16 CHAPMAN STREET, WERRINGTON

Section J Assessment
Deemed to Satisfy

Prepared for:

The Bathla Group
137 Gilba Road
Girraween NSW 2145

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with The Bathla Group (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30768-R01-v1.0	14 March 2022	James Cleary	Neihad Al-Khalidy	Neihad Al-Khalidy

EXECUTIVE SUMMARY

SLR Consulting Pty Ltd (SLR) has been engaged by The Bathla Group to assess the proposed mixed use 16 Chapman Street, Werrington development, for compliance with the National Construction Code (NCC) 2019 provisions for Energy Efficiency under Section J. The objective of the NCC Section J is to reduce greenhouse gas emissions by efficiently using energy in buildings.

The proposed two storey commercial development will consist of 16 lots and will house commercial warehouse and recreation facilities. From the plans provided the site includes the following:

- Warehouses with office facilities;
- Showrooms;
- Shops;
- Canteen;
- Pool, gym and recreation facilities
- Dance studio; and
- Café.

The sub classification for the proposed building is:

- Cafe – Class 6
- Shop – Class 6
- Canteen – Class 6
- Showroom – Class 6
- Office space – Class 5
- Gym and recreation facilities – Class 6

This requirement has been defined in Volume 1 of the 2019 NCC under Section J and is titled *Energy Efficiency*. There are eight (7) Deemed-to-Satisfy subsections, J1 to J8, that focus on separate aspects of energy efficiency.

- J1 - Building Fabric and Glazing.
- J3 - Building Sealing.
- J5 - Air Conditioning and Ventilation Systems.
- J6 - Artificial Lighting and Power.
- J7 - Heated Water Supply and Swimming Pool and Spa Pool Plant.
- J8 - Facilities for Energy Monitoring.

EXECUTIVE SUMMARY

The NCC currently defines the development area as climate zone 6. This report covers the NCC Section J requirements of the commercial component of the building only.

SLR recommends the following to the building fabrics to comply with NCC 2019 Section J:

- Roof and ceiling insulation requirements have been specified within **Table 1**. SLR recommends R2.9 bulk insulation be added to the roof envelope where specified in **Appendix A**, this is in place of proposed R2.5;
- Wall-glazing requirements and wall requirements have been specified within **Table 2** and **Table 3**, SLR recommends the R2.1 requirement be met through bulk insulation to be defined through consideration of proposed wall cladding thermal properties. Wall envelope specified in **Appendix C**; and
- Floor insulation requirements have been specified within **Table 4**, SLR recommends R1.7 bulk insulation be added to floor envelope where specified in **Appendix B**.

Requirements for building sealing, air-conditioning, artificial lighting, hot water supply and the Facilities for Energy Monitoring are found in the body of this report.

This report has provided advice about each subsection under Section J and identified how compliance with the NCC can be achieved regarding the proposed building. It shall remain the responsibility of the building designers to ensure that the installation meets the requirements of this report, and in turn the NCC.

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1 Introduction

SLR Consulting Pty Ltd (SLR) has been engaged by The Bathla Group to assess the proposed mixed use 16 Chapman Street, Werrington development, for compliance with the National Construction Code (NCC) 2019 provisions for Energy Efficiency under Section J. The objective of the NCC Section J is to reduce greenhouse gas emissions by efficiently using energy in buildings.

The site will form part of the Lysterfield Village Centre and the assessment herein forms part of the Development Application to Penrith City Council.

1.1 Location of Proposed Site

The proposed Development will be located within the Kings Central development and is bound by proposed future streets: Road 11 to the north and Road 12 to the south. The proposed comprises Stage 4A and 4B of the overall development, as shown in **Figure 1**.

Figure 1 Development Site Location

1.2 Development Description

The proposed two storey commercial development will consist of 16 lots and will house commercial warehouse and recreation facilities. From the plans provided the site includes the following:

- Warehouses with office facilities;
- Showrooms;
- Shops;
- Canteen;
- Pool, gym and recreation facilities
- Dance studio; and
- Café.

Representative views of the proposed development are shown in **Figure 2**.

Figure 2 Representative Architectural Plan Views of the development

2 Building Code of Australia Energy Efficiency Requirements

Since the 2006 release of the Building Code of Australia (BCA) it is a mandatory requirement for all BCA class buildings, except Class 4 and Class 10 buildings, to achieve efficient use of energy.

This requirement has been defined in Volume 1 of the 2019 NCC under Section J and is titled *Energy Efficiency*. There are eight (7) Deemed-to-Satisfy subsections, J1 to J8, that focus on separate aspects of energy efficiency.

- J1 - Building Fabric and Glazing.
- J3 - Building Sealing.
- J5 - Air Conditioning and Ventilation Systems.
- J6 - Artificial Lighting and Power.
- J7 - Heated Water Supply and Swimming Pool and Spa Pool Plant.
- J8 - Facilities for Energy Monitoring.

This report will provide advice about each subsection and identify how compliance with the NCC can be achieved for these new requirements regarding the proposed development.

It shall remain the responsibility of the building designers to ensure that the installation meets the requirements of this report, and in turn the NCC.

2.1 Defining the Building Class

The sub classification for the proposed building is:

- Cafe – Class 6
- Shop – Class 6
- Canteen – Class 6
- Showroom – Class 6
- Office space – Class 5
- Gym and recreation facilities – Class 6

2.2 Defining the Energy Efficiency Requirements

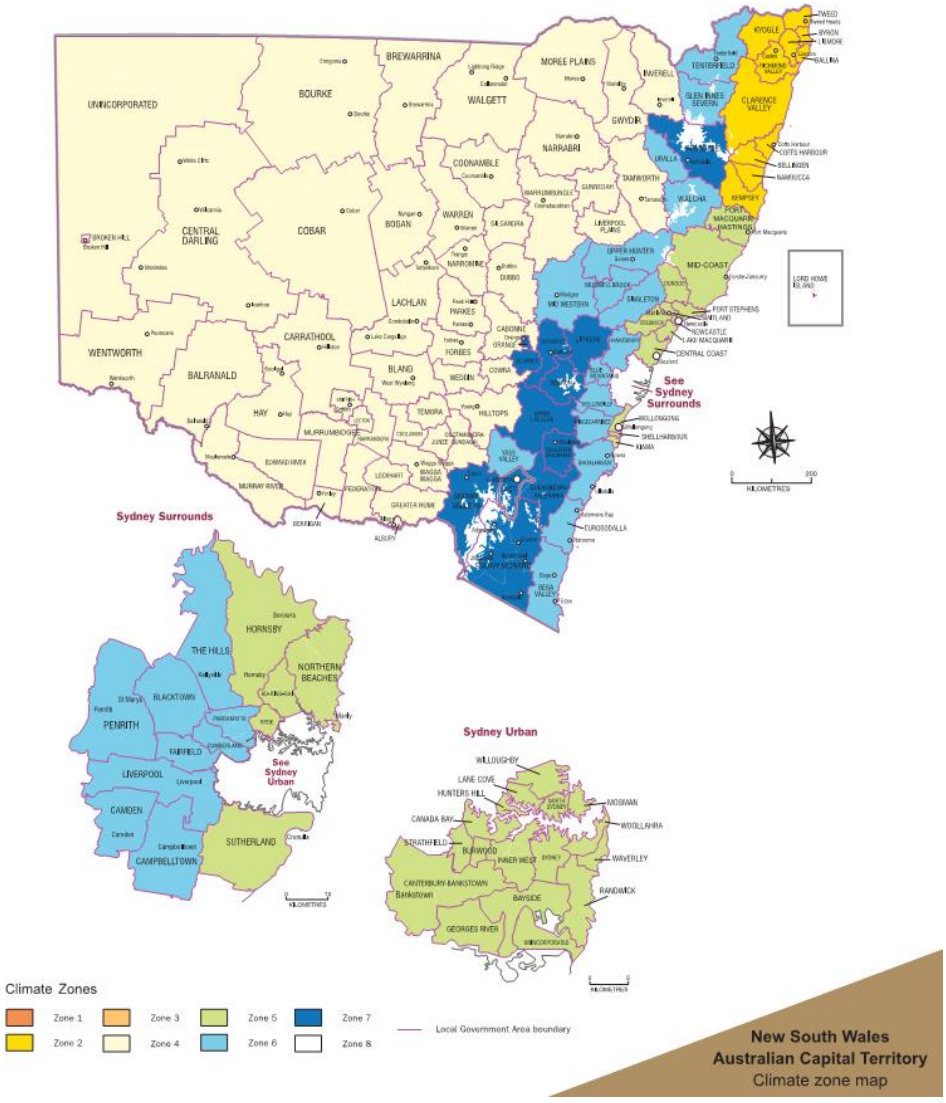
The objective of Section J from Volume 1 of the NCC defines this section as being applicable to Class 2 to 9 buildings, other than Class 7, 8 or 9b buildings that do not have conditioned space. In this instance of the proposed development, there are requirements for compliance with Section J.

This report assumes the 2019 NCC Section J compliance for this development will be achieved through the Deemed-to-Satisfy method. In order to achieve compliance with Section J of the 2019 NCC, the proposed development must satisfy and achieve all requirements of every Deemed-to-Satisfy subsection. This report will include the requirements for the building classes specified within the scope of the 2019 NCC Section J via the deemed-to-satisfy method.

2.3 Defining the BCA Climate

As the proposed development is situated within Bayside Council, parts of the NCC requirements will be based on these climate characteristics. The NCC currently defines the development area as climate zone 6 (shown in **Figure 3**).

Figure 3 Building Code of NSW Climate Zone Map



2.4 Design Documents

The report is prepared based on the architectural drawing set dated February and March 2022. The mark-up drawings used in this report are attached in Appendices.

3 Part J1 - Building Fabric

Part J1 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance of the building fabric. The purpose of this subsection is to ensure that the building fabric will provide sufficient thermal insulation to minimise heating and cooling loads placed on the building and the commensurate energy consumption HVAC systems servicing internal building spaces.

3.1 J1.1 - Application

As stated by the 2019 NCC, Part J1 applies to the proposed office spaces.

3.2 J1.2 - General Thermal Construction

Where thermal insulation is installed in exterior envelope walls or roof of the proposed development, the insulation must comply with AS/NZS 4859.1 and be installed so that it:

a. abuts or overlaps adjoining insulation;

b. forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and

c. does not affect the safe or effective operation of a *service* or fitting.

Where reflective insulation is installed in exterior envelope walls or roof of the proposed development, it must be installed with:

a. the necessary airspace to achieve the *required R-Value* between a reflective side of the *reflective insulation* and a building lining or cladding;

b. the *reflective insulation* closely fitted against any penetration, door or *window* opening;

c. the *reflective insulation* adequately supported by framing members; and

d. each adjoining sheet of roll membrane being:

- overlapped not less than 50 mm; or
- taped together.

Where bulk insulation is installed in exterior envelope walls or roof of the proposed development, it must be installed so that:

• it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and

- in ceilings where there is no bulk insulation or *reflective insulation* in the wall, it overlaps the wall member by not less than 50 mm.

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 J1.5a for wall-glazing construction; or
- determined in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.

3.3 J1.3 - Roof and Ceiling Insulation

The proposed development is located in climate zone 6, the roof and ceiling system that is part of the envelope must achieve the minimum Total R-value of:

- in climate zone 6, R3.2 for a downward direction of heat flow; and
- In climate zones 1, 2, 3, 4, 5, 6 and 7, the solar absorptance of the upper surface of a roof must be not more than 0.45.

The roof/ceiling system for the roof exposed to unconditioned areas of the development is:

- Metal Deck + Insulation + PB

Table 1 Roof R-value

Proposed Roofing System	R-Value	R-Value Requirement	Compliance	Additional R-Value Required	Recommendations
Metal Deck + R2.5 + Plasterboard	2.89	3.2 (with a roof upper surface solar absorptance value of more than 0.45)	No	0.31	SLR recommends R2.9 roof insulation to roof/ceiling in place of R2.5.

Detailed mark ups of required roof insulation are shown in **Appendix A**.

3.4 J1.4 – Roof Lights

The total area of roof lights serving the room or spaces as a percentage of the floor area of the room or space must not exceed 5%. The roof lights must comply with Table J1.4 below.

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

Notes:

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.

No roof lights have been provided to the proposed commercial building areas, therefore this section is not applicable.

3.5 J1.5 – Walls and Glazing

The Total System U-Value of wall-glazing construction must not be greater than—

- 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
- for a Class 3 or 9c building or a Class 9a ward area—

    (i) In climate zones 1, 3, 4, 6 or 7, U1.1; or

    (ii) In climate zones 2 or 5, U2.0; or

    (iii) in climate zone 8, U0.9.

The Total System U-Value of display glazing must not be greater than U5.8.

The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification J1.5a.

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

The solar admittance of externally facing 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, the values specified in Table J1.5b; and

(ii) for a Class 3 or 9c building or a Class 9a ward area, the values specified in Table J1.5c.

The solar admittance of a wall-glazing construction must be calculated in accordance with Specification J1.5a.

The Total system SHGC of display glazing must not be greater than 0.81 divided by the applicable shading factor specified in Clause 7 of Specification J1.5a.

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

Table J1.5c Maximum wall-glazing construction solar admittance - Class 3 or 9b building or Class 9a ward area

Climate zone	Eastern aspect *solar admittance*	Northern aspect *solar admittance*	Southern aspect *solar admittance*	Western aspect *solar admittance*
1	0.07	0.07	0.10	0.07
2	0.10	0.10	0.10	0.10
3	0.07	0.07	0.07	0.07
4	0.07	0.07	0.07	0.07
5	0.10	0.10	0.10	0.10
6	0.07	0.07	0.07	0.07
7	0.07	0.07	0.08	0.07
8	0.08	0.08	0.08	0.08

Table 2 Wall-Glazing Calculation Recommended Average Glazing U-value and SHGC

Lot	Area	Recommended Average[3] – Glazing System	
		U-Value	SHGC
4002, 4003, 4004	Showroom	2.6	0.22
	Office	2.4	0.19
4005	Ground	2.4	0.22
	L1	2.7	0.25
4006	Canteen	2.6	0.22
	L1 Café, Gym and Studio	2.7	0.25
4007, 4101, 4102	Ground	2.7	0.24
	L1	2.4	0.2
4103	All	2.7	0.25
4104, 4105, 4106, 4107, 4108	Ground	2.4	0.22
	L1	2.7	0.25
4109	All	2.4	0.22
4110	Ground	2.4	0.22
	L1	2.7	0.25

The glazing calculations considered 2m awnings to the following lots:

- Lot 4002, 4003 and 4004 Ground Level north and east
- Lot 4006 All levels north and east
- Lot 4103, 4104, 4105, 4106, 4107 and 4108 Level 1 north and east
- Lot 4109 and 4110 All levels north and east

Table 3 R-value of Proposed Wall System

Proposed Wall System	Required Average Wall R-Value[4]	Solar Adsorption	Compliance	Recommendations
Precast Concrete Panel	R2.1	0.4	No	Additional insulation required to meet prescribed average R-Value. Additional R-Value of R1.7 should apply to walls enclosing the thermal envelope.

Wall-glazing calculations summary reports are shown in **Appendix C**.

Note:

U-value for the wall glazing system including Aluminium frame
[2] Nominated compliance pathway: Either method can achieve compliance
[3] A JV3 Alternative Solution offers opportunities to reduce/remove higher glazing options finish.
[4] Average R-value is calculated for a Lightweight concrete wall: 10mm Plasterboard+ 70mm stud+ 20mm insulation (min. 11kg/m3) + 100mm Aerated concrete. Any other alternative wall system with a minimum R2.10 can satisfy the DtS requirements.

3.6 J1.6 - Floors

A floor must achieve the total R-value specified in Table J1.6.

Table J1.6 Floors - Minimum Total R-Value

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

Note to Table J1.6: For the purpose of calculating the Total R-Value of a floor, the sub-floor and soil R-Value must be calculated in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A.

The proposed floor system is as described below:

- Suspended concrete floor (upper levels)

Table 4 summarises the R-values of the proposed floor systems, and the recommendations to achieve compliance.

Table 4 Floor Systems Summary and Recommendations

Proposed System	R-Value	R-Value Requirement	Compliance	Additional R-Value Required	Recommendations
Suspended Concrete Slab	0.36	2.0	No	1.64	SLR recommends additional insulation of R1.7 be applied to concrete slab.

Detailed mark ups of required floor insulation are shown in **Appendix B**.

4 Part J3 – Building Sealing

Part J3 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance for building sealing. The purpose of this subsection is to ensure that additional heating and cooling loads will not be introduced through building leakage.

4.1 J3.1 – Application

Building sealing is applicable to the conditioned spaces within the building.

4.2 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.

4.3 J3.3 – Roof Lights

(a) A roof light must be sealed, or capable of being sealed, when serving—

(i) a conditioned space; or

(ii) a habitable room in climate zones 4, 5, 6, 7 or 8.

(b) A roof light required by (a) to be sealed, or capable of being sealed, must be constructed with—

(i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or

(ii) a weatherproof seal; or

(iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.

4.4 J3.4 – External Windows and Doors

The Part J3.4 of the NCC Section J requirements will apply to the development.

Part J3.4 of the 2019 NCC requires that a seal to restrict air infiltration must be fitted to each edge of an external door, openable external window or the like when serving a conditioned space. This requirement does not apply to:

- a window complying with AS 2047; or
- a fire door; or

- a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.

The seal may be a foam or rubber compressible strip, fibrous seal or the like.

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.

A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.

4.5 J3.5 – Exhaust fans

An exhaust fan must be fitted with a sealing device such as a self-closing damper.

4.6 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.

5 Part J5 - Air Conditioning and Ventilation Systems

Part J5 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance of a building's air conditioning and ventilation systems. The purpose of this subsection is to ensure that conditioned air (when required) is generated, controlled and supplied to the building in an energy efficient manner. This subsection also ensures that ventilation and exhaust systems are efficient, while also keeping the wasted conditioned air to a minimum.

The mechanical services engineer should ensure that the proposed air-conditioning systems for the development comply with the following sections.

5.1 J5.2 - Air-Conditioning and Ventilation Systems

5.1.1 Air Conditioning Unit or Ventilation System

The air-conditioning unit or system serving the conditioned spaces is to comply with the following performance requirements.

An air-conditioning unit or system must:

- Be capable of -
    - being inactivated when the building served is not occupied; and
- Thermostatically control the temperature of each zone or area when serving more than one zone
- Provides the required mechanical ventilation, other than in climate zone 1 or where dehumidification control is needed, must have an outdoor air economy cycle if the total air flow rate of any airside component of an air-conditioning system is greater than or equal to the figures in **Table 5**.
- When two or more air-conditioning systems serve the same space, they must use control sequences that prevent the systems from operating in opposing heating and cooling modes.
- Contains more than one water heater, chiller or coil, must be capable of stopping the flow of water to those not operating; and with an airflow of more than 1000 L/s, must have a variable speed fan when its supply air quantity is capable of being varied;

Table 5 Copy of Table J5.2 - Requirement for an outdoor air economy cycle

Table J5.2 Requirement for an outdoor air economy cycle

Climate zone	Total air flow rate *requiring* an economy cycle (L/s)
2	9000
3	7500
4	3500
5	3000
6	2000
7	2500
8	4000

5.1.2 Mechanical Ventilation System

This subsection of J5.3 applies all components of the proposed development as all spaces are to be mechanically ventilated. The mechanical ventilation systems are to comply with the following performance requirements.

A mechanical ventilation system must:

- Be capable of being deactivated when the building or part of the building served by that system is not occupied; and
- When serving a conditioned space-
    - Not provide mechanical ventilation in excess of the minimum quantity required by part F4 of the NCC for a mechanical ventilation system, where relevant, by more than 20% other than where there is-
        - Additional unconditioned outside air supplied to provide free cooling or to balance process exhaust as from a health-care building or laboratory; or
        - additional exhaust ventilation needed to balance the required mechanical ventilation; or
        - an energy reclaiming system that preconditions outsider air.
    - Where the number of square metres per person is 1 or less as specified in NCC section D1.13 and the air flow rate is more than 1000 L/s, have-
        - An energy reclaiming system that preconditions outsider air; or
        - The ability to automatically modulate the mechanical ventilation required by Part F4 in proportion to the number of occupants; and
- When the mechanical ventilation is provided by means other than an air-conditioning system and the air flow rate is more than 1000 L/s-
    - Have a fan power to air flow rate ration of 0.65 W/ (L/s) without filters or 0.98 W/ (L/s) with filters for a general mechanical ventilation system.

5.2 J5.3 - Time Switch

Part J5.3 applies to the proposed development where applicable. Power supply must be controlled by a time switch for:

- air-conditioning system of more than 2 kW_r; or
- ventilation system with an air flow rate of more than 1000 L/s; or
- heating system of more than 1 $kW_{heating}$.

The requirements for time switch do not apply to a building where air-conditioning or ventilation is needed 24hour occupancy such as manufacturing process or emergency services.

The time switch must be capable of –

- Switching on and off electric power to systems –
    - at variable pre-programmed times and on variable pre-programmed days.
    - limiting the period, the system is switched on to 2 hours beyond the time for when the building is occupied.
- Being overridden by a manual switch for a period of up to 2 hours, after which the time switch must resume control.

5.3 J5.4 – Fan Systems

There are two options to demonstrate that a fan system that forms part of an air-conditioning system is compliant with J5.4.

- The first option is to demonstrate that each of the individual components of a fan system are individually more efficient than the values specified in J5.4.
- The second option is to demonstrate that the fan system as a whole is more efficient than a system that is designed meeting the individual component requirements.

5.4 J5.5 Ductwork Insulation

Ductwork and fittings in an air-conditioning system must be provided with insulation—

- complying with AS/NZS 4859.1; and
- having an insulation R-Value greater than or equal to—

Insulation must—

- be protected against the effects of weather and sunlight; and
- be installed so that it abuts adjoining insulation to form a continuous barrier; and maintains its position and thickness, other than at flanges and supports.

5.5 J5.6 Ductwork sealing

Ductwork in an air-conditioning system with a capacity of 3000 L/s or greater, not located within the only or last room served by the system, must be sealed against air loss in accordance with the duct sealing requirements of AS 4254.1 and AS 4254.2 for the static pressure in the system.

5.6 J5.7 Pump Systems

Pumps and pipework that form part of an air-conditioning system must either—

- separately comply or

- achieve a pump motor power per unit of flowrate lower than the pump motor power per unit of flowrate achieved when applying together.

5.7 J5.8 Pipework insulation

Piping, vessels, heat exchangers and tanks containing heating or cooling fluid, where the fluid is held at a heated or cooled temperature, that are part of an air-conditioning system, other than in appliances covered by MEPS, must be provided with insulation—

- complying with AS/NZS 4859.1
- for piping of heating and cooling fluids, having an insulation R-Value in accordance with Table J5.8a; and
- for vessels, heat exchangers or tanks, having an insulation R-Value in accordance with Table J5.8b; and
- for refill or pressure relief piping, having an insulation R-Value equal to the required insulation R-Value of the connected pipe, vessel or tank within 500 mm of the connection.

Table 6 Copy of Table J5.8a Piping – Minimum Insulation R value

Table J5.8a Piping — Minimum insulation R-Value

Fluid temperature range	Minimum insulation *R-Value* — nominal pipe diameter ≤ 40 mm	Minimum insulation *R-Value* — nominal pipe diameter > 40 mm and ≤ 80 mm	Minimum insulation *R-Value* — nominal pipe diameter between > 80 mm and ≤ 150 mm	Minimum insulation *R-Value* — nominal pipe diameter > 150 mm
Low temperature chilled — ≤ 2°C	1.3	1.7	2.0	2.7
Chilled — > 2°C but ≤ 20°C	1.0	1.5	2.0	2.0
Heated — > 30°C but ≤ 85°C	1.7	1.7	1.7	1.7
High Temperature heated — > 85°C	2.7	2.7	2.7	2.7

Table 7 Copy of Table J5.8b Vessels, Heat Exchangers and Tanks — Minimum Insulation R-Value

Table J5.8b Vessels, heat exchangers and tanks — Minimum insulation R-Value

Fluid temperature range	Minimum insulation *R-Value*
Low temperature chilled — ≤ 2°C	2.7
Chilled — > 2°C but ≤ 20°C	1.8
Heated — > 30°C but ≤ 85°C	3.0
High temperature heated — > 85°C	3.0

5.8 J5.10 Refrigerant chillers

An air-conditioning system refrigerant chiller must comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio in Table J5.10a or Table J5.10b when determined in accordance with AHRI 551/591.

5.9 J5.11 Unitary air-conditioning equipment

Unitary air-conditioning equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with MEPS.

5.10 J5.12 Heat rejection equipment

The motor rated power of a fan in a cooling tower, closed circuit cooler or evaporative condenser must not exceed the allowances in Table J5.12.

The fan in an air-cooled condenser must have a motor rated power of not more than 42 W for each kW of heat rejected from the refrigerant, when determined in accordance with AHRI 460 except for—

- a refrigerant chiller in an air-conditioning system that complies with the energy efficiency ratios in J5.10;
- packaged air-conditioners, split systems, and variable refrigerant flow air-conditioning equipment that complies with the energy efficiency ratios in J5.11.

Table 8 Copy of Table J5.12 Maximum Fan Motor Power — Cooling Towers, Closed Circuit Coolers and Evaporative Condensers

Table J5.12 Maximum fan motor power — Cooling towers, closed circuit coolers and evaporative condensers

Type	Cooling tower maximum fan motor input power (W/kW_{rej})	Closed circuit cooler maximum fan motor input power (W/kW_{rej})	Evaporative condenser maximum fan motor input power (W/kW_{rej})
Induced draft	10.4	16.9	11.0
Forced draft	19.5	Note	11.0

6 Part J6 – Artificial Lighting and Power

Part J6 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance of a building's artificial lighting and power. The purpose of this subsection is to ensure that efficient lighting systems are installed to maintain required lighting levels while keeping energy consumption to a minimum. This subsection also ensures that effective lighting control is utilised to reduce wasted energy consumption.

6.1 J6.1 – Application

As stated by the 2019 NCC, Part J6 applies to all classes of buildings with the exception of sole-occupancy units of a Class 2 or Class 4 part of a building. **Part J6 therefore applies to the proposed development.**

6.2 J6.2 – Interior Artificial Lighting

There is a requirement for the proposed building that the artificial lighting must not exceed the maximum lamp power density in **Table 9**, except that in a bathroom, dressing rooms or the like, an average artificial *light source efficacy* of not less than 40 Lumens/W may be used.

Table 9 Maximum Lamp Power Density

Location	Maximum Lamp Power Density (W/m^2)
Board room and conference room	5
Carpark - general	5
Carpark - entry zone (first 20 m of travel) during night-time	2.5
Control room, switch room and the like	3
Corridors	5
Entry lobby from outside the building	9
Kitchen and food preparation area	4
Office - artificially lit to an ambient level of less than 200 lx	2.5
Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	14
Retail space including a museum and gallery whose purpose is the sale of objects	14
Sole occupancy unit of a Class 3 building	5

Service areas such as cleaner's room and the like	1.5
Toilet, locker room, staff room, rest room	3
Wholesale storage and display area	4

The maximum illuminance power density may be increased by multiplying by any adjustment factor provided in NCC Table J6.2b which provides adjustment factors based on methods of controlling the lighting systems, such as motion detectors, dimming systems and room properties.

6.3 J6.3 - Interior Artificial Lighting and Power Control

A light switch must be located in a visible position in the room or space being switched, or in an adjacent room or space from where the lighting being switched is visible. The light switch must not operate lighting within an area of more than 250 m^2.

These lighting and power control requirements do not apply to Emergency Lighting in accordance with Part E4, NCC Volume One.

6.4 J6.4 - Interior Decorative and Display Lighting

Any interior/ lighting for display or decorative purposes, such as the illumination of foyer murals, must be separately controlled from other artificial lighting.

Each group of decorative/display lighting must be controlled by a manual light switch.

6.5 J6.5 - Artificial Lighting around the Perimeter of the Building

Artificial lighting around the perimeter of a building will be controlled by a time switch or daylight sensor complying with Section J6 lighting controls requirements.

A time switch needs to abide by the specification set out in the 2019 NCC. Switching on and off electric power to systems at variable pre-programmed times and on variable pre-programmed days.

When the total perimeter lighting load exceeds 100W, it must have an average light source efficacy of not less than 60 Lumens/W or be controlled by a motion detector in accordance with Specification J6 and when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification J6.

6.6 J6.6 - Boiling Water and Chilled Water Storage Units

Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.

6.7 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 6.7b; or if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2.

6.8 J6.7 – Escalators and moving walkways

Escalators and moving walkways must have the ability to slow to between 0.2 m/s and 0.05 m/s when unused for more than 15 minutes.

7 Part J7 - Hot Water Supply and Swimming Pool and Spa Pool Plant

Part J7 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance of a building's hot water supply system. The purpose of this subsection is to ensure that efficient hot water units and systems are installed.

7.1 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.

8 Part J8 - Facilities for energy monitoring

Part J8 of the 2019 NCC contains the requirements of the Deemed-to-Satisfy compliance of a building's Facilities for energy monitoring. The purpose of this subsection is to ensure that access can be gained to all services and 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.

8.1 J8.1 - Application

As stated by the 2019 NCC, Part J8 applies to a Class 6 building. Part J8 therefore applies to the proposed development.

8.2 J8.3 Facilities for energy monitoring

(a) A building or sole-occupancy unit with a floor area of more than 500 m^2 must have the facility to record the consumption of gas and electricity.

(b) A building with a floor area of more than 2,500 m^2 must have the facility to record individually the energy consumption of:

i. air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans;

ii. artificial lighting;

iii. appliance power;

iv. central hot water supply;

v. internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and

vi. other ancillary plant.

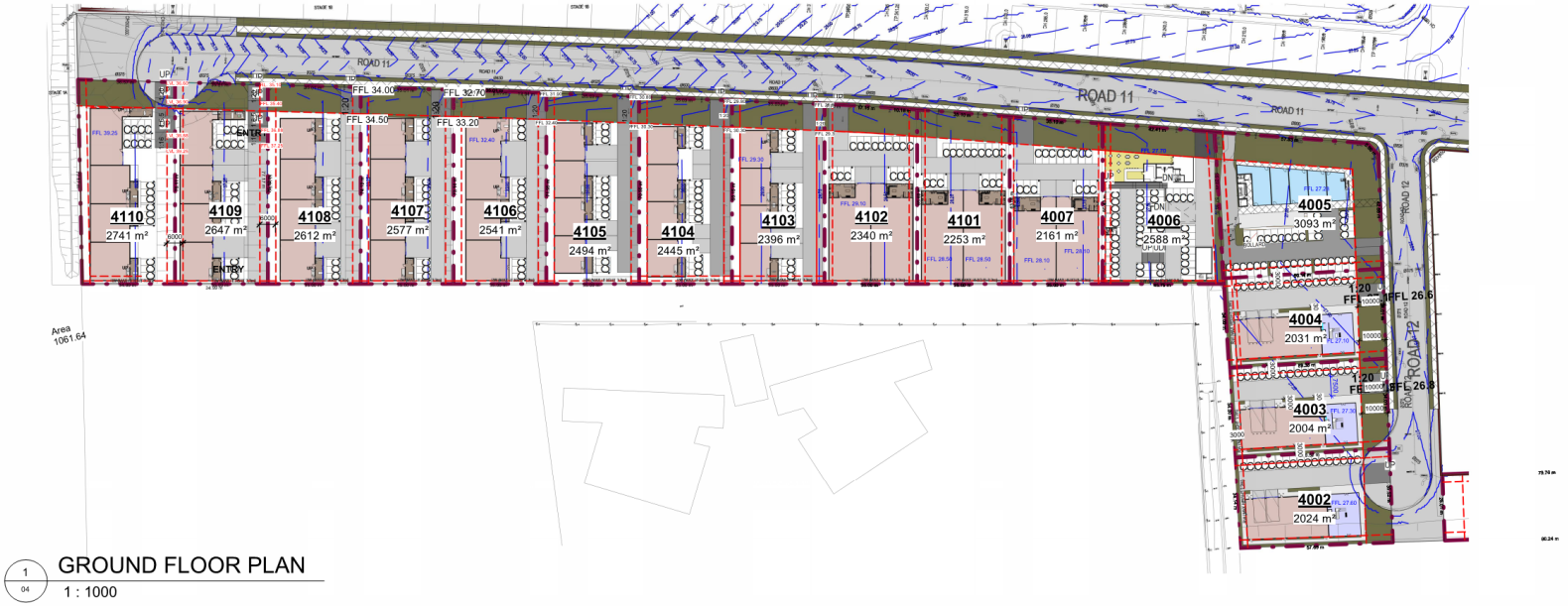
9 Conclusion

SLR Consulting Pty Ltd (SLR) has been engaged by The Bathla Group to assess the proposed mixed use 16 Chapman Street, Werrington development, for compliance with the National Construction Code (NCC) 2019 provisions for Energy Efficiency under Section J. The objective of the NCC Section J is to reduce greenhouse gas emissions by efficiently using energy in buildings.

This report has provided advice about each subsection under Section J and identified how compliance with the NCC can be achieved in regard to the proposed commercial areas of the designed building. It shall remain the responsibility of the building designers to ensure that the installation meets the requirements of this report, and in turn the NCC.

APPENDIX A

NCC 2019 ROOF/CEILING INSULATION REQUIREMENTS



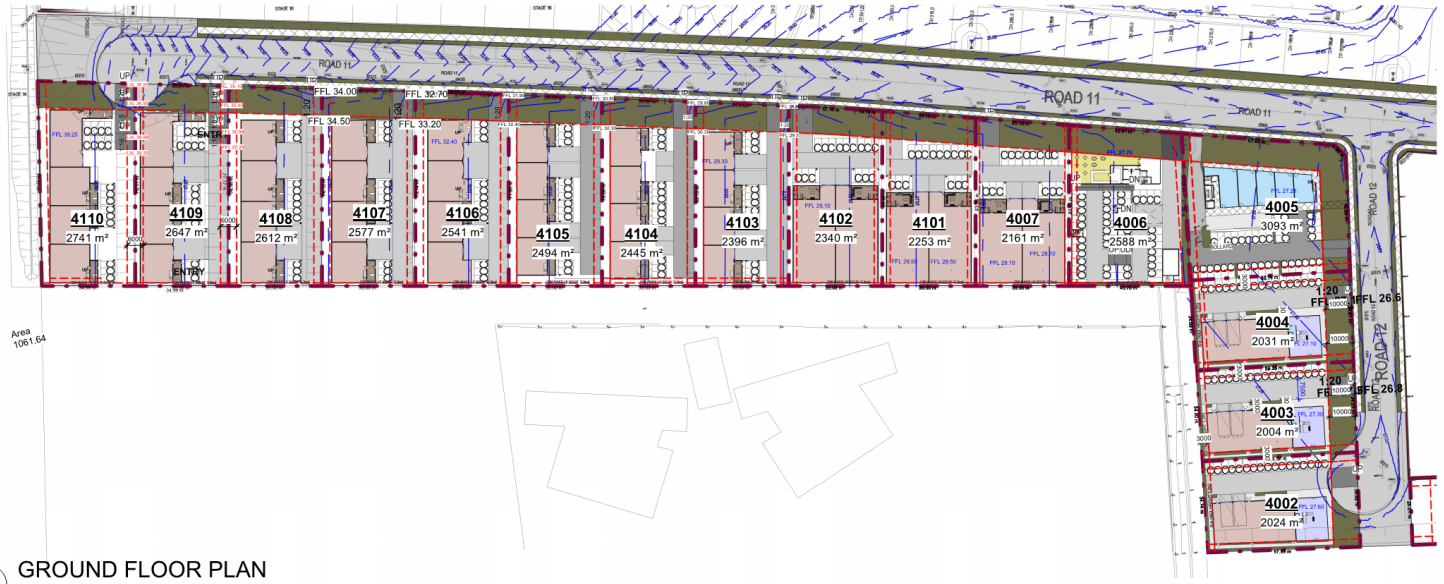
1 / 04 GROUND FLOOR PLAN
1 : 1000

Ceiling system with total R3.2 required

2 / 04 Level 1
1 : 1000

APPENDIX B

NCC 2019 ENVELOPE FLOOR DTS REQUIREMENTS



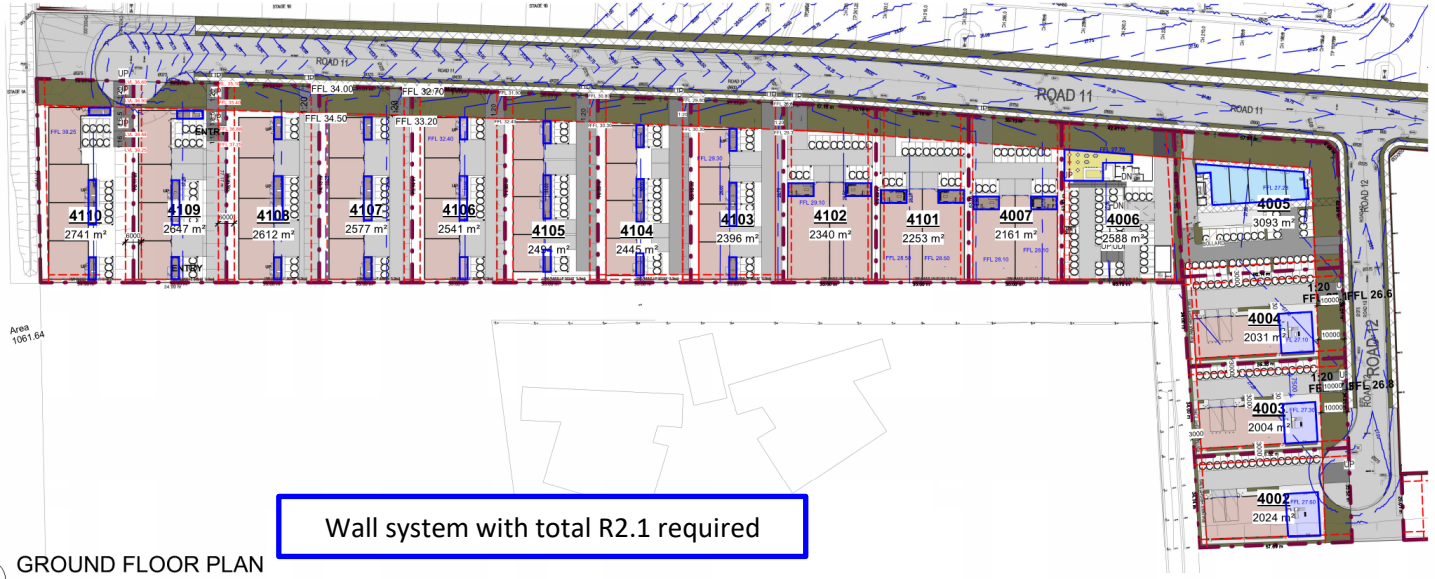
1/04 GROUND FLOOR PLAN
1 : 1000

Floor system with total R2.0 required

2/04 Level 1
1 : 1000

APPENDIX C

MARKED-UP DRAWING FOR EXTERNAL WALL AND NCC 2019 WALL-GLAZING CALCULATOR DTS REQUIREMENTS



Wall system with total R2.1 required

1 / 04 GROUND FLOOR PLAN
1 : 1000

2 / 04 Level 1
1 : 1000

Façade

Report

Calculator

Project Summary

Date
10-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4002 Office

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

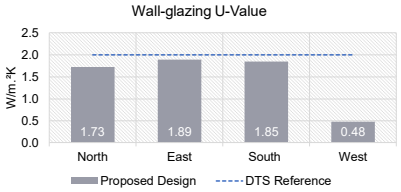
Tool Version
1.2 (June 2020)

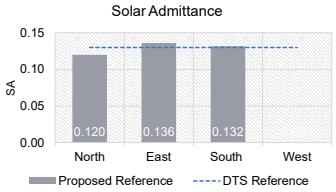
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

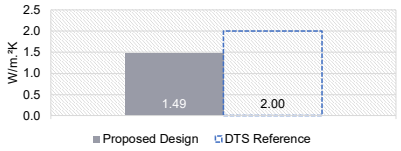
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.73	1.89	1.85	0.48	1.49
Solar Admittance	0.12	0.14	0.13		
AC Energy Value					35

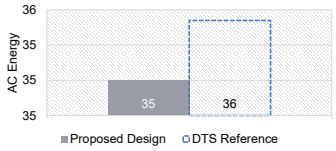
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	34.02	44.8	45.6	0
Glazing to Façade Ratio	65%	74%	71%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.19	0.19	0.19	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	18.325	16	18.325	59.812
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
10-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4002 Showroom

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

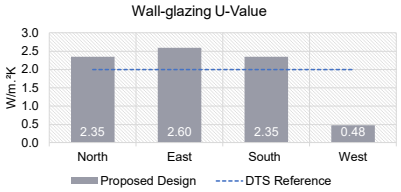
Tool Version
1.2 (June 2020)

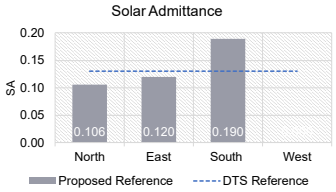
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.35	2.60	2.35	0.48	1.92
Solar Admittance	0.11	0.12	0.19		
AC Energy Value					34

Method 1





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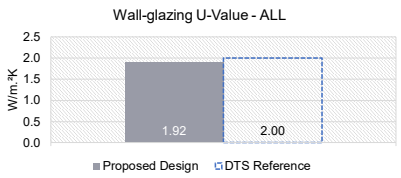

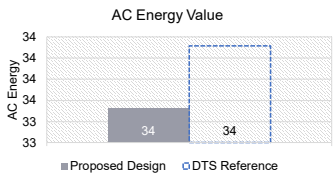

Project Details

	North	East	South	West
Glazing Area (m²)	46.17	61.18	46.17	0
Glazing to Façade Ratio	88%	100%	88%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.60	2.60	2.60	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	6.175	0	6.175	59.812
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4003 Office

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

Tool Version
1.2 (June 2020)

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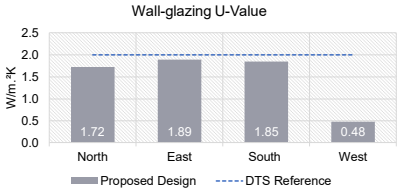
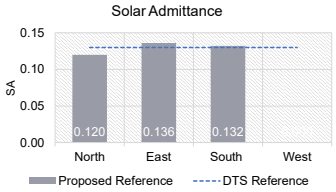
Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.72	1.89	1.85	0.48	1.49
Solar Admittance	0.12	0.14	0.13		
AC Energy Value					34

Method 1





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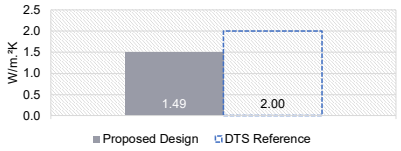
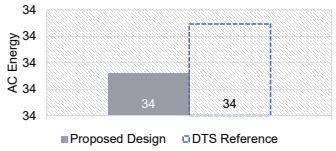




Project Details

	North	East	South	West
Glazing Area (m²)	33.53	41.16	45.6	0
Glazing to Façade Ratio	65%	74%	72%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.19	0.19	0.19	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	18.15	14.7	18.15	55.86
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4003 Showroom

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

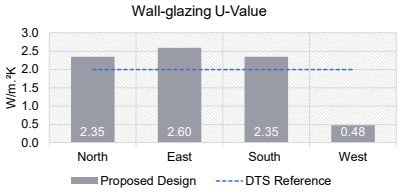
Tool Version
1.2 (June 2020)

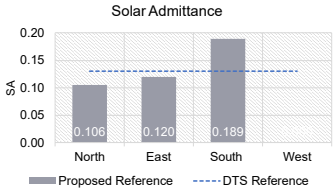
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

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)	2.35	2.60	2.35	0.48	1.93
Solar Admittance	0.11	0.12	0.19		
AC Energy Value					33

Method 1





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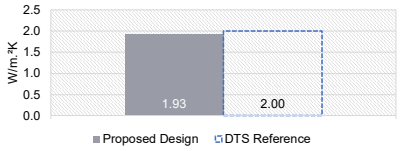
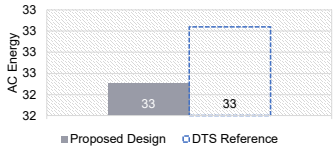




Project Details

	North	East	South	West
Glazing Area (m²)	45.885	56.62	45.885	0
Glazing to Façade Ratio	88%	100%	88%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.60	2.60	2.60	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	6.175	0	6.175	56.62
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4004 Office

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

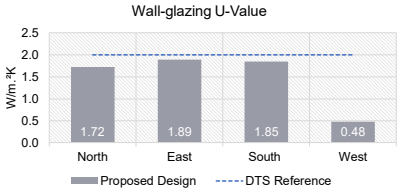
Tool Version
1.2 (June 2020)

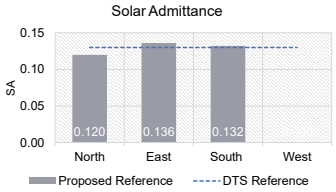
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

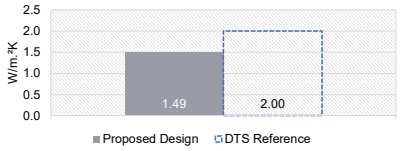
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.72	1.89	1.85	0.48	1.49
Solar Admittance	0.12	0.14	0.13		
AC Energy Value					34

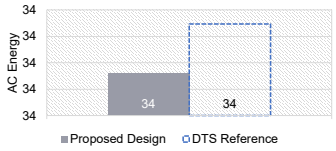
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	33.53	41.16	45.6	0
Glazing to Façade Ratio	65%	74%	72%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.19	0.19	0.19	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	18.15	14.7	18.15	55.86
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4004 Showroom

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

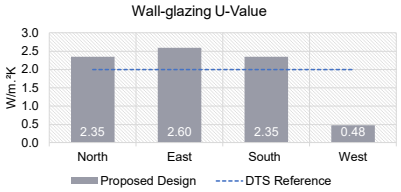
Tool Version
1.2 (June 2020)

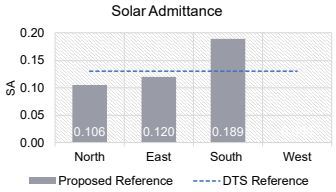
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

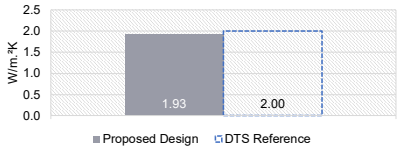
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.35	2.60	2.35	0.48	1.93
Solar Admittance	0.11	0.12	0.19		
AC Energy Value					33

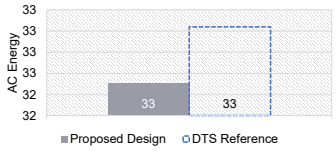
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	45.885	56.62	45.885	0
Glazing to Façade Ratio	88%	100%	88%	0%
Glazing References	1	1	1	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.60	2.60	2.60	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	6.175	0	6.175	56.62
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4005 Ground

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

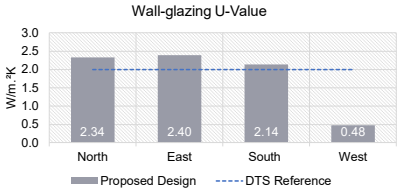
Tool Version
1.2 (June 2020)

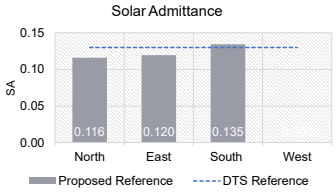
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

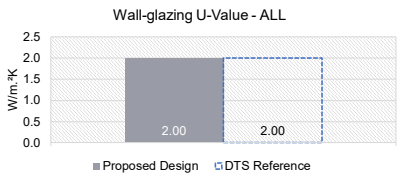
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.34	2.40	2.14	0.48	2.00
Solar Admittance	0.12	0.12	0.13		
AC Energy Value					68

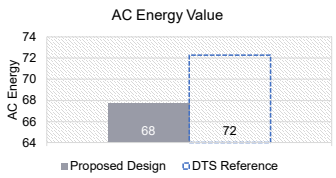
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	153.862	38.57	136.23	0
Glazing to Façade Ratio	97%	100%	87%	0%
Glazing References	1 2 3 4 5	1	1 2 3 4 5	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	4.94	0	20.596	59.66
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4005 Upper

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

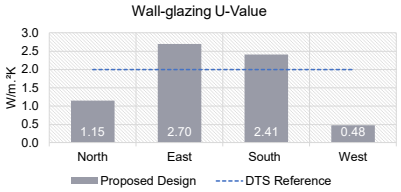
Tool Version
1.2 (June 2020)

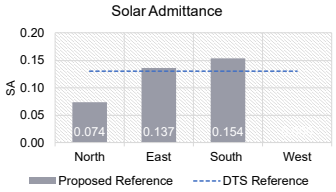
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

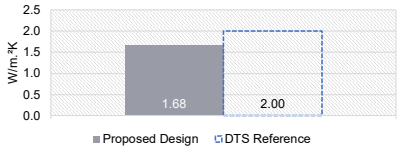
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.15	2.70	2.41	0.48	1.68
Solar Admittance	0.07	0.14	0.15		
AC Energy Value					58

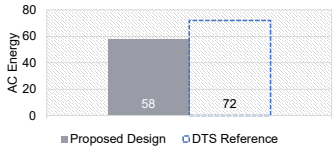
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	46.55	43.396	136.876	0
Glazing to Façade Ratio	30%	100%	87%	0%
Glazing References	1	1	1 2 3 4 5	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	107.312	0	20.596	65.36
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4006 Café Gym Dance Studio

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

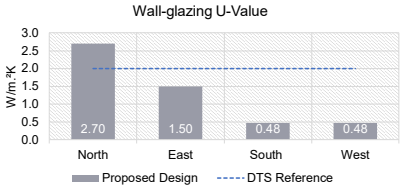
Tool Version
1.2 (June 2020)

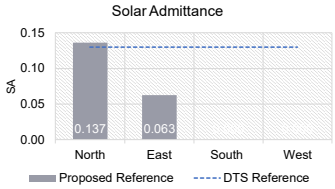
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

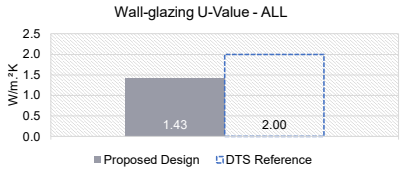
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.70	1.50	0.48	0.48	1.43
Solar Admittance	0.14	0.06			
AC Energy Value					34

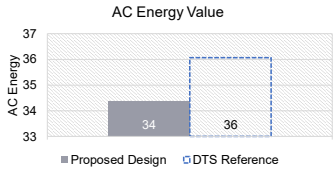
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	108.48	13.4816	0	0
Glazing to Façade Ratio	100%	46%	0%	0%
Glazing References	1	1		1
Glazing System Types	Fixed	Fixed		Fixed
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating		Double Glazed Unit - single low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	2.70	2.70		
Average Glazing SHGC	0.25	0.25	0.00	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	15.84	108.16	37.504
Wall Types		Wall	Wall	Wall
Methodology	Wall			
Wall Construction		Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness		200	200	200
Average Wall R-value (m².K/W)		2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4006 Canteen

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

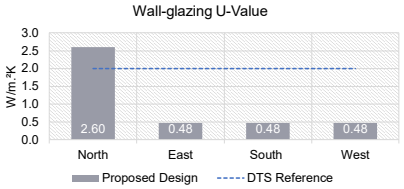
Tool Version
1.2 (June 2020)

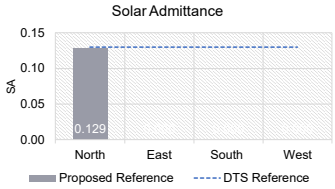
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

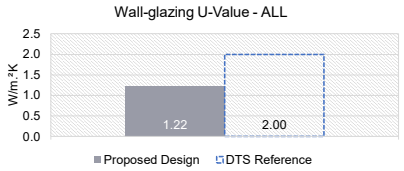
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.60	0.48	0.48	0.48	1.22
Solar Admittance	0.13				
AC Energy Value					38

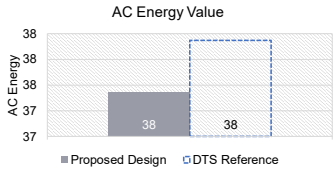
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	137.7	0	0	0
Glazing to Façade Ratio	100%	0%	0%	0%
Glazing References	1			
Glazing System Types	Fixed			
Glass Types	Double Glazed Unit - single low-E coating			
Frame Types	Aluminium			
Average Glazing U-Value (W/m².K)	2.60			
Average Glazing SHGC	0.22	0.00	0.00	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	52.92	136.62	63.315
Wall Types		Wall	Wall	Wall
Methodology	Wall			
Wall Construction		Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness		200	200	200
Average Wall R-value (m².K/W)		2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4007 Ground

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

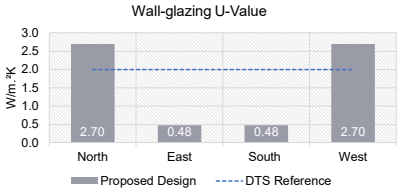
Tool Version
1.2 (June 2020)

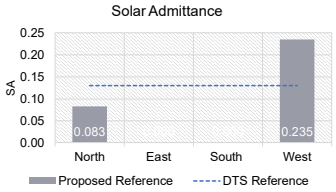
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

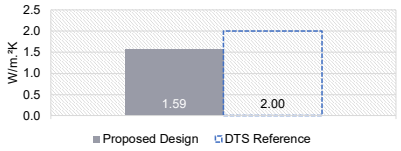
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.70	0.48	0.48	2.70	1.59
Solar Admittance	0.08			0.24	
AC Energy Value					15

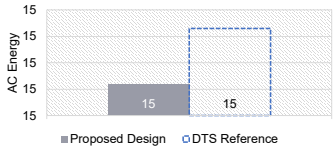
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	37.962	0	0	20.577
Glazing to Façade Ratio	100%	0%	0%	100%
Glazing References	1			1
Glazing System Types	Fixed			Fixed
Glass Types	Double Glazed Unit - single low-E coating			Double Glazed Unit - single low-E coating
Frame Types	Aluminium			
Average Glazing U-Value (W/m².K)	2.70			2.70
Average Glazing SHGC	0.24	0.00	0.00	0.24
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	20.577	37.962	0
Wall Types		Wall	Wall	
Methodology	Wall			
Wall Construction		Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness		200	200	
Average Wall R-value (m².K/W)		2.10	2.10	
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4007 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

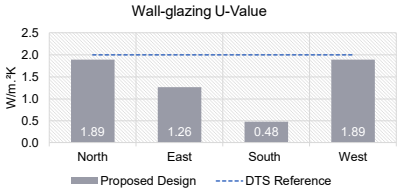
Tool Version
1.2 (June 2020)

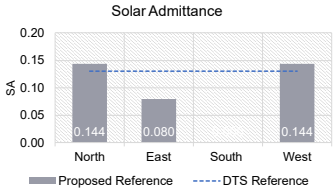
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

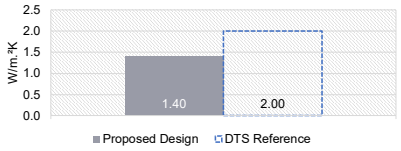
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.89	1.26	0.48	1.89	1.40
Solar Admittance	0.14	0.08		0.14	
AC Energy Value					29

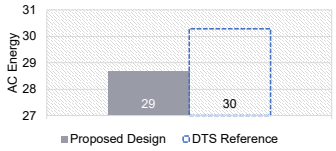
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	27.972	18.998	0	34.16
Glazing to Façade Ratio	74%	41%	0%	74%
Glazing References	1	1		1
Glazing System Types	Fixed	Fixed		Fixed
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating		Double Glazed Unit - single low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	2.40	2.40		2.40
Average Glazing SHGC	0.20	0.20	0.00	0.20
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	9.99	27.362	37.962	12.2
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4101 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

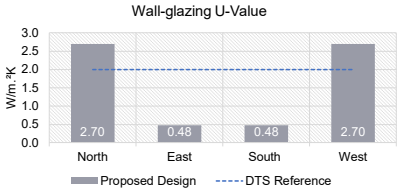
Tool Version
1.2 (June 2020)

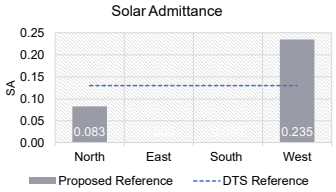
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

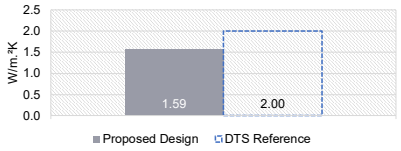
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.70	0.48	0.48	2.70	1.59
Solar Admittance	0.08			0.24	
AC Energy Value					15

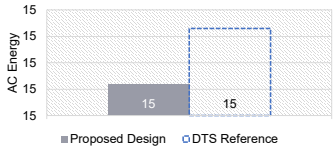
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	37.962	0	0	20.577
Glazing to Façade Ratio	100%	0%	0%	100%
Glazing References	1			1
Glazing System Types	Fixed			Fixed
Glass Types	Double Glazed Unit - single low-E coating			Double Glazed Unit - single low-E coating
Frame Types	Aluminium			
Average Glazing U-Value (W/m².K)	2.70			2.70
Average Glazing SHGC	0.24	0.00	0.00	0.24
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	20.577	37.962	0
Wall Types		Wall	Wall	
Methodology	Wall			
Wall Construction		Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness		200	200	
Average Wall R-value (m².K/W)		2.10	2.10	
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4101 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

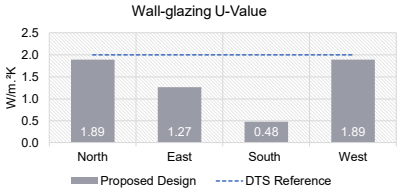
Tool Version
1.2 (June 2020)

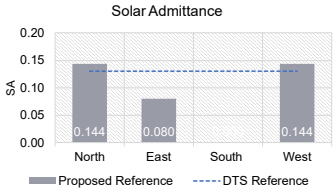
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

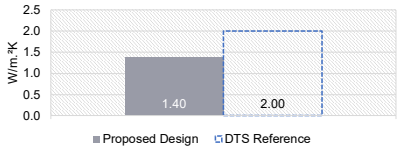
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.89	1.27	0.48	1.89	1.40
Solar Admittance	0.14	0.08		0.14	
AC Energy Value					28

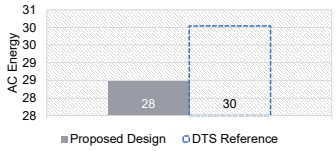
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	27.972	18.998	0	33.502
Glazing to Façade Ratio	74%	41%	0%	74%
Glazing References	1	1		1
Glazing System Types	Fixed	Fixed		Fixed
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating		Double Glazed Unit - single low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	2.40	2.40		2.40
Average Glazing SHGC	0.20	0.20	0.00	0.20
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	9.99	27.127	37.962	11.965
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4102 Ground

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

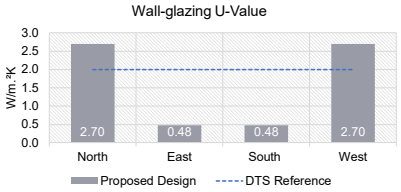
Tool Version
1.2 (June 2020)

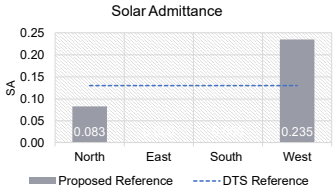
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

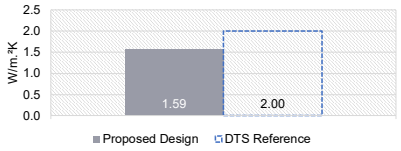
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.70	0.48	0.48	2.70	1.59
Solar Admittance	0.08			0.24	
AC Energy Value					15

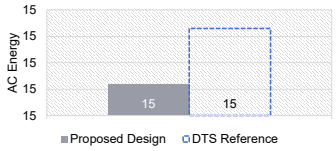
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	37.962	0	0	20.577
Glazing to Façade Ratio	100%	0%	0%	100%
Glazing References	1			1
Glazing System Types	Fixed			Fixed
Glass Types	Double Glazed Unit - single low-E coating			Double Glazed Unit - single low-E coating
Frame Types	Aluminium			
Average Glazing U-Value (W/m².K)	2.70			2.70
Average Glazing SHGC	0.24	0.00	0.00	0.24
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	20.577	37.962	0
Wall Types		Wall	Wall	
Methodology	Wall			
Wall Construction		Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness		200	200	
Average Wall R-value (m².K/W)		2.10	2.10	
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4102 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

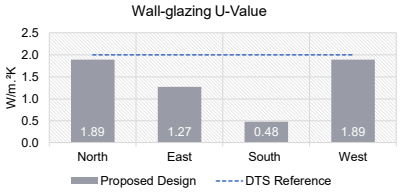
Tool Version
1.2 (June 2020)

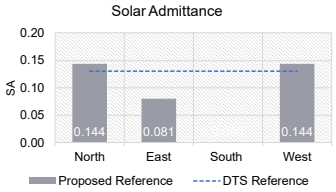
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

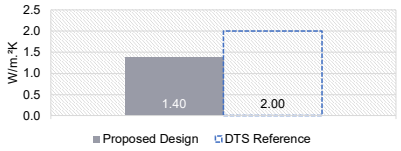
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.89	1.27	0.48	1.89	1.40
Solar Admittance	0.14	0.08		0.14	
AC Energy Value					28

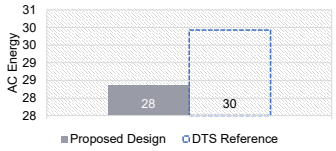
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	27.972	18.998	0	33.18
Glazing to Façade Ratio	74%	41%	0%	74%
Glazing References	1	1		1
Glazing System Types	Fixed	Fixed		Fixed
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating		Double Glazed Unit - single low-E coating
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	2.40	2.40		2.40
Average Glazing SHGC	0.20	0.20	0.00	0.20
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	9.99	27.012	37.962	11.85
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
11-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4103 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

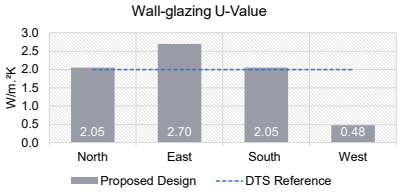
Tool Version
1.2 (June 2020)

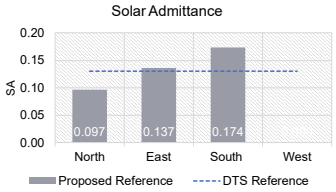
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

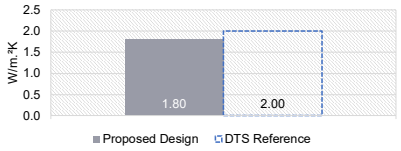
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	2.05	2.70	2.05	0.48	1.80
Solar Admittance	0.10	0.14	0.17		
AC Energy Value					51

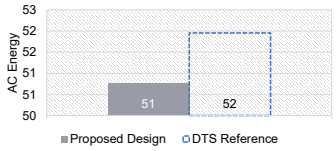
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	56.61	92.782125	56.61	0
Glazing to Façade Ratio	71%	100%	71%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	23.31	0	23.31	92.782125
Wall Types	Wall		Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall		Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200		200	200
Average Wall R-value (m².K/W)	2.10		2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4104 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

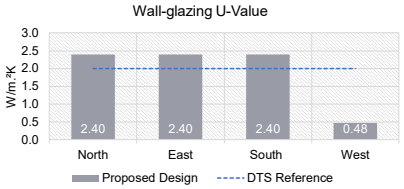
Tool Version
1.2 (June 2020)

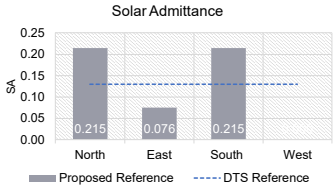
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

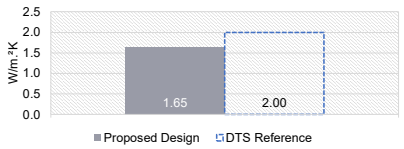
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.65
Solar Admittance	0.22	0.08	0.22		
AC Energy Value					38

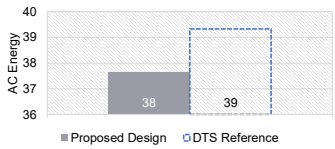
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	33.975	121.36625	33.975	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	121.36625
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4104 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

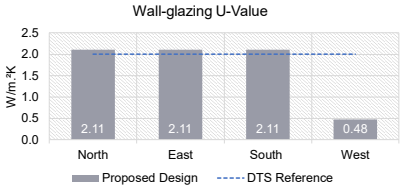
Tool Version
1.2 (June 2020)

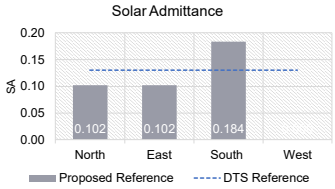
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.68
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					63

Method 1





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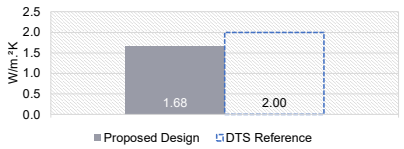
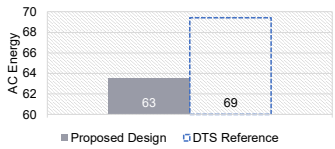




Project Details

	North	East	South	West
Glazing Area (m²)	79.50375	89.21625	79.50375	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.65	32.15	28.65	121.36625
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4105 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

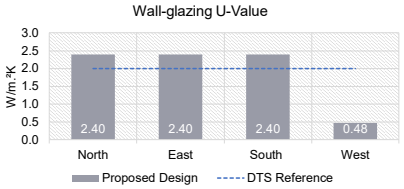
Tool Version
1.2 (June 2020)

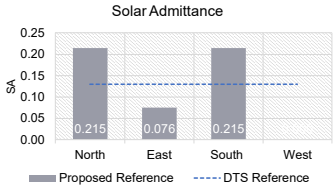
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

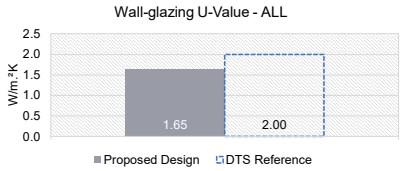
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.65
Solar Admittance	0.22	0.08	0.22		
AC Energy Value					38

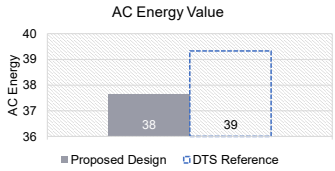
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	33.975	121.36625	33.975	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	121.36625
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4105 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

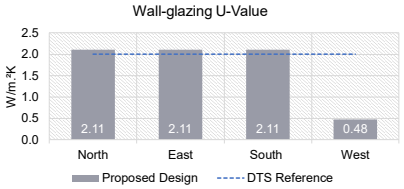
Tool Version
1.2 (June 2020)

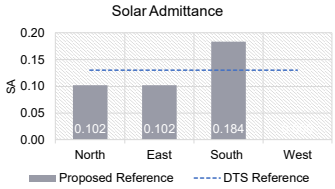
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

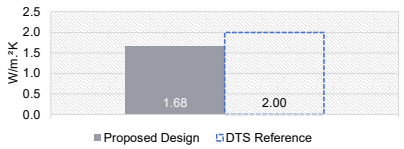
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.68
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					63

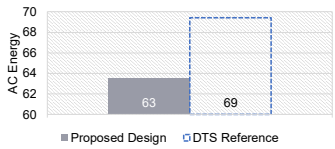
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	79.50375	89.21625	79.50375	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.65	32.15	28.65	121.36625
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4106 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

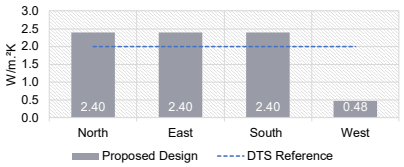
Tool Version
1.2 (June 2020)

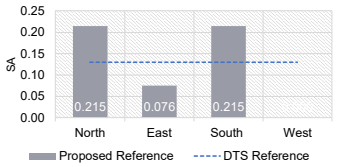
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

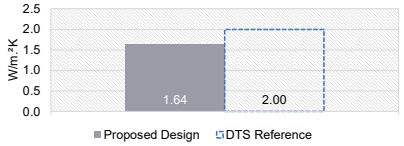
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.64
Solar Admittance	0.22	0.08	0.22		
AC Energy Value					38

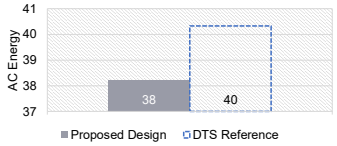
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	33.975	126.085	33.975	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	126.085
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4106 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

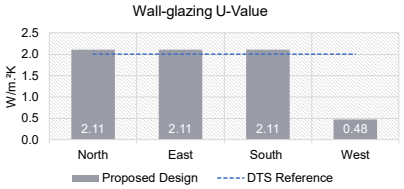
Tool Version
1.2 (June 2020)

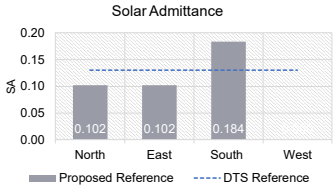
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

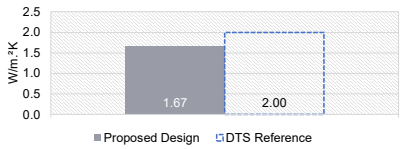
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.67
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					64

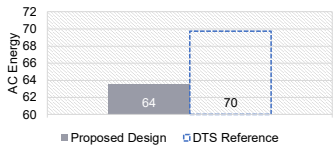
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	78.255	92.685	78.255	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.2	33.4	28.2	126.085
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4107 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

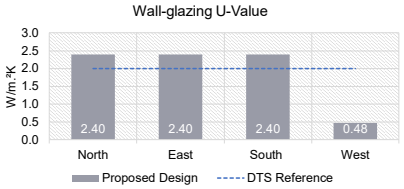
Tool Version
1.2 (June 2020)

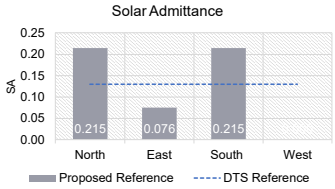
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

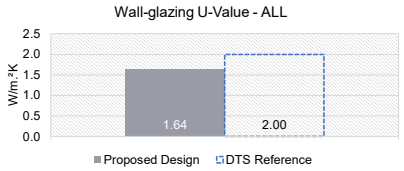
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.64
Solar Admittance	0.22	0.08	0.22		
AC Energy Value					38

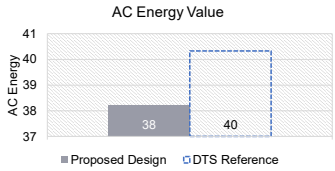
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	33.975	126.085	33.975	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	126.085
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4107 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

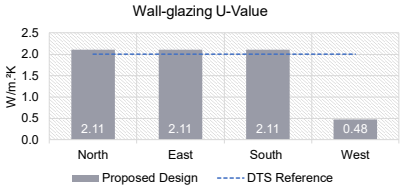
Tool Version
1.2 (June 2020)

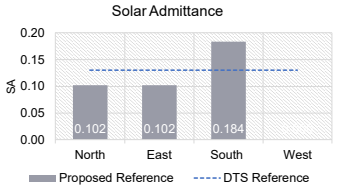
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

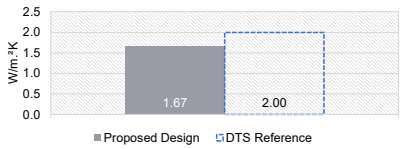
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.67
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					64

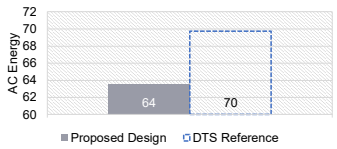
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	78.255	92.685	78.255	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.2	33.4	28.2	126.085
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4108 Ground

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

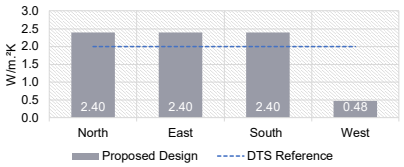
Tool Version
1.2 (June 2020)

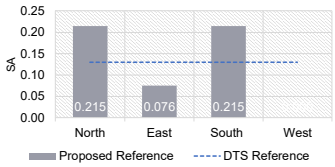
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.64
Solar Admittance	0.22	0.08	0.22		
AC Energy Value					38

Method 1





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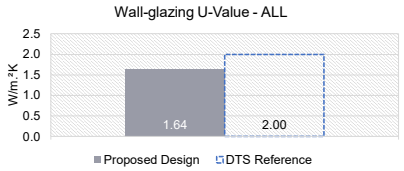

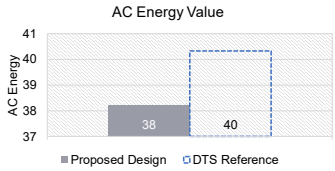

Project Details

	North	East	South	West
Glazing Area (m²)	33.975	126.085	33.975	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	126.085
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
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Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4108 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

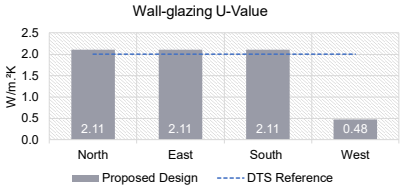
Tool Version
1.2 (June 2020)

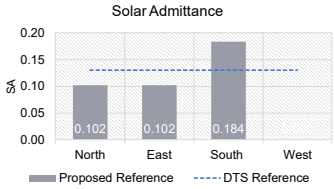
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.67
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					64

Method 1





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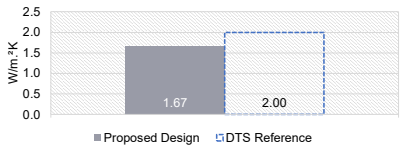

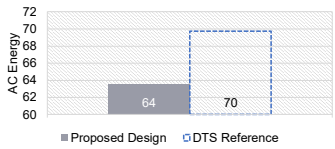

Project Details

	North	East	South	West
Glazing Area (m²)	78.255	92.685	78.255	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.2	33.4	28.2	126.085
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

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Building State
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Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

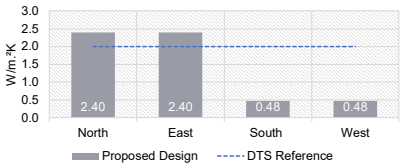
Tool Version
1.2 (June 2020)

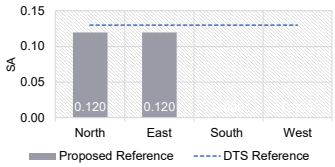
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	0.48	0.48	1.44
Solar Admittance	0.12	0.12			
AC Energy Value					12

Method 1





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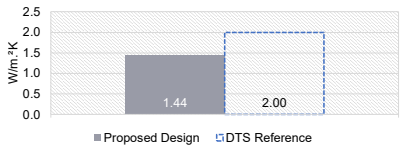
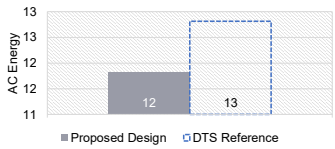




Project Details

	North	East	South	West
Glazing Area (m²)	37.81	11.4	0	0
Glazing to Façade Ratio	100%	100%	0%	0%
Glazing References	1	1		
Glazing System Types	Fixed	Fixed		
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating		
Frame Types	Aluminium	Aluminium		
Average Glazing U-Value (W/m².K)	2.40	2.40		
Average Glazing SHGC	0.22	0.22	0.00	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	37.81	11.4
Wall Types			Wall	Wall
Methodology	Wall			
Wall Construction			Precast Concrete Wall	Precast Concrete Wall
Wall Thickness			200	200
Average Wall R-value (m².K/W)			2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4109 Level 1

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

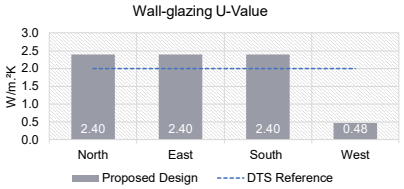
Tool Version
1.2 (June 2020)

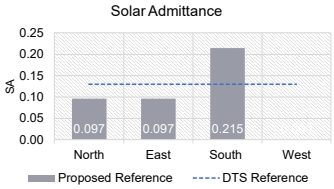
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.91
Solar Admittance	0.10	0.10	0.22		
AC Energy Value					52

Method 1





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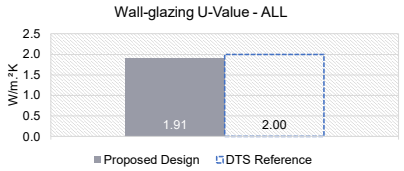
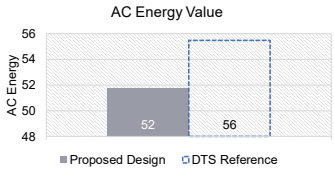




Project Details

	North	East	South	West
Glazing Area (m²)	88.5225	93.0735	88.5225	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	93.0735
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington Lot 4110 Ground

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

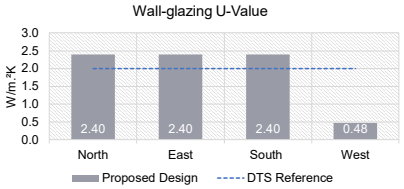
Tool Version
1.2 (June 2020)

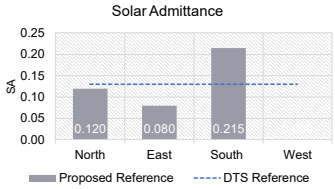
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.40	2.40	2.40	0.48	1.76
Solar Admittance	0.12	0.08	0.22		
AC Energy Value					39

Method 1





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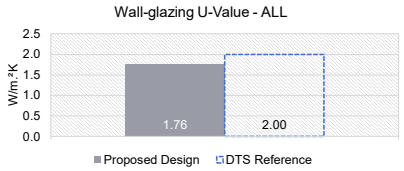
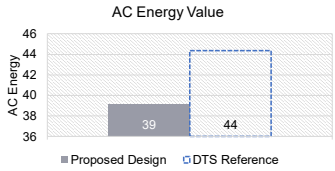




Project Details

	North	East	South	West
Glazing Area (m²)	53.96	106.78	53.96	0
Glazing to Façade Ratio	100%	100%	100%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.40	2.40	2.40	
Average Glazing SHGC	0.22	0.22	0.22	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	0	0	0	106.78
Wall Types				Wall
Methodology	Wall			
Wall Construction				
Wall Thickness				200
Average Wall R-value (m².K/W)				2.10
Solar Absorptance	0.4	0.4	0.4	0.4

Façade

Report

Calculator

Project Summary

Date
14-03-2022

Name
James Cleary

Company
SLR Consulting

Position
Senior Project Consultant

Building Name / Address
Chapman Street Werrington
Lot 4110 Level 1

Building State

NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Mixed 2 - 2 common, 5, 6, 7, 8, 9b, 9a non-ward

Storeys Above Ground
2

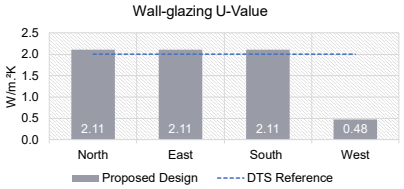
Tool Version
1.2 (June 2020)

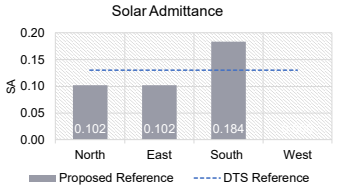
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.11	2.11	2.11	0.48	1.76
Solar Admittance	0.10	0.10	0.18		
AC Energy Value					64

Method 1





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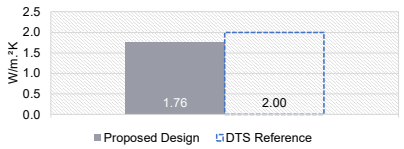

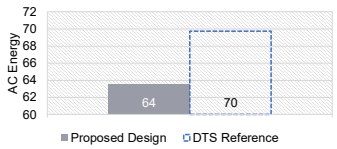

Project Details

	North	East	South	West
Glazing Area (m²)	78.255	92.685	78.255	0
Glazing to Façade Ratio	74%	74%	74%	0%
Glazing References	1 2 3	1 2 3	1 2 3	
Glazing System Types	Fixed	Fixed	Fixed	
Glass Types	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	Double Glazed Unit - single low-E coating	
Frame Types	Aluminium	Aluminium	Aluminium	Aluminium
Average Glazing U-Value (W/m².K)	2.70	2.70	2.70	
Average Glazing SHGC	0.25	0.25	0.25	0.00
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	28.2	33.4	28.2	92.685
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall	Precast Concrete Wall
Wall Thickness	200	200	200	200
Average Wall R-value (m².K/W)	2.10	2.10	2.10	2.10
Solar Absorptance	0.4	0.4	0.4	0.4

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