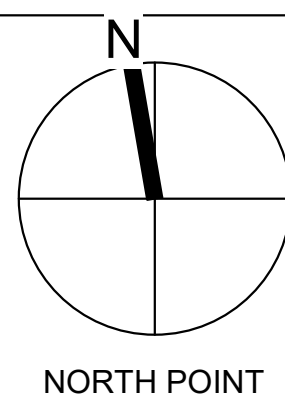


Macquarie HEALTH CORPORATION

Redevelopment of President Private Hospital

Macquarie Health Corporation

369-381 President Ave, 61-65
Hotham Rd, 2-4 Bidurgal Ave
Kirrawee NSW



Ground Floor General Arrangement Plan

Project number	MacHealth-06	A 104	
Date	20/08/2019		
Drawn by	NA	Scale @ A1	Plot stamp:
Checked by	SP	1 : 250	3/06/2020 5:48:03 PM
			Version: 54



Insulation

R-values indicated represent minimum total system R-value that are required to be achieved by the overall construction of the respective building fabric elements.

- R2.8 - New Wall portion separating from external or non-conditioned space
- R3.7 - New Roof/ ceiling portion over conditioned area (solar absorptance of upper surface of a roof must be 0.45)
- R2.0 - New Floor portion - Direct contact with ground or space below is enclosed, not-conditioned and mechanically ventilated by not more than 1.5 air changes per hour; or provided with not more than 150% of the aggregate sub-floor ventilation area required by NCC 2019 Part F1 and are not mechanically ventilated; or exposed and suspended above ground

Note: All insulation requirements as shown within the marked-up thermal boundary space is applicable to new works portion only. Floor insulations for all stairwells and lift shafts can be excluded.

- Department
- Inpatient
 - Recreation
 - Services
 - Therapy

Preliminary

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Redevelopment of President Private Hospital

Macquarie Health Corporation

369-381 President Ave, 61-65 Hotham Rd, 2-4 Bidurgal Ave
Kirrawee NSW

North Arrow

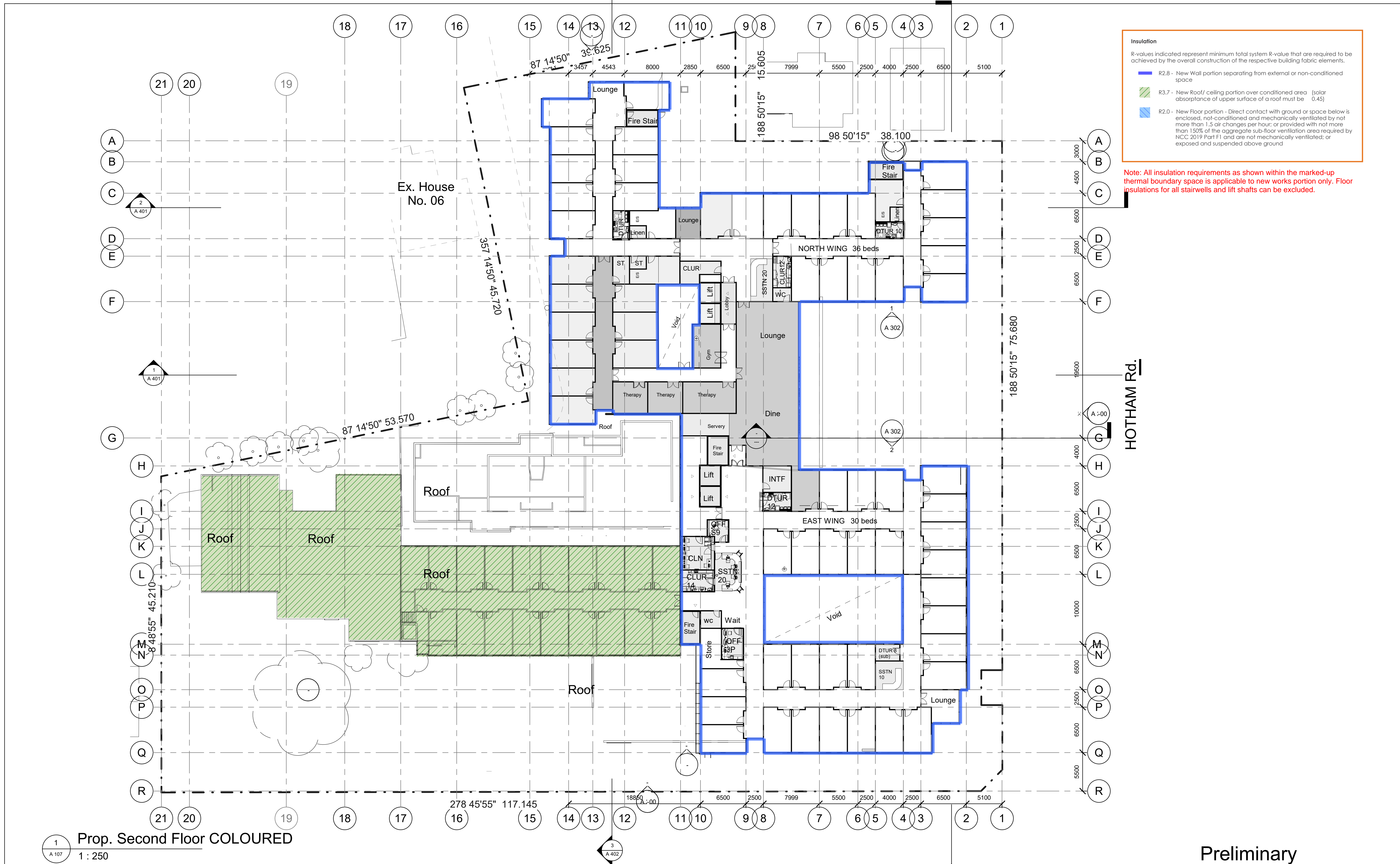
NORTH POINT

First Floor General Arrangement Plan

Project number: MacHealth-06
Date: 20/08/2019
Drawn by: NA
Checked by: SP

A 105

Scale @ A1: 1 : 250
Plot stamp: 3/06/2020 5:48:40 PM
Version: 54



Consultant Team:

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BCA Consultant: Blackett Maguire and Goldsmith
Electrical Consultant: Erbas and Associates
Hydraulic Consultant: Erbas and Associates
Mechanical Services Engineer: Erbas and Associates
Landscape Architect: Habit 8
Surveyor: Dunlop Thorpe & Co.

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Amendment Issue:

No.	Description	Date
44	Final for Sears Request	24/04/2019
53	For client approval	20/04/2020
54	For SSDA draft for review	20/04/2020

54

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Imagescape design Studios (ABN: 24 137 940 017) is an architect corporation registered under the provisions of the NSW Architects Act 2003. Nominated architects are Christine Kelly registration no. 6000 & Stephen Phillips registration no. 4608

Redevelopment of President Private Hospital

Macquarie Health Corporation

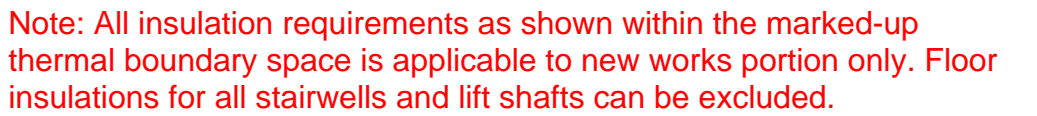
369-381 President Ave, 61-65 Hotham Rd, 2-4 Bidural Ave
Kirrawee NSW

Second Floor General Arrangement Plan

Project number: MacHealth-06
Date: 20/08/2019
Drawn by: NA
Checked by: SP

A 107

Scale @ A1: 1 : 250
Plot stamp: 3/06/2020 5:49:10 PM
Version: 54



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