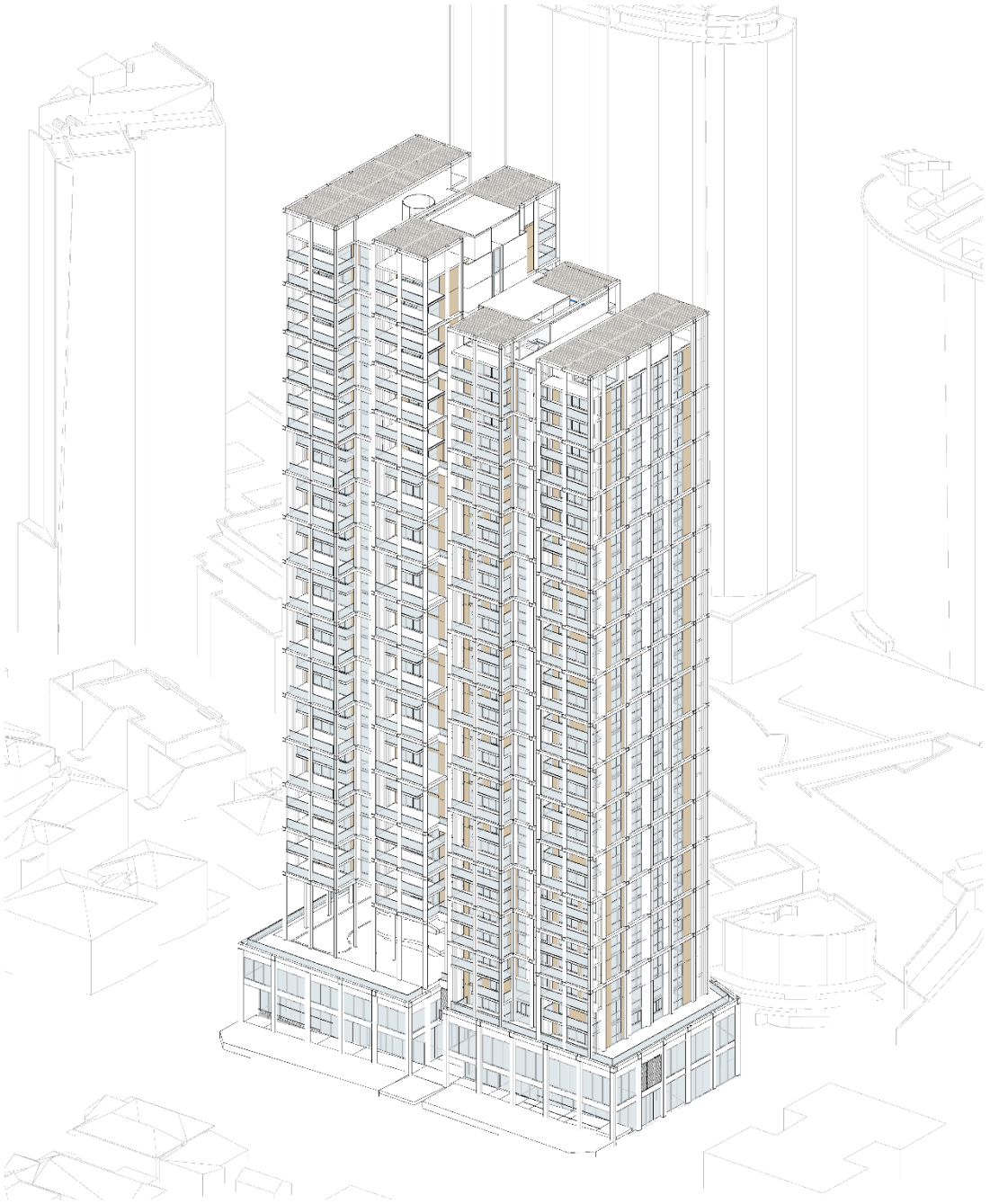
# Section J Report

**MIXED USE DEVELOPMENT**
**44-52 Anderson Street**
**Chatswood NSW 2067**

**Prepared for**
**Bridgestone Projects**

**Prepared by**
**GREENPERCH PTY LTD**
**OCT 2024**

GreenPerch



**Prepared on behalf of:**
Bridgestone Projects

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| REVISION | PREPARED | DRAWINGS |
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| 1 (30/10/2024) | MP check JP | 21.10.24 - DA ISSUE by MAKE ARCHITECTS |
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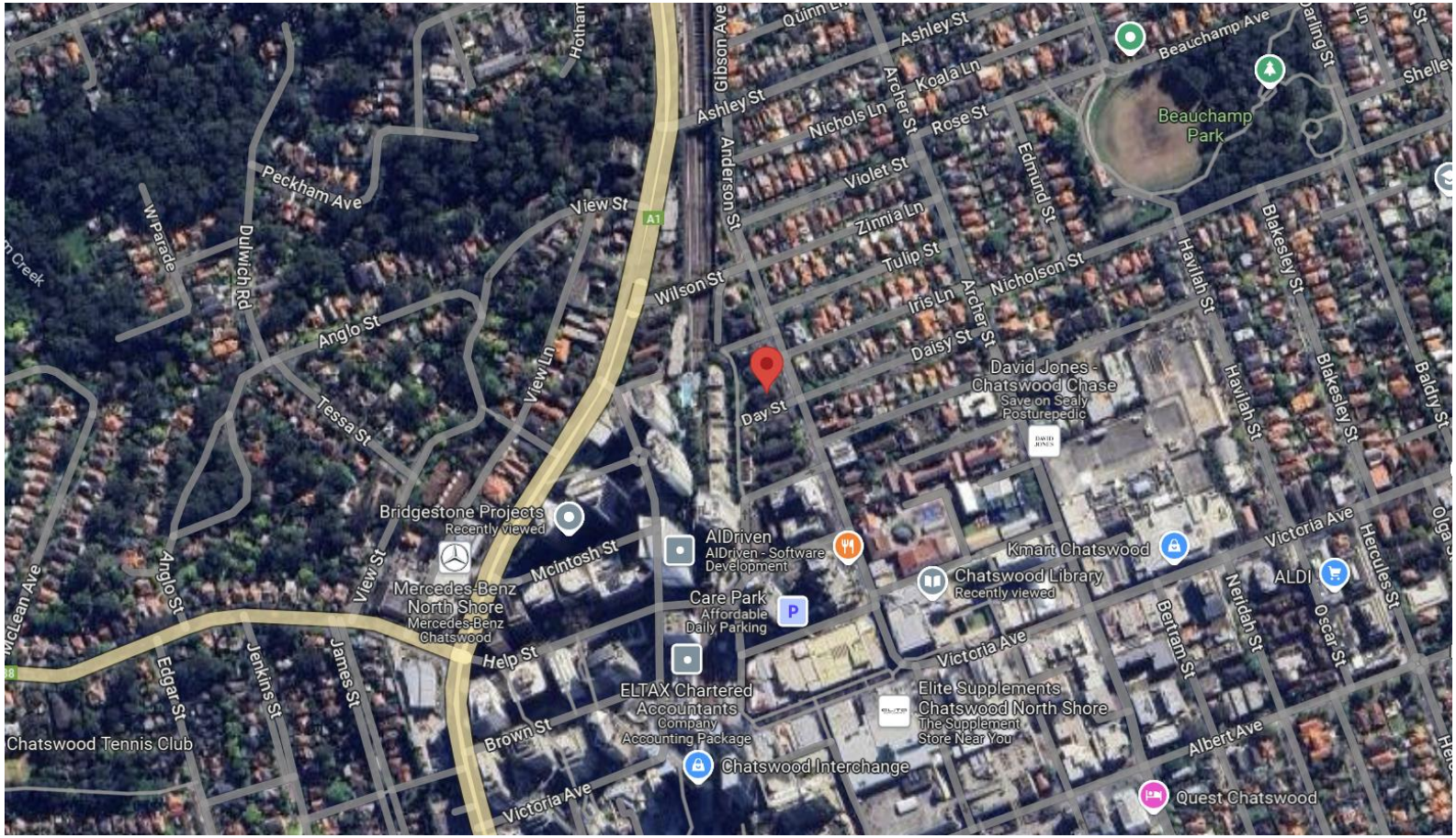
## INTRODUCTION AND SUMMARY

This report summarises the Section J initiatives for the proposed, mixed-use development at 44-52 Anderson Street, Chatswood 2067. The NCC 2022 and Section J DTS components have been used for this analysis. The site is classified as NCC climate zone 5.

GREENPERCH 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.




**Site Location Plan - 44-52 Anderson Street, Chatswood, NSW 2067**

The proposed development (**SSD-75408008**) seeks approval to construct 33-storey mixed use shop top housing, including in-fill affordable housing.

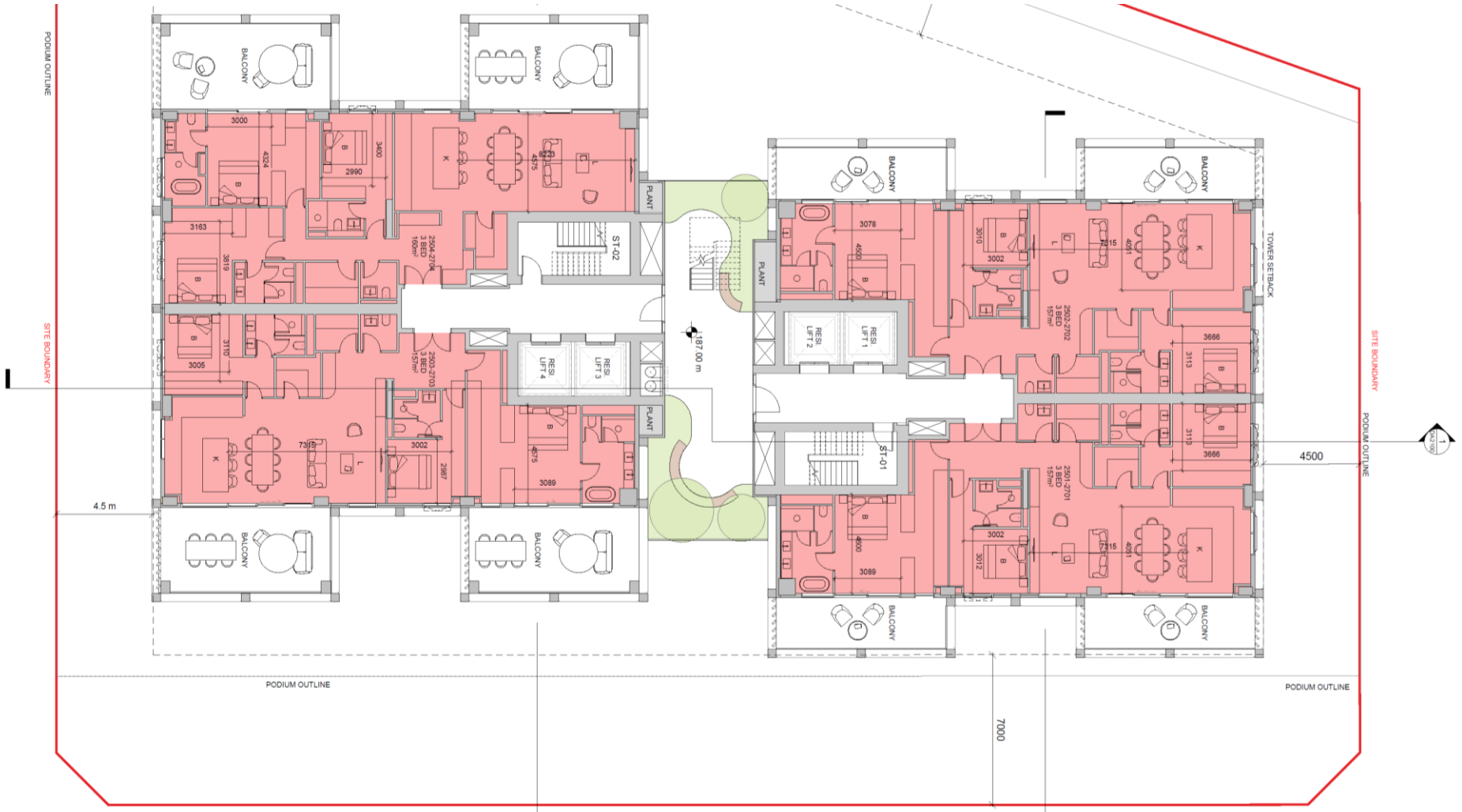
Specifically, this SSDA seeks approval for:

- Site preparation works including demolition of existing structures on the site, tree and vegetation clearing, and bulk earthworks;
- Construction of a 33-storey mixed use shop top housing development comprising:
  - A two-storey non-residential podium, with commercial/retail floor space, and
  - Two residential towers, with 123 apartments,
- Construction of an eight-level shared basement car parking for 296 carparking spaces including:

o 256 residential spaces (including 25 accessible spaces);
o 22 commercial and retail spaces (including 1 accessible space);
o 18 visitor spaces;

- Vehicular access from Day Street,
- Communal open space on Level 2 including shared outdoor spaces, swimming pool and associated amenities, sauna and BBQ area and a green spine running between the two towers;
- Associated landscaping and public domain works, and
- Services and infrastructure improvements, as required.

**Site Context Photo - 44-52 Anderson Street, Chatswood, NSW 2067**

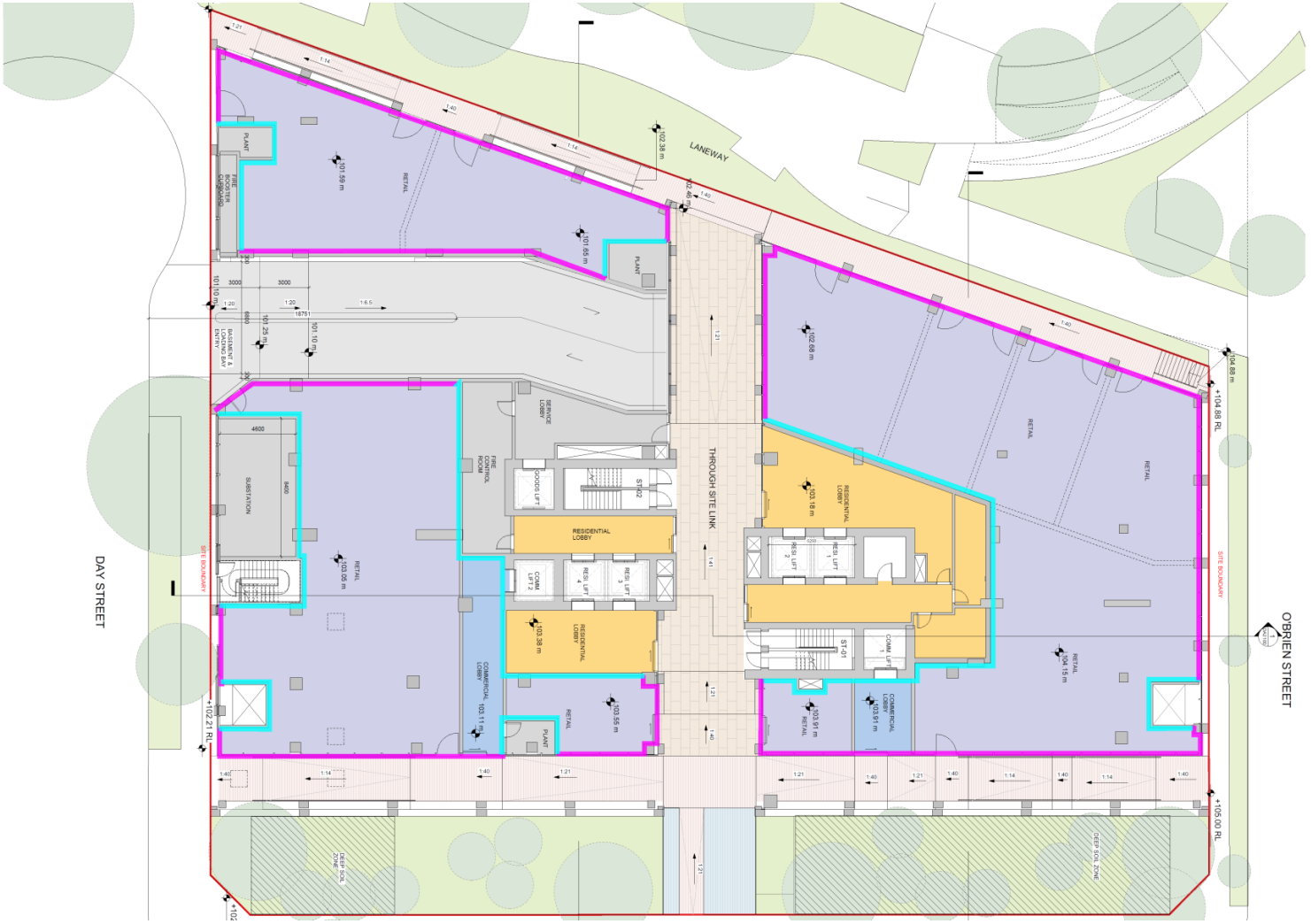



**Typical plan layout (upper levels) - 44-52 Anderson Street, Chatswood, NSW 2067**

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 and insulation options, due to the greater accuracy of the JV3 simulations. The JV3 simulation option may be considered during the construction stage.

| Section J item -Retail/Commercial | Construction – Commercial (Retail/Commercial) | Passing NCC DTS (Deemed-to-Satisfy) |
|---|---|---|
| 1 | Walls (external brick, concrete, cladding) | R2.5 added + break (10mm approx R0.2) to give >R1.6 total |
| 2 | Walls lightweight (next to enclosed plant room, ext. toilets, ext. store) | R1.5 added + break (10mm approx R0.2) to give >R1.2 total |
| 3 | Walls conc/masonry (next to enclosed plant room, ext. toilets, ext. store) | R1.5 added + break (10mm approx R0.2) to give >R1.2 total |
| 4 | Walls next to other retail or apartments (other conditioned) | Optional insulation, all walls |
| 5 | Floors (over air/basement, no in-slab heat) | R1.7 or more added, under slab |
| 6 | Floors (with slab-on-ground, no in-slab heat) | Not applicable |
| 7 | Ceiling under Roof/Balcony/Terrace | R3.3 added, excl. air gap (SA <0.45) |
| 8 | Ceiling under apartments/retail/communal rooms | Optional insulation, under conditioned |
| | | |
| 9 | GR- RETAIL - U-value (double-glaze + dark tint) | < 3.7 (double-glazing + dark tint) |
| 10 | GR- RETAIL - SHGC (double-glaze + dark tint) | < 0.38 (double-glazing + dark tint) |
| 11 | Level 1 conditioned - U-value (double-glaze + dark tint) | < 3.2 (double-glazing + dark tint) |
| 12 | Level 1 conditioned - SHGC (double-glaze + dark tint) | < 0.27 (double-glazing + dark tint) |
| 13 | Skylight U-value (common areas) | No skylights for retail / commercial |
| 14 | Skylight SHGC (common areas) | No skylights for retail / commercial |
| 15 | Shading devices for retail | No extra devices modelled - just eaves/overhangs as shown |

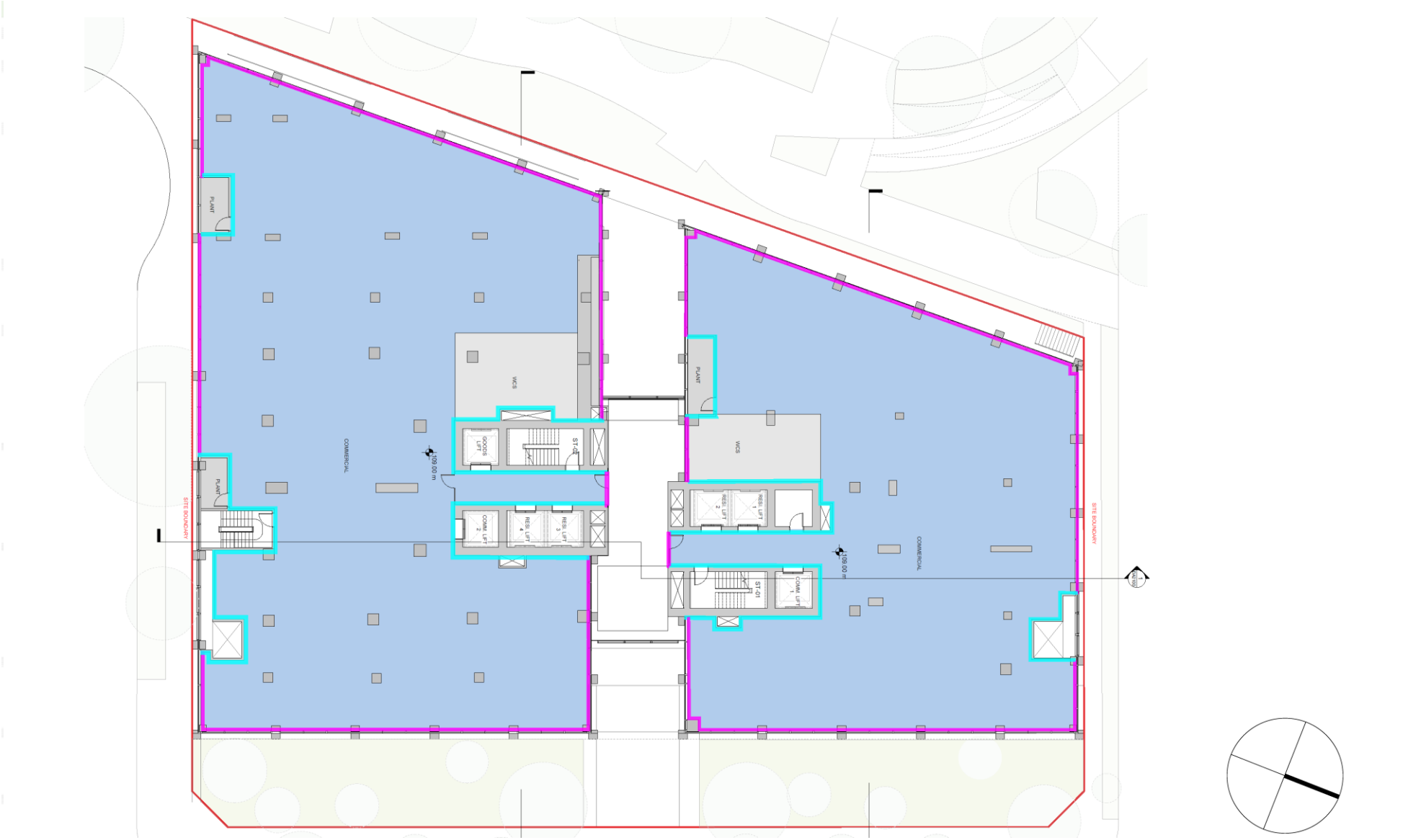
The plans below show the boundaries between conditioned retail and unconditioned areas (or outside air). The added insulation for walls is also shown.




**PLAN (GROUND - not to scale) - 44-52 Anderson Street, Chatswood 2067**

Wall has added R2.5 +thermal break (>R1.6 total)

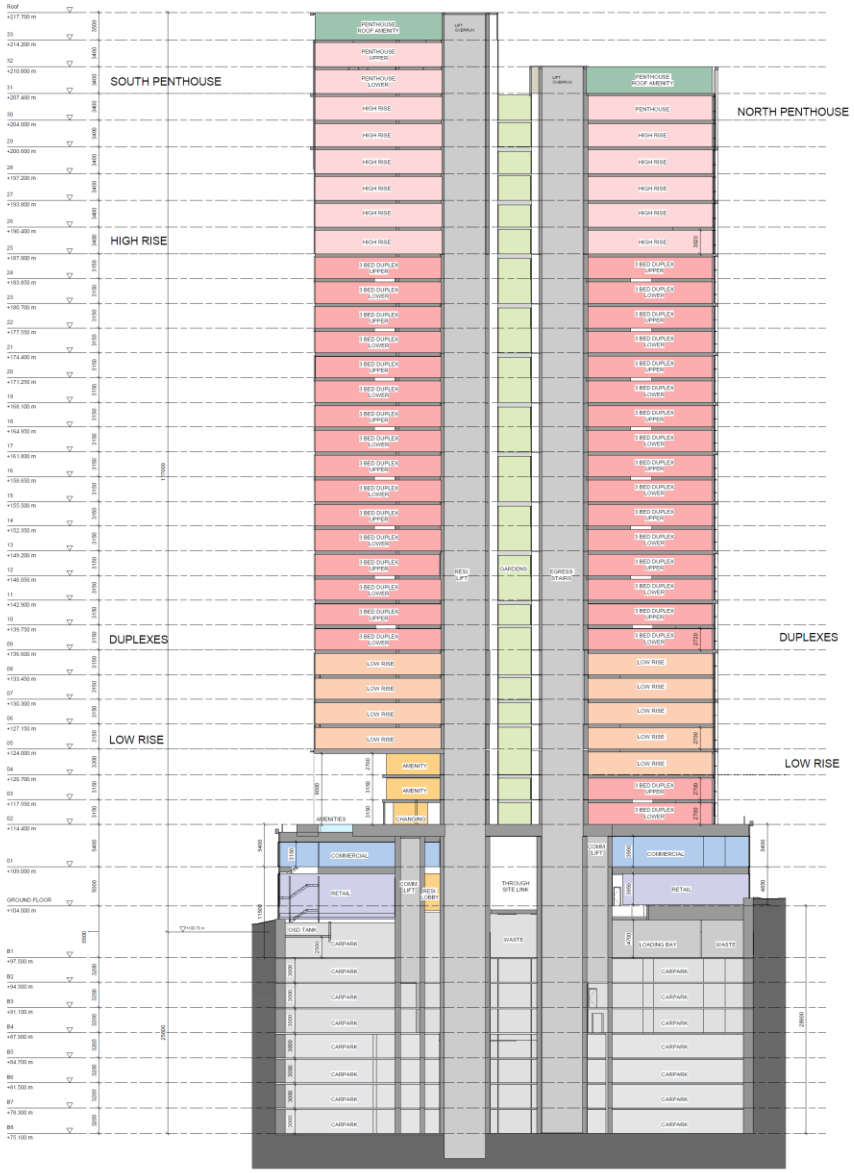
Wall has added R1.5 +thermal break (>R1.2 total)



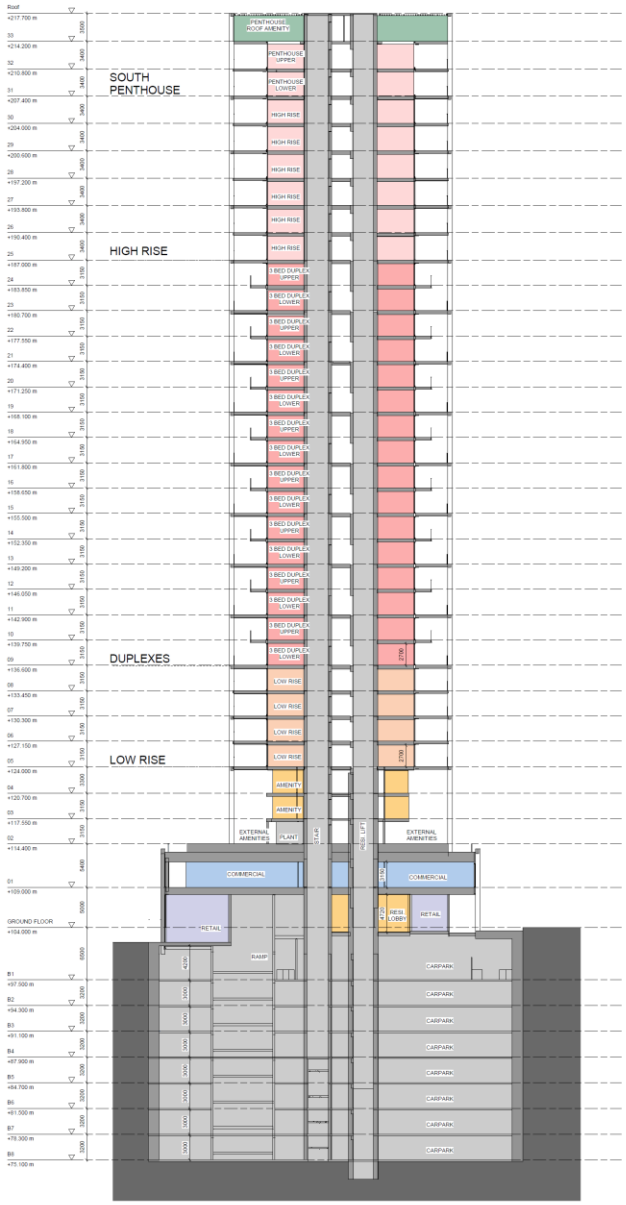

**PLAN (LEVEL 1 - not to scale) - 44-52 Anderson Street, Chatswood 2067**

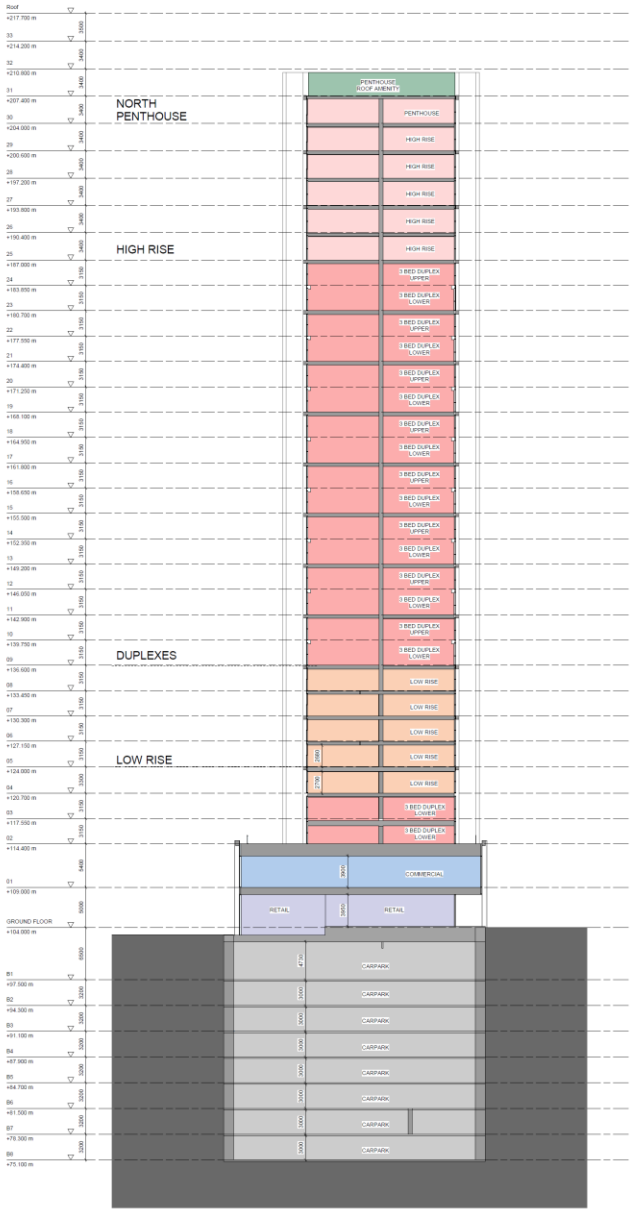
Wall has added R2.5 +thermal break (>R1.6 total)

Wall has added R1.5 +thermal break (>R1.2 total)

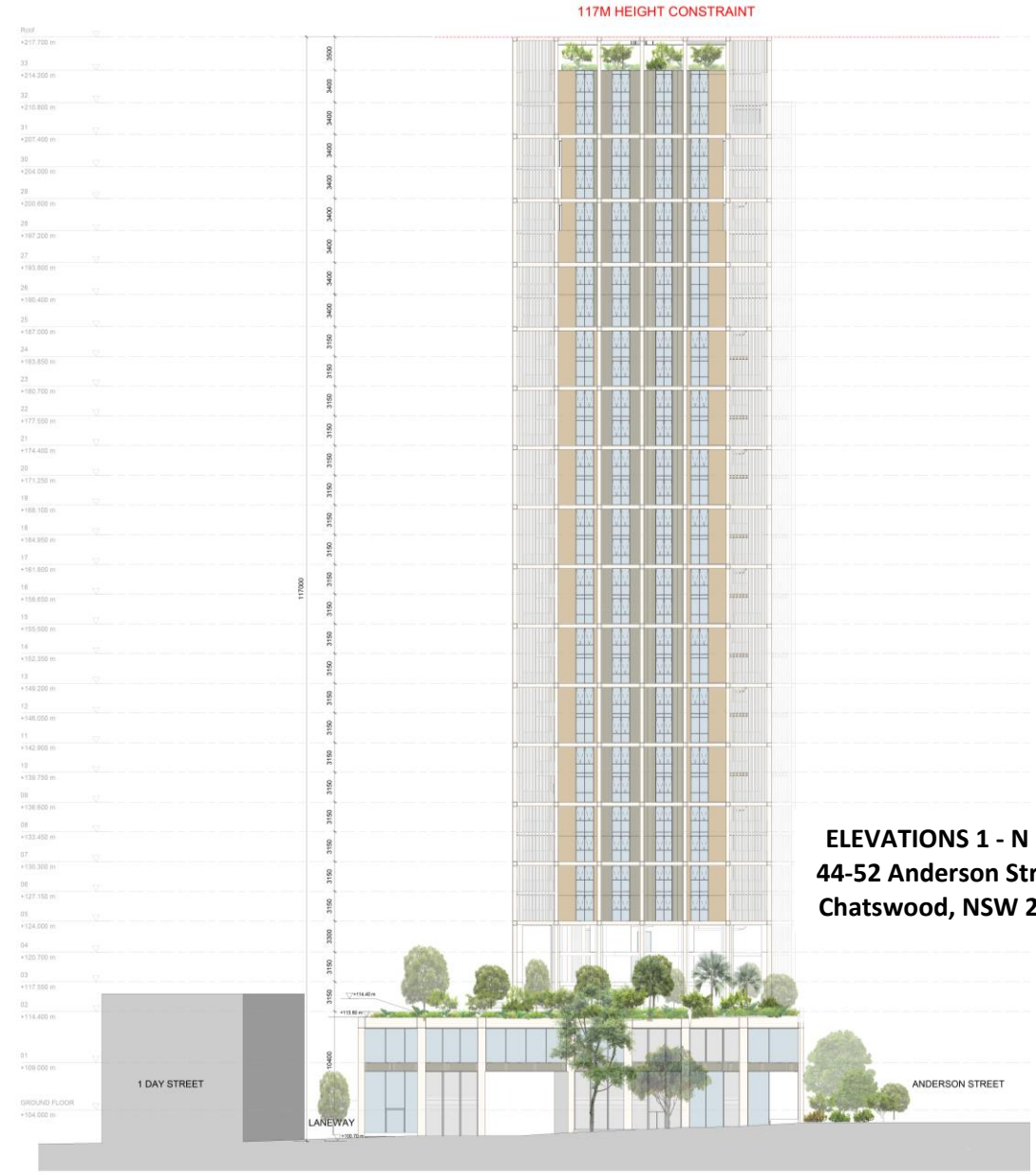



**SECTIONS 1 - 44-52 Anderson Street, Chatswood, NSW 2067**




**SECTIONS 2 - 44-52 Anderson Street, Chatswood, NSW 2067**


**ELEVATIONS 1 - N & S**
**44-52 Anderson Street, Chatswood, NSW 2067**

**ELEVATIONS 2 EAST –**
**44-52 Anderson Street, Chatswood, NSW 2067**


**ELEVATIONS 3 WEST - 44-52 Anderson Street, Chatswood,**

# SECTION J REQUIREMENTS AND INITIATIVES

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NCC Reference** | **NSW Part J1 Energy efficiency performance requirements** | **Specific Project Initiative** |
| **NSW J1F1 Energy efficiency** | A building must—<br>a. reduce the energy consumption and energy peak demand of key energy using equipment; and<br>b. reduce the greenhouse gas emissions that occur as a result of a building's energy consumption and energy source; and<br>c. for a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, improve occupant health and *amenity* by mitigating the impact of extreme hot and cold weather events and energy blackouts; and<br>d. for other than in a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building, protect occupant health and *amenity* by ensuring the building *envelope* assists in the maintenance of acceptable internal conditions while the building is occupied; &<br>e. be able to accommodate the future installation of distributed energy resources. | The development has been designed for this, as discussed in the summary table below. |
| **NSW J1P1 Energy use** | A building incl services, must have features that facilitate efficient use of energy appropriate to<br>a. the function and use of the building; and<br>b. the level of human comfort required for the building use; and<br>c. solar radiation being—<br>i. utilised for heating; and<br>ii. controlled to minimise energy for cooling; and<br>d. the energy source of the services; and<br>e. the sealing of the building envelope against air leakage; and<br>f. for a conditioned space, achieving an hourly regulated energy consumption, averaged over the annual hours of operation, of not more than—<br>i. for a Class 6 building, 80 kJ/m².hr; and<br>ii. for a Class 5, 7b, 8 or 9a building other than a ward area, or a Class 9b school, 43 kJ/m².hr; and<br>iii. for all other building classifications, 15 kJ/m².hr.<br>Applications - NSW J1P1 does not apply to a Class 2 building or a Class 4 part of a building. | The development has been designed for this, as discussed in the summary table below.<br><br>Likewise, the conditioned spaces will all use efficient heating (with a high COP and low greenhouse gas intensity).<br><br>''Regulated energy consumption" means energy used for air-conditioning, heated water, artificial lighting and lifts, (minus the renewable energy generated and used on site). |
| **NSW J1P4 Renewable energy and electric vehicle charging** | A building must have features that facilitate the future installation of on-site renewable energy generation and storage and electric vehicle charging equipment. | The building will have features to allow for the future installation of on-site renewable energy generation and storage and electric vehicle charging equipment. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NSW J1P5 Building fabric—Class 2 building and Class 4 parts of a building** | (1) Thermal insulation in a building must be installed in a manner and have characteristics, which facilitate the efficient use of energy for artificial heating and cooling.<br><br>(2) A building must have, to the degree necessary, thermal breaks installed between the framing and external cladding, to facilitate efficient thermal performance of the building envelope.<br><br>Explanatory information<br>NSW J1P5 only applies to a Class 2 building or a Class 4 part of a building.<br>NSW J1P5(1) only applies to thermal insulation in a building where a development consent specifies that the insulation is to be provided as part of the development.<br>NSW J1P5(2) only applies to a metal framed roof and metal framed wall. | The Class 2 parts must have<br>(1) Thermal insulation in a building must be installed in a manner and have characteristics, which facilitate the efficient use of energy for artificial heating and cooling.<br><br>(2) A building must have, to the degree necessary, thermal breaks installed between the framing and external cladding, to facilitate efficient thermal performance of the building envelope - for metal cladding, since no metal roofs are used. |
| **NSW J1P6 Building sealing—Class 2 building and Class 4 parts of a building** | A building must have, to the degree necessary, a level of building sealing against air leakage to facilitate the efficient use of energy for artificial heating and cooling appropriate to—<br>a) the function and use of the building; and<br>b) the internal environment; and<br>c) the geographic location of the building. | The class2 will have a level of building sealing against air leakage to facilitate the efficient use of energy for artificial heating and cooling appropriate to—<br>a) the function and use of the building; and<br>b) the internal environment; and<br>the geographic location of the building. |
| **NSW J1P7 Services—Class 2 building and Class 4 parts of a building** | A building's services must have features that, to the degree necessary, facilitate the efficient use of energy appropriate to—<br>a) the function and use of the service; and<br>b) the internal environment; and<br>c) the geographic location of the building; and<br>d) the energy source of the service.<br>Applications<br>NSW J1P7 only applies to a Class 2 building or Class 4 part of a building. | The class 2 services will have features that, to the degree necessary, facilitate the efficient use of energy appropriate to—<br>a) the function and use of the service; and<br>b) the internal environment; and<br>c) the geographic location of the building; and<br>d) the energy source of the service. |
| **NSW J1V1 NABERS Energy** | Not used - J1V1 NABERS Energy | Not used – N/A |
| **NSW J1V2 Green Star** | Not used - J1V2 Green Star | Not used – N/A |
| **NSW J1V3 Verification using reference** | Not used - J1V3 Verification using a reference building | Not used – may be used later, pending glazing and façade designs |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NSW J1V4 Verification of building envelope Sealing** | Not used - J1V4 Verification of building envelope sealing | Not used – N/A |
| **NCC Reference** | **Part J2 Energy efficiency** | **Specific Project Initiative** |
| **NSW J2D1 Deemed-to-Satisfy Provisions** | (1) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br>a) NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br><br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | The development has been designed for this, as discussed in the summary table below. |
| **NSW J2D2 Application of Section J** | (1) For a Class 3 and 5 to 9 building, Performance Requirement NSW J1P1 is satisfied by complying with—<br>a. Part J4, for the building *fabric*; and<br>b. Part J5, for building sealing; and<br>c. Part J6, for *air-conditioning* and ventilation; and<br>d. Part J7, for artificial lighting and power; and<br>e. Part J8, for heated water supply and *swimming pool* and spa pool plant; and<br>f. J9D3, for facilities for energy monitoring.<br><br>(2)For a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, Performance Requirement NSW J1P5 is satisfied by complying with—<br><br>a. J3D5 and J3D6, for thermal breaks; and<br>b. J4D3, for general thermal construction; and<br>c. J3D10(3), J3D10(5) and J3D10(6), for floor edge insulation.<br><br>(3) For a Class 2 building or a Class 4 part of a building, Performance Requirement NSW J1P6 is satisfied by complying with Part J5 for building sealing. | The development has been designed for this, as discussed in the report and table below. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (4)For a Class 2 building or a Class 4 part of a building, Performance Requirement NSW J1P7 is satisfied by complying with—<br><br>a. Part J6, for air-conditioning and ventilation; and<br>b. J8D2, for heated water supply; and<br>c. J9D3, for facilities for energy monitoring.<br><br>(5)For a Class 2 to 9 building, Performance Requirement NSW J1P4 is satisfied by complying with J9D4 and J9D5. | |
| **NCC Reference** | **Part J3 Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building** | **Specific Project Initiative** |
| **NSW J3D1 Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* J1P1 to J1P4 are satisfied by complying with—<br>a) NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br><br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | Only some applies to class 2,4 (in NSW) |
| **NSW J3D2 Application of Part** | The *Deemed-to-Satisfy Provisions* of this Part apply to building elements forming the external building *fabric* and *domestic services* of a *sole-occupancy unit* of a Class 2 building and a Class 4 part of a building. | Only some applies to class 2,4 (in NSW) |
| **NSW J3D3 to J3D4 not included** | J3D3 to J3D4 – N/A for NSW<br>not included (all apply to class2 and 4 but not NSW) | Not used –applies to class 2,4 (but outside NSW, without BASIX) |
| **NSW J3D5**<br><br>**Roof thermal breaks of a sole-occupancy unit of a Class 2** | (1 ) A roof that—<br><br>has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and<br><br>does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens, | Applies to class 2,4 (in NSW)<br><br>This must be implemented and signed off by building contractors. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **building or a Class 4 part of a building** | must have a thermal break, consisting of a material with an R-Value of greater than or equal to R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.<br><br>(2) The requirements of (1) do not apply to roofs constructed using insulated sandwich panels. | |
| **NSW J3D6**<br><br>**Wall thermal breaks of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building** | (1) A metal-framed wall that forms part of the building envelope 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 external cladding and the metal frame if the wall—<br>• does not have a wall lining or has a wall lining that is fixed directly to the same metal frame; and<br>• is clad with weatherboards, fibre-cement or the like, or metal sheeting fixed to a metal frame.<br>(2) The requirements of (1) do not apply to walls constructed using insulated sandwich panels. | Applies to class 2,4 (in NSW)<br><br>This must be implemented and signed off by building contractors. |
| **NSW J3D7 to J3D9 not included** | J3D7 to J3D9 – N/A for NSW<br>not included (all apply to class2 and 4 but not NSW) | Not used –applies to class 2,4 (but outside NSW, without BASIX) |
| **J3D10**<br><br>**Floors of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building** | (3) A concrete slab-on-ground with an in-slab or in-screed heating or cooling system must have insulation with<br><br>an R-Value at least 1.0 installed around the vertical edge of tis perimeter.<br><br>(5) Insulation required by (3) must—<br>• be water resistant; and<br>• be continuous from the adjacent finished ground level—<br>• to a depth of not less than 300 mm; or<br>• for at least the full depth of the vertical edge of the concrete slab-on-ground.<br>(6) The requirements of (3) do not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like. | Applies to class 2,4 (in NSW).<br><br>This will only apply where slab heating/cooling is used.<br><br>This must be implemented and signed off by building contractors. |
| **NSW J3D11 to J3D15 not included** | J3D11 to J3D15 – N/A for NSW<br>not included (all apply to class2 and 4 but not NSW) | Not used –applies to class 2,4 (but outside NSW, without BASIX) |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NCC Reference** | **Part J4 Building fabric** | **Specific Project Initiative** |
| **NSW J4D1 Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br>a) NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | The development has been designed for this, as discussed in the summary table below. |
| **NSW J4D2 Application of Part** | (1) The Deemed-to-Satisfy Provisions of this Part apply to building elements forming the envelope of a Class 3 and Class 5 to 9 building.<br><br>(2) NSW J4D3, applies to building elements forming the envelope of a sole-occupancy unit in a Class 2 building and a Class 4 part of a building.<br><br>(3) (2) only applies to thermal insulation in a sole-occupancy unit in a Class 2 building and a Class 4 part of a building where a development consent specifies that the insulation is to be provided as part of the development. | DTS will apply to various buildings, especially conditioned commercial areas. For example, since services are unconditioned, the "envelope" is the boundary between the conditioned retail and services . |
| **NSW J4D3 Thermal construction — general** | (1) Where *required*, insulation must comply with AS/NZS 4859.1 and be installed so that it—<br>a. abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must be against the member; and<br>b. forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and<br>c. does not affect the safe or effective operation of a *service* or fitting.<br>(2) Where *required*, *reflective insulation* must be installed with—<br>a. the necessary airspace to achieve the *required* *R-Value* between a reflective side of the *reflective insulation* and a building lining or cladding; and<br>b. the *reflective insulation* closely fitted against penetration, door or *window* opening; &<br>c. the *reflective insulation* adequately supported by framing members; and<br>d. each adjoining sheet of roll membrane being—<br>i. overlapped not less than 50 mm; or<br>ii. taped together. | Contractors are obliged to adhere to these installation guidelines, in the final specifications. These will apply to all parts of the envelope where thermal insulation is required. |

<table>
<tr><th>NCC Reference</th><th>SECTION J – Energy Efficiency Requirement</th><th>Specific Project Initiative</th></tr>
<tr><td></td><td>(3) Where required, bulk insulation must be installed so that—<br>a. 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<br>b. 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.<br>(4) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification 36.<br><br>(5) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—<br>a. calculated in accordance with AS/NZS 4859.2 for a roof or floor; or<br>b. determined in accordance with Specification 37 for wall-glazing construction; or<br>c. determined in accordance with Specification 39 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.</td><td></td></tr>
<tr><td>NSW J4D4<br>Roof and ceiling construction</td><td>(1) A roof or ceiling must achieve a Total R-Value greater than or equal to—<br>a. in climate zones 1, 2, 3, 4 and 5, R3.7 for a downward direction of heat flow; and<br>b. in climate zone 6, R3.2 for a downward direction of heat flow; and<br>c. in climate zone 7, R3.7 for an upward direction of heat flow; and<br>d. in climate zone 8, R4.8 for an upward direction of heat flow.<br>(2) 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 commercial areas, the Minimum Roof/Ceiling Insulation (for new roofs) is:<br><br>1. Medium or light colour roof (or terrace) - R3.7 total – down. So, this requires approx. R3.3 added, excl. air gaps<br>2. Dark colour – N/A with DTS, since roof solar absorption must be ≤0.45</td></tr>
<tr><td>NSW J4D5<br>Roof lights</td><td>Roof lights must have—<br>a. a total area of not more than 5% of the floor area of the room or space served; and<br>b. transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of—<br>i. for Total system SHGC, in accordance with Table J4D5; and<br>ii. for Total system U-Value, not more than U3.9.<br>Table J4D5 Roof lights – Total system SHGC<br><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>None used for retail/commercial</td></tr>
</table>

<table>
<tr><th>NCC Reference</th><th>SECTION J – Energy Efficiency Requirement</th><th>Specific Project Initiative</th></tr>
<tr>
<td>NSW J4D6 Walls and glazing</td>
<td>
(1) The Total System U-Value of wall-glazing construction, including wall-glazing construction which wholly or partly forms the envelope internally, must not be greater than—<br>
a. 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<br>
b. for a Class 3 or 9c building or a Class 9a ward area—<br>
i. in climate zones 1, 3, 4, 6 or 7, U1.1; or<br>
ii. in climate zones 2 or 5, U2.0; or<br>
iii. in climate zone 8, U0.9.<br>
(2) The Total System U-Value of display glazing must not be greater than U5.8.<br>
(3) The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification 37.<br>
(4) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of—<br>
a. where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or<br>
b. where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J4D6a.<br><br>
NSW Table NSW J4D6a: Minimum wall Total R-Value - Wall area 80% or more of wall-glazing construction area
<table>
<tr><th>Climate zone</th><th>Class 5, 6, 7, 8 or 9b building or a Class 9a building other than a ward area</th><th>Class 3 or 9c building or Class 9a ward area</th></tr>
<tr><td>1</td><td>2.4</td><td>3.3</td></tr>
<tr><td>2</td><td>1.4</td><td>1.4</td></tr>
<tr><td>3</td><td>1.4</td><td>3.3</td></tr>
<tr><td>4</td><td>1.4</td><td>2.8</td></tr>
<tr><td>5</td><td>1.4</td><td>1.4</td></tr>
<tr><td>6</td><td>1.4</td><td>2.8</td></tr>
<tr><td>7</td><td>1.4</td><td>2.8</td></tr>
<tr><td>8</td><td>1.4</td><td>3.8</td></tr>
</table>
(5) The solar admittance of externally facing wall-glazing construction, excluding wall-glazing construction which is wholly internal, must not be greater than—<br>
a. 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 J4D6b; and<br>
b. for a Class 3 or 9c building or a Class 9a ward area, the values specified in Table J4D6c.<br>
(6) The solar admittance of a wall-glazing construction must be calculated in accordance with Specification 37.<br>
(7) The Total system SHGC of display glazing must not be greater than 0.81 divided by the applicable shading factor specified in S37C7.
</td>
<td>
For the GR conditioned areas, the ‘whole-window’ glazing values (glass+ frame combined) are:<br>
- Total U-value ≤ 3.7 and SHGC ≤ 0.38<br><br>
For the conditioned Level 1, the ‘whole-window’ glazing values (glass+ frame combined) are:<br>
- Total U-value ≤ 3.2 and SHGC ≤ 0.27<br><br>
For the conditioned commercial areas, "Total External Wall R-values" under DTS are advised to be:<br>
- Walls (external metal or cladding) = R2.5 added (+ break, 10mm EPS or equiv.) to give >R 1.6 total<br><br>
- Walls (external concrete/block/etc) = R2.5 added (+ break, 10mm EPS or equiv.) to give >R1.6 total<br><br>
For the conditioned commercial areas, "Total Wall R-values" next to non-conditioned, enclosed spaces (such as plant rooms, external bathrooms, etc) are:<br>
- Walls lightweight (next to plant, etc) = R1.5 added (+ break, 10mm EPS or equiv.) to give >R 1.2 total<br><br>
- Walls masonry (next to plant, etc) = R1.5 added (+ break, 10mm EPS or equiv.) to give >R1.2 total<br><br>
For the conditioned commercial areas, "Total Wall R-values" next to other conditioned spaces are:<br>
- Lightweight walls – any or no insulation is OK<br>
- Masonry/concrete walls –any or no insulation is OK
</td>
</tr>
</table>

<table>
<tr><th>NCC Reference</th><th>SECTION J – Energy Efficiency Requirement</th><th>Specific Project Initiative</th></tr>
<tr><td>NSW J4D7 Floors</td><td>(1) A floor must achieve the Total R-Value specified in Table J4D7.<br>Table J4D7 Floors – Minimum Total R-Value<br><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 zones 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>(2) For the purposes of (1), a slab-on-ground that does not have an in-slab heating or cooling system is considered to achieve a Total R-Value of R2.0, except—<br>a. in climate zone 8; or<br>b. a Class 3, Class 9a ward area or Class 9b building in climate zone 7 that has a floor area to floor perimeter ratio of less than or equal to 2.<br>(3) 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—<br>a. is a concrete slab-on-ground in climate zone 8; or<br>b. has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like.<br>(4) Insulation required by (3) for a concrete slab-on-ground must—<br>a. be water resistant; and<br>b. be continuous from the adjacent finished ground level—<br>i. to a depth not less than 300 mm; or<br>ii. for the full depth of the vertical edge of the concrete slab-on-ground.</td><td>Floor Insulation for conditioned commercial area under DTS:<br><br>Assuming no in-slab heating or cooling, the following insulation is required for the new floors in conditioned rooms:<br><br><table><tr><th>Floor type</th><th>Minimum Total R-values</th></tr><tr><td>Slab above air or subfloor</td><td>R2 total (i.e. R1.7 added)</td></tr><tr><td>Slab on ground</td><td>n/a (for conditioned zones)</td></tr></table></td></tr>
<tr><th>NCC Reference</th><th>Part J5 Building sealing</th><th>Specific Project Initiative</th></tr>
<tr><td>NSW J5D1 Deemed-to-Satisfy Provisions</td><td>(1) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br>1. NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br>(2) Where a Performance Solution is proposed, the relevant Performance Requirements must be determined in accordance with A2G2(3) and A2G4(3) as applicable.</td><td>DTS will apply to various buildings, especially conditioned areas. For example, since services are unconditioned, the “envelope” is the boundary between the conditioned retail and services.</td></tr>
</table>

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NSW J5D2 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—<br>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<br>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<br>c. in a Class 3 or Class 5 to 9 building, a building or space where the mechanical ventilation required by Part F6 provides sufficient pressurisation to prevent infiltration; or<br>d. parts of buildings that cannot be fully enclosed. | DTS will apply to various buildings, especially conditioned areas. For example, since services are unconditioned, the "envelope" is the boundary between the conditioned retail and services . |
| **NSW J5D3 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. | N/A - No solid-fuel burning appliances. |
| **NSW J5D4 Roof lights** | (1) A *roof light* must be sealed, or capable of being sealed, when serving—<br>a. a *conditioned space*; or<br>b. a *habitable room* in *climate zones* 4, 5, 6, 7 or 8.<br>(2) A *roof light required* by (1) to be sealed, or capable of being sealed, must be constructed with—<br>a. an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level or<br>b. a weatherproof seal; or<br>c. a shutter system readily operated either manually, mechanically or electronically by the occupant. | N/A since no roof lights in conditioned zones |
| **NSW J5D5 Windows and doors** | (1) A door, openable window or the like must be sealed—<br>a. when forming part of the envelope; or<br>b. in climate zones 4, 5, 6, 7 or 8.<br><br>(2) The requirements of (1) do not apply to—<br>a. a window complying with AS 2047; or<br>b. a fire door or smoke door; or<br>c. a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security.<br><br>(3) A seal to restrict air infiltration—<br>a. for the bottom edge of a door, must be a draft protection device; and<br>b. 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 new doors and windows (for conditioned areas). This does not apply to:<br><br>(i) a window complying with AS 2047; or<br>(ii) a fire door or smoke door; or<br>(iii) a roller shutter/ security door<br><br>The external entrances to the conditioned space must have a self-closing door or the like.<br><br>A loading dock entrance into conditioned space, must use a rapid roller door or similar (but this is not applicable) |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (4) 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—<br><br>a. where the conditioned space has a floor area of not more than 50 $m^2$; or<br>b. where a café, restaurant, open front shop or the like has—<br>i. a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and<br>ii. at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.<br><br>(5)A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.<br><br>*Applications -NSW J5D5(5) does not apply to a Class 2 building or a Class 4 part of a building.* | |
| **NSW J5D6 Exhaust fans** | An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving—<br>a. a *conditioned space*; or<br>b. 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. |
| **NSW J5D7 Construction of ceilings, walls and floors** | (1) 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 (2)—<br>a. when forming part of the *envelope*; or<br>b. in *climate zones* 4, 5, 6, 7 or 8.<br><br>(2) Construction *required* by (1) must be—<br>a. enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or<br>b. sealed at junctions and penetrations with—<br>i. close fitting architrave, skirting or cornice; or<br>ii. expanding foam, rubber compressible strip, caulking or the like.<br><br>(3) The requirements of (1) 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). |
| **NSW J5D8 Evaporative coolers** | An evaporative cooler must be fitted with a self-closing damper or the like—<br>a. when serving a heated space; or<br>b. in *climate zones* 4, 5, 6, 7 or 8.<br>c. | NA – no evaporative coolers. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NCC Reference** | **Part J6 Air-conditioning and ventilation** | **Specific Project Initiative** |
| **NSW J6D1**<br><br>**Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br><br>1. NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br><br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | DTS for J6 will apply to the building. During the design development, the HVAC systems will be designed by the mechanical engineers to meet all these conditions. |
| **NSW J6D2 Application of Part** | (1) The Deemed-to-Satisfy Provisions of this Part do not apply to a Class 8 electricity network substation.<br>(2) J6D10 does not apply to a Class 2 building or a Class 4 part of a building. | DTS for J6 will apply to the building. However, J6D10 does not apply to the Class 2 building. |
| **NSW J6D3 Air-conditioning system control** | Not included here – Refer to NCC 2022 for details of: J6D3 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D4 Mech ventilation system control** | Not included here – Refer to NCC 2022 for details of: J6D4 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D5 Fans and duct systems** | Not included here – Refer to NCC 2022 for details of: J6D5 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D6 Ductwork insulation** | Not included here – Refer to NCC 2022 for details of: J6D6 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D7 Ductwork sealing** | Not included here – Refer to NCC 2022 for details of: J6D7 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D8 Pump systems** | Not included here – Refer to NCC 2022 for details of: J6D8 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NSW J6D9 Pipework insulation** | Not included here – Refer to NCC 2022 for details of: J6D9 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D10 Space heating** | Not included here – Refer to NCC 2022 for details of: J6D10 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D11 Refrigerant chillers** | Not included here – Refer to NCC 2022 for details of: J6D11 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D12 Unitary air-conditioning equipment** | Not included here – Refer to NCC 2022 for details of: J6D12 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NSW J6D13 Heat rejection equipment** | Not included here – Refer to NCC 2022 for details of: J6D13 | The HVAC will be designed and verified by the mechanical engineers to meet these conditions. |
| **NCC Reference** | **Part J7 Artificial lighting and power** | **Specific Project Initiative** |
| **NSW J7D1 Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br><br>a) NSW J2D2; and<br>a) NSW J3D2 to J3D10; and<br>b) NSW J4D2 to J4D7; and<br>c) NSW J5D2 to J5D8; and<br>d) NSW J6D2 to J6D13; and<br>e) NSW J7D2 to J7D9; and<br>f) J8D2 to NSW J8D4; and<br>g) J9D2 to J9D5.<br><br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable | DTS for J7 will apply to internal and external areas. |
| **NSW J7D2 Application of Part** | (1) The Deemed-to-Satisfy Provisions of this Part do not apply to a Class 2 building or a Class 4 part of a building.<br><br>(2) J7D3, J7D4 and J7D6(1)(b) do not apply to a Class 8 electricity network substation. | DTS for J7 will apply to internal and external areas. |

<table>
<tr><th>NCC Reference</th><th>SECTION J – Energy Efficiency Requirement</th><th>Specific Project Initiative</th></tr>
<tr><td>NSW J7D3 Artificial lighting</td><td>(1) This subclause does not apply in NSW.<br><br>(2) In a Class 3 or Class 5 to 9 building—<br><br>a. (2) In a Class 3 or Class 5 to 9 building—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 J7D3a; and<br>b. the aggregate design illumination power load in (a) is the sum of the design illumination power loads in each of the spaces served; and<br>c. where there are multiple lighting systems serving the same space, the design illumination power load for (b) is—<br>i. the total illumination power load of all systems; or<br>ii. where a control system permits only one system to operate at a time based on the highest illumination power load; or determined by the formula<br><br>$$[H \times T/2 + P \times (100 - T/2]/100$$<br><br>d. In the formula at (c)(ii)—<br>i. H = the highest illumination power load; and<br>ii. T = the time for which the maximum illumination power load will occur, expressed as a percentage; and<br>iii. P = the predominant illumination power load.</td><td>Lighting for areas will satisfy the power targets, including:<br><br>
<table>
<tr><th>Space</th><th>W/m2</th></tr>
<tr><td>Auditorium, church and public hall</td><td>8</td></tr>
<tr><td>Board room and conference room</td><td>5</td></tr>
<tr><td>Carpark - general</td><td>2</td></tr>
<tr><td>Carpark - entry zone (first 15 m of travel) during the daytime</td><td>11.5</td></tr>
<tr><td>Carpark - entry zone (next 4 m of travel) during the day</td><td>2.5</td></tr>
<tr><td>Carpark - entry zone (first 20 m of travel) during night time</td><td>2.5</td></tr>
<tr><td>Common rooms, spaces and corridors in a Class 2 building</td><td>4.5</td></tr>
<tr><td>Control room, switch room and like - intermittent monitoring</td><td>3</td></tr>
<tr><td>Control room, switch room and like - constant monitoring</td><td>4.5</td></tr>
<tr><td>Corridors</td><td>5</td></tr>
<tr><td>Courtroom</td><td>4.5</td></tr>
<tr><td>Dormitory of a Class 3 building used for sleeping only</td><td>3</td></tr>
<tr><td>Dormitory of a Class 3 building used for sleeping and study</td><td>4</td></tr>
<tr><td>Entry lobby from outside the building</td><td>9</td></tr>
<tr><td>Health-care – infant children's wards & emergency departm.</td><td>4</td></tr>
<tr><td>Health-care - examination room</td><td>4.5</td></tr>
<tr><td>Health-care exam room intensive care +high dependency</td><td>6</td></tr>
<tr><td>Health-care - other patient care areas incl. wards+ corridors</td><td>2.5</td></tr>
<tr><td>Kitchen and food preparation area</td><td>4</td></tr>
<tr><td>Laboratory - artificially lit to an ambient level 400 lx or more</td><td>6</td></tr>
<tr><td>Library - stack and shelving area</td><td>2.5</td></tr>
<tr><td>Library - reading room and general areas</td><td>4.5</td></tr>
<tr><td>Lounge area for communal use in a Class 3 or 9c building</td><td>4.5</td></tr>
<tr><td>Museum gallery - circulation, cleaning and service lighting</td><td>2.5</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 ave. 160 lx vertical illuminance needed</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 or space food or drinks</td><td>14</td></tr>
<tr><td>Retail space including a museum and gallery-sale of objects</td><td>14</td></tr>
<tr><td>School - general purpose learning areas and tutorial rooms</td><td>4.5</td></tr>
<tr><td>Sole-occupancy unit of a Class 3 or 9c building</td><td>5</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 - vertical illuminance target 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>
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|---|---|---|

Table J7D3a Maximum illumination power density

| Space | Maximum illumination power density |
|---|---|
| Auditorium, church and public hall | 8 |
| 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 night time | 2.5 |
| Common rooms, spaces and corridors in a Class 2 building | 4.5 |
| Control room, switch room and the like - intermittent monitoring | 3 |
| 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 |
| 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 |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (1) In areas not listed above, the maximum illumination power density is—<br>(a) for an illuminance not more than 80 lx, 2 W/m$^2$; and<br>(b) for an illuminance more than 80 lx and not more than 160 lx, 2.5 W/m$^2$; and<br>(c) for an illuminance more than 160 lx and not more than 240 lx, 3 W/m$^2$; and<br>(d) for an illuminance more than 240 lx and not more than 320 lx, 4.5 W/m$^2$; and<br>(e) for an illuminance more than 320 lx and not more than 400 lx, 6 W/m$^2$; and<br>(f) for an illuminance more than 400 lx and not more than 600 lx, 10 W/m$^2$; and<br>(g) for an illuminance more than 600 lx and not more than 800 lx, 11.5 W/m$^2$.<br>(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).<br>(3) The Room Aspect Ratio of the enclosed space is determined by the formula: A/(H x C), where—<br>(a) A is the area of the enclosed space; and<br>(b) H is the height of the space measured from the floor to the highest part of the ceiling; and<br>(c) C is the perimeter of the enclosed space at floor level.<br>(4) In addition to 2, the maximum illumination power density may be increased by dividing it by the illumination power density adjustment factor in Table J7D3b and Table J7D3c and where the control device is not installed to comply with J6D4.<br>(5) Circulation spaces are included in the allowances listed in the Table.<br><br>(3) The requirements of (1) and (2) do not apply to the following:<br>a. Emergency lighting provided in accordance with Part E4.<br>b. Signage, display lighting within cabinets and display cases that are fixed in place.<br>c. Lighting for accommodation within the residential part of a *detention centre*.<br>d. A heater where the heater also emits light, such as in bathrooms.<br>e. Lighting of a specialist process nature such as in a surgical operating theatre, fume cupboard or clean workstation.<br>f. Lighting of performances such as theatrical or sporting.<br>g. 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.<br>h. Lighting installed solely to provide photosynthetically active radiation for indoor plant growth on green walls and the like.<br>(4) For the purposes of Table J7D3b, the following control devices must comply with Specification 40:<br>a. Lighting timers.<br>b. Motion detectors.<br>c. Daylight sensors and dynamic lighting control devices. | |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NSW J7D4 Interior artificial lighting and power control** | (1) All artificial lighting of a room or space must be individually operated by–<br>a. a switch; or<br>b. other control device; or<br>c. a combination of (a) and (b).<br>(2) An occupant activated device, such as a room security device, a motion detector in accordance with Specification 40, 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.<br>(3) An artificial lighting switch or other control device in (1) must—<br>a. if an artificial lighting switch, be located in a visible and easily accessed position—<br>i. in the room or space being switched; or<br>ii. in an adjacent room or space from where 90% of the lighting being switched is visible; and<br>b. for other than a single functional space such as an auditorium, theatre, *swimming pool*, sporting stadium or warehouse—<br>i. if in a Class 5 building or a Class 8 laboratory, not operate lighting for an area of more than 250 $m^2$; or<br>ii. if in a Class 3, 6, 7, 8 (other than a laboratory) or 9 building, not operate lighting for an area of more than—<br>1. 250 $m^2$ for a space of not more than 2000 $m^2$; or<br>2. 1000 $m^2$ for a space of more than 2000 $m^2$.<br>(4) 95% of the light fittings in a building or storey of a building, other than a Class 3 building of more than 250 m2 must be controlled by—<br>a. a time switch in accordance with Specification 40; or<br>b. an occupant sensing device such as—<br>i. a security key card reader that registers a person entering and leaving the building; or<br>ii. a motion detector in accordance with Specification 40.<br>(5) 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—<br>a. the room containing the natural lighting zone is less than 20 $m^2$; or<br>b. the room's natural lighting zone contains less than 4 luminaires; or<br>c. 70% or more of the luminaires in the room are in the natural lighting zone.<br>(6) 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 40. | These lighting requirements apply to conditioned and unconditioned. All relevant targets must be applied.<br><br>For example, this building, the following will be ensured in the new lighting design:<br><br>Lighting for each room or space will be individually operated by a switch or other control device.<br><br>Lighting switches or other control devices will—<br>- be in a visible position in the room/space OR<br>- be in an adjacent room/space (lighting is visible).<br>- not operate lighting for an area > 250m2<br><br>Artificial lighting in the foyer<br>a. of more than 250 W in one zone; and<br>b. adjacent to windows,<br>must be controlled by a daylight sensor and dynamic lighting control device in accordance with Specification 40. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (7) Artificial lighting in a foyer, corridor and other circulation spaces—<br>a. of more than 250 W within a single zone; and<br>b. adjacent to *windows*,<br>must be controlled by a daylight sensor and dynamic lighting control device in accordance with Specification 40.<br>(8) 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 40.<br>(9) The requirements of (1), (2), (3), (4), (5), (6), (7) and (8) do not apply to the following:<br>a. Emergency lighting in accordance with Part E4.<br>b. 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*.<br>(10) The requirements of (4) do not apply to the following:<br>a. Artificial lighting in a space where the sudden loss of artificial lighting would cause an unsafe situation such as—<br>i. in a *patient care area* in a Class 9a building or in a Class 9c building; or<br>ii. a plant room or lift motor room; or<br>iii. a workshop where power tools are used.<br>b. A heater where the heater also emits light, such as in bathrooms. | |
| **NSW J7D5 Interior decorative and display lighting** | (1) Interior decorative and display lighting, such as for a foyer mural or art display, must be controlled—<br>a. separately from other artificial lighting; and<br>b. 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<br>c. by a time switch in accordance with Specification 40 where the display lighting exceeds 1 kW.<br>(2) Window display lighting must be controlled separately from other display lighting. | Interior decorative and display lighting will be controlled—<br>- separately from other artificial lighting; and<br>- by a manual switch for each area; and<br>- by a time-switch in accordance with Specification J6 if display lighting exceeds 1 kW. |
| **NSW J7D6 Exterior artificial lighting** | (1) Exterior artificial lighting attached to or directed at the facade of a building, must—<br>a. be controlled by—<br>i. a daylight sensor; or<br>ii. 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<br>b. when the total lighting load exceeds 100 W—<br>i. use LED luminaires for 90% of the total lighting load; or<br>ii. be controlled by a motion detector in accordance with Specification 40; or<br>iii. when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification 40. | Perimeter lighting will be deigned to have:<br>- (A) a daylight sensor; or<br>- (B) a time switch with pre-programmed times/days AND<br>- LEDs for >90% fittings or<br>- Motion sensors or<br>- Time switches (if façade/sign decoration lights) |

<table>
<tr><th>NCC Reference</th><th>SECTION J – Energy Efficiency Requirement</th><th>Specific Project Initiative</th></tr>
<tr><td></td><td>(2) The requirements of (1)(b) do not apply to the following:<br>a. Emergency lighting in accordance with Part E4.<br>b. Lighting around a detention centre.</td><td></td></tr>
<tr><td>NSW J7D7<br>Boiling water and chilled water storage units</td><td>Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification 40.</td><td>Power supply to a boiling water or chilled water storage unit will be controlled by a time switch.</td></tr>
<tr><td>J7D8<br>Lifts</td><td>Lifts must—<br>a. be configured to ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; and<br>b. achieve the idle and standby energy performance level in Table J7D8a; and<br>Table J7D8a Lift idle and standby energy performance level<br><table><tr><th>Rated load</th><th>Idle and standby energy performance level in accordance with ISO 25745-2 Note</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>▼ Table Notes<br>Applies to the standby power used after 30 minutes.<br>c. achieve—<br>i. the energy efficiency class in Table J7D8b; or<br>ii. if a dedicated goods lift, energy efficiency class D in accordance with ISO 25745-2.</td><td>Lifts are applicable for the commercial. Lifts must comply with J7D8 Lifts targets.</td></tr>
<tr><td>NSW J7D9<br>Escalators and moving walkways</td><td>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.</td><td>Not applicable – no escalators are proposed.</td></tr>
</table>

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NCC Reference** | **Part J8 Heated water supply and swimming pool and spa pool plant** | **Specific Project Initiative** |
| **NSW J8D1 Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br>1. NSW J2D2; and<br>1. NSW J3D2 to J3D10; and<br>2. NSW J4D2 to J4D7; and<br>3. NSW J5D2 to J5D8; and<br>4. NSW J6D2 to J6D13; and<br>5. NSW J7D2 to J7D9; and<br>6. J8D2 to NSW J8D4; and<br>7. J9D2 to J9D5.<br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | DTS for J8 will apply to hot water only. |
| **NSW J8D2 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. |
| **NSW J8D3 Swimming pool heating and pumping** | (1) Heating for a *swimming pool* must be by—<br>a. a solar heater; or<br>b. a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or<br>c. a geothermal heater; or<br>d. a gas heater that—<br>i. if rated to consume 500 MJ/hour or less, achieves a minimum gross thermal efficiency of 86%; or<br>ii. if rated to consume more than 500 MJ/hour, achieves a minimum gross thermal efficiency of 90%; or<br>e. a heat pump; or<br>f. a combination of (a) to (e).<br>(2) Where some or all of the heating *required* by (1) is by a gas heater or a heat pump, the *swimming pool* must have—<br>a. a cover with a minimum *R-Value* of 0.05; and<br>b. a time switch to control the operation of the heater.<br>(3) A time switch must be provided to control the operation of a circulation pump for a *swimming pool*.<br>(4) 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. | N/A since no pool for commercial<br><br>NSW J8D3 does not apply to a Class 2 building and a Class 4 part of a building. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (5) Pipework carrying heated or chilled water for a *swimming pool* must comply with the insulation requirements of J6D9.<br><br>(6) For the purpose of J8D3, a *swimming pool* does not include a spa pool.<br><br>Applications - NSW<br><br>J8D3 does not apply to a Class 2 building and a Class 4 part of a building. | |
| **NSW J8D4 Spa pool heating and pumping** | (1) Heating for a spa pool that shares a water recirculation system with a *swimming pool* must be by—<br>a. a solar heater; or<br>b. a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or<br>c. a geothermal heater; or<br>d. a gas heater that—<br>i. if rated to consume 500 MJ/hour or less, achieves a minimum gross thermal efficiency of 86%; or<br>ii. if rated to consume more than 500 MJ/hour, achieves a minimum gross thermal efficiency of 90%; or<br>e. a heat pump; or<br>f. a combination of (a) to (e).<br><br>(2) Where some or all of the heating *required* by (1) is by a gas heater or a heat pump, the spa pool must have—<br>a. a cover with a minimum *R-Value* of 0.05; and<br>b. a push button and a time switch to control the operation of the heater.<br><br>(3) 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.<br><br>(4) 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.<br>(5) Pipework carrying heated or chilled water for a spa pool must comply with the insulation requirements of J6D9.<br><br>Applications - J8D4 does not apply to a Class 2 building and a Class 4 part of a building. | N/A since no spa for commercial<br><br>J8D4 does not apply to a Class 2 building and a Class 4 part of a building. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| **NCC Reference** | **Part J9 Energy monitoring and on-site distributed energy resources** | **Specific Project Initiative** |
| **NSW J9D1 Deemed-to-Satisfy Provisions** | (1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements NSW J1P1 to NSW J1P7 are satisfied by complying with—<br>1. NSW J2D2; and<br>1. NSW J3D2 to J3D10; and<br>2. NSW J4D2 to J4D7; and<br>3. NSW J5D2 to J5D8; and<br>4. NSW J6D2 to J6D13; and<br>5. NSW J7D2 to J7D9; and<br>6. J8D2 to NSW J8D4; and<br>7. J9D2 to J9D5.<br><br>(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable. | DTS for J9 will apply to this building. |
| **NSW J9D2 Application of Part** | The *Deemed-to-Satisfy Provisions* of this Part do not apply—<br>a. within a *sole-occupancy unit* of a Class 2 building or a Class 4 part of a building; or<br>b. to a Class 8 *electricity network substation*. | DTS for J9 will apply to this building. |
| **NSW J9D3 Facilities for energy monitoring** | (1) A building or *sole-occupancy unit* with a *floor area* of more than 500 $m^2$ must have energy meters configured to record the time-of-use consumption of gas and electricity.<br><br>(2) 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 data recording, in accordance with (3), of—<br>a. *air-conditioning* plant including, where appropriate, heating plant, cooling plant and air handling fans; and<br>b. artificial lighting; and<br>c. appliance power; and<br>d. central hot water supply; and<br>e. internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and<br>f. on-site *renewable energy* equipment; and<br>g. on-site electric vehicle charging equipment; and<br>h. on-site *battery systems*; and<br>i. other ancillary plant. | Since the new building area has a floor area over 500 m2, it will need the use of meters to record the consumption of gas and electricity. This will be done anyway.<br><br>Since the building area is also more than 2,500 m2, it will need the facility to record individually the energy consumption of—<br><br>(i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and<br>(ii) artificial lighting; and<br>(iii) appliance power; and<br>(iv) central hot water supply; and<br>(v) internal transport devices including lifts, escalators and travelators if more than one serves the building; and<br>(vi) other ancillary plant. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | (3) Energy meters *required* by (2) must be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed and reviewed<br><br>(4) The provisions of (2) do not apply to energy meters serving—<br>a. a Class 2 building where the total *floor area* of the common areas is less than 500 $m^2$; or<br>b. individual *sole-occupancy units* with a *floor area* of less than 2 500 $m^2$. | |
| **NSW J9D4 Facilities for electric vehicle charging equipment** | (1) Subject to (2), a *carpark* associated with a Class 2, 3, 5, 6, 7b, 8 or 9 building must be provided with electrical distribution boards dedicated to electric vehicle charging—<br><br>a. in accordance with Table J9D4 in each *storey* of the *carpark*; and<br>b. labelled to indicate use for electric vehicle charging equipment.<br><br>(2) Electrical distribution boards dedicated to serving electric vehicle charging in a *carpark* must—<br><br>a. be fitted with a charging control system with the ability to manage and schedule charging of electric vehicles in response to total building demand; and<br>b. when associated with a Class 2 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 11:00 pm to 7:00 am daily; and<br>c. when associated with a Class 5 to 9 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 12 kWh from 9:00 am to 5:00 pm daily; and<br>d. when associated with a Class 3 building, have capacity for each circuit to support an electric vehicle charger able to deliver a minimum of 48 kWh from 11:00 pm to 7:00 am daily; and<br>e. be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in—<br>i. 100% of the car parking spaces associated with a Class 2 building; or<br>ii. 10% of car parking spaces associated with a Class 5 or 6 building; or<br>iii. 20% of car parking spaces associated with a Class 3, 7b, 8 or 9 building; and | This building does have new carparks so these “Facilities for electric vehicle charging equipment’’ will apply.<br><br>The electrical engineer will ensure all switchboards and labels are implemented as per J9D4. |

| NCC Reference | SECTION J – Energy Efficiency Requirement | Specific Project Initiative |
|---|---|---|
| | f. contain space of at least 36 mm width of DIN rail per outgoing circuit for individual sub-circuit electricity metering to record electricity use of electric vehicle charging equipment; and<br>g. be labelled to indicate the use of the space *required* by (f) is for the future installation of metering equipment.<br><br>*Limitations - J9D4 does not apply to a stand-alone Class 7a building.* | |
| **NSW J9D5 Facilities for solar photovoltaic and battery systems** | (1) The main electrical switchboard of a building must—<br>a. contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for—<br>i. a solar photovoltaic system; and<br>ii. a *battery system*; and<br>b. be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area.<br><br>(2) At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings—<br>a. with installed solar photovoltaic panels on—<br>i. at least 20% of the roof area; or<br>ii. an equivalent generation capacity elsewhere on-site; or<br>b. where 100% of the roof area is shaded for more than 70% of daylight hours; or<br>c. with a roof area of not more than 55 $m^2$; or<br>d. where more than 50% of the roof area is used as a terrace, *carpark*, roof garden, *roof light* or the like.<br><br>*Limitations*<br>1. The requirements of J9D5(1)(a)(i) and (b) do not apply to a building with solar photovoltaic panels installed on at least 20% of the roof area.<br>2. The requirements of J9D5(1)(a)(ii) and (b) do not apply to a building with *battery systems* installed. | As shown by the roof plan, over 20% of the roof area has been left clear (suitable for the installation of solar photovoltaic panels).<br><br>The requirements of J9D5 do apply so switchboards and PV solar panels will be designed accordingly. |

# APPENDIX A - GLAZING CALCULATIONS

The glazing and wall calculation summary is provided below. The calculations also continue over the page.

| Windows | U-value | SHGC | Type |
|---|---|---|---|
| **LEVEL 1** | < 3.2 | <0.27 | Double-glazed + good frames + |
| | | | dark tint |
| **GROUND FLOOR** | < 3.7 | <0.38 | Double-glazed + metal frames + |
| | | | Medium/dark tint |

ABCB

## Façade Report

National Construction Code Calculator

### Project Summary

**Date**
30/10/2024

**Name**
MARTIN PINSON

**Company**
GREENPERCH

**Position**
ESD CONSULTANT

**Building Name / Address**
44-52 Anderson Street, Chatswood 2067
Level 1

**Building State**
NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 6 - display glazing

**Storeys Above Ground**
1

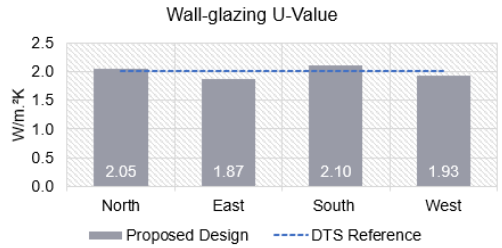
**Tool Version**
1.1 (April 2020)

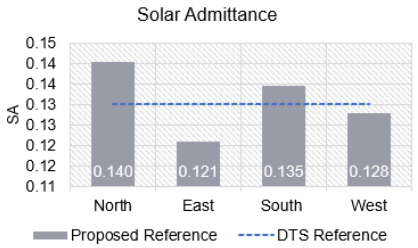
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

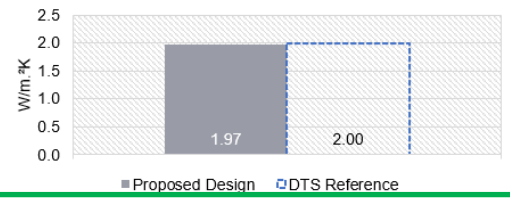
| | Method 1 North | Method 1 East | Method 1 South | Method 1 West | Method 2 All |
|---|---|---|---|---|---|
| Wall-glazing U-Value (W/m².K) | 2.05 | 1.87 | 2.10 | 1.93 | 1.97 |
| Solar Admittance | 0.14 | 0.12 | 0.13 | 0.13 | |
| AC Energy Value | | | | | 279 |

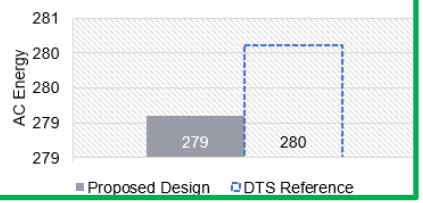
**Method 1**




**Method 2**



## Project Details

| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | 119.67 | 169.2 | 155.565 | 183.3 |
| Glazing to Façade Ratio | 53% | 44% | 54% | 46% |
| Glazing References | Window 1 Windows 2 Windows 3 | Window 1 Windows 2 | Window 1 Windows 2 Windows 3 | Window 1 Windows 2 |
| Glazing System Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Glass Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Frame Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Average Glazing U-Value (W/m².K) | 3.20 | 3.20 | 3.20 | 3.20 |
| Average Glazing SHGC | 0.27 | 0.27 | 0.27 | 0.27 |
| Shading Systems | Horizontal Device | Horizontal Device | Horizontal Device | Horizontal Device |
| Wall Area (m²) | 105.75 | 215.43 | 133.115 | 211.27 |
| Wall Types | Wall | Wall | Wall | Wall |
| Methodology | Wall | | | |
| Wall Construction | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break |
| Wall Thickness | 200 150 250 100 | 200 150 250 100 | 200 150 250 100 | 200 |
| Average Wall R-value (m².K/W) | 1.35 | 1.20 | 1.21 | 1.20 |
| Solar Absorptance | 0.5 | 0.5 | 0.5 | 0.5 |

The glazing and wall calculation summary is provided below. The calculations also continue over the page.

ABCB

# Façade

Report

National Construction Code

Calculator

## Project Summary

**Date**
30/10/2024

**Name**
MARTIN PINSON

**Company**
GREENPERCH

**Position**
ESD CONSULTANT

**Building Name / Address**
44-52 Anderson Street, Chatswood 2067
Ground Floor

**Building State**
NSW

**Climate Zone**
Climate Zone 5 - Warm temperate

**Building Classification**
Class 6 - display glazing

**Storeys Above Ground**
1

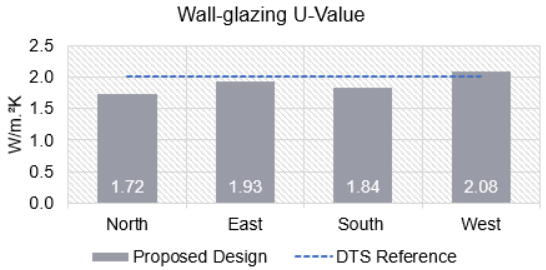
**Tool Version**
1.1 (April 2020)

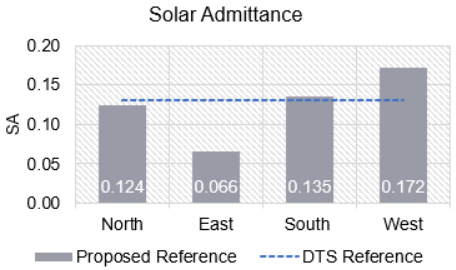
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

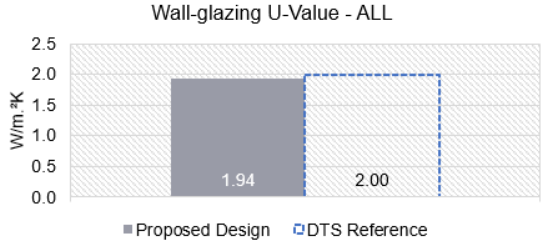
| | Method 1 North | Method 1 East | Method 1 South | Method 1 West | Method 2 All |
|---|---|---|---|---|---|
| Wall-glazing U-Value (W/m².K) | 1.72 | 1.93 | 1.84 | 2.08 | 1.94 |
| Solar Admittance | 0.12 | 0.07 | 0.13 | 0.17 | |
| AC Energy Value | | | | | 367 |

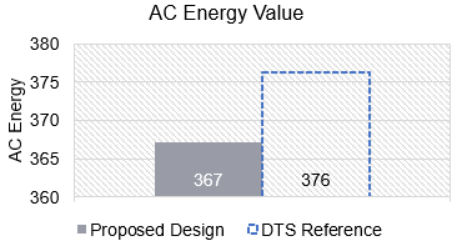
**Method 1**




**Method 2**



## Project Details

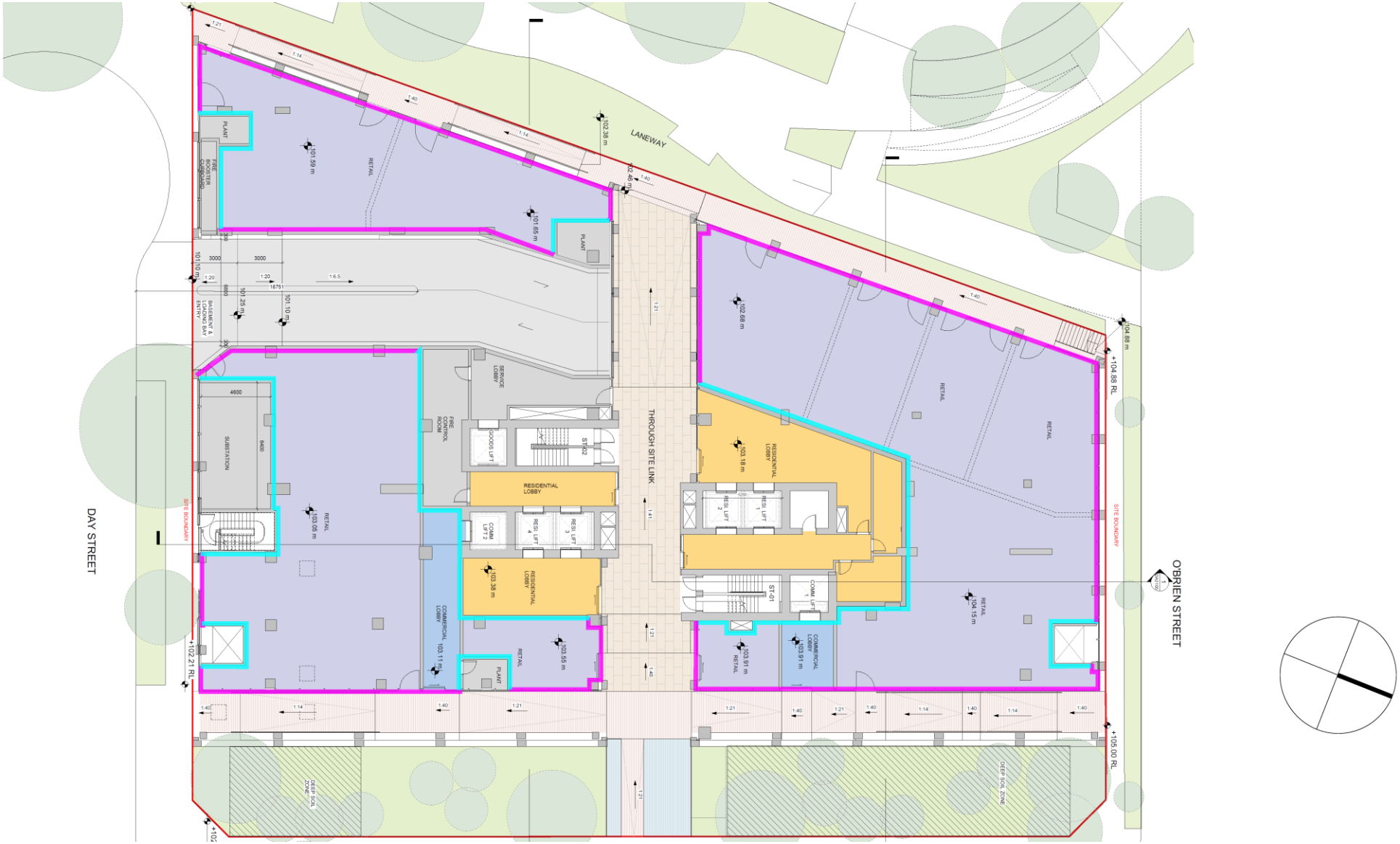
| | North | East | South | West |
|---|---|---|---|---|
| Glazing Area (m²) | 76.33 | 201.11 | 114.9 | 297 |
| Glazing to Façade Ratio | 32% | 40% | 35% | 45% |
| Glazing References | Window 1 Windows 2 | Window 1 Windows 2 | Window 1 Windows 2 | Window 1 Windows 2 |
| Glazing System Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Glass Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Frame Types | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) | DEFAULTS (GENERIC) |
| Average Glazing U-Value (W/m².K) | 3.70 | 3.70 | 3.70 | 3.70 |
| Average Glazing SHGC | 0.38 | 0.38 | 0.38 | 0.38 |
| Shading Systems | Horizontal Device | Horizontal Device | Horizontal Device | Horizontal Device |
| Wall Area (m²) | 160.67 | 301.09 | 212.1 | 367.65 |
| Wall Types | Wall | Wall | Wall | Wall |
| Methodology | Wall | | | |
| Wall Construction | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break | Internal wall +R1.5 +break Brick wall +R2.5 +break Steel + R2.5 + EPS 15mm Ext wall +R2.5 +break |
| Wall Thickness | 200 150 250 100 | 200 150 250 100 | 200 150 250 100 | 200 |
| Average Wall R-value (m².K/W) | 1.28 | 1.33 | 1.21 | 1.30 |
| Solar Absorptance | 0.5 | 0.5 | 0.5 | 0.5 |

## APPENDIX B – BUILDING FABRIC SUMMARY

The table below shows the building fabric summary, based on the current DTS (Deemed-to-Satisfy) targets. This includes the façade calculations results, from the previous few pages. 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/Commercial | Construction – Commercial (Retail/Commercial) | Passing NCC DTS (Deemed-to-Satisfy) |
|---|---|---|
| 1 | Walls (external brick, concrete, cladding) | R2.5 added + break (10mm approx R0.2) to give >R1.6 total |
| 2 | Walls lightweight (next to enclosed plant room, ext. toilets, ext. store) | R1.5 added + break (10mm approx R0.2) to give >R1.2 total |
| 3 | Walls conc/masonry (next to enclosed plant room, ext. toilets, ext. store) | R1.5 added + break (10mm approx R0.2) to give >R1.2 total |
| 4 | Walls next to other retail or apartments (other conditioned) | Optional insulation, all walls |
| 5 | Floors (over air/basement, no in-slab heat) | R1.7 or more added, under slab |
| 6 | Floors (with slab-on-ground, no in-slab heat) | Not applicable |
| 7 | Ceiling under Roof/Balcony/Terrace | R3.3 added, excl. air gap (SA <0.45) |
| 8 | Ceiling under apartments/retail/communal rooms | Optional insulation, under conditioned |
| | | |
| 9 | GR- RETAIL - U-value (double-glaze + dark tint) | < 3.7 (double-glazing + dark tint) |
| 10 | GR- RETAIL - SHGC (double-glaze + dark tint) | < 0.38 (double-glazing + dark tint) |
| 11 | Level 1 conditioned - U-value (double-glaze + dark tint) | < 3.2 (double-glazing + dark tint) |
| 12 | Level 1 conditioned - SHGC (double-glaze + dark tint) | < 0.27 (double-glazing + dark tint) |
| 13 | Skylight U-value (common areas) | No skylights for retail / commercial |
| 14 | Skylight SHGC (common areas) | No skylights for retail / commercial |
| 15 | Shading devices for retail | No extra devices modelled - just eaves/overhangs as shown |

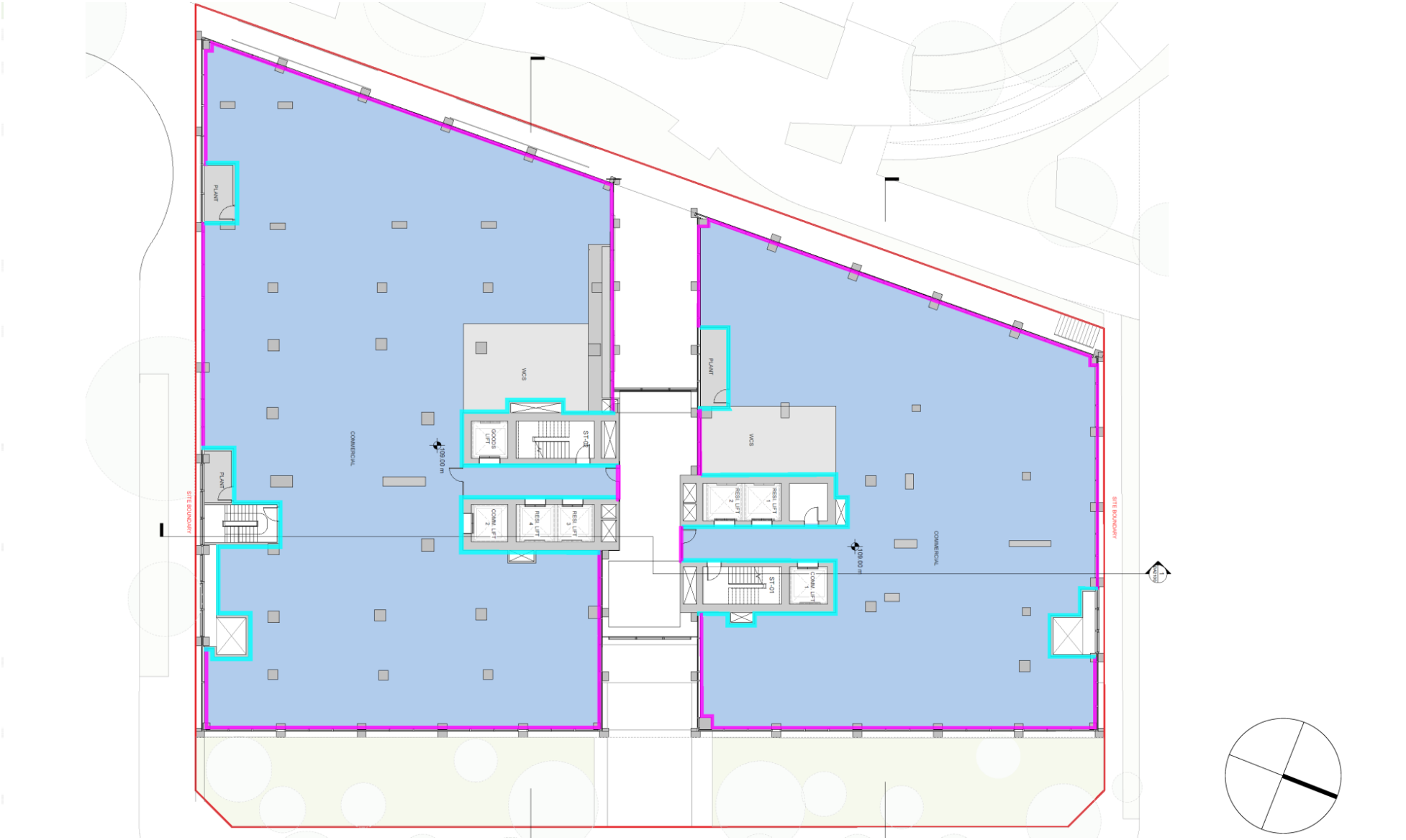
# APPENDIX C – CONDITIONED FLOOR AREAS




**PLAN (GROUND - not to scale) - 44-52 Anderson Street, Chatswood 2067**

Wall has added R2.5 +thermal break (>R1.6 total)

Wall has added R1.5 +thermal break (>R1.2 total)




**PLAN (LEVEL 1 - not to scale) - 44-52 Anderson Street, Chatswood 2067**

Wall has added R2.5 +thermal break (>R1.6 total)

Wall has added R1.5 +thermal break (>R1.2 total)