BUILDING SERVICES ENGINEERING
SECTION J REPORT

EVOLVED
ENGINEERING

Dee Why RSL Stage 7
932 Pittwater Rd
Dee Why
NSW 2099

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Revision Control

REVISION	ISSUED DATE	REVIEWED BY	AUTHORISED BY
1.0	28/01/2025	J. Mc Hugh-Dolan	J. Warrell
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1. INTRODUCTION

1.1. Overview

The National Construction Code (NCC) Section J for class 2 to 9 buildings was introduced by the Australian Building Codes Board (ABCB) to ensure new buildings are designed to meet a minimum standard of energy efficiency. The requirements are presented so that both the passive performance of the building, as well as the active operation of the building's services achieves the nominated level of performance.

A building will comply with the NCC if it satisfies the *performance requirements* of each section. This is achieved by:

a) complying-with the deemed-to-satisfy provisions; or

b) formulating an *alternative solution* which -

(i) complies with the *performance requirements*

(ii) is shown to be at least equivalent of the *deemed-to-satisfy* provisions; or

c) a combination of a) and b).

The *performance requirements* of Section J are reproduced below:

- Elemental provisions for a sole-occupancy unit of a Class 2 building or a Class 4 part of a building
- Building fabric
- Building sealing
- Air conditioning and ventilation systems
- Artificial lighting and power
- Heated water supply and swimming pool and spa
- Energy monitoring and on-site distributed energy

The NCC Section J Deemed-to-Satisfy requirements are documented in Section 2 of this report.

1.1.1. Project Overview

The Dee Why RSL Stage 7 project is the renovating of the Gaming room and Bistro of the current building and the addition of a new roof above the new Gaming room.

The building is of the following classes as defined by the Australian Building Codes Board.

- Class 5, 6 and 9b

The drawings that form the basis of this assessment are architectural drawings completed by Altis Architects. The drawings are as follows:

- 2341.10-DA-1103-RA-OVERALL ARRANGEMENT PLAN - LEVEL 2
- 2341.10-DA-1104-RA-OVERALL ARRANGEMENT PLAN - LEVEL 3
- 2341.10-DA-1105-RA-OVERALL ARRANGEMENT PLAN - LEVEL 4 AND ADMIN
- 2341.10-DA-1106-RA-OVERALL ARRANGEMENT PLAN - ROOF PLAN

1.1.2. Architectural Design

Below are Level 2, 3, 4 and roof level plans of the building being assessed as part of this report:

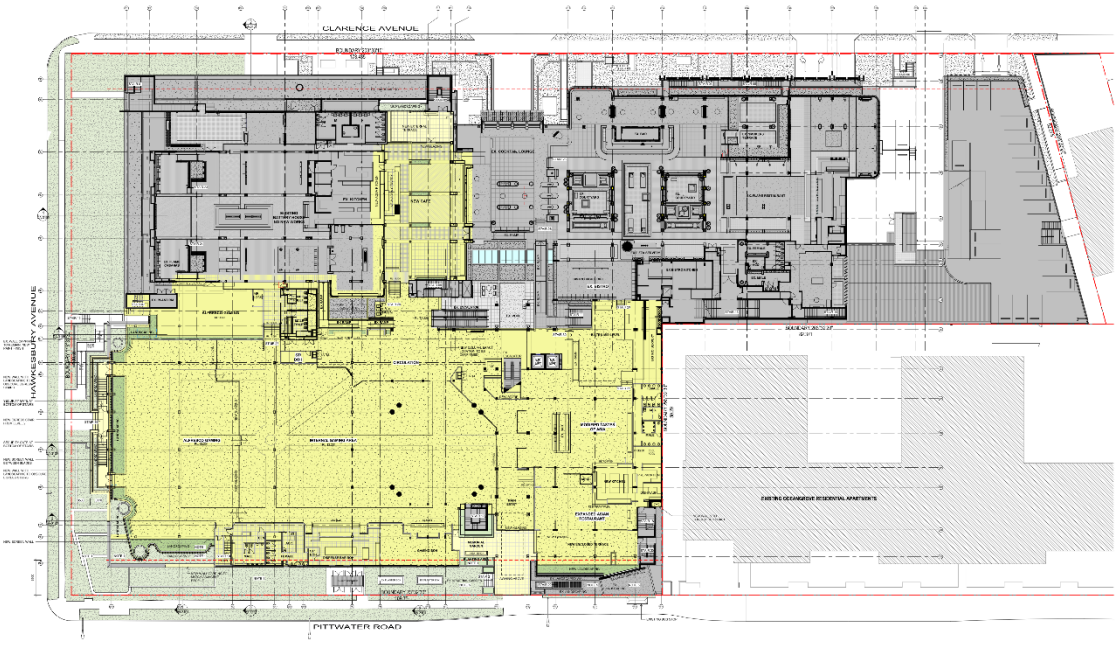


Figure 1 Level 2

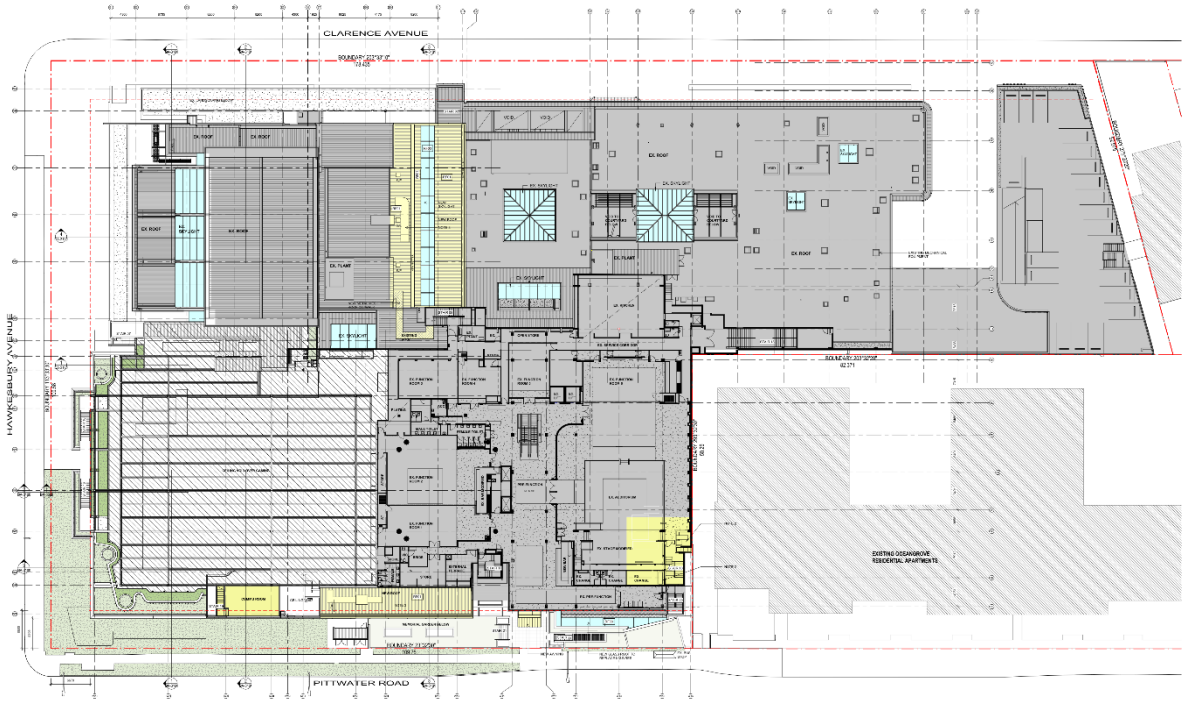


Figure 2 Level 3

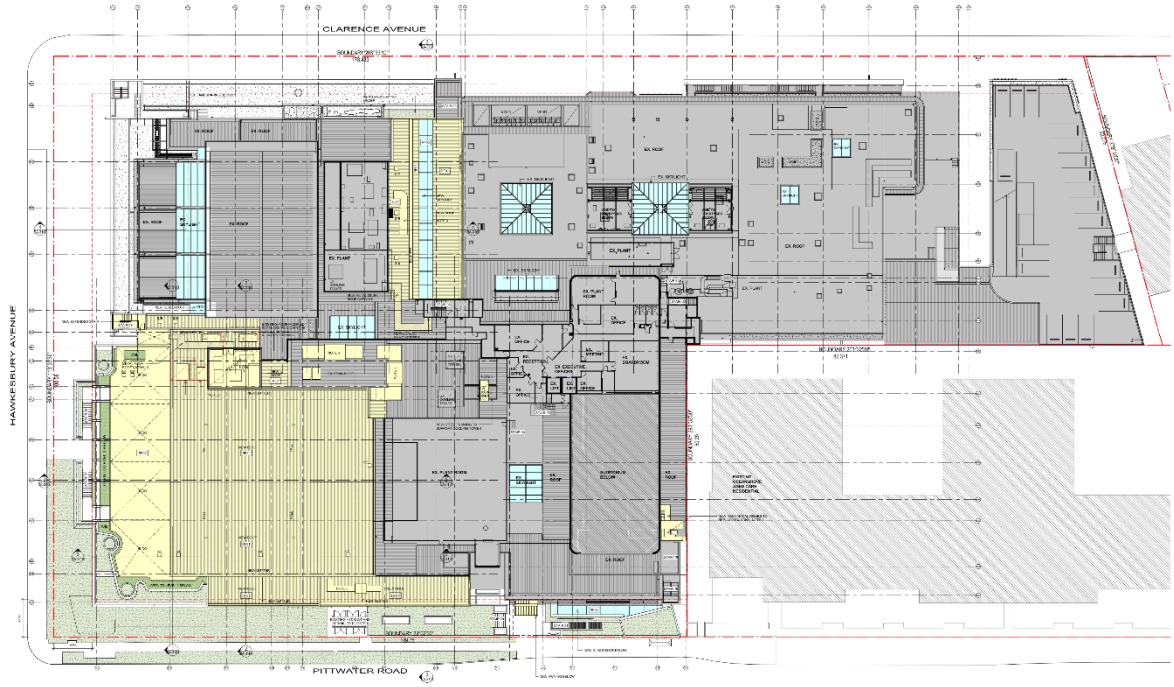


Figure 3 Level 4 and Roof Plan

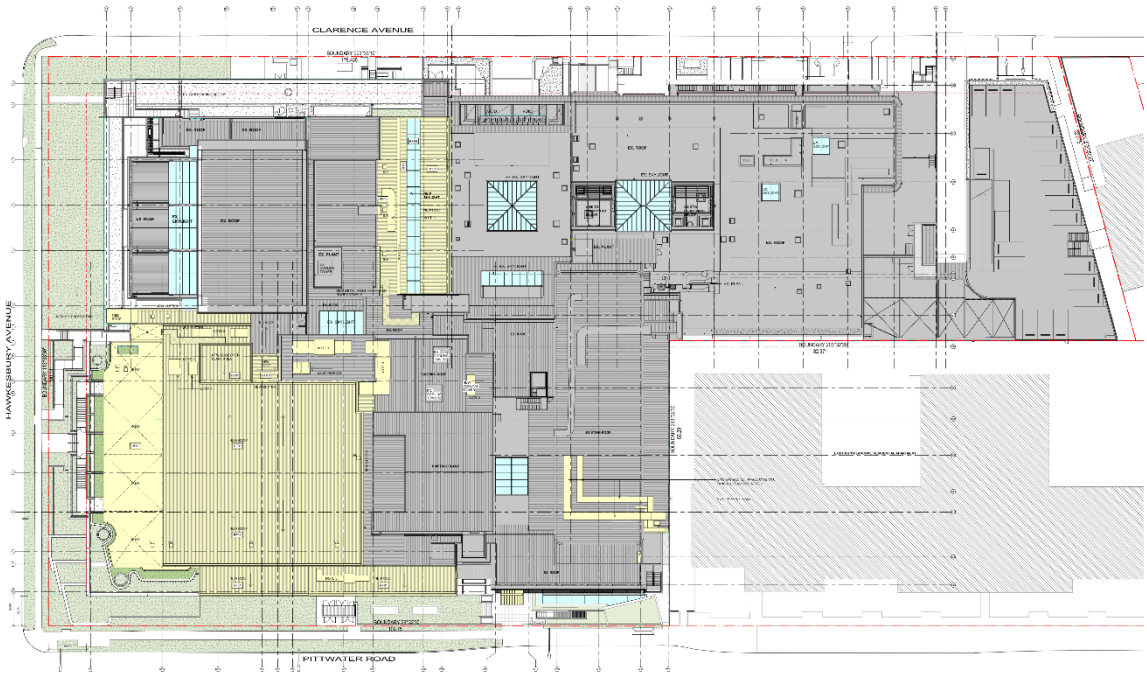


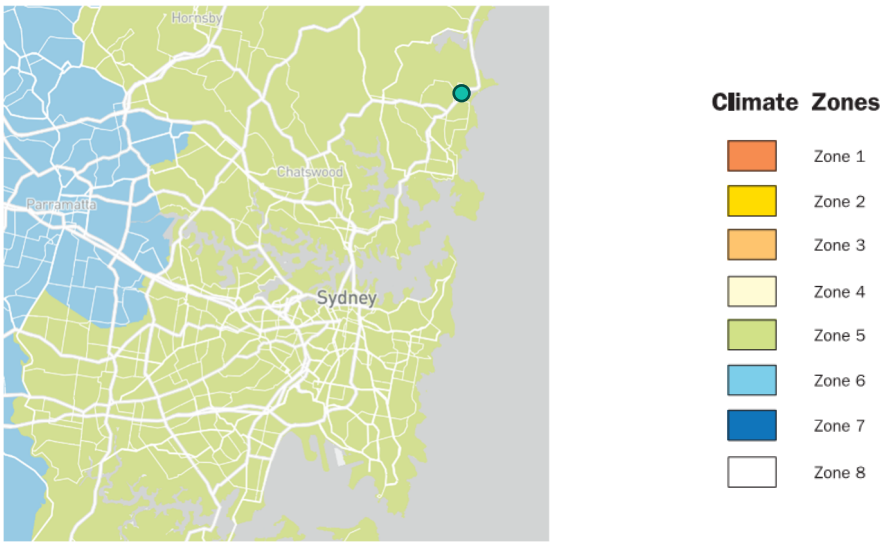
Figure 4 Roof Plan

1.2. Building Class and Climate Zone

The 2022 National Construction Code (NCC) is used for the purposes of this report.

The NCC building class for the proposed development is a combination of **Class 5, 6, 7a, 7b, 8 and 9b.**

The Australian Building Codes Board climate map was used to determine the premise is located in **Climate Zone 5** in Dee Why.



Climate Zone Map (extract) taken from www.abcb.gov.au

The NCC energy efficiency requirements for public building developments are captured within Section J of Volume 1 of the National Construction Code.

2. DEEMED-TO-SATISFY REQUIREMENTS

The following sections outline the requirements of the Deemed to Satisfy (DTS) solution as per the NCC 2022.

2.1. Part J3 Elemental Provisions for a Sole-Occupancy Unit of a Class 2 Building or a Class 4 Part of a Building

NCC DESIGNATION	DEEMED-TO-SATISFY REQUIREMENT	PROPOSED DESIGN	COMMENTS
J3D3 Reducing heating and cooling loads of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building using house energy rating software	The sole-occupancy units of a Class 2 building or a Class 4 part of a building must be in accordance with NCC Section J3D3 to reduce heating and cooling loads.	N/a	N/a
J3D4 Ceiling fans in a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D4 (1)	Ceiling fans must be installed in accordance with Table J3D4 in— (a) climate zones 1, 2 and 3; and (b) climate zone 5 in New South Wales and Queensland	N/a	N/a
J3D4 (2)	Ceiling fans required by (1) must— (a) be permanently installed; and (b) have a speed controller	N/a	N/a
J3D5 Roof thermal breaks of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D5 (1)	A roof 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, if the roof— (a) has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and (b) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens	N/a	N/a
J3D5 (2)	The requirements of (1) do not apply to roofs constructed using insulated sandwich panels.	N/a	N/a
J3D6 Wall thermal breaks of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D6 (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— (a) does not have a wall lining or has a wall lining that is fixed directly to the same metal frame; and (b) is clad with weatherboards, fibre-cement or the like, or metal sheeting fixed to a metal frame.	N/a	N/a
J3D6 (2)	The requirements of (1) do not apply to walls constructed using insulated sandwich panels.	N/a	N/a

J3D7 Roofs and ceilings of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D7 (1)	Roof and ceiling insulation must achieve the minimum R-Value in climate zone 5.	N/a	N/a
J3D7 (2)	Reflective insulation installed to comply with (1) must— (a) have a surface emittance of not more than 0.05; and (b) be adjacent to a roof space of not less than 20 mm; and (c) in climate zones 3 to 8, be downward facing.	N/a	N/a
J3D7 (3)	The thermal bridging in a metal-framed roof must be addressed as follows— (a) for a pitched roof with a horizontal ceiling— - achieving the Total R-Value in Table J3D7s, calculated using a method that accounts for the effects of thermal bridging; or - increasing the R-Value of the insulation between the ceiling frames by R0.5 more than the R-Value derived from (1); or - adding a continuous ceiling insulation layer with a minimum R-Value of R0.13 above or below the ceiling joists or the bottom chords of the trusses; or - achieving the required ceiling R-Value derived from (1) by stacking two layers of insulation immediately on top of each other, such that the top layer is orientated to cover the ceiling joists or bottom chord of the trusses and has an R-Value of at least R0.5; or (b) for a flat, skillion or cathedral roof— - achieving the Total R-Value in Table J3D7t, calculated using a method that accounts for the effects of thermal bridging; or - complying with Table J3D7u.	N/a	N/a
J3D7 (4)	Where F8D5(1) applies, continuous insulation placed above the primary insulation layer to mitigate thermal bridging must have a vapour permeance of not less than that of the primary insulation layer.	N/a	N/a
J3D7 (5)	Where, for operational or safety reasons, the area of ceiling insulation required is reduced, the loss of insulation must be compensated for in accordance with Table J3D7w.	N/a	N/a
J3D7 (6)	Where the ceiling insulation required by (1) to (5) has an R-Value— (a) greater than R3.0 and less than or equal to R4.5, it may be reduced to R3.0 within 450 mm of an external wall; or (b) greater than R4.5, it may be reduced to R3.0 within 450 mm of an external wall, provided all other required ceiling insulation is increased by R0.5.	N/a	N/a
J3D7 (7)	The requirements of (1) to (6) do not apply to roofs constructed using insulated sandwich panels.	N/a	N/a
J3D7 (8)	Roofs constructed using insulated sandwich panels must achieve the minimum Total R-Value in Table J3D7x.	N/a	N/a

J3D7 (9)	In climate zones 1 to 5, the solar absorptance of the upper surface of a roof must not be more than 0.64.	N/a	N/a
J3D8 External walls of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D8 (1)	The Total R-Value of an external wall— (a) in climate zones 1, 2, 3, 5 and 6— - where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is less than 20%, must be at least R1.15; and - where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is greater than or equal to 20% but less than 35%, must be at least R2.04; and - where the ratio of the area of opaque external walls to the floor area of the sole-occupancy unit is greater than or equal to 35%, must be at least R2.24; and (b) in climate zones 4, 7 and 8, must be at least R2.24.	N/a	N/a
J3D8 (2)	The Total R-Value of an external wall must be determined in accordance with— (a) for a spandrel panel in a curtain wall system, in accordance with Specification 38; and (b) for all other walls, in accordance with AS/NZS 4859.2.	N/a	N/a
J3D8 (3)	The solar absorptance of an external wall must be in accordance with J3D8 (3)	N/a	N/a
J3D9 Wall-glazing construction of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D9 (1)	The Total System U-Value of wall-glazing construction that forms part of the external building fabric must not be greater than J3D9 (1)	N/a	N/a
J3D9 (2)	The Total System U-Value of wall-glazing construction that forms part of the external building fabric must be calculated in accordance with Specification 37.	N/a	N/a
J3D9 (3)	Wall components of wall-glazing construction must achieve a minimum Total R-Value of— (a) where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or (b) where the wall is 80% or more of the area of the wall-glazing construction, the value specified in Table J4D6a for a Class 3 building.	N/a	N/a
J3D9 (4)	In climate zones 1 to 6, the solar admittance of externally facing wall-glazing construction must be not greater than that shown in Table J3D9.	N/a	N/a
J3D9 (5)	In climate zones 7 and 8, glazing in a wall-glazing construction must have a Total System SHGC of at least 0.4.	N/a	N/a
J3D9 (6)	The solar admittance of a wall-glazing construction must be calculated in accordance with Specification 37.	N/a	N/a
J3D9 (7)	The solar absorptance of an external wall must be in accordance with J3D8(3).	N/a	N/a

J3D11 External winter glazing of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D11 (1)	In climate zones 2 to 8, the ratio of the conductance (CU) and solar heat gain (CSHGC) of the glazing of each storey, including any mezzanine, of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must— (a) not exceed the allowance obtained from Table J3D11a; and (b) be calculated in accordance with the formula found in NCC Section J3D11 (1) (b)	N/a	N/a
J3D12 External summer glazing of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D12 (1)	In climate zones 1 to 7, the aggregate solar heat gain of the glazing in each storey, including any mezzanine, of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building must— (a) not exceed the allowance resulting from multiplying the floor area of the storey, including any mezzanine, (b) measured within the enclosing walls, by the constant CSHGC obtained from Table J3D12a; and be calculated in accordance with the formula found in NCC Section J3D12 (1) (b)	N/a	N/a
J3D13 Shading of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building	Where shading is required to comply with J3D11 or J3D12, it must— (a) be provided by an external permanent projection, such as a verandah, balcony, fixed canopy, eaves, shading hood or carport, which— - extends horizontally on both sides of the glazing for a distance greater than or equal to the projection distance P in Figure S37C7; or - provide the equivalent shading to (i) with a reveal or the like; or (b) be provided by an external shading device, such as a shutter, blind, vertical or horizontal building screen with blades, battens or slats, which— - is capable of restricting at least 80% of the summer solar radiation; and - if adjustable, is readily operated either manually, mechanically or electronically by the building occupants.	N/a	N/a
J3D14 Net equivalent energy usage of a sole-occupancy unit of a Class 2 building or a Class 4 part of a building J3D14 (1)	The net equivalent energy usage of a sole-occupancy unit of a Class 2 building or Class 4 part of a building, calculated in accordance with NCC Section J3D14 (1) (a), must not exceed the allowance calculated in accordance with NCC Section J3D14 (1) (b).	N/a	N/a
J3D15 Net equivalent energy usage for a sole-occupancy unit of a Class 2 building or Class 4 part of building – home energy rating software	A sole-occupancy unit of a Class 2 building or a Class 4 part of a building must achieve a whole-of-home rating of not less than 50 using house energy rating software.	N/a	N/a

2.2. Part J4 Building Fabric

NCC DESIGNATION	DEEMED-TO-SATISFY REQUIREMENT	PROPOSED DESIGN	COMMENTS
J4D3 Thermal construction — general	Insulation must be installed in accordance with NCC Section J4D3 to prevent thermal bridging.	Insulation shall be installed in accordance with NCC Section J4D3 to prevent thermal bridging.	Architectural Details to be designed to suit and specification provided.
J4D4 Roof and ceiling construction	Roof or ceiling must achieve a Total R-value greater than or equal to R3.7	R-value of ceiling shall be greater than or equal to R3.7	Architectural Details to be designed to suit and specification provided.
J4D5 Roof Lights	Roof lights must have— (a) a total area of not more than 5% of the floor area of the space served; and (b) transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of— - for Total system SHGC, in accordance with Table J4D5; and - for Total system U-Value, not more than U3.9.	All roof lights shall be in accordance with NCC Section J4D5. The total area of skylights does not exceed 5% of area of the redeveloped portion of the building. **All skylight:** Required Glazing System U-Value **≤3.9 W/m²K** Required SHGC (Solar Heat Gain Coefficient) **≤0.29**	Architectural Details to be designed to suit and specification provided.
J4D6 Walls and Glazing	Area and performance as per the glazing calculator, NCC 2022 Volume One.	Assuming a wall R-value of **1.4m²K/W**, the U-values and SHGC of the new windows and doors are as per the NCC 2022 Volume 1. **All facades:** Required Glazing System U-Value **6.0 W/m²K** Required SHGC (Solar Heat Gain Coefficient) **0.52**	Architectural Details to be designed to suit and specification provided.
J4D7 Floors	Floors must achieve the following minimum R-Values in climate zone 5 in floors without an in-slab heating or cooling system. R2.0 value.	Floors shall achieve the following R-Values in climate zone 5 in floors without an in-slab heating or cooling system. R2.0 value.	Architectural Details to be designed to suit and specification provided.

2.3. Part J5 Building Sealing

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
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.	Any chimney or flue of an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal.	Architectural Details to be designed to suit and specification provided.
J5D4 Roof lights	(1) A roof light must be sealed, or capable of being sealed, when serving a conditioned space. (2) A roof light required by (1) to be sealed, or capable of being sealed, must be constructed with— - an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or - a weatherproof seal; or - a shutter system readily operated either manually, mechanically or electronically by the occupant.	All roof lights shall be sealed in accordance with NCC Section J5D4.	Architectural Details to be designed to suit and specification provided.

J5D5 Windows and doors	(1) A door, openable window or the like must be sealed when forming part of the envelope. (2) The requirements of (1) do not apply to— - a window complying with AS 2047; or - a fire door or smoke door; or - a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security. (3) A seal to restrict air infiltration— - for the bottom edge of a door, must be a draft protection device; and - 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. (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 where the conditioned space has a floor space not more than 50m^2. (5) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.	All door and windows shall be installed in accordance with NCC Section J5D5. All external doors opening into air-conditioned spaces shall be self-closing, rapid roller type, revolving or have an airlock.	Architectural Details to be designed to suit and specification provided.
J5D6 Exhaust fans	Exhaust fans must be fitted with a sealing device such as a self-closing damper when serving a conditioned space.	All exhaust fans shall be sealed in accordance with NCC Section J5D6.	Mechanical services specification.
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) when forming part of the envelope. (2) Construction required by (1) must be— - enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or - sealed at junctions and penetrations with close fitting architrave, skirting or cornice, or expanding foam, rubber compressible strip, caulking or the like. (3) The requirements of (1) do not apply to openings, grilles or the like required for smoke hazard management.	Building sealing shall be in accordance with NCC Section J5D7.	Architectural Details to be designed to suit and specification provided.
J5D8 Evaporative Coolers	An evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space.	An evaporative cooler shall be fitted with a self-closing damper or the like when serving a heated space.	Mechanical services specification.

2.4. Part J6 Air-Conditioning and Ventilation Systems

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D3 Air-conditioning system	An AC system—		
J6D3 (1) (a)	- Must be capable of being deactivated when the area of the building served is not occupied.	Air conditioning units shall be capable of being deactivated when not in use.	Mechanical services specification.
J6D3 (1) (b)	- When serving more than one AC zone with different heating or cooling needs, must – (i) Thermostatically control the temperature of each zone. (ii) Not control temperature by mixing actively heated air and actively cooled air (iii) Limit reheating to not more than 7.5K rise in temperature	AC systems in each individual zone shall be controlled by their own thermostat. Mixing actively heated and cooled air is not proposed. Any reheat will be limited to a maximum of a 7.5K rise in temperature.	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D3 (1) (c)	- Which provides the required mechanical ventilation, other than in climate zone 1 or where dehumidification control is needed, must have an outdoor air economy cycle.	Relevant units to have economy cycles.	Mechanical services specification.
J6D3 (1) (d)	- That contains more than one water heater, chiller, or coil, must be capable of stopping the flow of water to those not operating.	N/a	N/a
J6D3 (1) (e)	- With an airflow of more than 1000 L/s, must have a variable speed fan when its supply air quantity is capable of being varied.	For AC systems with an airflow of 1000L/s or more, variable speed fan shall be provided.	Mechanical services specification.
J6D3 (1) (f)	- When serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole-occupancy unit that opens to a balcony or the like, is open for more than one minute.	N/a	N/a
J6D3 (1) (g)	- Must have the ability to use direct signals from the control components responsible for the delivery of comfort conditions in the building to regulate the operation of central plant.	System shall have the ability to direct signals from the control components.	Mechanical services specification.
J6D3 (1) (h)	- Must have a control dead band of not less than 2°C, except where a smaller range is required for specialised applications.	System shall have a control band not less than 2°C.	Mechanical services specification.
J6D3 (1) (i)	- Must be provided with balancing dampers and balancing valves, as required to meet the needs of the system at its maximum operating condition, that ensure the maximum design air or fluid flow is achieved but not exceeded by more than 15% above design at each (i) component; or (ii) group of components operating under a common control in a system containing multiple components.	System shall be provided with balancing dampers as per NCC Section J6D3 (1) (i).	Mechanical services specification.
J6D3 (1) (j)	- Must ensure that each independently operating space of more than 1 000 m^2 and every separate floor of the building has provision to terminate airflow independently of the remainder of the system sufficient to allow for different operating times.	Operating space of more than 1 000 m^2 and every separate floor of the building to have provision to terminate airflow independently of the remainder of the system sufficient to allow for different operating times.	Mechanical services specification.
J6D3 (1) (k)	- Must have automatic variable temperature operation of heated water and chilled water circuits.	Automatic variable temperature operation of heated water and chilled water circuits to be provided.	Mechanical services specification.
J6D3 (1) (l)	- When deactivated, must close any motorised outdoor air or return air damper that is not otherwise being actively controlled.	System shall close any motorised damper that is not being actively controlled.	Mechanical services specification.
J6D3 (2)	When two or more air-conditioning systems serve the same space, they must use control sequences that prevent the systems from operating in opposing heating and cooling modes.	When two or more air-conditioning systems serve the same space, they shall use control sequences that prevent the systems from operating in opposing heating/cooling modes.	Mechanical services specification.
J6D3 (3) Time Switches J6D3 (3) (a)	A time switch must be provided to control— (i) an air-conditioning system of more than 2 kWr; and (ii) a heater of more than 1 $kW_{heating}$ used for air-conditioning.	A time switch shall be provided to control an air-conditioning system of more than 2 kWr and a heater of more than 1 kW heating used for air-conditioning.	Mechanical services specification.
J6D3 (3) (b)	The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days.	A time switch shall have the ability to power on and off at variable pre-programmed times and on variable pre-programmed days.	Mechanical services specification.
J6D3 (3) (c)	The requirements of (a) and (b) do not apply to— - an air-conditioning system that serves— (A) only one SOU in a Class 2, 3 or 9c building; or (B) a Class 4 part of a building; or - a conditioned space where air-conditioning is needed for 24-hour continuous use.	Time switches shall be installed when required, in accordance with NCC Section J6D3 (3) (c).	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D4 Mechanical ventilation system control J6D4 (1)	General — A mechanical ventilation system, including one that is part of an air-conditioning system, except where the mechanical system serves only one sole-occupancy unit in a Class 2 building or serves only a Class 4 part of a building, must—		
J6D4 (1) (a)	- Be capable of being deactivated when the building or part of the building served by that system is not occupied	The mechanical ventilation system shall have the ability to be deactivated when the building or part of the building is not occupied.	Mechanical services specification.
J6D4 (1) (b)	- When serving a conditioned space, except in period when evaporative cooling is being used— (i) where specified in Table J6D4, have— (A) an energy reclaiming system that preconditions outdoor air at a minimum sensible heat transfer effectiveness of 60%; or (B) demand control ventilation in accordance with AS 1668.2 if appropriate to the application; and (ii) not exceed the minimum outdoor air quantity required by Part F6 by more than 20%, except where— (A) additional unconditioned outdoor air is supplied for free cooling; or (B) additional mechanical ventilation is needed to balance the required exhaust or process exhaust; or (C) an energy reclaiming system preconditions all the outdoor air	The mechanical ventilation system shall adhere to Table J6D4 and NCC Clause J6D4 (1) (b) (ii).	Mechanical services specification.
J6D4 (1) (c)	For an airflow of more than 1000 L/s, have a variable speed fan unless the downstream airflow is required by Part F6 to be constant.	The mechanical ventilation shall have a variable speed fan for airflows of greater than 1000L/s.	Mechanical services specification.
J6D4 (2)	Exhaust systems — An exhaust system with an air flow rate of more than 1000 L/s must be capable of stopping the motor when the system is not needed, except for an exhaust system in a sole-occupancy unit in a Class 2, 3 or 9c building.	An exhaust of greater than 1000L/s shall be capable of stopping the motor when not required.	Mechanical services specification.
J6D4 (3)	Carpark exhaust systems — Carpark exhaust systems must have a control system in accordance with— (a) 4.11.2 of AS 1668.2; or (b) 4.11.3 of AS 1668.2.	N/a	N/a
J6D4 (4) Time switches J6D4 (4) (a)	A time switch must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s.	A time switch shall be provided to a mechanical ventilation system with an air flow rate of more than 1000L/s	Mechanical services specification.
J6D4 (4) (b)	The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days.	The time switch shall be capable of powering on and off at variable pre-programmed times and on variable pre-programmed days.	Mechanical services specification.
J6D4 (4) (c)	The requirements of (a) and (b) do not apply to— - a mechanical ventilation system that serves— (A) only one SOU in a Class 2, 3 or 9c building; or (B) a Class 4 part of a building; or - a building where mechanical ventilation is needed for 24-hour occupancy.	Time switches shall be installed when required, in accordance with NCC Section J6D4 (4) (c).	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D5 Fan and duct systems J6D5 (1)	General — Fans, ductwork and duct components that form part of an air-conditioning system or mechanical ventilation system must either— (a) separately comply with (2), (3), (4) and (5); or (b) achieve a fan motor input power per unit of flowrate lower than the fan motor input power per unit of flowrate achieved when applying (2), (3), (4) and (5) together.	Fans installed shall be in accordance with NCC Section J6D5 (1).	Mechanical services specification.
J6D5 (2) (a)	Fans that have a static pressure of less than 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula: $\eta_{min} = 0.13 \times \ln(p) - 0.3$	Fans that have a static pressure of less than 200 Pa shall be in accordance with NCC Clause J6D5 (2) (a).	Mechanical services specification.
J6D5 (2) (c)	Fans that have a static pressure of greater than 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula: $\eta_{min} = 0.85 \times (a \times \ln(P) - b + N) / 100$	Fans that have a static pressure of greater than 200 Pa shall be in accordance with NCC J6D5 (2) (c).	Mechanical services specification.
J6D5 (3) (a)	The pressure drop in the index run across all straight sections of rigid ductwork and all sections of flexible ductwork must not exceed 1 Pa/m when averaged over the entire length of straight rigid duct and flexible duct. The pressure drop of flexible ductwork sections may be calculated as if the flexible ductwork is laid straight.	The pressure drop shall not exceed 1 Pa/m on index runs of ductwork.	Mechanical services specification.
J6D5 (3) (b)	Flexible ductwork must not account for more than 6 m in length in any duct run.	Flexible ductwork shall not exceed 6m in length.	Mechanical services specification.
J6D5 (3) (c)	The upstream connection to ductwork bends, elbows and tees in the index run must have an equivalent diameter to the connected duct.	The upstream connection shall have the same diameter as the connected duct.	Mechanical services specification.
J6D5 (3) (d)	Turning vanes must be included in all rigid ductwork elbows of 90° or more acute than 90° in the index run except where – (i) the inclusion of turning vanes presents a fouling risk; or (ii) a long radius bend in accordance with AS 4254.2 is used.	Turning vanes shall be installed in accordance with NCC Clause J6D5 (3) (d).	Mechanical services specification.
J6D5 (4)	Ductwork components in the index run:		
J6D5 (4) (a)	The pressure drop across a coil must not exceed the value specified in Table J6D5d.	The pressure drop across the coil shall not exceed the relevant value in Table J6D5d.	Mechanical services specification.
J6D5 (4) (b)	A high efficiency particulate arrestance (HEPA) air filter must not exceed the higher of— (i) a pressure drop of 200 Pa when clean; or (ii) the filter design pressure drop when clean at an air velocity of 1.5 m/s.	No HEPA filter shall exceed a pressure drops of 200 Pa when clean or the filter design pressure drop at 1.5m/s.	Mechanical services specification.
J6D5 (4) (c)	Any other air filter must not exceed— (i) the pressure drop specified in Table J6D5e when clean; or (ii) the filter design pressure drop when clean at an air velocity of 2.5 m/s	No filter shall exceed the relevant pressure drops in Table J6D5e when clean or the filter design pressure drop at 2.5m/s.	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D5 (4) (d)	The pressure drop across intake louvres must not exceed the higher of — (i) for single stage louvres, 30 Pa; and (ii) for two stage louvres, 60 Pa; and (iii) for acoustic louvres, 50 Pa; and (iv) for other non-weatherproof louvres, 30 Pa.	The pressure drop of intake louvres shall not exceed the relevant pressure drops in NCC Clause J6D5 (4) (d).	Mechanical services specification.
J6D5 (4) (e)	The pressure drop across a variable air volume box, with the damper in the fully open position, must not exceed— (i) for units with electric reheat, 100 Pa; and (ii) for other units, 25 Pa not including coil pressure losses.	The pressure drop across VAV boxes shall not exceed the values given in NCC Section J6D5 (4) (e).	Mechanical services specification.
J6D5 (4) (f)	Rooftop cowls must not exceed a pressure drop of 30 Pa.	Rooftop cowls shall not exceed a pressure drop of 30 Pa.	Mechanical services specification.
J6D5 (4) (g)	Attenuators must not exceed a pressure drop of 40 Pa.	Attenuators shall not exceed a pressure drop of 40 Pa.	Mechanical services specification.
J6D5 (4) (h)	Fire dampers must not exceed a pressure drop of 15 Pa when open.	Fire dampers shall not exceed a pressure drop of 15 Pa when open.	Mechanical services specification.
J6D5 (4) (i)	Balancing and control dampers in the index run must not exceed a pressure drop of 25 Pa when in the fully open position.	Balancing and control dampers shall not exceed a pressure drop of 25 Pa.	Mechanical services specification.
J6D5 (4) (j)	Supply air diffusers and grilles must not exceed a pressure drop of 40 Pa.	Supply air diffusers shall not exceed a pressure drop of 40 Pa.	Mechanical services specification.
J6D5 (4) (k)	Exhaust grilles must not exceed a pressure drop of 30 Pa.	Exhaust grilles shall not exceed a pressure drop of 30 Pa.	Mechanical services specification.
J6D5 (4) (l)	Transfer ducts must not exceed a pressure drop of 12 Pa.	Transfer ducts shall not exceed a pressure drop of 12 Pa.	Mechanical services specification.
J6D5 (4) (m)	Door grilles must not exceed a pressure drop of 12 Pa.	Door grilles shall not exceed a pressure drop of 12 Pa.	Mechanical services specification.
J6D5 (4) (n)	Active chilled beams must not exceed a pressure drop of 150 Pa.	N/a	N/a
J6D6 Ductwork insulation J6D6 (1)	Ductwork and fittings in an air-conditioning system must be provided with insulation — (a) complying with AS/NZS 4859.1; and (b) having an insulation R-Value greater than or equal to— (i) for flexible ductwork, 1.0; or (ii) for cushion boxes, that of the connecting ductwork; or (iii) that specified in Table J6D6.	Ductwork and fittings in an air-conditioning system shall be provide with insulation in accordance with NCC Section J6D6 (1).	Mechanical services specification.
J6D6 (2)	Insulation must – (a) be protected against the effects of weather and sunlight; and (b) be installed so that it — (i) abuts adjoining insulation to form a continuous barrier; and (ii) maintains its position and thickness, other than at flanges and supports; and (c) When conveying cooled air – (i) be protected by a vapour barrier on the outside of the insulation; and (ii) where the vapour barrier is a membrane, be installed so that adjoining sheets of the membrane – (A) overlap by at least 50 mm; and (B) are bonded or taped together.	Insulation shall be installed in accordance with NCC Section J6D6 (2).	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D6 (3)	The requirements of (1) do not apply to — (a) ductwork and fittings located within the only or last room served by the system; or (b) fittings that form part of the interface with the conditioned space; or (c) return air ductwork in, or passing through, a conditioned space; or (d) ductwork for outdoor air and exhaust air associated with an air-conditioning system; or (e) the floor of an in-situ air-handling unit; or (f) packaged air conditioners, split systems, and variable refrigerant flow air-conditioning equipment complying with MEPS; or (g) flexible fan connections.	Insulation shall be installed if required, accordance with NCC Section J6D6 (3).	Mechanical services specification.
J6D6 (4)	For the purposes of (1), (2) and (3), fittings — (a) include non-active components of a ductwork system such as cushion boxes; and (b) exclude active components such as air-handling unit components.	Insulation shall be installed in accordance with NCC Section J6D6 (4).	Mechanical services specification.
J6D7 Ductwork sealing	Ductwork in an air-conditioning system with a capacity of 3000 L/s or greater, not located within the only or last room served by the system, must be sealed against air loss in accordance with the duct sealing requirements of AS 4254.1 and AS 4254.2 for the static pressure in the system.	Ductwork in an air-conditioning system with a capacity of 3000 L/s or greater shall be sealed in accordance with MCC Section J6D7.	Mechanical services specification.
J6D8 Pump systems J6D8 (1)	General — Pumps and pipework that form part of an air-conditioning system must either— (a) separately comply with (2), (3) and (4); or (b) achieve a pump motor power per unit of flowrate lower than the pump motor power per unit of flowrate achieved when applying (2), (3) and (4) together.	Pumps installed shall be in accordance with NCC Section J6D8 (1).	Hydraulic services specification.
J6D8 (2)	Circulator pumps — A glandless impeller pump, with a rated hydraulic power output of less than 2.5 kW and that is used in closed loop systems must have an energy efficiency index (EEI) not more than 0.27 calculated in accordance with European Union Commission Regulation No. 622/2012.	Circulator pumps installed shall be in accordance with NCC Section J6D8 (2).	Hydraulic services specification.
J6D8 (3)	Other pumps — Pumps that are in accordance with Articles 1 and 2 of European Union Commission Regulation No. 547/2012 must have a minimum efficiency index (MEI) of 0.4 or more when calculated in accordance with European Union Commission Regulation No. 547/2012.	Other pumps installed shall be in accordance with NCC Section J6D8 (3).	Hydraulic services specification.
J6D8 (4)	Pipework — Straight segments of pipework along the index run, forming part of an air-conditioning system — (a) in pipework systems that do not have branches and have the same flow rate throughout the entire pipe network, must achieve an average pressure drop of not more than— (i) for constant speed systems, the values nominated in Table J6D8a; or (ii) for variable speed systems, the values nominated in Table J6D8b; or (b) in any other pipework system, must achieve an average pressure drop of not more than— (i) for constant speed systems, the values nominated in Table J6D8c; or (ii) for variable speed systems, the values nominated in Table J6D8d.	Pipework installed shall be in accordance with NCC Section J6D8 (4).	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D8 (5)	The requirements of (4) do not apply — (a) to valves and fittings; or (b) where the smallest pipe size compliant with (4) results in a velocity of 0.7 m/s or less at design flow.	Pipework installed shall be in accordance with NCC Section J6D8 (5).	Mechanical services specification.
J6D9 Pipework insulation J6D9 (1)	Piping, vessels, heat exchangers and tanks containing heating or cooling fluid, where the fluid is held at a heated or cooled temperature, that are part of an air-conditioning system, other than in appliances covered by MEPS, must be provided with insulation — (a) complying with AS/NZS 4859.1; and (b) for piping of heating and cooling fluids, having an insulation R-Value in accordance with Table J6D9a; and (c) for vessels, heat exchangers or tanks, having an insulation R-Value in accordance with Table J6D9b; and (d) for refill or pressure relief piping, having an insulation R-Value equal to the required insulation R-Value of the connected pipe, vessel or tank within 500 mm of the connection.	Piping, vessels, heat exchangers and tanks containing heating or cooling fluid shall be installed in accordance with NCC Section J6D9 (1).	Mechanical services specification.
J6D9 (2)	Insulation must — (a) be protected against the effects of weather and sunlight; and (b) be able to withstand the temperatures within the piping, vessel, heat exchanger or tank.	Insulation shall protect against the effects of weather and sunlight and shall be able to withstand the temperatures within the piping, vessel, heat exchanger or tank.	Mechanical services specification.
J6D9 (3)	Insulation provided to piping, vessels, heat exchangers or tanks containing cooling fluid must be protected by a vapour barrier on the outside of the insulation.	Insulation provided to piping, vessels, heat exchangers or tanks containing cooling fluid shall be protected by a vapour barrier on the outside of the insulation.	Mechanical services specification.
J6D9 (4)	The requirements of (1) and (2) do not apply to piping, vessels or heat exchangers — (a) located within the only or last room served by the system and downstream of the control device for the regulation of heating or cooling service to that room; or (b) encased within a concrete slab or panel which is part of a heating or cooling system; or (c) supplied as an integral part of a chiller, boiler or unitary air-conditioner complying with the requirements of J6D10, J6D11 and J6D12; or (d) inside an air-handling unit, fan-coil unit, or the like.	Pipework insulation shall be installed in accordance with NCC Section J6D9 (4).	Mechanical services specification.
J6D9 (5)	For the purposes of (1), (2), (3) and (4)— (a) heating fluids include refrigerant, heated water, steam and condensate; and (b) cooling fluids include refrigerant, chilled water, brines and glycol mixtures, but do not include condenser cooling water.	Pipework insulation shall be installed in accordance with NCC Section J6D9 (5).	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D10 Space heating J6D10 (1)	A heater used for air-conditioning or as part of an air-conditioning system must be — (a) a solar heater; or (b) a gas heater; or (c) a heat pump heater; or (d) a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or (e) an electric heater if— (i) the heating capacity is not more than— (A) 10 W/m2 of the floor area of the conditioned space in climate zone 1; or (B) 40 W/m2 of the floor area of the conditioned space in climate zone 2; or (C) the value specified in Table J6D10 where reticulated gas is not available at the allotment boundary; or (ii) the annual energy consumption for heating is not more than 15 kWh/m2 of the floor area of the conditioned space in climate zones 1, 2, 3, 4 and 5; or (iii) the in-duct heater complies with J6D3(1)(b)(iii); or (f) any combination of the above.	Any heater installed shall be in accordance with NCC Section J6D10 (1).	Mechanical services specification.
J6D10 (2)	An electric heater may be used for heating a bathroom in a Class 2, 3, 9a or 9c building if the heating capacity is not more than 1.2 kW and the heater has a timer.	N/a	N/a
J6D10 (3)	A fixed heating or cooling appliance that moderates the temperature of an outdoor space must be configured to automatically shut down when — (a) there are no occupants in the space served; or (b) a period of one hour has elapsed since the last activation of the heater; or (c) the space served has reached the design temperature.	A fixed heating or cooling appliance that moderates the temperature of an outdoor space must be configured to automatically shut down in accordance with NCC Section J6D10 (3).	Mechanical services specification.
J6D10 (4)	A gas water heater, that is used as part of an air-conditioning system, must — (a) if rated to consume 500 MJ/hour of gas or less, achieve a minimum gross thermal efficiency of 86%; or (b) if rated to consume more than 500 MJ/hour of gas, achieve a minimum gross thermal efficiency of 90%.	N/a	N/a
J6D11 Refrigerant chillers	An air-conditioning system refrigerant chiller must comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio in Table J6D11a or Table J6D11b when determined in accordance with AHRI 551/591.	An air-conditioning system refrigerant chiller to comply with MEPS and the full load operation energy efficiency ratio and integrated part load energy efficiency ratio in Table J6D11a or Table J6D11b when determined in accordance with AHRI 551/591.	Mechanical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J6D12 Unitary air-conditioning equipment	Unitary air-conditioning equipment including packaged air-conditioners, split systems, and variable refrigerant flow systems must comply with MEPS and for a capacity greater than or equal to 65 kWr — (a) where water cooled, have a minimum energy efficiency ratio of 4.0 Wr / $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power; or (b) where air cooled, have a minimum energy efficiency ratio of 2.9 Wr / $W_{input\ power}$ for cooling when tested in accordance with AS/NZS 3823.1.2 at test condition T1, where input power includes both compressor and fan input power.	All unitary air-conditioning equipment shall be in accordance with NCC Section J6D12.	Mechanical services specification.
J6D13 Heat rejection equipment J6D13 (1)	The motor rated power of a fan in a cooling tower, closed circuit cooler or evaporative condenser must not exceed the allowances in Table J6D13.	The motor rated power of a fan in a cooling tower, closed circuit cooler or evaporative condenser shall be in accordance with the relevant values in Table J6D13.	Mechanical services specification.
J6D13 (2)	The fan in an air-cooled condenser must have a motor rated power of not more than 42 W for each kW of heat rejected from the refrigerant, when determined in accordance with AHRI 460 except for— - a refrigerant chiller in an air-conditioning system that complies with the energy efficiency ratios in J6D11; or - packaged air-conditioners, split systems, and variable refrigerant flow air-conditioning equipment that complies with the energy efficiency ratios in J6D12.	The fan in an air-cooled condenser shall have a motor rated power in accordance with NCC Section J6D13 (2).	Mechanical services specification.

2.5. Part J7 Artificial Lighting and Power

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J7D3 Artificial lighting J7D3 (1)	Sole-occupancy units in a Class 2 building or a Class 4 part of a building will have an average illumination power density not exceeding the requirements of NCC.	N/a	N/a
J7D3 (2)	In a building other than a sole-occupancy unit of a Class 2 building or Class 4 part of a building, the aggregate design illumination power load must not exceed requirements of Table J7D3a.	Average illumination power load shall be less than requirements of NCC.	Electrical services specification.
J7D4 Interior artificial lighting and power control J7D4 (1)	All artificial lighting of a room or space must be individually operated by – (a) a switch; or (b) other control device; or (c) a combination of (a) and (b).	All spaces shall have a switch or a control device to operate all artificial lighting.	Electrical services specification.
J7D4 (2)	Class 3 sole-occupancy units will be provided with an occupant activated device to cut power to lighting, air-conditioning, local exhaust fans and bathroom heater when unit is unoccupied.	N/a	N/a

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J7D4 (3)	An artificial lighting switch or other control device in (1) must: (a) if an artificial lighting switch, be located in a visible and easily accessed location – (i) in the space being switched; or (ii) in an adjacent space from where 90% of the lighting being switch is visible; and (b) for other than a single functional space such as an auditorium, theatre, swimming pool, sporting stadium or warehouse – (i) For Classes 5 and 8 (laboratory), switch serve less than 250m² (ii) For Classes 3, 6, 7, 8 (other than laboratory) or 9 building: (A) Switches serve less than 250m² for space <2000m2 (B) Switches serve less than 1000m² for space >2000m²	Artificial lighting switches or other control devices in (1) shall be in accordance with NCC Section J7D3 (3).	Electrical services specification.
J7D4 (4)	Spaces >250m² in a building other than a Class 2, 3 or 4, 95% of the light fittings must be controlled by a time switch or an occupant sensing device.	Spaces >250m² in a building other than a Class 2, 3 or 4, 95% of the light fittings to be controlled by a time switch or an occupant sensing device.	Electrical services specification.
J7D4 (5)	For Classes 5, 6 or 8 building >250m², 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 – (a) the room containing the natural lighting zone is less than 20 m²; or (b) the room's natural lighting zone contains less than 4 luminaires; or (c) at least 70% of the luminaires are in the natural lighting zone	N/a	N/a
J7D4 (6)	Artificial lighting in a fire isolated stairway/passageway/ramp must be controlled by a motion detector in accordance with Specification 40.	Artificial lighting in a fire isolated stairway/passageway/ramp shall be controlled by a motion detector in accordance with Specification 40.	Electrical services specification.
J7D4 (7)	Artificial lighting in a foyer, corridor, or other circulation spaces of more than 250W within a single zone and adjacent to windows must be controlled by a daylight sensor and dynamic lighting control device in accordance with Specification 40.	Artificial lighting of more than 250W adjacent to windows shall be controlled by a daylight sensor and dynamic lighting control device.	Electrical services specification.
J7D4 (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.	N/a	N/a
J7D5 Interior decorative and display lighting J7D5 (1)	Interior decorative and display lighting must be controlled: (a) separately from other artificial lighting; and (b) by a manual switch for each area; and (c) by a time switch if lighting exceeds 1 kW.	All decorative and display lighting shall be manually switched separately from other artificial lighting.	Electrical services specification.
J7D5 (2)	Window display lighting must be controlled separately from other display lighting.	Window display lighting shall be provided with separate control from other display lighting.	Electrical services specification.
J7D6 Exterior artificial lighting	Exterior artificial lighting attached to or directed at the façade of a building, must – (a) be controlled by a time switch or daylight sensor. (b) when total lighting load exceeds 100W – (i) use LED luminaires for 90% of the total lighting load; or (ii) be controlled by motion detector; or (iii) have a separate switch if used for decorative purposes	All exterior artificial lighting shall be controlled by a time switch or daylight sensor. If lighting load >100W, it shall be of LED luminaires, controlled by a motion detector or switched separately if used as decorative lighting.	Electrical services specification.

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J7D7 Boiling Water and chilled water storage units	Power supply to a boiling water or chilled water storage unit must be controlled by a time switch.	Boiling water and chilled water storage units shall come complete with time clock.	Electrical and Hydraulic services specification.
J7D8 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 energy performance and efficiency in Table J7D8a and Table J7D8b, respectively.	Lifts to – (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 energy performance and efficiency in Table J7D8a and Table J7D8b, respectively.	Electrical services specification.
J7D9 Escalators and moving walkways	Escalators and moving walkways must have ability to slow to between 0.2m/s and 0.05m/s when unused for more than 15 minutes	Escalators and moving walkways shall be able to slow down in accordance with NCC Section J7D9.	Electrical services specification.

2.6. Part J8 Heated Water Supply and Swimming Pool and Spas

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
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.	A heated water supply for food preparation and sanitary purposes shall be in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	Hydraulic Services Specification.
J8D3 Swimming pool heating and pumping J8D3 (1)	Heating for a swimming pool must be by – (a) a solar heater; or (b) a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or (c) a geothermal heater; or (d) a gas heater that – (i) if rated to consume 500MJ/hr or less, achieves a minimum gross thermal efficiency of 86%; or (ii) if rated to consume more than 500MJ/hr, achieves a minimum gross thermal efficiency of 90% (e) a heat pump; or (f) a combination of (a) to (e)	N/a	N/a
J8D3 (2)	Where some or all of the heating required by (1) is by a gas heater or heat pump, the swimming pool must have – (a) a cover with a minimum R-Value of 0.05; and (b) a push button and a time switch to control the operation of the heater.	N/a	N/a
J8D3 (3)	A time switch must be provided to control the operation of a circulation pump for a swimming pool.	N/a	N/a
J8D3 (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	N/a
J8D3 (5)	Pipework carrying heated or chilled water for a swimming pool must comply with the insulation requirements of J6D9.	N/a	N/a
J8D3 (6)	For the purpose of J8D3, a swimming pool does not include a spa pool.		

J8D4 Spa pool heating and pumping J8D4 (1)	Heating for a spa pool that shares a water recirculation system with a swimming pool must be by – (a) a solar heater; or (b) a heater using reclaimed heat from another process such as reject heat from a refrigeration plant; or (c) a geothermal heater; or (d) a gas heater that – (i) if rated to consume 500MJ/hr or less, achieves a minimum gross thermal efficiency of 86%; or (ii) if rated to consume more than 500MJ/hr, achieves a minimum gross thermal efficiency of 90% (e) a heat pump; or (f) a combination of (a) to (e)	N/a	N/a
J8D4 (2)	Where some or all of the heating required by (1) is by a gas heater or heat pump, the spa pool must have – (a) a cover with a minimum R-Value of 0.05; and (b) a push button and a time switch to control the operation of the heater.	N/a	N/a
J8D4 (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.	N/a	N/a
J8D4 (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	N/a
J8D4 (5)	Pipework carrying heated or chilled water for a spa pool must comply with the insulation requirements of J6D9.	N/a	N/a

2.7. Part J9 Energy Monitoring and On-Site Distributed Energy Resources

NCC Designation	Deemed-to-Satisfy Requirement	Proposed Design	Comments
J9D3 Facilities of energy monitoring J9D3 (1)	A building or sole-occupancy unit with a floor area >500m² must have energy meters to record the time-of-use consumption of gas and electricity.	A building or sole-occupancy unit with a floor area >500m² to have energy meters to record the time-of-use consumption of gas and electricity.	Electrical services specification.
J9D3 (2)	A building with a floor area >2500m² must have energy meters configured to enable individual time-of-use energy data recording, in accordance with (3), of – (a) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and (b) artificial flighting; and (c) appliance power; and (d) central hot water supply; and (e) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and (f) on-site renewable energy equipment; and (g) on-site electric vehicle charging equipment; and (h) on-site battery systems; and (i) other ancillary plant.	Building with a floor area >2500m² to have energy meters configured to enable individual time-of-use energy data recording, in accordance with (3), of – (a) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and (b) artificial flighting; and (c) appliance power; and (d) central hot water supply; and (e) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and (f) on-site renewable energy equipment; and (g) on-site electric vehicle charging equipment; and (h) on-site battery systems; and (i) other ancillary plant.	Electrical services specification.
J9D3 (3)	Energy meters required by (2) must be interlinked by a communication system that collates the time-of-use energy consumption to a single interface monitoring system where it can be stored, analyses and reviewed.	Energy meters required by (2) to be interlinked by a communication system that collates the time-of-use energy consumption to a single interface monitoring system where it can be stored, analyses and reviewed.	Electrical services specification.
J9D4 Facilities for electric vehicle charging equipment J9D4 (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 — (a) in accordance with Table J9D4 in each storey of the carpark; and (b) labelled to indicate use for electric vehicle charging equipment.	N/a	N/a

J9D4 (2)	Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must— (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 (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 (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 (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 (e) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in— (i) 100% of the car parking spaces associated with a Class 2 building; or (ii) 10% of car parking spaces associated with a Class 5 or 6 building; or (iii) 20% of car parking spaces associated with a Class 3, 7b, 8 or 9 building; and (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 (g) be labelled to indicate the use of the space required by (f) is for the future installation of metering equipment.	N/a	N/a
J9D5 Facilities for solar photovoltaic and battery systems J9D5 (1)	The main electrical switchboard of a building must— (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 — (i) a solar photovoltaic system; and (ii) a battery system; and (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.	N/a	N/a
J9D5 (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— (a) with installed solar photovoltaic panels on — (i) at least 20% of the roof area; or (ii) an equivalent generation capacity elsewhere on-site; or (b) where 100% of the roof area is shaded for more than 70% of daylight hours; or (c) with a roof area of not more than 55 m^2; or (d) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.	Roof area shall be provisioned in accordance with NCC Section J9D5 (2).	Architectural Details to be designed to suit and specification provided.

3. CONCLUSION

This report shall be used as a reference point for the relevant disciplines for compliance with the NCC 2022 Volume 1 Section J requirements. Items within this report to be captured by the Architect, building services engineer or any other consultant shall be done within their final construction documentation with reference to this report.

This document is for reference of items that have been included within the design and reference should be made to the relevant discipline specification and documents for final certification.

Assuming a wall R-value of 1.4m²K/W, the U-values and SHGC of the new windows and doors are as per the NCC 2022 Volume 1- required Glazing System U-Value of 6.0 W/m²K and a required SHGC (Solar Heat Gain Coefficient) of 0.52.