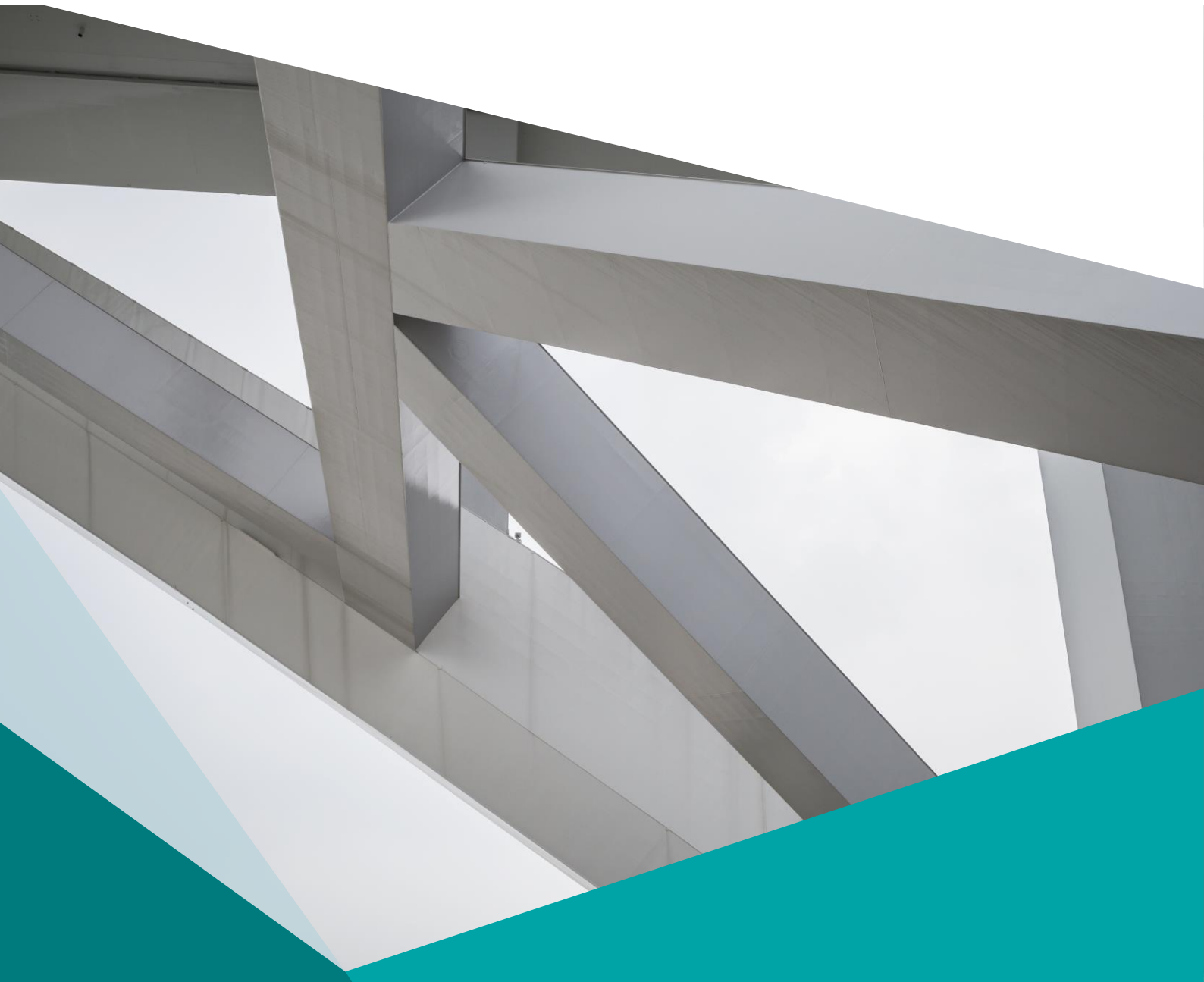




REPORT

ST PAULS CATHOLIC PRIMARY SCHOOL, MOSS VALE – BLOCK A NCC 2022 SECTION J DEEMED-TO-SATISFY REPORT

Prepared for **DTA Architects**



Document information

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COMMERCIAL IN CONFIDENCE

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EXECUTIVE SUMMARY

DTA Architects has requested that Egis Consulting Pty Ltd (Egis) undertake an analysis of the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School, Moss Vale NSW to assess compliance with the National Construction Code (NCC 2022) Section J: *Energy Efficiency*.

According to the Code, a building that complies with Section J must satisfy Performance Requirements J1P1 to J1P4. The proposed building is Class 9b and it is in Climate Zone 6. This project seeks to achieve compliance with the NCC 2022 Section J performance requirements via a Deemed-To-Satisfy (DTS) solution.

This report outlines the DTS provisions in Parts J4 and J5 that apply to the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School, Moss Vale NSW, and details how compliance is achieved for each provision. The following table summarises the overall minimum requirements to meet these provisions in the NCC. Further information is contained throughout the report.

Please note: Specific manufacturers or products may be mentioned in this report as examples only. Actual products or manufacturers used in construction may differ from the examples, however, minimum required values stated throughout this document must be achieved to comply with Section J.

TABLE 0-1 EXECUTIVE SUMMARY OF REQUIREMENTS

PART	COMPONENT	MINIMUM REQUIREMENT	COMMENTS
J2	Energy Efficiency	-	Performance Requirement J1P1 is satisfied by complying with Parts J4, J5, J6, J7, J8 and J9D3.
J3	Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building	-	Not applicable to Class 9b buildings
J4D3	Thermal Construction	-	Applicable to the construction
J4D4	Roof & Ceiling Construction	R3.2	■ Applicable to new roof ■ Colorbond 'Shale Grey' roof sheeting on steel framing ■ R1.8 foil-backed insulation blanket with appropriate spacer system ■ Min. 60mm reflected air space ■ Plasterboard ceiling
J4D5	Roof Lights	-	There are no roof lights serving the building, therefore, this clause does not apply.
J4D6	Envelope Walls – Type A	R1.4	■ Fibre cement cladding ■ R2.5 insulation batts on 150mm steel framing ■ Plasterboard lining
	Envelope Walls – Type B	R1.4	■ 150mm steel stud with R2.0 insulation batts ■ Plasterboard lining to both sides
	Louvred windows	U-Value _{TOT} : 5.8 SHGC _{TOT} : 0.55	■ All louvred windows must be equal to or more efficient than the values stated
	All other glazed elements	U-Value _{TOT} : 5.8 SHGC _{TOT} : 0.58	■ All glazed elements (including doors and windows but excluding louvred windows) must be equal to or more efficient than the values stated
J4D7	Floor without heating cooling system	R2.0	■ New GLAs slab: insulation required to meet R2.0

PART	COMPONENT	MINIMUM REQUIREMENT	COMMENTS
J5D3	Building Sealing – Chimney and Flues	-	There are no chimneys or flues in the project. Therefore, this clause does not apply.
J5D4	Building Sealing – Roof Lights	-	There are no roof lights serving the conditioned space. Therefore, this clause does not apply
J5D5	Building Sealing – Doors and Windows	-	This provision applies to building entrances leading to conditioned spaces larger than 50m². Doors must have self-closers or the like.
J5D6	Building Sealing – Exhaust Fans	-	All exhaust fans serving a conditioned space are required to be fitted with a sealing device such as a self-closing damper.
J5D7	Building Sealing – Construction of ceilings, walls, and floors	-	Construction must be: - enclosed by internal lining systems that are close fitting at ceiling, wall, and floor junctions. - sealed by caulking, skirting, architraves, cornices, or the like.
J5D8	Building Sealing – Evaporative Coolers	-	There are no evaporative coolers in the project. Therefore, this clause does not apply.

1 INTRODUCTION

1.1 General

Egis have been requested to undertake an analysis of the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School, Moss Vale NSW to assess compliance with the National Construction Code (NCC 2022) Section J: *Energy Efficiency*.

Performance requirement J1P1 states that:

A building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of 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
- (c) Solar radiation being –
 - i. Utilised for heating; and
 - ii. Controlled to minimise energy for cooling; and
- (d) The energy source of the services; and
- (e) 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, 15 kJ/m².hr

Performance requirement J1P2 states that:

- (1) The total heating load of the habitable rooms and conditioned spaces in a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must not exceed the heating load limit in Specification 44.
- (2) The total cooling load of the habitable rooms and conditioned spaces in a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must not exceed the cooling load limit in Specification 44.
- (3) The total thermal energy load of the habitable rooms and conditioned spaces in a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must not exceed the thermal energy load limit in Specification 44.

Performance requirement J1P3 states that:

- (1) The energy value of the domestic services of a sole-occupancy unit of a Class 2 building or Class 4 part of a building must not exceed the energy value with –
 - a. A 3-star ducted heat pump, rated under the 2019 GEMS determination, heating all spaces that are provided with heating; and
 - b. A 3-star ducted heat pump under the 2019 GEMS determination, cooling all spaces that are provided with cooling; and
 - c. A 5-star instantaneous gas water heater, rated under the 2017 GEMS determination, providing all domestic hot water; and
 - d. A lighting power density of 4 W/m² serving all internal spaces that are provided with artificial lighting.
- (2) Domestic services, including any associated distribution system and components must, to the degree necessary, have features that facilitate the efficient use of energy appropriate to –
 - a. The domestic service and its usage; and
 - b. The geographic location of the building; and
 - c. The location of the domestic service; and
 - d. The energy source.

Performance requirement J1P4 states that:

A building must have features that facilitate the future installation of on-site renewable energy generation and storage and electric vehicle charging equipment.

A Deemed-to-Satisfy (DTS) solution that complies with the following DTS provisions is considered to satisfy the above performance requirements, J1P1 to J1P4:

- J2D2; and
- J3D2 to J3D15; and
- J4D2 to J4D7; and
- J5D2 to J5D8; and
- J6D2 to J6D13; and
- J7D2 to J7D9; and
- J8D2 to J8D4; and
- J9D2 to J9D5.

This report outlines the DTS provisions in **Part J4 and Part J5** applicable to the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School, Moss Vale NSW and identifies the minimum requirements to satisfy the relevant Performance Requirements.

1.2 Limitations and Disclaimers

This report and its findings apply only to the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School, Moss Vale NSW and any other existing buildings are not included in the scope of this report.

The architectural drawings and models listed in this report have been used as the basis for calculations to assess compliance with Section J. Any revisions to architectural documentation and subsequent changes to the buildings envelope, orientation, or services after the issue of this report may require changes to calculations and may impact or forfeit the results.

This report details the scope of works required to comply with Section J only. The responsibility of complying with the requirements remains with the Architect, Main Contractor, and any other relevant designers by reviewing and incorporating the requirements into the building design, in consultation with Egis.

2 PROJECT INFORMATION

2.1 Building Description

This report refers to the proposed refurbishment and extension to Block A at St Paul's Catholic Primary School. The building consists of two levels with amenities, classrooms, storage areas and a canteen.

The component of the building upgrades required to comply with Section J are the new Year 5 and Year 6 GLAs and breakout area.

TABLE 2-1 BUILDING INFORMATION

BUILDING NAME	Block A – Year 5 and Year 6 GLA
BUILDING ADDRESS	St Paul’s Catholic Primary School 18 Garrett Street, Moss Vale NSW 2577
NCC BUILDING CLASSIFICATION	9b
NCC 2022 CLIMATE ZONE	6
NUMBER OF STOREYS	2

2.2 Floor Plans

The following Figures show the building's floor plans with the part of the building envelope required to comply with Section J highlighted. The envelope, for the purpose of Section J, refers to the parts of a building's fabric that separate a conditioned space from the exterior of the building or from a non-conditioned space.

FIGURE 2-1 FIRST FLOOR BUILDING ENVELOPE FOR SECTION J



2.3 Reference Documentation

The following Table lists the reference documentation used to complete the analysis.

TABLE 2-2 REFERENCE DOCUMENTATION

Document number	Document Type	Description	Issue/revision
DA02	Drawing	Demolition Plan – Overall	P2
DA03	Drawing	Demolition Plan	P2
DA04	Drawing	Site Plan	P2
DA07	Drawing	Block A – Ground Floor Plan	P2
DA08	Drawing	Block A – First Floor Plan	P2
DA09	Drawing	Block A – First Floor Plan	P2
DA10	Drawing	Block A – Roof Plan	P2
DA11	Drawing	Block A – Roof Plan	P2
DA12	Drawing	Elevations	P2
DA13	Drawing	Sections	P2

3 PART J2: ENERGY EFFICIENCY

3.1 J2D2 Application of Section J

Part J2D2: Application of Section J of the NCC 2022 states that, for a Class 2 to 9 building, other than a sole-occupancy unit of a Class 2 building or Class 4 part of a building, Performance Requirement J1P1 is satisfied by complying with Parts J4, J5, J6, J7, J8 and J9D3.

Performance Requirements J1P2 and J1P3 refer sole-occupancy units of Class 2 buildings or Class 4 parts of buildings and are therefore not applicable to this project.

For a Class 2 to 9 building, Performance Requirement J1P4 is satisfied by complying with J9D4 and J9D5 (outside the scope of this report).

4 PART J3: ELEMENTAL PROVISIONS FOR A SOLE-OCCUPANCY UNIT OF A CLASS 2 BUILDING OR A CLASS 4 PART OF A BUILDING

4.1 J3D2 Application of Part

The Deemed-to-Satisfy provisions of Part J3 apply to building elements forming the external building fabric and domestic services of sole-occupancy units of Class 2 buildings and Class 4 Parts of buildings.

Part J3 is not applicable to the proposed extension to Block A, St Paul's Catholic Primary School Moss Vale NSW.

5 PART J4: BUILDING FABRIC

5.1 General

Specific manufacturers or products mentioned in this section are examples only. Actual products or manufacturers used in construction may differ from the examples, however, minimum required values stated throughout this document must be achieved to comply with Section J.

5.2 J4D2 Application of Part

Part J4D2: Application of Part of the NCC 2022 states that:

The Deemed-to-Satisfy provisions of this Part apply to building elements forming the *envelope* of a Class 2 to 9 building other than J3D3(5), J4D4, J4D5, J4D6 and J4D7 which do not apply to a Class 2 sole-occupancy unit or a Class 4 part of a building.

Therefore, Part J4 is applicable to the proposed extension to Block A, St Paul's Catholic Primary School Moss Vale NSW.

5.3 J4D3 Thermal Construction General

According to the NCC 2022 J4D3:

- Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it –
 - 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
 - Forms a continuous thermal barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
 - Does not affect the safe or effective operation of a service or a fitting.
- Reflective insulation, where required, must be installed with –
 - the necessary airspace required to achieve the required R-value between a reflective side of the reflective insulation and a building lining or cladding; and
 - the reflective insulation closely fitted against any penetration, door or window opening; and
 - the reflective insulation adequately supported by framing members; and
 - each adjoining sheet being overlapped by 50mm or taped together.
- Bulk insulation, where required, must be installed so that –
 - 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
 - In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50mm.
- Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in NCC 2022 Specification 36
- The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be –
 - Calculated in accordance with AS/NZS 4859.2 for a roof or floor; or
 - Determined in accordance with Specification 37 for wall-glazing construction; or
 - Determined in accordance with Specification 39 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.

All insulation installed within the proposed extension to Block A, St Paul's Catholic Primary School Moss Vale NSW must comply with these installation requirements.

5.4 J4D4 Roof and Ceiling Construction

Part J4D4 of the NCC 2022 requires that a roof or ceiling must achieve a Total R-Value greater than or equal to the values in the following table. Additionally, in Climate Zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must not be more than 0.45.

TABLE 5-1 ROOF AND CEILING CONSTRUCTION – MINIMUM R-VALUE

CLIMATE ZONE	DIRECTION OF HEAT FLOW	MINIMUM TOTAL R-VALUE
1, 2, 3, 4, 5	Downward	R3.7
6	Downward	R3.2
7	Upward	R3.7
8	Upward	R4.8

The proposed extension and refurbishment to Block A, St Paul's Catholic Primary School Moss Vale NSW is in Climate Zone 6. **Therefore, the roof/ceiling construction over the building envelope must achieve a total R-Value of R3.2 downwards. The solar absorptance of the roof must be no greater than 0.45.**

The proposed roof colour is Colorbond Shale Grey, which has a solar absorptance of 0.44.

5.4.1 Roof & Ceiling Construction Details

For this project, the roof of the building envelope required to comply with Section J is the new roof only. The roof is to be constructed from metal sheeting on metal framing with foil-backed insulation blanket and plaster ceiling. Details can be found in the following table. An appropriate roof spacer system is required to ensure the integrity of the insulation blanket.

TABLE 5-2 ROOF AND CEILING CONSTRUCTION R-VALUE DETAILS

MATERIAL	THICKNESS (MM)	R-VALUE (M ² K/W)
Outdoor air film	-	0.03
Metal roof sheeting (solar absorptance <0.45)	-	0.00
Foil-backed insulation blanket (e.g. Anticon)	~80	Min. 1.8
Reflected, unventilated roof space	Min. 60	1.16
Plasterboard ceiling	13	0.08
Indoor air (pitch <5°)	-	0.16
TOTAL		3.23
NCC 2022 MINIMUM REQUIREMENT		3.20

5.5 J4D5 Roof Lights

The documents referenced in Section 2.3 indicate that there are no roof lights in the building envelope. Therefore, this clause does not apply to this project.

5.6 J4D6 Walls and Glazing

Part J4D6 of the NCC 2022 is applicable to walls that form part of a building envelope. The envelope refers to walls that separate a conditioned space or habitable room from the exterior of a building or from an adjacent non-conditioned space in the building.

The NCC 2022 states that the Total System U-Value of wall-glazing construction must not be greater than U2.0 for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building (other than a ward area). The wall glazing construction is assessed using the Australian Building Code Board Façade calculator.

5.6.1 Glazed Elements

The analysis is for the total window system, including glazing and framing, as per the NCC 2022.

The following table shows the window system used as the basis of analysis for each window type. The U-value and SHGC value achieved for each system must be equal to or better than that shown to maintain compliance with this report and with Part J4D6 of the NCC 2022.

TABLE 5-3 GLAZED ELEMENTS MINIMUM REQUIREMENTS

GLAZING TYPE/IDENTIFIER	GLASS/FRAMING	TOTAL SYSTEM U-VALUE	TOTAL SYSTEM SHGC
Louvred windows	Single Glazed/Aluminium	No greater than 5.8	No greater than 0.55
All other new glazed elements to Yr 5 and Yr 6 GLAs	Single Glazed/Aluminium	No greater than 5.8	No greater than 0.58

5.6.2 Envelope Walls

This section of the report details the requirements for the building envelope walls to comply with Section J.

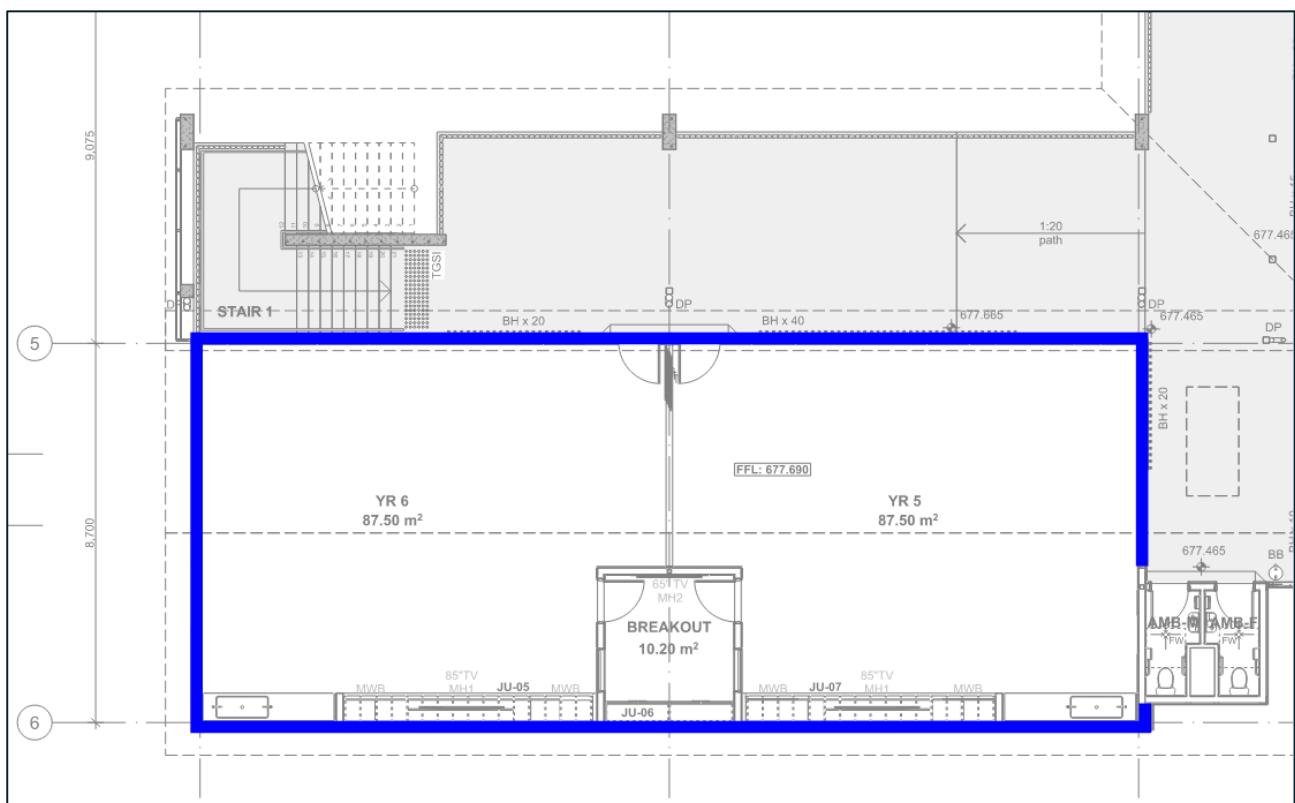
5.6.2.1 Envelope Walls – Type A

Envelope Wall Type A is to be constructed from fibre cement cladding, 150mm steel stud with insulation batts and plaster lining. Envelope Wall Type A locations are highlighted in the following Figure and details are provided in the table below.

TABLE 5-4 ENVELOPE WALLS R-VALUE DETAILS – TYPE A

MATERIAL	THICKNESS (MM)	R-VALUE (M ² K/W)
Outdoor air film	-	0.03
CFC Cladding	9	0.04
Insulation batts (on 150mm steel stud framing)	~75	Min. 2.5
Plasterboard	13	0.08
Indoor air film	-	0.12
TOTAL WALL R-VALUE (ACCOUNTING FOR THERMAL BRIDGING)		R1.419
NCC 2022 MINIMUM REQUIREMENT		R1.4

FIGURE 5-1 ENVELOPE WALL PLAN – TYPE A



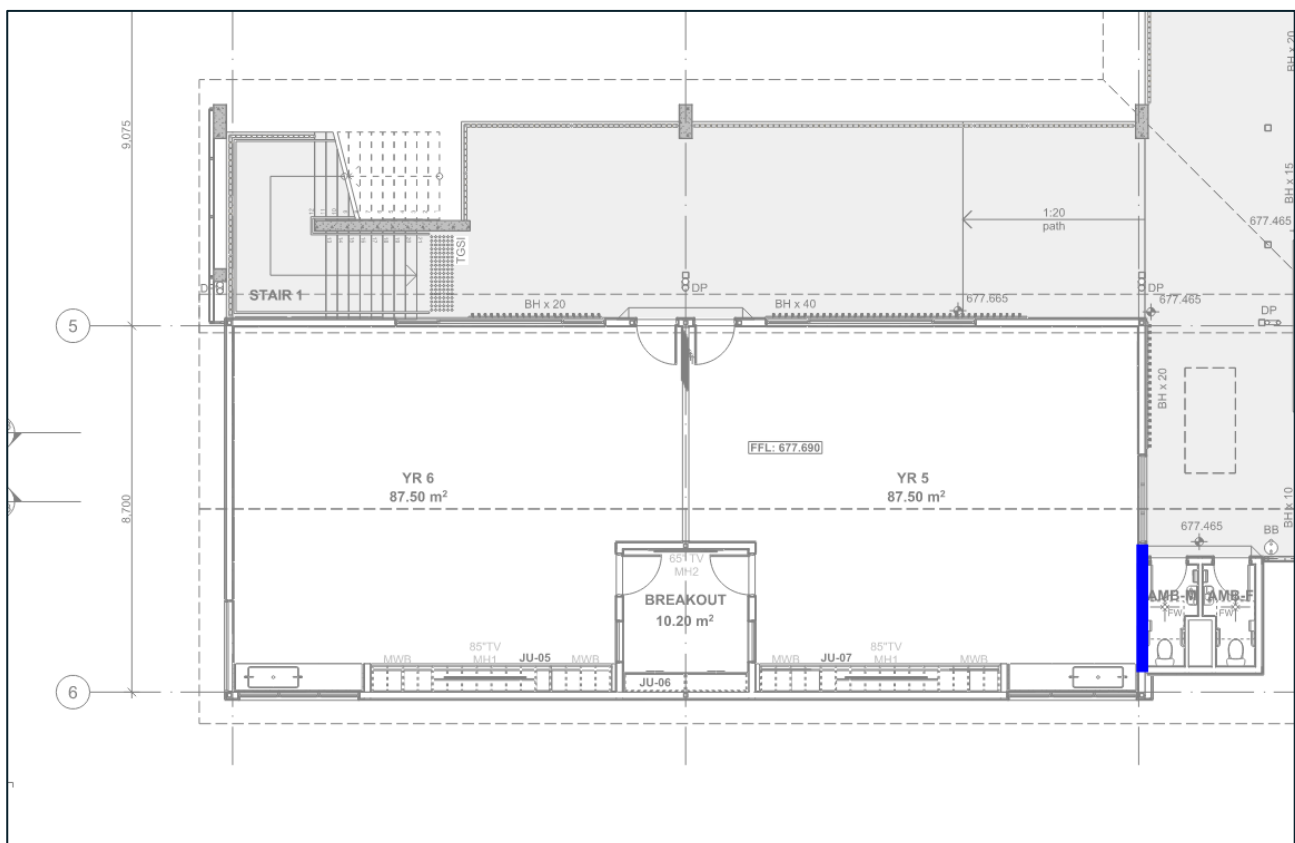
5.6.2.2 Envelope Walls – Type B

Envelope Wall Type B is to be constructed from steel framing with insulation batts and plaster lining to both sides. Locations of Envelope Wall Type B are shown in the following Figures and details are provided in the Table below.

TABLE 5-5 ENVELOPE WALLS R-VALUE DETAILS – TYPE B

MATERIAL	THICKNESS (MM)	R-VALUE (M ² K/W)
Indoor air film	-	0.12
Plasterboard	13	0.08
Insulation batts (on 150mm steel stud framing)	~90	Min. 2.0
Plasterboard	13	0.08
Indoor air film	-	0.12
TOTAL WALL R-VALUE (ACCOUNTING FOR THERMAL BRIDGING)		1.426
NCC 2022 MINIMUM REQUIREMENT		1.40

FIGURE 5-2 ENVELOPE WALL PLAN – TYPE B



5.7 J4D7 Floors

In accordance with the NCC 2022 Table J4D7, the minimum R-value for the floor of a Class 9b building in Climate Zone 6 without an in-slab heating or cooling system is R2.0.

TABLE 5-6 REQUIRED R-VALUES – FLOORS

LOCATION	CLIMATE ZONE	R-VALUE
A floor without an in-slab heating or cooling system	1, 2, 3, 4, 5, 6, 7	2.0
	8	3.5
A floor with an in-slab heating or cooling system	1, 2, 3, 4, 5, 6, 7	3.25
	8	4.75

Level 1 is a suspended slab with areas of unconditioned or external space below. Therefore, the Level 1 slab requires additional insulation as detailed in the following Table.

The spaces listed below require slab insulation:

- Year 6 GLA
- Year 5 GLA
- Breakout Space

TABLE 5-7 LEVEL 1 FLOOR INSULATION REQUIREMENTS

MATERIAL	THICKNESS (MM)	R-VALUE (M ² K/W)
Outdoor air film	-	0.03
Slab insulation boards (e.g. Kingspan K3)	~50	Min. 1.5
Concrete slab	300	0.21
Internal floor covering	~8	0.16
Indoor air film	-	0.12
TOTAL R-VALUE		R2.02
NCC 2022 MINIMUM REQUIREMENT		R2.0

6 PART J5: BUILDING SEALING

6.1 J5D2 Application of Part

Part J5D2 Application of Part of the NCC 2022 states that:

The Deemed-to-Satisfy provisions of this Part apply to elements forming the *envelope* of a Class 2 to 9 building other than –

- (a) A building in climate zones 1, 2, 3, and 5 where the only means of air-conditioning is by using an evaporative cooler; or
- (b) A permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or
- (c) A building or space where the mechanical ventilation required by Part F6 provides sufficient pressurisation to prevent infiltration.

Therefore, Part J5 is applicable to the proposed new extension and refurbishment to Block A at St Paul's Catholic Primary School, Moss Vale NSW.

6.2 J5D3 Chimneys and Flues

The proposed new extension and refurbishment to Block A at St Paul's Catholic Primary School, Moss Vale NSW does not contain any chimneys or flues. Therefore, provision J5D3 is not applicable to the building.

6.3 J5D4 Roof Lights

All roof lights must be sealed, or capable of being sealed, when serving a conditioned space or a habitable room in climate zones 4, 5, 6, 7 or 8. Roof lights that are required to be sealed, or be capable of being sealed, must be constructed with an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level, a weatherproof seal or a shutter system readily operated either manually, mechanically, or electronically by the occupant.

There are no roof lights serving the building envelope of the proposed new extension and refurbishment to Block A at St Paul's Catholic Primary School, Moss Vale NSW. Therefore, provision J5D4 is not applicable.

6.4 J5D5 Windows and Doors

The edges of doors, openable windows or the like must be fitted with a seal to restrict air infiltration. This requirement does not apply to –

- Windows that comply with AS2407
- Fire doors or smoke doors
- Roller shutter doors, roller shutter grilles or other security doors/devices installed for the sole purpose of out-of-hours security.

Where a seal is required for the bottom edge of a door, it must be a draft protection device. Where a seal is required for the other edges of a door or the edges of an openable window or the like, it may be a foam or rubber compression strip, fibrous seal or similar.

All entrances to Block A that open to a conditioned space or habitable room larger than 50m² must have an airlock, self-closing door, revolving door, or the like. This applies to the following spaces in the project:

- Year 5 (L1)
- Year 6 (L1)

6.5 J5D6 Exhaust Fans

Any exhaust fan serving a conditioned space or habitable room in Block A must be fitted with a sealing device such as a self-closing damper or the like.

6.6 J5D7 Construction of Ceilings, Walls, and Floors

Ceilings, walls, floors, and any openings such as window frames, door frames, roof light frames or the like that form part of the building envelope must be constructed to minimise air leakage. Construction must be –

- Enclosed by internal lining systems that are close fitting at ceiling, wall, and floor junctions; or
- Sealed by caulking, skirting, architraves, cornices, or the like.

Provision J5D7 does not apply to openings, grilles or the like that are required for smoke hazard management.

6.7 J5D8 Evaporative Coolers

The proposed extension and refurbishment to Block A at St Paul's Catholic Primary School, Moss Vale does not contain any evaporative coolers. Therefore, provision J5D8 is not applicable to the building.

Appendix A **Façade Calculator**



Project Summary

Date
18/07/2024

Name
Genevieve Safey

Company
Egis Consulting Pty Ltd

Position
Mechanical Engineer

Building Name / Address
Block A - St Paul's Catholic Primary School
18 Garrett Street, Moss Vale

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 9b - schools

Storeys Above Ground
2

Tool Version
1.5 (May 2024)

The summary below provides an overview of where compliance has been achieved for Specification S37 - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =

Non-Compliant Solution =

	North	East	Method 1 South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	2.12	1.49	1.18	1.04	1.52
Solar Admittance	0.13	0.06	0.05	0.03	
AC Energy Value					19

Method 1

Wall-glazing U-Value

Solar Admittance

Method 2

Wall-glazing U-Value - ALL

AC Energy Value

Project Details

	North	East	South	West
Glazing Area (m²)	19	5.4	6.22	2.31
Glazing to Façade Ratio	28%	15%	9%	6%
Glazing References	single clear	louvre	single clear	single clear
Glazing System Types	single clear	single clear	single clear	single clear
Glass Types	single clear	louvre clear	single clear	single clear
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	5.80	5.80	5.80	5.80
Average Glazing SHGC	0.58	0.55	0.58	0.58
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	49.58	30.16	62.37	33.25
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	External	Internal External	External	External
Wall Thickness	210	210	210	210
Average Wall R-value (m².K/W)	1.40	1.40	1.40	1.40
Solar Absorptance	0.6	0.6	0.6	0.6

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