NCC Section J Report

Berry Holdsworth - Mixed-use Development
12-20 Berry Road & 11-19 Holdsworth Avenue
St Leonards South NSW 2065 Australia

Prepared on behalf of
Aqualand St Leonard Development 3 P/L

Prepared by
INTEGRECO CONSULTING

June 2022

Prepared on behalf of
Aqualand St Leonard
Development 3 P/L

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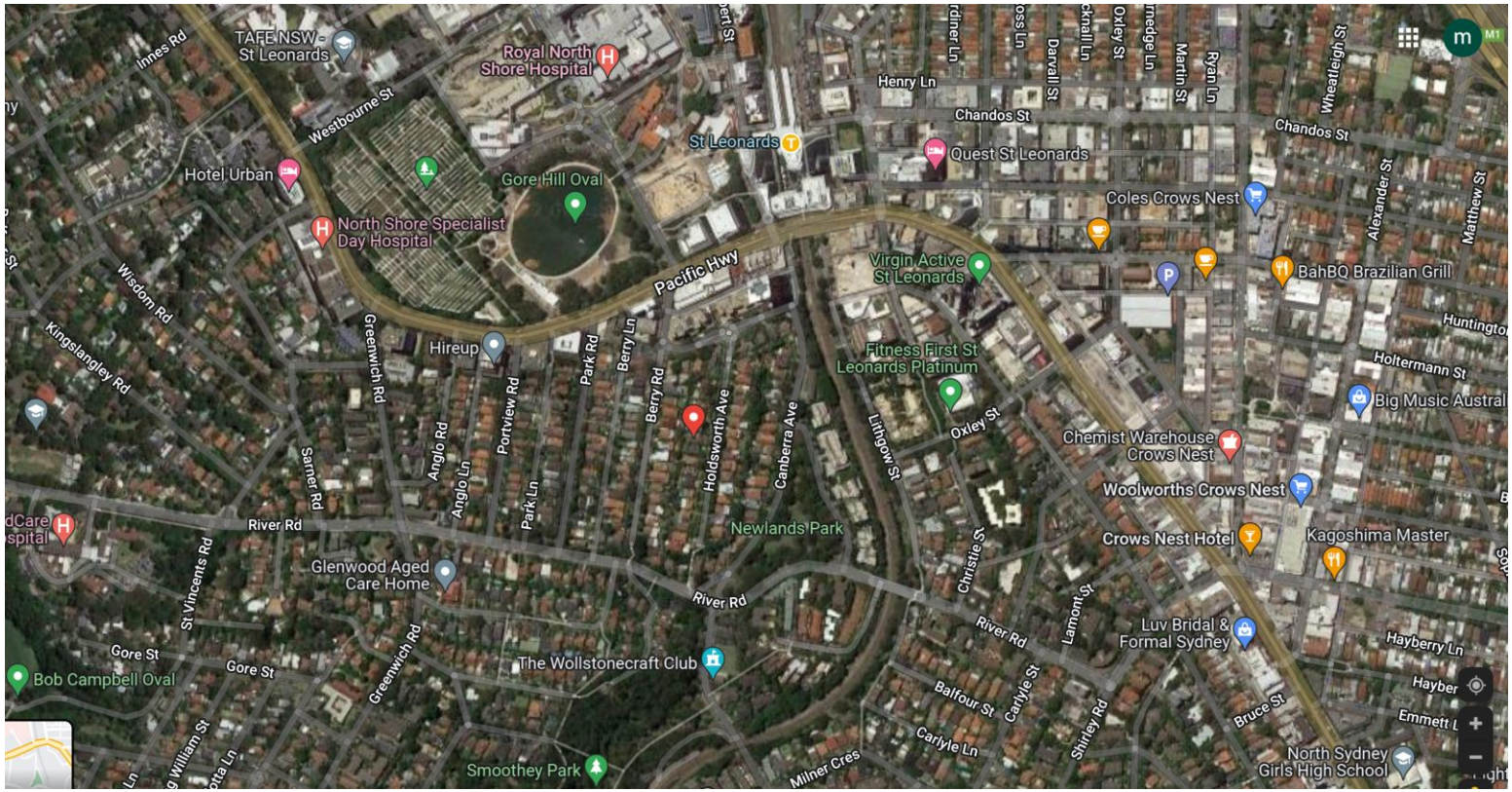
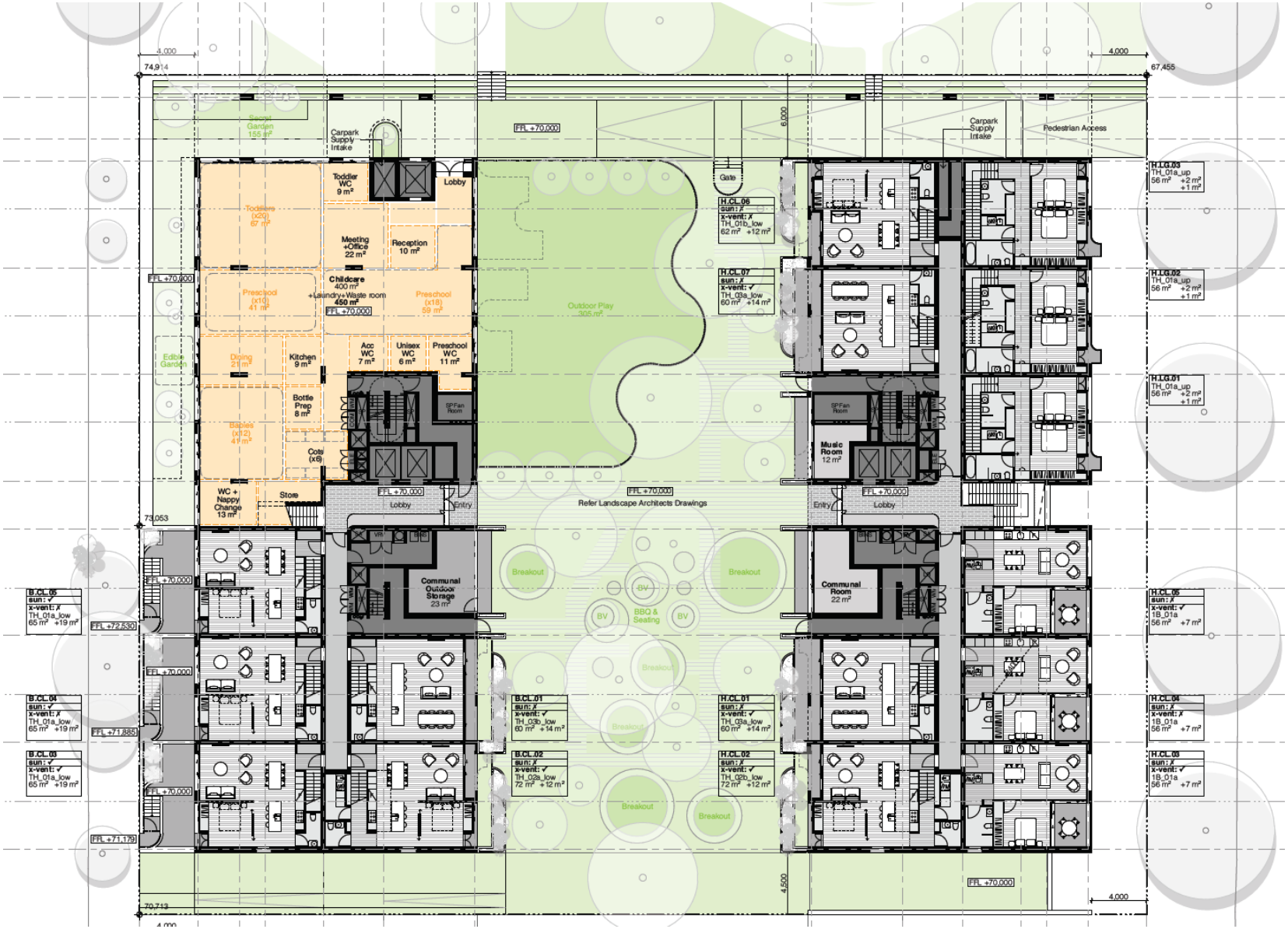
INTRODUCTION AND SUMMARY

This report summarises the Section J initiatives for the proposed, mixed-use development at BERRY HOLDSWORTH - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065. The enclosed analysis was undertaken by Integreco Consulting on behalf of Aqualand St Leonard Development 3 P/L. The NCC 2019 (Section J DTS) and the NCC 2019— Amendment 1 have been used for this analysis. The site is in St Leonards, Sydney, and is classified under the NCC climate zone 5. Integreco Consulting worked closely with the design team, to ensure that a high degree of energy-efficiency was achieved. In particular, a strong emphasis was placed on the passive efficiency of the building, including passive heating, passive cooling, natural lighting and natural ventilation. This is evident within the community room and childcare designs, and the good Section J results within this report.



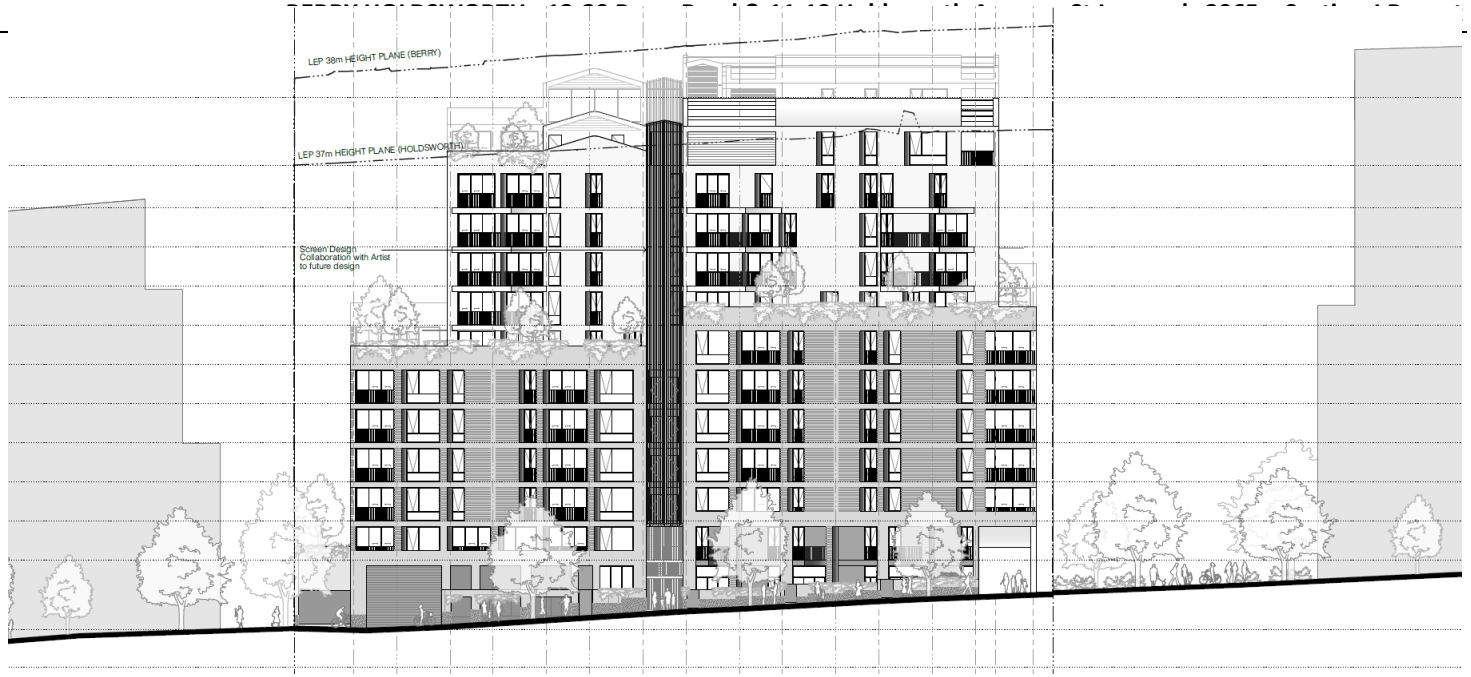
Site Location – BERRY HOLDSWORTH - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065

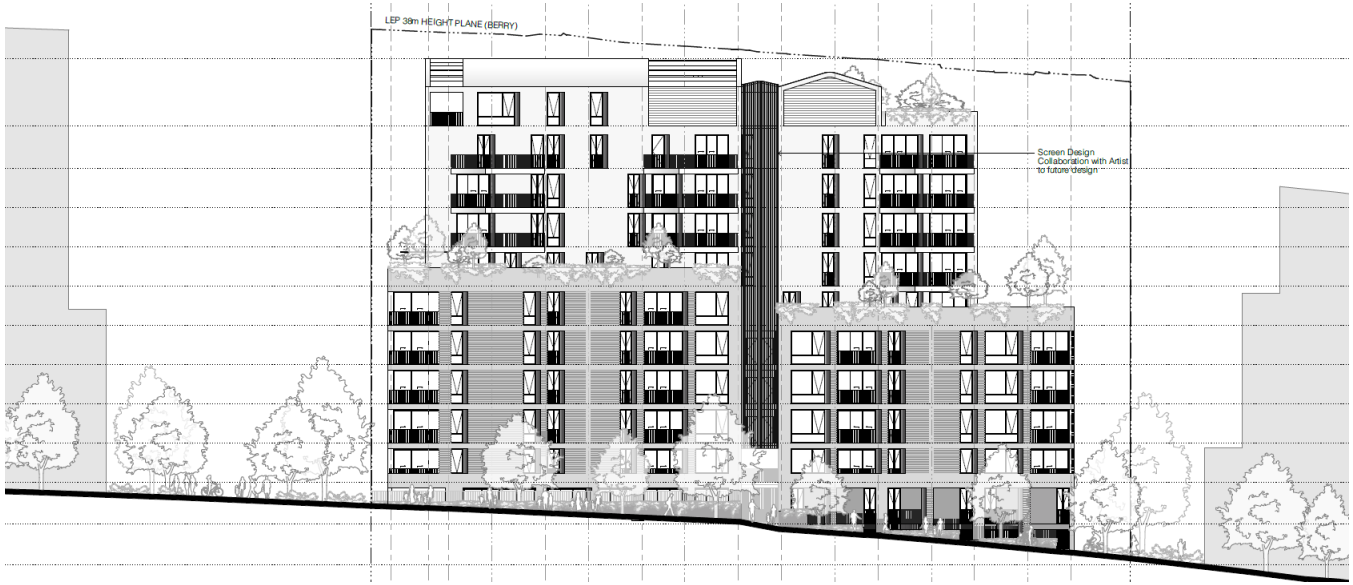
Site Context Photo - BERRY HOLDSWORTH - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065



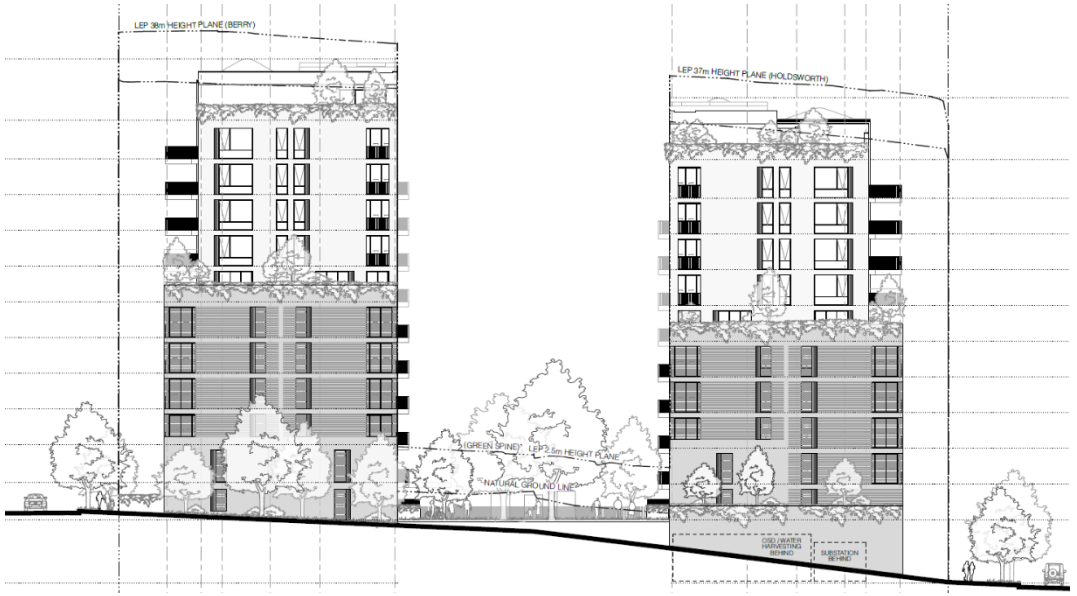
Courtyard Level Plan for Conditioned Non-Residential Areas (in Orange) - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065

Upper Ground Plan for Conditioned Non-Residential Areas (in Orange) - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065





Elevations by SILVESTER FULLER
East and West respectively



Elevations by SILVESTER FULLER (South and North respectively

The table below shows the building fabric summary, based on the current DTS (Deemed-to-Satisfy) targets. As an alternative, for future design development analyses, the targets from a JV3 analysis would be more flexible. This is especially so for glazing, due to the greater accuracy of the JV3 simulations. The JV3 simulation option may be considered during the construction stage.

Section J item - Retail	Construction – Childcare and Community	Passing NCC DTS (Deemed-to-Satisfy)
1	Internal walls (childcare or community next to apartments)	Anything is OK (between 2 conditioned)
2	Internal walls (within childcare or community)	Anything is OK (between 2 conditioned)
3	External walls (masonry)	R2.5 added + break (10mm EPS or equiv.)
4	Walls concrete (next to corridors, plant, toilets, store, lift, stairs)	R1.5 added + break (10mm EPS or equiv.)
5	Walls other (next to corridors, plant, toilets, store, lift, stairs)	R1.5 added + break (10mm EPS or equiv.)
6	Floors (slab-on-ground, assume no in-slab heat)	None
7	Floors (over basement, assume no in-slab heat)	R1.7 added, or more
8	Ceiling under concrete Terrace/Balcony	R3.7 added, or more (note: SA <0.45)
9	Ceiling under Neighbour	No insulation required
10	Childcare U-value (Double-glaze tint + metal frames)	< 3.2 (double glazed)
11	Childcare SHGC (Double-glaze tint + metal frames)	< 0.63 (clear colour, or anything darker)
12	Community Room U-value (Double-glaze tint + metal frames)	< 3.3 (double glazed)
13	Community Room SHGC (Double-glaze tint + metal frames)	< 0.38 (light tint, or anything darker)
14	Skylight U-value	None for retail
15	Skylight SHGC	None for retail
16	Shading devices for non-residential (Childcare + Community Room)	No devices simulated (but eaves/overhangs modelled)

Site 3D renders from Architect SILVESTER FULLER - 12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065

SECTION J REQUIREMENTS AND INITIATIVES

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
JP1 Energy use	A building, including its *services*, must have features that facilitate the efficient use of energy appropriate to— **(a)** the function and use of the building; and **(b)** the level of human comfort required for the building use; and **(c)** solar radiation being— **(i)** utilised for heating; and **(ii)** controlled to minimise energy for cooling; and **(d)** the energy source of the *services*; and **(e)** the sealing of the building *envelope* against air leakage; and **(f)** for a *conditioned space*, achieving an hourly *regulated energy* consumption, averaged over the annual *hours of operation*, of not more than— **(i)** for a Class 6 building, 80 kJ/m^2.hr; and **(ii)** for a Class 5, 7b, 8 or 9a building other than a *ward area*, or a Class 9b *school*, 43kJ/m^2.hr; and **(iii)** for all other building classifications, other than a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, 15 kJ/m^2.hr.	The development has been designed for this, as discussed in the summary table below. Water heating for the childcare/community will use energy-efficient heat pumps. Likewise, the conditioned spaces will all use efficient heating (with a high COP and low greenhouse gas intensity). The Class 9b Childcare will achieve a regulated energy consumption, averaged over the annual hours of operation <43 kJ/m2.hr. The Class 2 community rooms will achieve a regulated energy consumption, averaged over the annual hours of operation <15 kJ/m2.hr. ‘’Regulated energy consumption" means energy used for air-conditioning, heated water, artificial lighting and lifts, (minus the renewable energy generated and used on site).
JV1 NABERS Energy for Offices	JV1 NABERS Energy for Offices	NOT USED IN THIS ASSESSMENT - JV1 NABERS Energy for Offices
JV2 Green Star	JV2 Green Star	NOT USED IN THIS ASSESSMENT - JV2 Green Star
JV3 Verification using reference building	JV3 Verification using reference building	NOT USED IN THIS ASSESSMENT - JV3 Verification using reference building

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
JV4 Building envelope sealing	JV4 Building envelope sealing	NOT USED IN THIS ASSESSMENT - JV4 Building envelope sealing
NCC Reference	**Part J0 Energy efficiency**	**Specific Project Initiative**
J0.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3. **(b)** Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	The development has been designed for this, as discussed in the summary table below.
J0.1 Application of Section J	*Performance Requirement* JP1 is satisfied by complying with— **(a)** for reducing the heating or cooling loads— **(i)** of *sole-occupancy units* of a Class 2 building or a Class 4 part of a building, J0.2 to J0.5; & **(ii)** of a Class 2 to 9 building, other than the *sole-occupancy units* of a Class 2 building or a Class 4 part of a building, Parts J1 and J3; and **(b)** for *air-conditioning* and ventilation, Part J5; and **(c)** for artificial lighting and power, Part J6; and **(d)** for heated water supply and *swimming pool* and spa pool plant, Part J7; and **(e)** for facilities for monitoring, Part J8.	The development has been designed for this, as discussed in the summary table below.
J0.2 Heating and cooling loads of sole-occupancy units of a Class 2 building or a Class 4 part	The *sole-occupancy units* of a Class 2 building or a Class 4 part of a building must— **(a)** for reducing the heating or cooling loads— **(i)** collectively achieve an average energy rating of not less than 6 stars, including the separate heating and cooling load limits; and **(ii)** individually achieve an energy rating of not less than 5 stars, including the separate heating and cooling load limits, using *house energy rating software* and the load limits specified in the ABCB Standard for NatHERS Heating and Cooling Load Limits. **(b)** for general thermal construction, comply with J1.2; and	This applies to class 2 (not (a) in NSW, due to BASIX): Class 2 must: **(b)** for general thermal construction, comply with J1.2; and **(c)** for thermal breaks, comply with J0.4 and J0.5; and **(d)** for floor edge insulation, comply with J1.6(b) and J1.6(c); **(e)** for building sealing, comply with Part J3.

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
	(c) for thermal breaks, comply with J0.4 and J0.5; and **(d)** for floor edge insulation, comply with J1.6(b) and J1.6(c); and **(e)** for building sealing, comply with Part J3.	
J0.3 Ceiling fans	Ceiling fans *required* as part of compliance with J0.2(a), must— **(a)** be permanently installed; and **(b)** have a speed controller; and **(c)** serve the whole room, with the *floor area* that a single fan serves not exceeding— **(i)** 15 m^2 if it has a blade rotation diameter of not less than 900 mm; and **(ii)** 25 m^2 if it has a blade rotation diameter of not less than 1 200 mm.	N/A (since fans must be ignored by the NatHERS assessments)
J0.4 Roof thermal breaks	For compliance with J0.2(c), a roof that— **(a)** has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and **(b)** does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens, must have a thermal break, consisting of a material with an *R-Value* of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.	Roof construction details will be developed, to adhere to these ''thermal break'' guidelines. This will apply to all part of the building envelope where roof thermal breaks are required.
J0.5 Wall thermal breaks	For compliance with J0.2(c), a wall that— **(a)** does not have a wall lining or has a wall lining that is fixed directly to the same metal frame & **(b)** has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame, must have a thermal break, consisting of a material with an *R-Value* of ≥R0.2, installed at all points of contact between the external cladding and the metal frame.	Wall construction details will be developed, to adhere to these ''thermal break'' guidelines. This will apply to all part of the building envelope where roof thermal breaks are required.
NCC Reference	**Part J1 - Building Fabric**	**Specific Project Initiative**
J1.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3.	The development has been designed for this, as discussed in the summary table below.

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
	(b) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	
J1.1 Application of Part	The *Deemed-to-Satisfy Provisions* of this Part apply to building elements forming the *envelope* of a Class 2 to 9 building other than J1.2(e), J1.3, J1.4, J1.5 and J1.6(a) which do not apply to a Class 2 *sole-occupancy unit* or a Class 4 part of a building.	DTS for J1 applies to all of the conditioned non-residential areas. For example, plant rooms are unconditioned, so the "envelope" is the boundary between the childcare and plant.
J1.2 Thermal construction - general	**(a)** Where *required*, insulation must comply with AS/NZS 4859.1 and be installed so that it— **(i)** abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels & the like where the insulation must be against the member; & **(ii)** forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and **(iii)** does not affect the safe or effective operation of a *service* or fitting. **(b)** Where *required*, *reflective insulation* must be installed with— **(i)** the necessary airspace to achieve the *required R-Value* between a reflective side of the *reflective insulation* and a building lining or cladding; and **(ii)** the *reflective insulation* closely fitted against any penetration, door or *window* opening; & **(iii)** the *reflective insulation* adequately supported by framing members; and **(iv)** each adjoining sheet of roll membrane being— **(A)** overlapped not less than 50 mm; or **(B)** taped together. **(c)** Where *required*, bulk insulation must be installed so that— **(i)** it maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and **(ii)** in a ceiling, where there is no bulk insulation or *reflective insulation* in the wall beneath, it overlaps the wall by not less than 50 mm. **(d)** Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification J1.2.	Contractors will be obliged to adhere to these installation guidelines, in the final specifications. These will apply to all part of the envelope where thermal insulation is required.

<table>
<tr><th>NCC Reference</th><th>Section J - Energy Efficiency</th><th>Specific Project Initiative</th></tr>
<tr><td></td><td>(e) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—
(i) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or
(ii) determined in accordance with Specification J1.5a for wall-glazing construction; or
(iii) determined in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.</td><td></td></tr>
<tr><td>J1.3
Roof and ceiling construction</td><td>(a) A roof or ceiling must achieve a Total R-Value greater than or equal to—
(i) in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and
(ii) in climate zone 6, R3.2 for a downward direction of heat flow; and
(iii) in climate zone 7, R3.7 for an upward direction of heat flow; and
(iv) in climate zone 8, R4.8 for an upward direction of heat flow.

(b) 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.</td><td>For conditioned, non-apartment areas, the Minimum Roof/Ceiling Total Insulation is:

Medium/light concrete roof (or terrace) - R3.7 total - down Hence >R3.2 added (as bulk) excl. air gap

Dark colour roof – none (solar absorptance must be ≤0.45)</td></tr>
<tr><td>J1.4
Roof lights</td><td>Roof lights must have—
(a) a total area of not more than 5% of the floor area of the room or space served; and
(b) transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of—
(i) for Total system SHGC, in accordance with Table J1.4; and
(ii) for Total system U-Value, not more than U3.9.

Table J1.4 Roof lights - Total system SHGC
<table>
<tr><th>Roof light shaft index Note 1</th><th>Total area of roof lights up to 3.5% of the floor area of the room or space</th><th>Total area of roof lights more than 3.5% and up to 5% of the floor area of the room or space</th></tr>
<tr><td>< 1.0</td><td>≤ 0.45</td><td>≤ 0.29</td></tr>
<tr><td>≥ 1.0 to < 2.5</td><td>≤ 0.51</td><td>≤ 0.33</td></tr>
<tr><td>≥ 2.5</td><td>≤ 0.76</td><td>≤ 0.49</td></tr>
</table></td><td>Not applicable – no skylights roof lights used for the conditioned, non-apartment areas</td></tr>
</table>

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
	Notes to Table J1.4 : - 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. - 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.	
J1.5 Walls and glazing	**(a)** The *Total System U-Value* of *wall-glazing construction* must not be greater than— **(i)** for a Class 2 common area, a Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a *ward area*, U2.0; and **(ii)** for a Class 3 or 9c building or a Class 9a *ward area*— **(A)** in *climate zones* 1, 3, 4, 6 or 7, U1.1; or **(B)** in *climate zones* 2 or 5, U2.0; or **(C)** in *climate zone* 8, U0.9. **(b)** The *Total System U-Value* of *display glazing* must not be greater than U5.8. **(c)** The *Total System U-Value* of *wall-glazing construction* must be calculated in accordance with Specification J1.5a. **(d)** 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**	**For the conditioned, non-apartment areas, the 'whole-window' glazing values (glass+ frame combined) are:** - Total U-value ≤ 3.2 childcare - Total SHGC ≤ 0.63 childcare - Total U-value ≤ 3.3 community room - Total SHGC ≤ 0.38 community room **For the conditioned, non-apartment areas, "Total External Wall R-values" under DTS are advised to be:** - Walls (masonry construction) R2.5 added (+thermal break, 10mm EPS or equiv.) - Walls (external concrete if applicable) R2.5 added (+thermal break, 10mm EPS or equiv.) **For the conditioned, non-apartment areas, the "Total Wall R-values" next to non-conditioned, enclosed spaces (e.g. plant) are:** - Hebel (next to plant, stairs, corridors, etc) R1.5 added (+thermal break, 10mm EPS or equiv.) - Concrete or other (next to plant, stairs, corridors) R1.5 added (+thermal break, 10mm EPS or equiv.)

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative

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.

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

(g) 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

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative

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

<table>
<tr><th>NCC Reference</th><th>Section J - Energy Efficiency</th><th>Specific Project Initiative</th></tr>
<tr><td></td><td>
<table>
<tr><th>Climate zone</th><th>Eastern aspect solar admittance</th><th>Northern aspect solar admittance</th><th>Southern aspect solar admittance</th><th>Western aspect solar admittance</th></tr>
<tr><td>1</td><td>0.07</td><td>0.07</td><td>0.10</td><td>0.07</td></tr>
<tr><td>2</td><td>0.10</td><td>0.10</td><td>0.10</td><td>0.10</td></tr>
<tr><td>3</td><td>0.07</td><td>0.07</td><td>0.07</td><td>0.07</td></tr>
<tr><td>4</td><td>0.07</td><td>0.07</td><td>0.07</td><td>0.07</td></tr>
<tr><td>5</td><td>0.10</td><td>0.10</td><td>0.10</td><td>0.10</td></tr>
<tr><td>6</td><td>0.07</td><td>0.07</td><td>0.07</td><td>0.07</td></tr>
<tr><td>7</td><td>0.07</td><td>0.07</td><td>0.08</td><td>0.07</td></tr>
<tr><td>8</td><td>0.08</td><td>0.08</td><td>0.08</td><td>0.08</td></tr>
</table>
</td><td></td></tr>
<tr><td>J1.6
Floors</td><td>
(a) A floor must achieve the Total R-Value specified in Table J1.6.

(b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor—
(i) is a concrete slab-on-ground in climate zone 8; or
(ii) has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like.

(c) Insulation required by (b) for a concrete slab-on-ground must—
(i) be water resistant; and
(ii) be continuous from the adjacent finished ground level—
(A) to a depth not less than 300 mm; or
(B) for the full depth of the vertical edge of the concrete slab-on-ground.
</td><td>
Floor Insulation for the conditioned, non-apartment areas under DTS:
Assuming no in-slab heating or cooling, the following insulation is required for the conditioned rooms:
<table>
<tr><th>Floor type</th><th>Minimum Total R-values</th></tr>
<tr><td>Slab above basement</td><td>R2 total (i.e. R1.7 added)</td></tr>
<tr><td>Slab on ground</td><td>None added</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>NCC Reference</th><th>Section J - Energy Efficiency</th><th>Specific Project Initiative</th></tr>
<tr><td></td><td>Table J1.6 Floors - Minimum Total R-Value
<table>
<tr><th>Location</th><th>Climate zone 1 — upwards heat flow</th><th>Climate zones 2 and 3 — upwards and downwards heat flow</th><th>Climate zone s 4, 5, 6 and 7 — downwards heat flow</th><th>Climate zone 8 — downwards heat flow</th></tr>
<tr><td>A floor without an in-slab heating or cooling system</td><td>2.0</td><td>2.0</td><td>2.0</td><td>3.5</td></tr>
<tr><td>A floor with an in-slab heating or cooling system</td><td>3.25</td><td>3.25</td><td>3.25</td><td>4.75</td></tr>
</table></td><td></td></tr>
<tr><th>NCC Reference</th><th>Part J2 * * * * *</th><th>Part J2 * * * * *</th></tr>
<tr><td></td><td>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.</td><td></td></tr>
<tr><th>NCC Reference</th><th>Part J3 - Building Sealing</th><th>Specific Project Initiative</th></tr>
<tr><td>J3.0 Deemed-to-Satisfy Provisions</td><td>(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement JP1 is satisfied by complying with—
(i) J0.1 to J0.5; and
(ii) J1.1 to J1.6; and
(iii) J3.1 to J3.7; and
(iv) J5.1 to J5.12; and
(v) J6.1 to J6.8; and
(vi) J7.1 to J7.4; and
(vii) J8.1 to J8.3.

(b) Where a Performance Solution is proposed, the relevant Performance Requirements must be determined in accordance with A2.2(3) and A2.4(3) as applicable.</td><td>This will apply to the conditioned, non-apartment areas. The ‘envelope’ is the boundary between a conditioned space and unconditioned spaces (such as the outside air or plant rooms).</td></tr>
</table>

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
J3.1 Application of Part	The *Deemed-to-Satisfy Provisions* of this Part apply to elements forming the *envelope* of a Class 2 to 9 building, other than— **(a)** a building in *climate zones* 1, 2, 3 and 5 where the only means of *air-conditioning* is by using an evaporative cooler; or **(b)** a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or **(c)** a building or space where the mechanical ventilation *required* by Part F4 provides sufficient pressurisation to prevent infiltration.	This will apply to the conditioned, non-apartment areas. The 'envelope' is the boundary between a conditioned space and unconditioned spaces (e.g. between childcare and plant room).
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.	NA - No solid-fuel burning appliances.
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.	N/A – otherwise, roof lights must be sealed (weatherproof seals) if used.
J3.4 Windows and doors	**(a)** A door, openable *window* or the like must be sealed— **(i)** when forming part of the *envelope*; or **(ii)** in *climate zones* 4, 5, 6, 7 or 8. **(b)** The requirements of (a) do not apply to— **(i)** a *window* complying with AS 2047; or **(ii)** a fire door or smoke door; or **(iii)** a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security. **(c)** A seal to restrict air infiltration— **(i)** for the bottom edge of a door, must be a draft protection device; and **(ii)** for the other edges of a door or the edges of an openable *window* or other such opening, may be a foam or rubber compression strip, fibrous seal or the like.	Seals must be fitted to the edges of doors and windows (for retail and residential). This does not apply to: (i) a window complying with AS 2047; or (ii) a fire door or smoke door; or (iii) a roller shutter/ security door The entrances to the conditioned, non-apartment areas (into conditioned spaces) must have a self-closing door or the like.

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
	(d) An entrance to a building, if leading to a *conditioned space* must have an airlock, *self-closing* door, *rapid roller door*, revolving door or the like, other than— **(i)** where the *conditioned space* has a *floor area* of not more than 50 m^2; or **(ii)** where a café, restaurant, open front shop or the like has— **(A)** a 3 m deep un-conditioned zone between the main entrance, including an open front, and the *conditioned space*; and **(B)** at all other entrances to the café, restaurant, open front shop or the like, *self-closing* doors. **(e)** A loading dock entrance, if leading to a *conditioned space*, must be fitted with a *rapid roller door* or the like.	
J3.5 Exhaust fans	**(a)** An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving— **(i)** a *conditioned space*; or **(ii)** a *habitable room* in *climate zones* 4, 5, 6, 7 or 8.	Exhaust fans in all habitable spaces will be fitted with sealing devices, such as self-closing dampers.
J3.6 Construction of ceilings, walls and floors	**(a)** Ceilings, walls, floors and any opening such as a *window* frame, door frame, *roof light* frame or the like must be constructed to minimise air leakage in accordance with (b) when forming part of— **(i)** the *envelope*; or **(ii)** in *climate zones* 4, 5, 6, 7 or 8. **(b)** Construction *required* by (a) must be— **(i)** enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or **(ii)** sealed at junctions and penetrations with— **(A)** close fitting architrave, skirting or cornice; or **(B)** expanding foam, rubber compressible strip, caulking or the like. **(c)** The requirements of (a) do not apply to openings, grilles or the like *required* for smoke hazard management.	Construction details will be developed later, to ensure walls, ceilings, floors and windows/doors minimise air leakage (using linings, caulking, skirting, architraves, cornices, etc).
J3.7 Evaporative coolers	An evaporative cooler must be fitted with a self-closing damper or the like— **(a)** when serving a heated space; or **(b)** in *climate zones* 4, 5, 6, 7 or 8.	NA – no evaporative coolers.

NCC Reference	Section J - Energy Efficiency	Specific Project Initiative
NCC Reference	Part J4 * * * * * Blank clause	Part J4 * * * * * Blank clause

NCC Reference	Part J5 - Air-conditioning and Ventilation Systems	Specific Project Initiative
J5.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3. **(b)** Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	DTS for J5 will apply to the building. During the next stage of design development, the HVAC systems will be designed by the mechanical engineers to meet all these conditions.
J5.1 Application of Part	The *Deemed-to-Satisfy Provisions* of this Part do not apply to a Class 8 *electricity network substation*.	DTS for J5 will apply to the building.
J5.2 Air-conditioning system control	**Refer to NCC 2019 for details of J5.2 Air-conditioning system control**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.3 Mechanical ventilation system control	**Refer to NCC 2019 for details of J5.3 Mechanical ventilation system control**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.4 Fan systems	**Refer to NCC 2019 for details of J5.4 Fan systems**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.5 Ductwork insulation	**Refer to NCC 2019 for details of J5.5 Ductwork insulation**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.

J5.6 Ductwork sealing	**Refer to NCC 2019 for details of J5.6 Ductwork sealing**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.7 Pump systems	**Refer to NCC 2019 for details of J5.7 Pump systems**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.8 Pipework insulation	**Refer to NCC 2019 for details of J5.8 Pipework insulation**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.9 Space heating	**Refer to NCC 2019 for details of J5.9 Space heating**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.10 Refrigerant chillers	**Refer to NCC 2019 for details of J5.10 Refrigerant chillers**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.11 Unitary air-conditioning equipment	**Refer to NCC 2019 for details of J5.11 Unitary air-conditioning equipment**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
J5.12 Heat rejection equipment	**Refer to NCC 2019 for details of J5.12 Heat rejection equipment**	HVAC (for childcare and community rooms) will be designed by the mechanical engineers to meet these conditions.
NCC Reference	**Part J6 - Artificial Lighting and Power**	**Specific Project Initiative**
J6.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3. **(b)** Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	DTS for J6 will apply to internal and external areas.

<table>
<tr><td>J6.1 Application of Part</td><td>J6.2, J6.3 and J6.5(a)(ii) do not apply to a Class 8 electricity network substation.</td><td>DTS for J6 will apply to internal and external areas.</td></tr>
<tr><td>J6.2 Artificial lighting</td><td>
(a) In a sole-occupancy unit of a Class 2 building or a Class 4 part of a building—
(i) the lamp power density or illumination power density of artificial lighting must not exceed the allowance of—
(A) 5 W/m^2 within a sole-occupancy unit; and
(B) 4 W/m^2 on a verandah, balcony or the like attached to a sole-occupancy unit; and
(ii) the illumination power density allowance in (i) may be increased by dividing it by the illumination power density adjustment factor for a control device in Table J6.2b as applicable; and
(iii) when designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires; and
(iv) halogen lamps must be separately switched from fluorescent lamps.
(b) In a building other than a sole-occupancy unit of Class 2 building or Class 4 part of a building:
(i) for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density in Table J6.2a; and
(ii) the aggregate design illumination power load in (i) is the sum of the design illumination power loads in each of the spaces served; and
(iii) where there are multiple lighting systems serving the same space, the design illumination power load for (ii) is—
(A) the total illumination power load of all systems; or
(B) where a control system permits only one system to operate at a time—
(aa) based on the highest illumination power load; or
(bb) determined by the formula—
<table>
<tr><td colspan="2">[H x T/2 + P x (100 - T/2)] / 100</td></tr>
<tr><td colspan="2">where—</td></tr>
<tr><td>H =</td><td>the highest illumination power load; and</td></tr>
<tr><td>T =</td><td>the time for which the maximum illumination power load will occur, expressed as a percentage; and</td></tr>
<tr><td>P =</td><td>the predominant illumination power load.</td></tr>
</table>
</td><td>
Lighting for childcare areas will be designed to satisfy the power targets below:

<table>
<tr><th>Space</th><th>Max illum. power density W/m^2</th></tr>
<tr><td>Control room, switch room and the like - intermittent monitoring</td><td>3</td></tr>
<tr><td>Control room, switch room and the like - constant monitoring</td><td>4.5</td></tr>
<tr><td>Corridors</td><td>5</td></tr>
<tr><td>Entry lobby from outside the building</td><td>9</td></tr>
<tr><td>Kitchen and food preparation area</td><td>4</td></tr>
<tr><td>Office - artificially lit to an ambient level of 200 lx or more</td><td>4.5</td></tr>
<tr><td>Office - artificially lit to an ambient level of less than 200 lx</td><td>2.5</td></tr>
<tr><td>Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms</td><td>4</td></tr>
<tr><td>Plant rooms with a horizontal illuminance target of 80 lx</td><td>2</td></tr>
<tr><td>Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks</td><td>14</td></tr>
<tr><td>Retail space including a museum and gallery whose purpose is the sale of objects</td><td>14</td></tr>
<tr><td>Storage</td><td>1.5</td></tr>
<tr><td>Service area, cleaner's room and the like</td><td>1.5</td></tr>
<tr><td>Toilet, locker room, staff room, rest room and the like</td><td>3</td></tr>
<tr><td>Wholesale storage area with a vertical illuminance target of 160 lx</td><td>4</td></tr>
<tr><td>Stairways, including fire-isolated stairways</td><td>2</td></tr>
<tr><td>Lift cars</td><td>3</td></tr>
</table>
</td></tr>
</table>

J6.2 Artificial lighting (contd.)

(c) The requirements of (a) and (b) do not apply to the following:
(i) Emergency lighting provided in accordance with Part E4.
(ii) Signage, display lighting within cabinets and display cases that are fixed in place.
(iii) Lighting for accommodation within the residential part of a *detention centre*.
(iv) A heater where the heater also emits light, such as in bathrooms.
(v) Lighting of a specialist process nature such as in a surgical operating theatre, fume cupboard or clean workstation.
(vi) Lighting of performances such as theatrical or sporting.
(vii) Lighting for the permanent display and preservation of works of art or objects in a museum or gallery other than for retail sale, purchase or auction.
(viii) Lighting installed solely to provide photosynthetically active radiation for indoor plant growth on green walls and the like.
(d) For the purposes of Table J6.2b, the following control devices must comply with Specification J6:
(i) Lighting timers.
(ii) Motion detectors.
(iii) Daylight sensors and dynamic lighting control devices.

Table J6.2a Maximum illumination power density

Space	Max *illum. power density*
Auditorium, church and public hall	5
Board room and conference room	5
Carpark - general	2
Carpark - entry zone (first 15 m of travel) during the daytime	11.5
Carpark - entry zone (next 4 m of travel) during the day	2.5
Carpark - entry zone (first 20 m of travel) during nighttime	2.5
Common rooms, spaces and corridors in a Class 2 building	4.5
Control room, switch room and the like - intermittent monitoring	3

J6.2 Artificial lighting (contd.)	Control room, switch room and the like - constant monitoring	4.5
	Corridors	5
	Courtroom	4.5
	Dormitory of a Class 3 building used for sleeping only	3
	Dormitory of a Class 3 building used for sleeping and study	4
	Entry lobby from outside the building	9
	Health-care - infants' and children's wards and emergency department	4
	Health-care - examination room	4.5
	Health-care - examination room in intensive care and high dependency ward	6
	Health-care - all other *patient care areas* including wards and corridors	2.5
	Kitchen and food preparation area	4
	Laboratory - artificially lit to an ambient level of 400 lx or more	6
	Library - stack and shelving area	2.5
	Library - reading room and general areas	4.5
	Lounge area for communal use in a Class 3 or 9c building	4.5
	Museum and gallery - circulation, cleaning and service lighting	2.5
	Office - artificially lit to an ambient level of 200 lx or more	4.5
	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
	Plant rooms with a horizontal illuminance target of 80 lx	2
	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
	School - general purpose learning areas and tutorial rooms	4.5

J6.2 Artificial lighting (contd.)

Sole-occupancy unit of a Class 3 or 9c building	5
Storage	1.5
Service area, cleaner's room and the like	1.5
Toilet, locker room, staff room, rest room and the like	3
Wholesale storage area with a vertical illuminance target of 160 lx	4
Stairways, including *fire-isolated stairways*	2
Lift cars	3

Notes to Table J6.2a:

1. In areas not listed above, the maximum *illumination power density* is—
    1. for an illuminance not more than 80 lx, 2 W/m^2; and
    2. for an illuminance more than 80 lx and not more than 160 lx, 2.5 W/m^2; and
    3. for an illuminance more than 160 lx and not more than 240 lx, 3 W/m^2; and
    4. for an illuminance more than 240 lx and not more than 320 lx, 4.5 W/m^2; and
    5. for an illuminance more than 320 lx and not more than 400 lx, 6 W/m^2; and
    6. for an illuminance more than 400 lx and not more than 600 lx, 10 W/m^2; and
    7. for an illuminance more than 600 lx and not more than 800 lx, 11.5 W/m^2.
2. For enclosed spaces with a Room Aspect Ratio of less than 1.5, the maximum *illumination power density* may be increased by dividing it by an adjustment factor for room aspect which is—

0.5 + (Room Aspect Ratio/3) The Room Aspect Ratio of the enclosed space is determined by the formula— A/(H x C), where—

1. A is the area of the enclosed space; and
2. H is the height of the space measured from the floor to the highest part of the ceiling; and
3. C is the perimeter of the enclosed space at floor level.

3. In addition to 2, the maximum *illumination power density* may be increased by dividing it by the *illumination power density* adjustment factor in Table J6.2b and Table J6.2c and where the control device is not installed to comply with J6.3.
4. Circulation spaces are included in the allowances listed in the Table.

Table J6.2b Illumination power density adjustment factor for a control device – not included
Table J6.2c Illumination power density adjustment factor for light colour – not included

J6.3 Interior artificial lighting and power control	**(a)** All artificial lighting of a room or space must be individually operated by– **(i)** a switch; or **(ii)** other control device; or **(iii)** a combination of (i) and (ii). **(b)** An occupant activated device, such as a room security device, a motion detector in accordance with Specification J6, or the like, must be provided in the *sole-occupancy unit* of a Class 3 building, other than where providing accommodation for people with a disability or the aged, to cut power to the artificial lighting, air-conditioner, local exhaust fans and bathroom heater when the *sole-occupancy unit* is unoccupied. **(c)** An artificial lighting switch or other control device in (a) must— **(i)** if an artificial lighting switch, be located in a visible and easily accessed position— **(A)** in the room or space being switched; or **(B)** in an adjacent room or space from where 90% of the lighting being switched is visible; and **(ii)** for other than a single functional space such as an auditorium, theatre, *swimming pool*, sporting stadium or warehouse— **(A)** not operate lighting for an area of more than 250 m^2 if in a Class 5 building or a Class 8 laboratory; or **(B)** not operate lighting for an area of more than— **(aa)** 250 m^2 for a space of not more than 2000 m^2; or **(bb)** 1000 m^2 for a space of more than 2000 m^2, if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building. **(d)** 95% of the light fittings in a building or *storey* of a building, other than a Class 2 or 3 building or a Class 4 part of a building, of more than 250 m^2 must be controlled by— **(i)** a time switch in accordance with Specification J6; or **(ii)** an occupant sensing device such as— **(A)** a security key card reader that registers a person entering and leaving the building; or **(B)** a motion detector in accordance with Specification J6. **(e)** In a Class 5, 6 or 8 building of more than 250 m^2, artificial lighting in a natural lighting zone adjacent to *windows* must be separately controlled from artificial lighting not in a natural lighting zone in the same *storey* except where— **(i)** the room containing the natural lighting zone is less than 20 m^2; or **(ii)** the room's natural lighting zone contains less than 4 luminaires; or **(iii)** 70% or more of the luminaires in the room are in the natural lighting zone.	For this childcare and community room, the following will be ensured in the final lighting design: Lighting for each room or space will be individually operated by a switch or other control device. Lighting switches or other control devices will— - be in a visible position in the room/space **OR** - be in an adjacent room/space (lighting is visible). - not operate lighting for an area > 250m2

J6.3 Interior artificial lighting and power control (contd.)	**(f)** Artificial lighting in a *fire-isolated stairway*, *fire-isolated passageway* or *fire-isolated ramp*, must be controlled by a motion detector in accordance with Specification J6. **(g)** Artificial lighting in a foyer, corridor and other circulation spaces— **(i)** of more than 250 W within a single zone; and **(ii)** adjacent to *windows*, must be controlled by a daylight sensor and dynamic lighting control device in accordance with Specification J6. **(h)** Artificial lighting for daytime travel in the first 19 m of travel in a *carpark* entry zone must be controlled by a daylight sensor in accordance with Specification J6. **(i)** The requirements of (a), (b), (c), (d), (e), (f), (g) and (h) do not apply to the following: **(i)** Emergency lighting in accordance with Part E4. **(ii)** Where artificial lighting is needed for 24 hour occupancy such as for a manufacturing process, parts of a hospital, an airport control tower or within a *detention centre*. **(j)** The requirements of (d) do not apply to the following: **(i)** Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as— **(A)** in a *patient care area* in a Class 9a building or in a Class 9c building; or **(B)** a plant room or lift motor room; or **(C)** a workshop where power tools are used. **(ii)** A heater where the heater also emits light, such as in bathrooms	
J6.4 Interior decorative and display lighting	**(a)** Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled— **(i)** separately from other artificial lighting; and **(ii)** by a manual switch for each area other than when the operating times of the displays are the same in a number of areas such as in a museum, art gallery or the like, in which case they may be combined; and **(iii)** by a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW. **(b)** Window display lighting must be controlled separately from other display lighting.	Interior decorative and display lighting will be controlled— - separately from other artificial lighting; and - by a manual switch for each area; and - by a time-switch in accordance with Specification J6 if display lighting exceeds 1 kW.
J6.5 Exterior artificial lighting	**(a)** Exterior artificial lighting attached to or directed at the facade of a building, must— **(i)** be controlled by— **(A)** a daylight sensor; or **(B)** a time switch that is capable of switching on and off electric power to the system at variable pre-programmed times and on variable pre-programmed days; and **(ii)** when the total lighting load exceeds 100 W—	Perimeter lighting will be deigned to have: - (A) a daylight sensor; or - (B) a time switch with pre-programmed times/days AND

<table>
<tr>
<td></td>
<td>
(A) use LED luminaires for 90% of the total lighting load; or
(B) be controlled by a motion detector in accordance with Specification J6; or
(C) when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification J6.
(b) The requirements of (a)(ii) do not apply to the following:
(i) Emergency lighting in accordance with Part E4.
(ii) Lighting around a detention centre.
</td>
<td>
- LEDs for >90% fittings or
- Motion sensors or
- Time switches (if façade/sign decoration lights)
</td>
</tr>
<tr>
<td>J6.6 Boiling and chilled water storage</td>
<td>Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.</td>
<td>Power supply to a boiling water or chilled water storage unit will be controlled by a time switch.</td>
</tr>
<tr>
<td>J6.7 Lifts</td>
<td>
Lifts must—
(a) be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; and
(b) achieve the idle and standby energy performance level in Table 6.7a; and
(c) achieve—
(i) the energy efficiency class in Table 6.7b; or
(ii) if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2.
Table 6.7a Lift idle and standby energy performance level
<table>
<tr><th>Rated load</th><th>Idle and standby Note energy performance level in accordance with ISO 25745-2</th></tr>
<tr><td>Less than or equal to 800 kg</td><td>2</td></tr>
<tr><td>801 kg to less than or equal to 2000 kg</td><td>3</td></tr>
<tr><td>2001 kg to less than or equal to 4000 kg</td><td>4</td></tr>
<tr><td>Greater than 4000 kg</td><td>5</td></tr>
</table>
Note to Table 6.7a : Applies to the standby power used after 30 minutes.
Table 6.7b Lift energy efficiency class
<table>
<tr><th>Usage category in accordance with ISO 25745-2</th><th>Energy efficiency class in accordance with ISO 25745-2</th></tr>
<tr><td>1 - 4</td><td>C</td></tr>
<tr><td>> 5</td><td>D</td></tr>
</table>
</td>
<td>
Lifts for childcare must be selected to meet the following targets:
(a) lighting & ventilation turned off, if lift unused>15 mins &
(b) achieve the idle/standby performance in Table 6.7a; and
(c) achieve the energy efficiency class in Table 6.7b
</td>
</tr>
</table>

J6.8 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.	N/A
NCC Reference	**Part J7 - Heated water supply and swimming pool and spa pool plant**	**Specific Project Initiative**
J7.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirement JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3. **(b)** Where a *Performance Solution* is proposed, the relevant *Performance Requirement* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	DTS for J7 will apply to hot water only.
J7.1 * * * * *	Blank	N/A
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.	The system will be designed & installed in accordance with Part B2 of NCC Vol. Three — Plumbing Code of Australia.
J7.3 Swimming pool heating and pumping	**(a)** Heating for a *swimming pool* must be by— **(i)** a solar heater; or **(ii)** a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or **(iii)** a geothermal heater; or **(iv)** a gas heater that— **(A)** if rated to consume 500 MJ/hour or less, achieves a minimum gross thermal efficiency of 86%; or **(B)** if rated to consume more than 500 MJ/hour, achieves a minimum gross thermal efficiency of 90%; or **(v)** a heat pump; or **(vi)** a combination of (i) to (v).	N/A since no pool other than residential (assessed under BASIX)

	(b) Where some or all of the heating *required* by (a) is by a gas heater or a heat pump, the *swimming pool* must have— **(i)** a cover with a minimum *R-Value* of 0.05; and **(ii)** a time switch to control the operation of the heater. **(c)** A time switch must be provided to control the operation of a circulation pump for a *swimming pool*. **(d)** Where *required*, a time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days. **(e)** Pipework carrying heated or chilled water for a *swimming pool* must comply with the insulation requirements of J5.8. **(f)** For the purpose of J7.3, a *swimming pool* does not include a spa pool.	
J7.4 Spa pool heating and pumping	**(a)** Heating for a spa pool that shares a water recirculation system with a *swimming pool* must be by— **(i)** a solar heater; or **(ii)** a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or **(iii)** a geothermal heater; or **(iv)** a gas heater that— **(A)** if rated to consume 500 MJ/hour or less, achieves a minimum gross thermal efficiency of 86%; or **(B)** if rated to consume more than 500 MJ/hour, achieves a minimum gross thermal efficiency of 90%; or **(v)** a heat pump; or **(vi)** a combination of (i) to (v). **(b)** Where some or all of the heating *required* by (a) is by a gas heater or a heat pump, the spa pool must have— **(i)** a cover with a minimum *R-Value* of 0.05; and **(ii)** a push button and a time switch to control the operation of the heater. **(c)** A time switch must be provided to control the operation of a circulation pump for a spa pool having a capacity of 680 L or more. **(d)** Where *required*, a time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days. **(e)** Pipework carrying heated or chilled water for a spa pool must comply with the insulation requirements of J5.8.	N/A since no spa other than residential (assessed under BASIX)

NCC Reference	Part J8 - Facilities for energy monitoring	Specific Project Initiative
J8.0 Deemed-to-Satisfy Provisions	**(a)** Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* JP1 is satisfied by complying with— **(i)** J0.1 to J0.5; and **(ii)** J1.1 to J1.6; and **(iii)** J3.1 to J3.7; and **(iv)** J5.1 to J5.12; and **(v)** J6.1 to J6.8; and **(vi)** J7.1 to J7.4; and **(vii)** J8.1 to J8.3. **(b)** Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	DTS for J8 will apply to this building.
J8.1 Application of Part	The *Deemed-to-Satisfy Provisions* of this Part do not apply— **(a)** within a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building; or **(b)** to a Class 8 *electricity network substation*.	DTS for J8 will apply to this building.
J8.2 * * * * *	This clause has deliberately been left blank in the NCC.	NA
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 an energy meter configured to record the time-of-use consumption of gas and electricity. **(b)** A building with a *floor area* of more than 2 500 m^2 must have energy meters configured to enable individual time-of-use energy consumption data recording, in accordance with (c), of the energy consumption of— **(i)** *air-conditioning* plant including, where appropriate, heating plant, cooling plant and air handling fans; and **(ii)** artificial lighting; and **(iii)** appliance power; and **(iv)** central hot water supply; and **(v)** internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and **(vi)** other ancillary plant. **(c)** Energy meters *required* by (b) must be interlinked by a communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed. **(d)** The provisions of (b) do not apply to a Class 2 building with a *floor area* of more than 2 500 m^2 where the total area of the common areas is less than 500 m^2.	Since the building has a floor area more than 500 m2, it will need the facility to record the consumption of gas and electricity. This will be done for tenancies, in any case. Since the building is also more than 2,500 m2 it will need the facility to record individually the energy consumption of— (i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and (ii) artificial lighting; and (iii) appliance power; and (iv) central hot water supply; and (v) internal transport devices including lifts, escalators and travelators if more than one serves the building; and (vi) other ancillary plant.

APPENDIX A - GLAZING CALCULATIONS

The glazing summary and calculations are provided below. The detailed Section J DTS calculations are shown in full and continue over the next few pages.

ABCB

Façade

Report

National Construction Code Calculator

Project Summary

Date
15/06/2022

Name
MARTIN PINSON

Company
INTEGRECO

Position
ESD CONSULTANT

Building Name / Address
12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065
Class 9b Childcare

Building State
NSW

Climate Zone
Climate Zone 5 - Warm temperate

Building Classification
Class 9b - early childhood centres

Storeys Above Ground
1

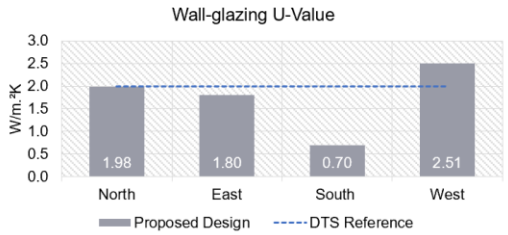
Tool Version
1.1 (April 2020)

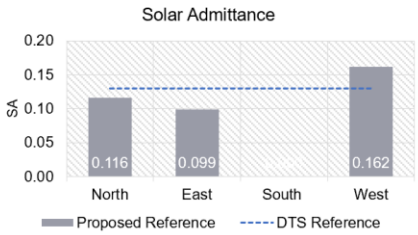
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

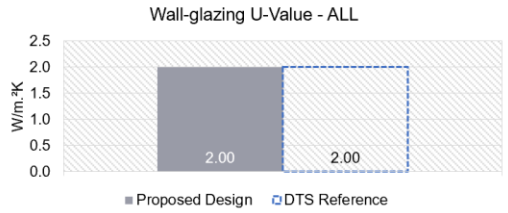
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	1.98	1.80	0.70	2.51	2.00
Solar Admittance	0.12	0.10		0.16	
AC Energy Value					71

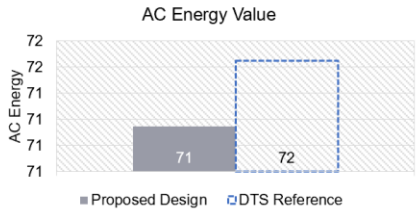
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	31.36	48.72	0	97.44
Glazing to Façade Ratio	53%	45%	0%	74%
Glazing References	Window 1	Window 1		Window 1
Glazing System Types	Sliding Door	Sliding Door		Sliding Door
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)	3.20	3.20		3.20
Average Glazing SHGC	0.63	0.63	0.00	0.63
Shading Systems	Horizontal Device	Horizontal Device	Horizontal Device	Horizontal Device
Wall Area (m²)	27.53	58.97	33.79	34.39
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm
Wall Thickness	200 150 250	200 150 250	200 150 250	200
Average Wall R-value (m².K/W)	1.68	1.57	1.43	1.85
Solar Absorptance	0.5	0.5	0.5	0.5

ABCB

Façade

Report

National Construction Code

Calculator

Project Summary

Date
15/06/2022

Name
MARTIN PINSON

Company
INTEGRECO

Position
ESD CONSULTANT

Building Name / Address
12-20 Berry Road & 11-19 Holdsworth Avenue, St Leonards 2065
Class 2 Community Room

Building State
NSW

Climate Zone
Climate Zone 5 - Warm temperate

Building Classification
Class 2 - apartment building (Common Area)

Storeys Above Ground
1

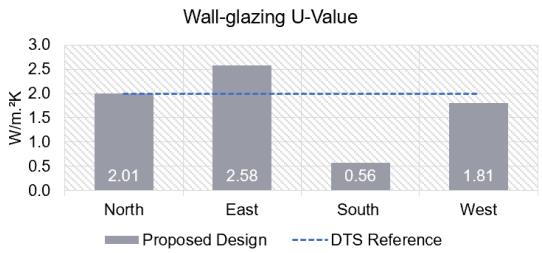
Tool Version
1.1 (April 2020)

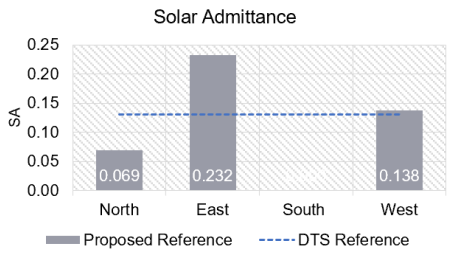
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	2.01	2.58	0.56	1.81	1.96
Solar Admittance	0.07	0.23		0.14	
AC Energy Value					35

Method 1





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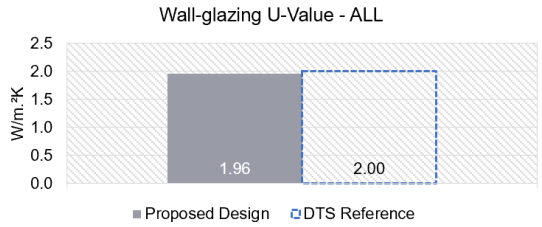

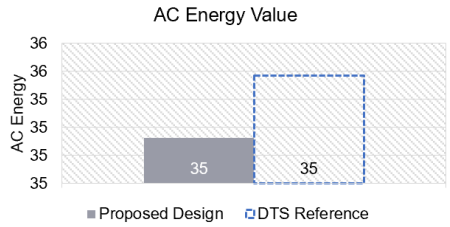

Project Details

	North	East	South	West
Glazing Area (m²)	30.8	31.9	0	15.95
Glazing to Façade Ratio	52%	74%	0%	44%
Glazing References	Window 1	Window 1		Window 1
Glazing System Types	Sliding Door	Sliding Door		Sliding Door
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)	3.30	3.30		3.30
Average Glazing SHGC	0.38	0.38	0.00	0.38
Shading Systems	Horizontal Device	Horizontal Device	Horizontal Device	Horizontal Device
Wall Area (m²)	28.14	11.485	16.74	20.63
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm	Brick+ R2.5+ 15mm EPS Conc + R1.5 + EPS 15mm Steel + R2.5 + EPS 15mm
Wall Thickness	200 150 250	200 150 250	200 150 250	200
Average Wall R-value (m².K/W)	1.69	1.72	1.77	1.53
Solar Absorptance	0.5	0.5	0.5	0.5