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342-348 High St, Penrith

2019 BCA Section J Assessment Report

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1. SITE APPRECIATION

The proposed development is located in BCA Climate Zone 6 at 342-348 High St, Penrith and consists of:

- Basement car parking – Class 7a
- Commercial/retail spaces from Ground to level 5 – Class 5 & 6
- 29 apartments over 6 levels – Class 2

2. BCA SECTION J (ENERGY EFFICIENCY) OUTLINE

The main objective of Section J is to promote the efficient use of energy via increasing the passive thermal performance of the building as well as improving the mechanical and hydraulic services.

Performance and compliance is achieved in the following areas under BCA Section J:

- J1: Building Fabric
- J2: This Part has been removed and is now included in Part J1
- J3: Building Sealing
- J4: This Part has deliberately been left blank
- J5: Air conditioning and Ventilation Systems
- J6: Artificial Lighting and Power
- J7: Heated Water Supply and Swimming Pool & Spa Pool Plant
- J8: Facilities for Energy Monitoring

3. BCA SECTION J RESIDENTIAL REQUIREMENTS

In order to ensure compliance with all relevant clauses under Section J, the recommendations for the residential component of the project are summarised in Table 1.

Table 1: Residential BCA Section J Compliance Recommendations

NSW SUBSECTION J(A) ENERGY EFFICIENCY		
Class 2 & 4 parts of buildings compliance are subject to BASIX (the Building Sustainability Index) BASIX requirements can be found in ESD Synergy report ES20200722_00 – 342-348 High St Penrith_BASIX_00 and BASIX Certificate No. 1206256M.		
NSW Part J(A)1 – BUILDING FABRIC		
Clause		***BCA DTS Section J Recommendations & Compliance***
NSW J(A)1.0 Deemed-to-Satisfy Provisions	(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement NSW J(A)P1 is satisfied by complying with NSW J(A)1.1 and NSW J(A)1.2. (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.	Complies.
NSW J(A)1.1 Application of Part	(a) The Deemed-to-Satisfy Provisions only apply to thermal insulation in a Class 2 building or Class 4 part of a building where a development consent or complying development certificate specifies that the insulation is to be provided as part of the development. (b) In (a), development consent and complying development certificate, have the meaning given to these terms by the Environmental Planning and Assessment Act 1979. (c) The Deemed-to-Satisfy Provisions of this Part for thermal breaks apply to all Class 2 buildings and Class 4 parts.	Complies.
NSW J(A)1.2 Compliance with BCA Provisions	The sole-occupancy units of a Class 2 building and a Class 4 part of a building must comply with the national BCA provisions of J0.2(b) to (d) - except that the reference to "Where required" in J1.2 is deemed to refer to "Where a development consent or a complying development certificate specifies that insulation is to be provided as part of the development." **Note: Compliance is not required with the national BCA provisions of J0.2(a) as those matters are regulated under BASIX and the national BCA provisions of J0.2(e) are covered by NSW J(A)2.2.**	Complies.
J0.2 Heating and Cooling Loads of Sole Occupancy Units of a Class 2	(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	(b) Complies (c) All metal rafters, purlins, battens and frames fixed to metal sheeting to comply with J0.4and J0.5. (e) There is no in-slab heating and cooling system or

Building or a Class 4 Part	J1.6(b) and J1.6(c)	not located in climate zone 8, hence J0.2(d) is not applicable.
NSW Part J(A)2 – BUILDING SEALING		
Clause		***BCA DTS Section J Recommendations & Compliance***
NSW J(A)2.0 Deemed-to-Satisfy Provisions	(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement NSW J(A)P2 is satisfied by complying with NSW J(A)2.1 and NSW J(A)2.2. (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.	Complies.
NSW J(A)2.1 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to elements forming the envelope of a Class 2 building and a Class 4 part of a building, other than— (a) a building in climate zones 2 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) parts of buildings that cannot be fully enclosed.	Complies
NSW J(A)2.2 Compliance with BCA Provisions	Class 2 buildings and Class 4 parts of buildings must comply with the following national BCA provisions, as applicable— (a) J3.2 Chimneys and flues; and (b) J3.3 Roof lights; and (c) J3.4(a) to (d) Windows and doors; and (d) J3.5 Exhaust fans; and (e) J3.6 Construction of ceilings, walls and floors; and (f) J3.7 Evaporative coolers.	(a) There are no chimneys or flues in the residential component of this development hence J3.2 is not applicable. (b) There are no roof lights in the residential component of this development hence J3.3 is not applicable. (c) All sealing requirements will comply with J3.4. (d) All sealing & damper requirements to exhaust fans will comply with J3.5. (e) Complies (f) There are no evaporative coolers in the residential component of this development hence J3.7 is not applicable.
NSW Part J(A)3 – AIR-CONDITIONING AND VENTILATING SYSTEMS		
Clause		***BCA DTS Section J Recommendations & Compliance***
NSW J(A)3.0 Deemed-to-Satisfy Provisions	(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement NSW J(A)P3 is satisfied by complying with NSW J(A)3.1 and NSW J(A)3.2. (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	Complies.

	applicable.	
NSW J(A)3.1 Application of Part	The *Deemed-to-Satisfy Provisions* of this Part apply to a Class 2 building and a Class 4 part of a building.	Complies.
NSW J(A)3.2 Compliance with BCA Provisions	Class 2 buildings and Class 4 parts of buildings must comply with the following national BCA provisions, as applicable— (a) for air-conditioning system control: J5.2; and (b) for mechanical ventilation system control: J5.3; and (c) for fan systems: J5.4; and (d) for ductwork insulation: J5.5; and (e) for ductwork sealing: J5.6; and (f) for pump systems: J5.7; and (g) for pipework insulation: J5.8; and (h) for refrigerant chillers: J5.10; and (i) for unitary air-conditioning equipment: J5.11; and (j) for heat rejection equipment: J5.12. **Note: Compliance is not required with the national BCA provisions of J5.9 as those matters are regulated under BASIX**.	(a) Developer intends to comply. (b) See ESD Synergy report ES20200722_00 – 342-348 High St Penrith_BASIX_00 and BASIX Certificate No. 1206256M (c) Developer intends to comply. (d) Developer intends to comply. (e) Developer intends to comply. (f) Developer intends to comply. (g) Developer intends to comply. (h) Developer intends to comply. (i) Developer intends to comply.
NSW Part J(A)4 – HEATED WATER SUPPLY		
Clause		***BCA DTS Section J Recommendations & Compliance***
NSW J(A)4.0 Deemed-to-Satisfy Provisions	(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement NSW J(A)P3 is satisfied by complying with NSW J(A)4.1 and NSW J(A)4.2. (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.	Complies.
NSW J(A)4.1 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to a Class 2 building and a Class 4 part of a building.	Complies.
NSW J(A)4.2 Compliance with BCA Provisions	Class 2 buildings and Class 4 parts of buildings must comply with the national BCA provisions of J7.2 Heated water supply. **Note: Compliance is not required with the national BCA provisions of J7.3 and J7.4 as those matters are regulated under BASIX.**	Complies.
NSW Part J(A)5 – FACILITIES FOR ENERGY MONITORING		
Clause		***BCA DTS Section J Recommendations & Compliance***
NSW J(A)5.0 Deemed-to-Satisfy Provisions	(a) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirement NSW J(A)P3 is satisfied by complying with NSW J(A)5.1 and NSW J(A)5.3. (b) Where a Performance Solution is	Complies.

	proposed, the relevant Performance Requirements must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	
NSW J(A)5.1 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to a Class 2 building except within a sole-occupancy unit.	Complies.
NSW J(A)5.2	This part has deliberately been left blank	
NSW J(A)5.3 Compliance with BCA Provisions	Class 2 buildings must comply with the national BCA provisions of J8.3.	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.

4. BCA SECTION J NON-RESIDENTIAL REQUIREMENTS

In order to ensure compliance with all relevant clauses under Section J, the recommendations for the non-residential component of the project are summarised in Table 2. Detailed calculations required for specific clauses can be found in the Appendix.

Table 2: Non-Residential Sections J Compliance Recommendations

Part J1 – BUILDING FABRIC		
Clause		***BCA DTS Section J Recommendations & Compliance***
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. (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.	Complies.
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.	Complies.
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 and the like where the insulation must be against the member; and (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	The developer intends to comply with all requirements of installation for bulk or reflective insulation as per J1.2.

	against any penetration, door or window opening; and (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. (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.	
J1.3 Roof and ceiling construction	(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.	• R2.7 ceiling/roof insulation to all new roofs is required to satisfy Section J1.3. **Note: Total roof system R-value to be met is R_t3.2** • To assist with thermal bridging, a minimum extra insulation of R0.2 must be installed in order for the façade to be compliant. • The solar absorptance of the upper surface of a roof must be not more than 0.45 (i.e. light colour) **Note: Compensation for the loss of ceiling insulation due to downlights, fans and other penetrations have not been included.**
J1.4 Roof lights	Roof lights must have— (a) a total area of not more than 5% of the floor area of the room or space served; and	There are no roof lights in the non-residential component of this development hence J1.4 is not applicable.

	(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.	
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. (e) 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.	**Stage A:** J1.5(d) – Wall components of the development: • R2.25 external wall insulation (for e.g. 90mm glasswool) to **brick veneer walls** is required to satisfy Section J1.5(d). **Note: Total external wall system R-value to be met is R_t2.39** • R1.0 external wall insulation (for e.g. 40mm glasswool) to **walls adjacent to carpark & service areas only** is required to satisfy Section J1.5(d). **Note: Total external wall system R-value to be met is R_t1.33** • Thermal breaks must be installed in order for the façade to be compliant (e.g. 100mm wide & 12mm thick EPS or R0.3 equivalent) J1.5(c) & (f) – Wall glazing construction of this development: • The U-value must not be greater than 3.8 • SHGC must not be greater than 0.46 **Stage B:** J1.5(d) – Wall components of the development: • R2.25 external wall insulation (for e.g. 90mm glasswool) to **brick veneer walls** is required to satisfy Section J1.5(d). **Note: Total external wall system R-value to be met is R_t2.39** • R1.0 external wall insulation (for e.g. 40mm glasswool) to **walls adjacent to carpark & service areas only** is required to satisfy Section J1.5(d). **Note: Total external wall system R-value to be met is R_t1.33** • Thermal breaks must be installed in order for the façade to be compliant (e.g. 100mm wide & 12mm thick EPS or R0.3 equivalent) J1.5(c) & (f) – Wall glazing construction of this development: • The U-value must not be greater than 4.2

		• SHGC must not be greater than 0.40.
J1.6 Floors	(a) A floor must achieve the Total R-Value specified in Table J1.6. (b) A floor must be insulated around the vertical edge of its perimeter with insulation having an R-Value greater than or equal to 1.0 when the floor— (i) is a concrete slab-on-ground in climate zone 8; or (ii) has an in-slab or in-screed heating or cooling system, except where used solely in a bathroom, amenity area or the like. (c) Insulation required by (b) for a concrete slab-on-ground must— (i) be water resistant; and (ii) be continuous from the adjacent finished ground level— (A) to a depth not less than 300 mm; or (B) for the full depth of the vertical edge of the concrete slab-on-ground. **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.**	For floors adjacent to the carpark[1]: • R1.3 floor insulation is required to satisfy Section J1.6. **Note: Total floor system R-value to be met is R_t2.0** For suspended floors on level 1, Level 3 & Level 4: • R1.7 floor insulation is required to satisfy Section J1.6. To assist with thermal bridging, a minimum extra insulation of R0.2 must be installed in order for the façade to be compliant.
Part J2 – This Part has deliberately been left blank. The content of Part J2 for glazing, which existed in NCC 2016, has been removed. Glazing provisions are now included in Part J1.		
Part J3 – BUILDING SEALING		
Clause		***BCA DTS Section J Recommendations & Compliance***
J3.0 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.	Complies.

[1] Assumed mechanically ventilated carpark by not more than 1.5 air changes per hour

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. (d) parts of buildings that cannot be fully enclosed	Complies.
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.	There are no chimneys or flues in the non-residential component of this development hence J3.2 is not applicable.
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.	All sealing requirements to roof lights will comply with J3.3.
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	All sealing requirements to windows and doors will comply with J3.4.

	the like. (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 m2; or (ii) where a cafe, 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 cafe, 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.	The developer intends that all exhaust fans will be fitted with a sealing device where applicable hence will comply with J3.5.
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.	Complies.
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.	There are no evaporative coolers in the non-residential component of this development hence J3.7 is not applicable.
Part J4 – This Part has deliberately been left blank		
Part J5 – AIR-CONDITIONING AND VENTILATING SYSTEMS		
Clause		***BCA DTS Section J Recommendations & Compliance***
All air-conditioning and ventilation systems and components will be designed in accordance with the Deemed to		

Satisfy requirements of Part J5. **A separate report will be provided by the mechanical services designer verifying compliance where required.**		
Part J6 – ARTIFICIAL LIGHTING AND POWER		
Clause		***BCA DTS Section J Recommendations & Compliance***
A report will be submitted by the electrical services designer verifying compliance on completion of the building, where required.		
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.	Complies.
J6.1 Application of Part	J6.2, J6.3 and J6.5(a)(ii) do not apply to a Class 8 electricity network substation.	Complies.
J6.2 Artificial lighting	(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 a Class 2 building or a Class 4 part of a building– (i) for artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances	Lighting intensities are listed in Table 9 in Appendix.

	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— [H x T/2 + P x (100 - T/2)] / 100 where— H = the highest illumination power load; and T = the time for which the maximum illumination power load will occur, expressed as a percentage; and P = the predominant illumination power load. (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.	
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 m2 must be controlled by– (i) a time switch in accordance with	Any artificial lighting control device to be installed in the development will comply with J6.3. The motion detector device proposed for the WCs must comply as per Specification J6, Section 4(b) The daylight sensor and dynamic lighting control device proposed for the office areas must comply as per Specification J6, Section 5

	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. (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.	Any display lighting to be installed in the development will comply with J6.4.
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 preprogrammed times and on variable pre-programmed days; and (ii) when the total lighting load exceeds 100 W– (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 facade 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.	All exterior artificial lighting will comply with J6.5.
J6.6 Boiling water and chilled water	Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with	All power supply installation for a boiler and chilled water storage units will comply with J6.6.

storage units	Specification J6.	
J6.7 Lifts	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.	All lifts will comply with J6.7.
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.	All escalators & moving walkways will comply with J6.8.
Part J7 – HEATED WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT		
Clause		***BCA DTS Section J Recommendations & Compliance***
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.	Complies.
J7.1	This part has deliberately been left blank	-
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.	Developer intends to comply.
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	There are no pools in the development hence J7.3 is not applicable.

	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 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	Spa located on top floor of Stage A pool heating & pumping as per ESD Synergy report ES20200722_00 – 342-348 High St Penrith_BASIX_00 and BASIX Certificate No. 1206256M.

	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.	
Part J8 – FACILITIES FOR ENERGY MONITORING		
Clause		***BCA DTS Section J Recommendations & Compliance***
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.	Complies.
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.	Complies.
J8.2	This part has deliberately been left blank	
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	If the buildings total floor area exceeds 2,500m^2, the facility must be able to record the consumption of all utilities as per J8.3 (b) & J8.3(c).

	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.	

5. ARCHITECTURAL DRAWINGS

The BCA Section J assessment carried out in this report was based on the following architectural drawings supplied by Integrated Design Group received on 8th October 2021.

DA DRAWING SET		
NUMBER	NAME	REVISION
0001	COVER PAGE	B
0002	GENERAL NOTES	B
0003	BASIX COMMITMENTS	A
0100	SITE PLAN	J
0200	DEMOLITION PLAN	B
0300	NCC COMPLIANCE PLANS	B
0400	AREA CALCULATIONS	B
0500	SEPP 65 ANALYSIS	B
0600	WASTE MANAGEMENT DETAILS	B
1000	BASEMENT 01 PLAN	S
1001	BASEMENT 02 PLAN	S
1100	GROUND LEVEL PLAN	S
1101	LEVEL 1 PLAN	Q
1102	LEVEL 2 PLAN	S
1103	LEVEL 3 PLAN	S
1104	LEVEL 4 PLAN	S
1105	LEVEL 5 PLAN	Q
1106	LEVEL 6 PLAN	T
1107	ROOF PLAN	Q
2000	ELEVATIONS BUILDING A	J
2001	ELEVATIONS BUILDING B	J
3000	SECTIONS 1	H
3001	SECTIONS 2	H
3002	SECTIONS 3	H
3003	DRIVEWAY SECTIONS 1	C
8000	FACADE AND SIGNAGE DETAIL 1	C
8001	FACADE AND SIGNAGE DETAIL 2	C
9100	SHADOW DIAGRAMS	E
9300	ADAPTABLE UNIT PLANS	B
9600	EXTERNAL FINISHES SCHEDULE	B

APPENDIX

1. PART J1: BUILDING FABRIC

1.1 J1.3: ROOF AND CEILING CONSTRUCTION

All new **exposed roof & ceiling** types as per Table 3 below.

Table 3: Exposed Roof/Ceiling Construction

Climate zone 6 – Downward direction of heat flow 100mm solid concrete roof to 5° pitch, Unventilated	
Construction	**R-value (m^2. K/W)**
Outdoor air film	0.04
4mm Waterproof membrane, rubber synthetic	0.03
100mm Solid concrete	0.07
Insulation	0.00
10mm Plasterboard, gypsum	0.06
Indoor air film (still air)	0.16
Total	**0.58**

1.2 J1.5: WALLS AND GLAZING

Retail & commercial spaces have **external walls** as per Table 4 below.

Table 4: External Wall Construction - Brick Veneer

Brick Veneer Steel frame 39mm breadth × 78mm depth × 0.55mm thick 12mm EPS thermal break (ADJUST ACCORDINGLY TO STUD TO BE INSTALLED i.e. METAL OR TIMBER)	
Construction	**R-value (m^2. K/W)**
Outdoor air film	0.04
Masonry	0.09
Insulation/Airspace (20mm to 40mm non-reflective and unventilated)	0/0.17
10mm Plasterboard	0.06
Indoor air film (still air)	0.12

Total	**0.31/0.48**

Table 5: External Wall Construction - Concrete

Concrete block, lined Steel frame 39mm breadth × 78mm depth × 0.55mm thick 12mm EPS thermal break (ADJUST ACCORDINGLY TO STUD TO BE INSTALLED i.e. METAL OR TIMBER)	
Construction	**R-value (m^2. K/W)**
Outdoor air film	0.04
150mm solid concrete	0.10
Insulation/Airspace (20mm to 40mm non-reflective and unventilated)	0/0.17
13mm Plasterboard	0.08
Indoor air film (still air)	0.12
Total	**0.34/0.51**

1.3 J1.6: FLOORS

Table 6: Table J1.6 Floors – Minimum Total R-Value

Location	***Climate zone* 1 — upwards heat flow**	***Climate zones* 2 and 3 — upwards and downwards heat flow**	***Climate zones* 4, 5, 6 and 7 — downwards heat flow**	***Climate zone* 8 — downwards heat flow**
A floor without an inslab heating or cooling system	2.0	2.0	2.0	3.5
A floor with an in-slab heating or cooling system	3.25	3.25	3.25	4.75
Note to Table J1.6:				
For the purpose of calculating the Total R-Value of a floor, the sub-floor and soil R-Value must be calculated in accordance with Specification J1.6 or Section 3.5 of CIBSE Guide A.				

Retail & commercial spaces have **exposed floors** that are suspended over the carpark & open subfloor located from levels 1, 3-4 as per below.

Table 7: Floor Construction – Concrete slab adjacent to carpark

150mm Concrete slab adjacent to carpark NOTE: Carpark assumed to be mechanically ventilated by not more than 1.5 air changes per hour	
Construction	**R-value (m^2. K/W)**

Indoor air film	0.16
150mm Solid concrete	0.10
Sub-floor space	0.5
Total	**0.76**

Table 8: Floor Construction – Suspended, open subfloor

Concrete, suspended ground floor, open subfloor	
Construction	**R-value (m^2. K/W)**
Indoor air film	0.16
150mm Solid concrete	0.10
Insulation	0.0
Outdoor air film	0.04
Total	**0.30**

2. PART 6: ARTIFICIAL LIGHTING AND POWER

2.1 J6.2: ARTIFICIAL LIGHTING

Lighting requirements are shown in Table 9.

Table 9: Maximum illumination power density for all commercial and retail areas

Area name	Level	Maximum illumination power density (W/m^2)
Car park - General	B2 – B1	2
Fan room	B2	1.5
Switch room	B2	3
Comms room	B2	3
Plant room	B2	2
Car-park – Entry zone (First 15m of travel) during the daytime	G	11.5
Car-park – Entry zone (next 4m of travel) during the day	G	2.5
Car-park – Entry zone (First 20m of travel) during the nighttime	G	2.5
Commercial Store	B1	1.5
Comms room	B1	3
Cold water pump room	B1	1.5
Tenancy 01, 02, 03 & 04	G	14
Commercial lobby	G	9
Residential lobby	G	9
Male, Female & ACC WC	G – L4	3
Residential & Commercial Garbage Store	G	1.5

Area name	Level	Maximum illumination power density (W/m^2)
Fire pump room	G	1.5
Commercial	L1 – L4	4.5
Corridors in Class 2	Stage A: L5 – L6 Stage B: L1 – L6	4.5
Corridors in Class 5	L1 – L4	5
Class 2 – SOU	Stage A: L5 – L6 Stage B: L1 – L6	5
Class 2 – verandah or balcony	Stage A: L5 – L6 Stage B: L1 – L6	4
Stairways, including fire-isolated stairways	B2 – L6	2
Lift cars	B2 – L6	3