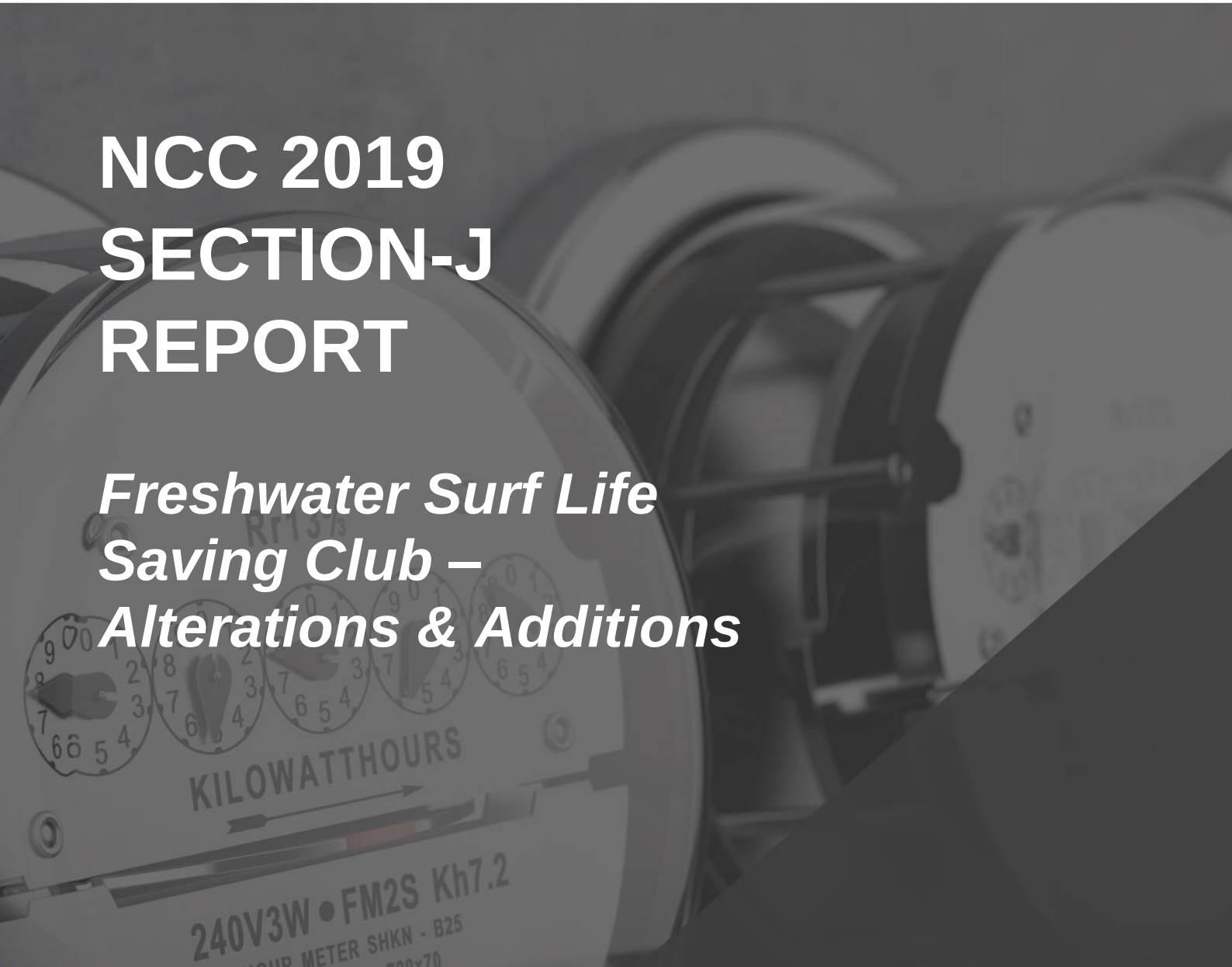
BCA ENERGY PTY LTD
Sustainable Design Consultants

NCC 2019 SECTION-J REPORT

Freshwater Surf Life Saving Club – Alterations & Additions



To:	Northern Beaches Council
Project:	Freshwater Surf Life Saving Club
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DOCUMENT CONTROL

Latest Revision	Issue Date	Report Details		
2668-DTS-r1/gz	30-11-20	NCC Section J Deemed-to-Satisfy Assessment Report		
Note: Issued for DA (27/11/20)		Prepared by	Checked by	Approved by
		Greg Zheng	Rob Romanous	Greg Zheng
		Sustainable Design Consultant	ESD Manager	Sustainable Design Consultant
				

Previous Revisions	Issue Date	Revision Notes

GLOSSARY

DTS	Deemed-to-satisfy
R-Value	Thermal resistance rating for individual material layer
Rt	Total R-value for the system

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EXECUTIVE SUMMARY

BCA Energy has been engaged by Northern Beaches Council to provide an assessment under Section J Energy Efficiency Deemed-to-Satisfy (DTS) provisions, Volume1, National Construction Code (NCC) 2019 for the proposed project at Freshwater Surf Life Saving Club alterations & additions works.

Highlighted within section-3 of this report, the summary outlines the relevant NCC section J provisions and nominates the minimum prescriptive requirements for the proposed project to achieve DTS compliance. Should the DTS pathway prove to be impractical, a JV3 performance-based design solution can be adopted as an alternative section J compliance pathway.

Based on the project nominated design specification, whilst most of the development may achieve or is capable of compliance under the specified Section J DTS provisions, the proposed new roof colour, and un-insulated suspended floor design would exceed the maximum DTS allowance and hence must refer to *proposed design change* or *JV3 alternative solution* pathway for a full NCC Section J compliance assessment.

1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at Kooloora Ave, Freshwater, an local Surf Life Saving club and consists of alterations and additions works to the existing facility.

The site has no common boundary line to any neighbouring buildings and surrounded by public roads:

- North-east – Kooloora Ave
- North-west – Gore St
- South-west – Moore Rd

Freshwater beach is on the south-east of the building, and there is no significant shading within the vicinity.

1.2 Project Proposals

The proposal seeks approval for:

- The new additions of Office and Meeting/Training spaces

1.3 Purpose

The purpose of this report is to assess the design proposal against the Deemed-to-Satisfy provisions of Section J of the NCC 2019, and to clearly outline those areas where compliance is not achieved.

The Report addresses ONLY matters relevant to Section 'J' of Volume 1 of the NCC pertaining to the Class 5 portion of the building. It is assumed relevant specialised consultants are engaged to ensure compliance of service design requirements within section J5 & J6 provisions, hence this assessment does not include the following sub-sections.

a) Part J5 Airconditioning and ventilation systems
b) Part J6 Artificial lighting and power

1.4 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of Section J of the National Construction Code Series Volume 1 - Building Code of Australia, 2019 Edition incorporating the State variations where applicable. Please note that the version of the NCC applicable is the version applicable at the time of the Construction Certificate Application is dated as received by the certifying authority.

1.5 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for -

Sections B, C, D, E, F, G, H and I of the NCC;

The structural adequacy or design of the building;

The inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

The design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

c) The National Construction Code - Plumbing Code of Australia Volume 3
d) The Disability Discrimination Act;
e) The Premises Standard;
f) Demolition Standards not referred to by the NCC;
g) Occupational Health and Safety Act;
h) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, RTA, Council and the like; and
i) Conditions of Development Consent
j) Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

1.6 Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

2 BUILDING DESCRIPTION

For the purpose of the NCC the development may be described as follows.

2.1 Classification (Clause A3.2)

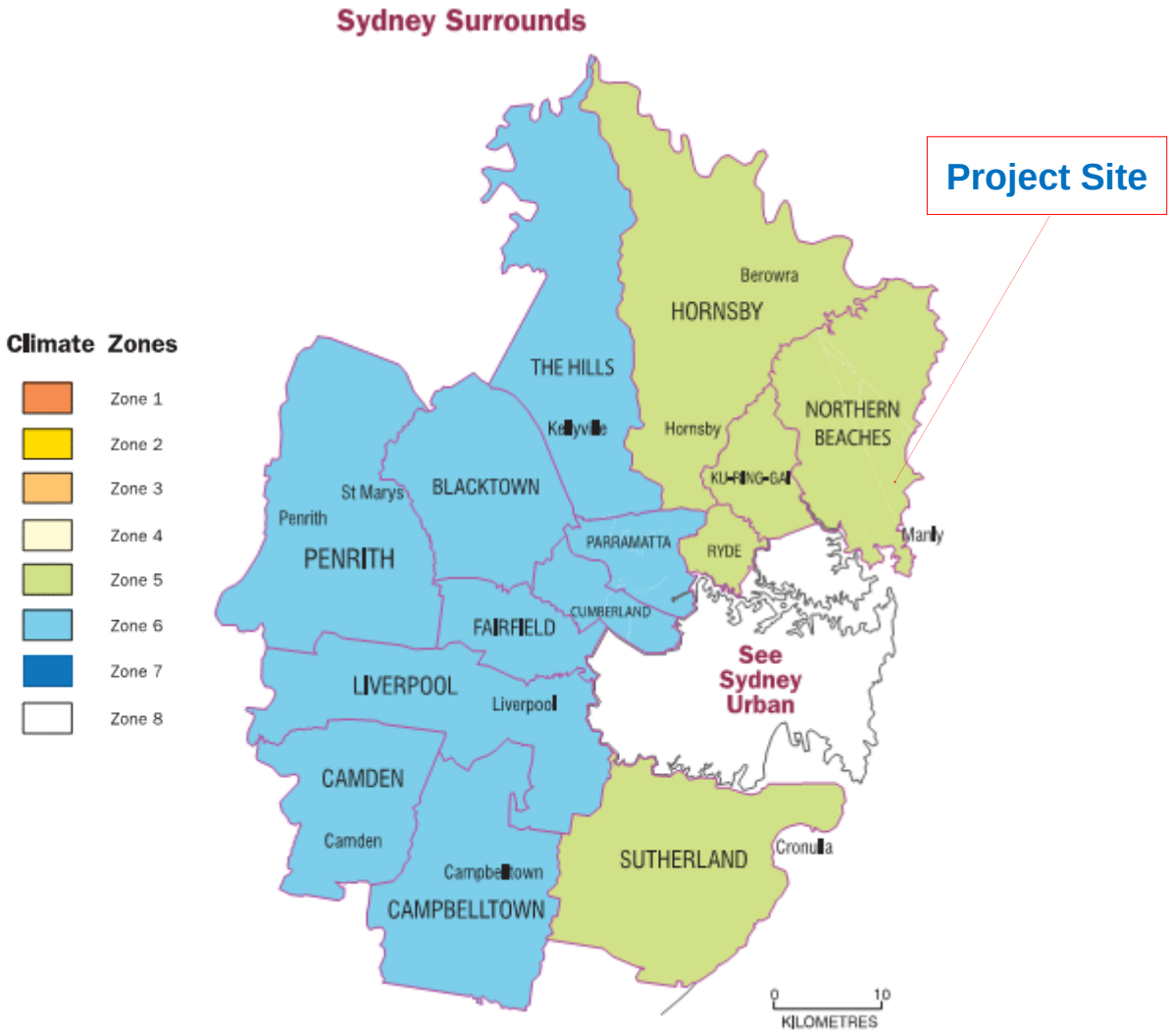
The Building has been classified as follows:

Class	Level	Description
5	3	New addition spaces

This Report addresses ONLY matters relevant to Section 'J' of Volume 1 of the NCC pertaining to the Class 5 portion/s of the building.

2.2 Climate Zone (Clause A1.1)

The building is located within Climate Zone No.5 . Any reference to 'this climate zone' throughout the report is referring to Climate Zone No.5



3 SUMMARY OF PROVISIONS TO COMPLY WITH SECTION J

The following is a summary of the requirements for compliance for Section J to be achievable, for full details of the assessment see Part 4 of this report:

3.1 Part J1.1 - Building Fabric Requirements

Building Element	Min. DTS Checker	Off-set	Min. Insulation	Fabric Min. Total R	Comply	Compliance Recommendation
New Roof - Metal roof <0.45 Solar Absorption (S.A)	Rt3.70 (downwards)	NA	R1.30 & R2.20	Rt3.73 S.A>0.45	No* (Refer proposed design to comply)	• R1.3 reflective blanket & R2.20 bulk insulation • Provide light colour roof OR JV3 pathway
New External Wall 1 – Blue-board, sarking, plasterboard, R2.25 bulk insulation & Steel stud, plasterboard	Rt1.40	NA	R2.25	Rt1.53	Yes	• 90mm, R2.25 bulk insulation • Reflective airgap
New Floor - Concrete suspended floor	Rt2.0	NA	No provision (Current design)	Rt0.55	No* (Refer proposed design to comply)	• Min R1.50 soffit insulation • OR JV3 pathway
New skylight - Existing & New meeting rooms	<=5% U-3.9 SHGC-0.29	NA	NA	NA	Yes (Proposed spec. to be equal or better than DTS)	• Skylight area <=5% • U-3.9 or lower • SHGC-0.29 or lower

NB Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

* For non-compliance DTS elements, refer to proposed compliance recommendation OR a JV3 Performance Solution pathway offers opportunities to reduce/remove insulation beneath the suspended floor, along with specifying other solar absorption range of roof finish. Note NCC2019 JV3 verification protocol requires the assessment of both greenhouse gas emissions (energy consumption) and thermal comfort to determine compliance.

Ceiling Assumption	The loss of insulation area because of exhaust fans, flues or down-lights is less than 0.5% of the ceiling area.

3.2 Part J1.2 - Glazing Requirements

Orientation	Methodology	System U-Value*	System SHGC	System Type
All	WERS	4.80	0.58	Single, low-e, clear, Al frame or equivalent performance system

3.3 Part J3 - Building Sealing

Building Element	Comment
New Entry Doors	Must be self-closing provided with weather seals.
New Exhaust Fans	Must have self-closing dampers.
Chimneys & Flues	Must have damper or flap that can be closed to seal the chimneys & flues.
Doors & Windows	Must have seals to restrict air infiltration or the windows must comply with AS 2047
Bi-Fold Doors	Any bi-fold doors must be interlocked to ensure the air-conditioning system is inactive when these doors are open.
Open Shop Front	Ensuring the last air conditioning outlet is at least 3 meters front he front entrance and all other door are self-closing.
Roof Lights	A roof light must be sealed when serving a conditioned space and must be constructed with an imperforate ceiling diffuser or a weatherproof seal if it is a roof window, or a readily operable shutter system.
Roof, Walls & Floor	Minimise air leakage by enclosed or internal lining systems that are close fitting at ceiling, wall and floor junctions or sealed by caulking, skirting, architraves, cornices or the like.

3.4 Part J7 - Hot Water Supply

Building Element	Comment
Food preparation and sanitary purposes	Must be designed and installed in accordance with Part B2 of NCC Volume Three – Plumbing Code of Australia.

3.5 Part J8 - Facilities for Energy Monitoring

Monitoring	Comment
Energy Monitoring	• For proposed minor addition works – Connect to the existing SLSC metering facility • For entire building refurbishment works – Energy meter configured to record the time-of-use consumption of gas and electricity

4 DETAILED ASSESSMENT

4.1 Part J1 - Building Fabric

J1.1 Application - All new parts of the new building envelope need to comply.

The deemed-to-satisfy provisions of this part apply to building elements forming the envelope of a Class 2 to 9 building.

Building Envelope – The building envelope for the purpose of this Section J is described as the external walls, glazing, floors, ceiling and roof of any conditioned space within the proposed Class 5 premises, as well as any internal walls or floors of the premises exposed to an unconditioned space. Please see APPENDIX 1 for building envelope and insulation mark-up.

J1.2 Thermal Construction General - Builder is to ensure compliance, during construction.

- Insulation must comply with AS/NZS 4859.1.
- Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels where the insulation must be against the member.
- Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that contribute to the thermal barrier.
- Does not affect the safe or effective operation of a service or fitting.
- Reflective insulation must be installed with the necessary airspace between the reflective insulation and a lining or cladding.
- Reflective insulation must be installed closely against any penetration, door or window opening.
- Reflective insulation must be adequately supported by framing members
- Each adjoining sheet of roll membrane being overlapped not less than 50mm or taped together.
- Bulk insulation must be installed so that it maintains its position and thickness.
- When selecting insulation, caution should be taken to clearly identify the total R-value of the installed roofing, ceiling, floor and wall systems.
- Total R-Value and Total System U-Value, must include allowance for thermal bridging, which in accordance with:
  - AS/NZS 4859.2 for a roof or floor, or
  - Specification J1.5a for wall-glazing construction, or
  - Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces

J1.3 Roof & Ceiling Construction

a) In this Climate Zone 5, a minimum total R-value of R3.70 (downwards).
b) In Climate Zone 1 to 7, the solar absorption of the upper surface of a roof must be no more than 0.45.

TYPE-1 Light-Coloured Metal roof: *R-Value R3.7 (Solar Absorption <0.45) Downward*

The roof & ceiling system that is a light-coloured metal roof with plasterboard ceiling has an un-insulated R-value of R1.32 (<5°) (downwards). Additional insulation is required to achieve a minimum total R-value of R3.70.

Roof & Ceiling Element	R-Value Unventilated-Down
Outside air film	0.04
Light colour metal Roof (Solar Absorption <0.45)	0.00
Roof blanket (thermal break equivalent) • 60mm reflective insulation, R1.30 • Steel purlin (15% frame to roof, 65mm flange, 2mm web)	0.21
Reflective Airspace	1.06
Ceiling bulk insulation • Minimum bulk insulation	*2.17*
Plasterboard	0.06
Internal air film	0.16
Total R-value	**3.70**

Compliance can be met by:

- For new metal roof, installing R1.30 (est. 60mm) reflective roof blanket, *AND* R2.20 (est. 160mm) ceiling batt or equivalent insulation which provide an additional R2.41, achieving **total R-value of R3.73**, which equals or exceeds the required minimum of Rt3.70.
- The upper surface of the roof material must not be higher than 0.45 (solar absorptance). **For the proposed design exceeds DTS maximum limit** (up to 0.75 solar absorptance), JV3 alternative solution pathway is required.
- Any insulation or sarking is required to be non-combustible material in accordance with BCA Specification C1.1.

Colour	Solar Absorptance	BCA Classification	BASIX Classificatio
Classic Cream™	0.32	L	L
Surfmist®	0.32	L	L
Paperbark®	0.42	M	L
Evening Haze®	0.43	M	L
Shale Grey™	0.43	M	L
Sandbank®	0.46	M	L
Dune®	0.47	M	L
Windspray®	0.58	M	M
Pale Eucalypt®	0.60	M	M
Bushland®	0.62	D	M
Headland®	0.63	D	M
Wilderness®	0.65	D	M
Jasper®	0.68	D	M
Manor Red®	0.69	D	M
Woodland Grey®	0.71	D	D
Loft®	0.71	D	D
Monument®	0.73	D	D
Ironstone®	0.74	D	D
Cottage Green®	0.75	D	D
Deep Ocean®	0.75	D	D

DTS

Alternative Solution

J1.4 Roof lights

a) A total area of roof lights must not exceed 5% of the floor area of the room or space served; and

b) Transparent and translucent elements, including imperforated ceiling diffuser, must comply with, -

i. Table J1.4 for Total system SHGC, and

ii. Not more than U3.9 for Total system U-value

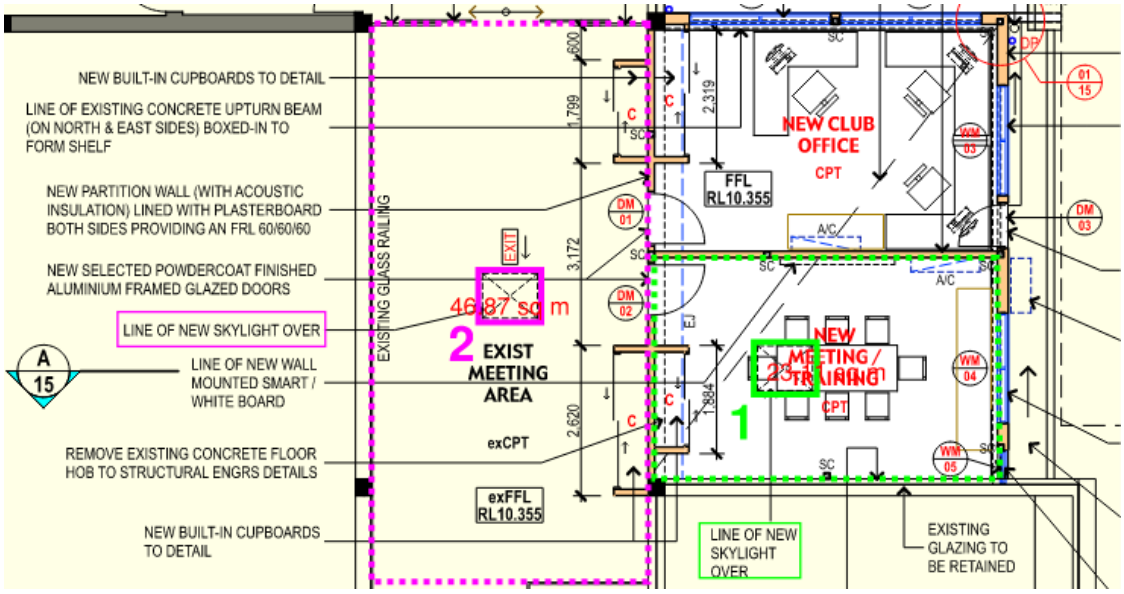
Notes to Table J1.4:

Table J1.4 Roof lights - Total system SHGC

Roof light shaft index Note 1	Total area of *roof lights* up to 3.5% of the *floor area* of the room or space	Total area of *roof lights* more than 3.5% and up to 5% of the *floor area* of the room or space
< 1.0	≤ 0.45	≤ 0.29
≥ 1.0 to < 2.5	≤ 0.51	≤ 0.33
≥ 2.5	≤ 0.76	≤ 0.49

1. 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 (or the diameter for a circular shaft) in the same units of measurement.
2. The area of a *roof light* is the area of the roof opening that allows light to enter the building. The total area of *roof lights* is the combined area for all *roof lights* serving the room or space.

Two skylights are proposed for the existing and the new meeting area below.



	Area 1 - New Meeting area	Area 2 - Existing meeting area
No. skylight	1	1
Total skylight area (m2)	0.75	0.75
Floor area serving (m2)	23.11	46.87
Skylight to floor area (%)	3.25%	1.6%
Max 5% DTS compliance	Yes (Allow up to 1.16m^2)	Yes (Allow up to 2.34m^2)
Shaft index	0	0
Skylight U-value	*3.9*	*3.9*
Skylight SHGC	*0.29*	*0.29*

Compliance can be met by:

- To achieve DTS compliance, the roof light area must not exceed 5% of the floor area served, with a maximum **U-value of 3.90,** AND maximum **SHGC values of 0.29.**

J1.5 Wall

and Glazing

The Total System U-Value and the Solar Admittance of wall-glazing construction must be calculated in accordance with Specification J1.5a and J1.5b of NCC 2019 provision:

a) The Total System U-Value of wall-glazing construction must not be greater than -
   i. 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, **U2.0**; and
   ii. for a Class 3 or 9c building or a Class 9a ward area –
      (a) in climate zones 2 or 5, **U2.0**; or

b) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of -
   i. where the wall is less than 80% of the area of the wall-glazing construction, **R1.0**; or
   ii. where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J1.5a

Table J1.5a Minimum wall Total R-Value - Wall area 80% or more of wall-glazing construction area

Climate zone	Class 2 common area, Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a *ward area*	Class 3 or 9c building or Class 9a *ward area*
1	2.4	3.3
2	1.4	1.4
3	1.4	3.3
4	1.4	2.8
5	1.4	1.4
6	1.4	2.8
7	1.4	2.8
8	1.4	3.8

c) The solar admittance of externally facing wall-glazing construction must not be greater than -
   i. for a Class 6 space, the values specified in Table J1.5b; and

Table J1.5b Maximum wall-glazing construction solar admittance - Class 2 common area, Class 5, 6, 7, 8 or 9b building or Class 9a building other than a ward area

Climate zone	Eastern aspect *solar admittance*	Northern aspect *solar admittance*	Southern aspect *solar admittance*	Western aspect *solar admittance*
1	0.12	0.12	0.12	0.12
2	0.13	0.13	0.13	0.13
3	0.16	0.16	0.16	0.16
4	0.13	0.13	0.13	0.13
5	0.13	0.13	0.13	0.13
6	0.13	0.13	0.13	0.13
7	0.13	0.13	0.13	0.13
8	0.2	0.2	0.42	0.36

Refer to Table J1.5a above for minimum wall and façade performance requirement.

Orientation	Class	Min. Wall R-value (m^2.K/W)	Max. DTS U-value (W/m^2.K)
N	5	1.00	2.0
E		1.40	2.0

J1.5.1 Façade Systems

Total Façade System Value:

Compliance	Facade	U-value	Solar Admittance	Compliance
Method 1 – Façade	North	2.57	0.13	No
	East	1.30	0.04	Yes
Method 2 – Combined facades	**U-value**		**1.84 of 2.0**	**Yes**
	AC Energy		**<5 of 5**	**Yes**

Nominated compliance pathway: Method-2 can achieve DTS compliance

J1.5.2 Glazing Elements

Nominated Glazing system types

Orientation	Methodology	System U-Value*	System SHGC	System Type
All	WERS	4.80	0.58	Single, low-e, clear, Al frame, or equivalent performance system

J1.5.3 Wall Elements

Nominated wall construction types for the projects; refer to Appendix-2 for Wall construction detail (incl. thermal bridging losses)

Wall system types	DTS min. checker	Min. to Comply Insulation R-value (m^2.K/W)	Min. to Comply Total system R-value (m^2.K/W)
New light-weight Cladded wall 7.5mm blue-board, airgap, 16mm plasterboard, 90mm steel stud + 90mm bulk insulation, and 13mm plasterboard	Rt1.40	R2.25	Rt1.1.53

J1.6 Floors

a) A floor must achieve the Total R-Value specified in Table J1.6.
b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor—
   i. is a concrete slab-on-ground in *climate zone* 8; or
   ii. has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like.
c) Insulation required by (b) for a concrete slab-on-ground must—
   i. be water resistant; and
   ii. be continuous from the adjacent finished ground level—
      (A) to a depth not less than 300 mm; or
      (B) for the full depth of the vertical edge of the concrete slab-on-ground.

The sub-floor and soil R-Value must be calculated in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A.

Location	*Climate zone* 1 — upwards heat flow	*Climate zones* 2 and 3 — upwards and downwards heat flow	*Climate zones* 4, 5, 6 and 7 — downwards heat flow	*Climate zone* 8 — downwards heat flow
A floor without an in-slab heating or cooling system	2.0	2.0	2.0	3.5
A floor with an in-slab heating or cooling system	3.25	3.25	3.25	4.75

The proposed addition consisted of partial suspended concrete floor has un-insulated R-value of R0.55 overall compliance without additional insulation requirement. Additional insulation is required to achieve a minimum total R-value of R2.0

Suspended floor

Floor Element	R-Value
Indoor air film	0.16
Additional insulation	*1.45 minimum*
Concrete floor (200mm)	0.13
Carpet flooring	0.10
Indoor air film	0.16
Total R-value	**2.00 minimum**

Compliance can therefore be met by the following:

- Adding non-combustible insulation which provides minimum R-value of 1.50. This will achieve a total ‘value’ of R2.05 which exceeds the required R-value of R2.0. For the proposed design without the underfloor insulation provision, JV3 alternative solution pathway is required.

4.2 Part J2 - This Part has deliberately been left blank

4.3 Part J3 - Building Sealing

J3.1 Application

Applies to elements forming the envelope of a Class 2 to 9 building other than -

i. A building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; OR
ii. 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
iii. A building or space where the mechanical ventilation required by Part F4 (Health and amenity – ventilation) provides sufficient pressurisation to prevent infiltration.

J3.2 Chimneys and Flues

The chimney or flue of an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.

J3.3 Roof Lights (Not Applicable)

A roof light must be sealed when serving a conditioned space and must be constructed with an imperforate ceiling diffuser or a weatherproof seal if it is a roof window, or a readily operable shutter system (manual, mechanical or electronic).

J3.4 Windows and doors

All external envelope doors and windows must either have seals to restrict air infiltration or the windows must comply with AS 2047.

An entrance to a building must have an airlock, self-closing door, rapid roller door, revolving door or the like…where the conditioned space has a floor area greater than 50m^2.

Compliance can be met by the following:

- All new entry doors must be self-closing.

J3.5 Exhaust Fans

All exhaust fans fitted in a conditioned space must have a sealing device such as a self-closing damper or the like.

Compliance can be met by:

- Any new exhaust fans to have self-closing dampers, including “miscellaneous exhaust fans”.

J3.6 Constructions of roofs, walls and floors

Roofs, ceilings, walls and floors and any opening such as a window or door must be constructed to minimise air leakage by -

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

J3.7 Evaporative coolers

An evaporative cooler must be fitted with a self-closing damper when serving -

i. A heated space; or
ii. A habitable room or a public area of a building in Climate Zones 5

4.4 Part J4 - Air Movement - This Part has deliberately been left blank

4.5 Part J5 - A/C & Ventilation Systems

Detailed air-conditioning and ventilation system sizing and compliance requirements must refer to Mechanical design documentation.

4.6 Part J6 - Artificial Lighting and Power

Detailed lighting, power control, water storage units, lifts, escalators and moving walkways compliance requirements must refer to Electrical design documentation.

4.7 Part J7 - Heated Water Supply, Swimming Pool & Spa Pool

J7.2 Heated Water Supply

Builder to generally ensure 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

Compliance can be met by:

- Specifying system as per required under Part B2 of NCC Volume Three – Plumbing Code of Australia

J7.3 Swimming Pool Heating and Pumping - Not Applicable

J7.4 Spa Pool Heating and Pumping - Not Applicable

4.8 Part J8 - Facilities for Energy Monitoring

J8.1 Application

The provisions of this part do not apply to a sole-occupancy unit of a Class 2 building, a Class 4 part of a building or to a Class 8 electricity network substation.

J8.2 *******

J8.3 Facilities for Energy Monitoring

a) A building or sole-occupancy unit with a floor area of more than 500 m^2 (under 2500m^2) must have an energy meter configured to record the time-of-use consumption of gas and electricity.

Compliance can be met by:

- As a minor addition work, it is sufficient to connect to the existing SLSC building metering facility. However, where major refurbishment works to be carried out for the entire facility, then the building is required to supply energy meters configured to record the time-of-use consumption of gas and electricity, i.e. smart meters.

5 STATEMENT OF COMPLIANCE

The design documentation as referred to in this report has been assessed against the applicable provisions of Section J of the National Construction Code (NCC) and it is considered that such documentation achieves or is capable of full compliance under the specified Section J provisions, with the *exception* of the proposed *roof colour* AND *un-insulated suspended floor* design which exceeded maximum DTS allowance and hence must refer to recommended design changes OR JV3 alternative solution pathway for a full NCC Section J compliance assessment.

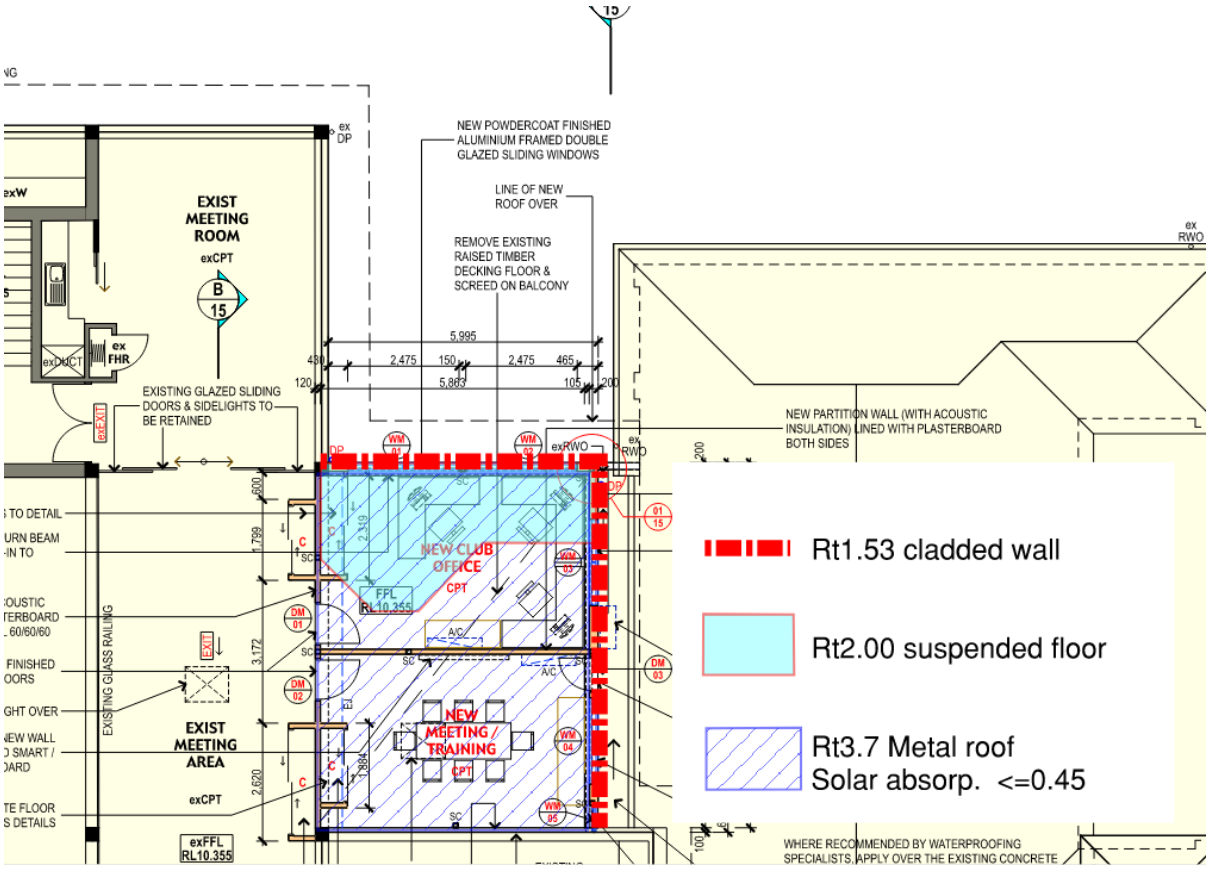
ANNEXURE A – DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Architectural Plans Prepared by Priestleys Architects		
Drawing Number	**Revision**	**Title**
22002.10 to 22002.15	B to E	Issued for Development Application (22/10/2020)

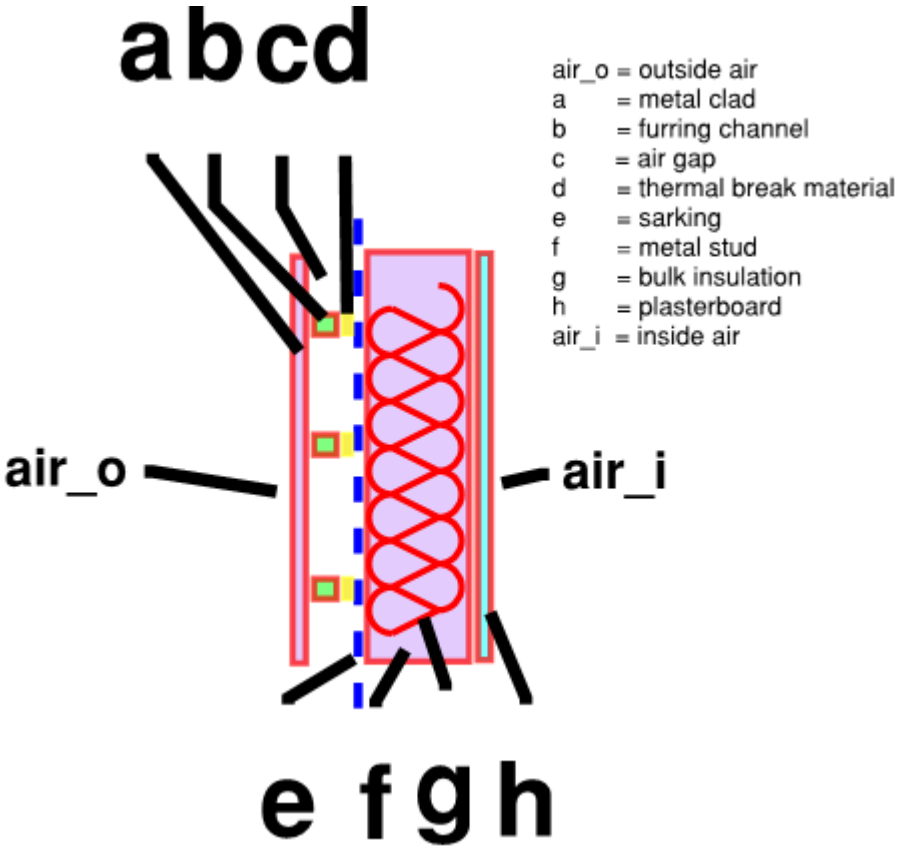
APPENDIX 1 – BUILDING ENVELOPE

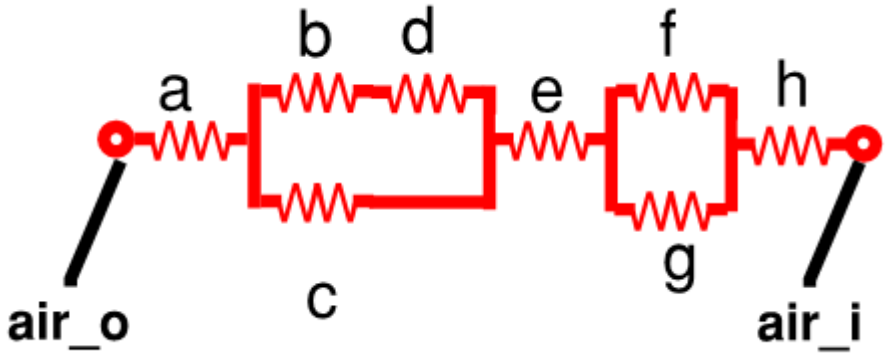
Level 3 Addition



APPENDIX 2 – WALL CONSTRUCTION DETAILS

Wall thermal resistance schematic (thermal break inclusion)





Wall type 1 – light-weight cladding wall

Lightweight wall	R-value
Outdoor air	0.04
Blueboard cladding	0.04
Airgap (Reflective)	0.48
Reflective sarking	
Plasterboard	0.09
+ bulk insulation R2.25 +Steel Stud (15%)	0.66
Plasterboard	0.09
Indoor air	0.12
TOTAL Rt	**1.53**

APPENDIX 3 – FAÇADE CALCULATOR OUPUT

Façade

Report

Calculator

Project Summary

Date
2/11/2020

Name
Greg Zheng

Company
BCA Energy

Position
ESD consultant

Building Name / Address
Freshwater Surf Lift Saving Club
0

Building State

NSW

Climate Zone
Climate Zone 5 - Warm temperate

Building Classification

Class 5 - office building

Storeys Above Ground
3

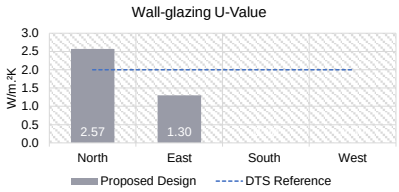
Tool Version
1.1 (April 2020)

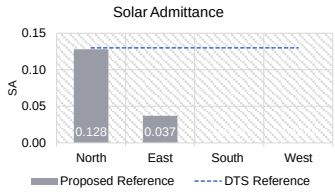
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

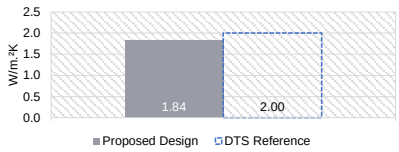
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	2.57	1.30			1.84
Solar Admittance	0.13	0.04			
AC Energy Value					5

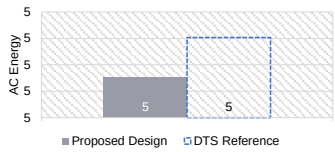
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	7.5	3.42		
Glazing to Façade Ratio	46%	16%		
Glazing References	Window	Window Door		
Glazing System Types	Sliding Door	Sliding Door		
Glass Types	Single glazing	Single glazing		
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	4.80	4.80		
Average Glazing SHGC	0.58	0.58	0.00	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	8.7	18.45		
Wall Types	Wall	Wall		
Methodology	Wall			
Wall Construction	New Cladding	New Cladding		
Wall Thickness	175	175		
Average Wall R-value (m².K/W)	1.53	1.53		
Solar Absorptance	0.7	0.7	0.7	0.7

APPENDIX 4 – EVIDENCE OF COMPLIANCE CHECK LIST

The purpose of this checklist is to itemise the evidence that should be collected during the construction phase of the project that will demonstrate how the final building complies with the Energy Efficiency requirements of Section J of the NCC that were identified during the design phase.

Generally evidence should take the form of delivery receipts, photographs, or signed and dated statements from installers.

This following check list is a generic list and some elements may not be applicable to a particular project.

Part J1 - Building Fabric

Element	Applicable (Y or N)	Evidence
Roof & ceiling insulation		Delivery receipts for roof/ceiling insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Roof Colour		Delivery receipts for roof material and colour or pictures of the roof colour naming the roof colour.
Roof Lights		Delivery receipts for any roof lights nominating the number, size and solar characteristics (U-value and SHGC-value).
Wall insulation		Delivery receipts for wall insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.
Floor		Delivery receipts for floor insulation type and rating and/or pictures of insulation installation and the R rating of the insulation.

Or a signed and dated statement from the builder/contractor that the Building Fabric insulation was installed as per the authorised plans and the Energy Efficiency Report.

Part J2 – Glazing

Element	Applicable (Y or N)	Evidence
Glazing		Delivery receipts for the glazing installed on site including the thermal characteristics of the glazing (U-value and SHGC-value)

Or a signed and dated statement from the builder/contractor that the Glazing was installed with the thermal characteristics as per the authorised plans and the Energy Efficiency Report.

Part J3 – Building Sealing

Element	Applicable (Y or N)	Evidence
Infiltration prevention		Delivery receipts for the number of self-closing doors installed.
Open shop front	NA	Pictures of the A/C outlet being at least 3 metres from the open shop front.
Exhaust fans		Delivery receipts for the self-closing dampers on exhaust fans or pictures showing their installation.

Or a signed and dated statement from the builder/contractor that the self-closing doors and/or A/C outlet next to the open shop front was installed as per the authorised plans, specifications and the Energy Efficiency Report.

Part J7 – Hot Water Supply, Swimming Pool, Spa Pool

Element	Applicable (Y or N)	Evidence
Hot water taps		Delivery receipts for the number and star rating of the hot water taps installed.
Hot Water Systems		Delivery receipts for the number and type of hot water systems installed.
Time clocks		Delivery receipts for the number and type of time clock installed to control the hot water systems.

Or a signed and dated statement from the hot water installer that the hot water system fitting and time clocks were installed as per the authorised plans, specifications and the Energy Efficiency Report.

Part J8 – Facilities for Energy Monitoring

Element	Applicable (Y or N)	Evidence
Energy Meters		Delivery receipts for the number and type of all the energy meter installed with time-of-use capability.
Energy interface monitoring system	NA	Delivery receipts for the interface monitoring system that capable to store, analyse and review energy data for the six specified consumption streams.

Or a signed and dated statement from the monitoring system installer indicating that the energy meters and monitoring systems were installed as per the authorised plans, specifications and the Energy Efficiency Report will comply.