



Section J Compliance Report – J1V3 Assessment

Project Name:	Kyabram Fauna Park (ZOOS VICTORIA), 75 Lake Road, Kyabram VIC 3620
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01	17/10/2024	Prepared by: Kevin Xiao	Reviewed by: Neema Swamy
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1 EXECUTIVE SUMMARY

The following report has been prepared to demonstrate compliance of the Proposed Wildlife Hospital at Kyabram Fauna Park (ZOOS VICTORIA), 75 Lake Road, Kyabram VIC 3620 with Section J of the NCC 2022 (Volume 1). The project falls in Climate Zone 4.

Section J4 has been assessed using J1V3 verification method of assessment, while sections J5-J9 have been assessed using the Deemed-to-Satisfy method assessment.

Building/Area	NCC Class	Verification Method
Wildlife Hospital	Class 5	J1V3 Verification Method – J1 Deemed-to-Satisfy (DtS) – J5-J9

2 INTRODUCTION

Part J4 of the NCC 2022 (Volume 1) has been assessed using J1V3 verification method. This method of assessment allows the benefits of the passive thermal design attributes of the development to be used to determine the most energy efficient and aesthetically pleasing glazing to be selected.

The assessment requires a reference case building to be modelled, based on NCC 2022 Section J Deemed-to-Satisfy (DtS) provisions, which the proposed building is then compared against (with the proposed glazing and insulation) to determine the comparative difference between the energy consumption of the two models.

As per the NCC 2022, verification using a reference building:

- (a) For a Class 3, 5, 6, 7, 8 or 9 building or common area of a Class 2 building, compliance with J1P1 is verified when—
 - (i) it is determined that the annual greenhouse gas emissions of the proposed building are not more than the annual greenhouse gas emissions of a reference building when—
 - (A) the proposed building is modelled with the proposed services; and
 - (B) the proposed building is modelled with the same services as the reference building; and
 - (ii) in the proposed building, a thermal comfort level of between a Predicted Mean Vote of -1 to +1 is achieved across not less than 95% of the floor area of all occupied zones for not less than 98% of the annual hours of operation of the building; and
 - (iii) the building complies with the additional requirements in Specification 33.
- (b) The annual greenhouse gas emissions of the proposed building may be offset by—
 - (i) renewable energy generated and used on site; and
 - (ii) another process such as reclaimed energy, used on site.
- (c) The calculation method used for (a) and (b) must comply with—
 - (i) ANSI/ASHRAE Standard 140; and
 - (ii) Specification 34.

Results from the J1V3 dynamic thermal and energy modelling are detailed below. The proposed building when modelled with the DtS services:

- (a) Consumed less energy and therefore had lower annual greenhouse gas emissions than the reference building, as well as meeting thermal comfort and Specification 33 requirements;
- (b) Does not require offset from renewable or reclaimed energy; and
- (c) Was calculated in accordance with ANSI/ASHRAE Standard 140 and Specification 34

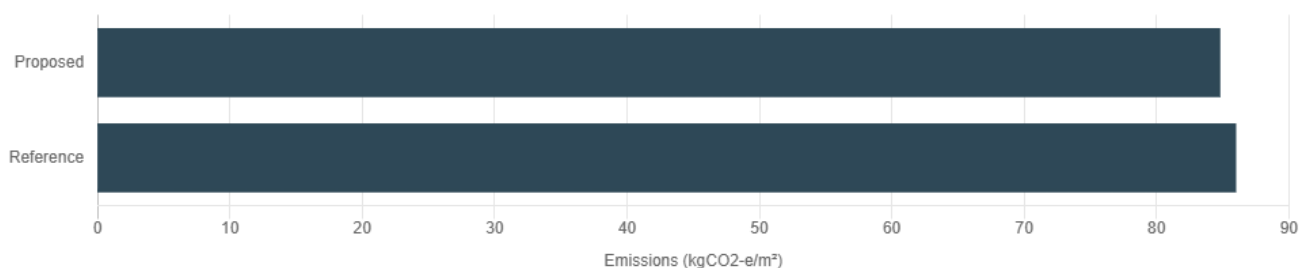
As the assessment meets all requirements of verification method J1V3, **compliance has been confirmed.**

For the purpose of this assessment, it is conservatively assumed that the HVAC equipment performs at the minimum DtS performance efficiencies.

Compliance is subject to confirmation from the contractor that all as-installed details pertaining to the thermal performance and energy efficiency of the building are within the performance requirements as detailed in this report. It is the responsibility of the contractor, architect and building surveyor to ensure the final construction incorporates a compliant solution.



Building Emissions: To meet the acceptance criteria, annual Supplied Energy emissions must be less than 85.74 kgCO₂-e/m². Based on a treated floor area of 386.43 m², the simulated building achieved 84.80 kgCO₂-e/m², meeting the acceptance criteria.



2.1 SCOPE OF THE ASSESSMENT

The scope and method of the assessment is as follows:

NCC Reference	Description / Notes
J4 Building Fabric	Compliance is displayed through J1V3 modelling. The building fabric and glazing requirements are detailed within this report.
J5 Building Sealing	The requirements within Part J5 do not affect the J1V3 thermal modelling parameters. Compliance requirements have been reported separately within this document.
J6 Air conditioning and ventilation systems	The requirements of Part J6 will be assessed against the DtS provisions and a report demonstrating compliance will be appended to this report as an appendix.
J7 Artificial lighting and power	The requirements of Part J7 will be assessed against the DtS provisions and a report demonstrating compliance will be appended to this report as an appendix.
J8 Heated Water Supply and Swimming Pool and Spa Pool Plant	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.
J9 Facilities for energy monitoring and on-site distributed energy resources	Energy metering facility will be provided for each building tenant.

2.2 SOURCES OF INFORMATION

This assessment has used the following sources of information:

- Architectural drawings issued by Space for Health Design & Fitout, dated July 2026.
- National Construction Code - NCC-BCA 2022 (Volume 1).
- Australian Building Codes Boards (ABCB) facade calculator.

2.3 LIMITATIONS

This assessment has been based on and limited to the sources and information detailed above and has only addressed minimum compliance with the regulations specified. The report does not provide any advice on achieving environmental best practice or optimising the design for energy efficiency or cost. Any alterations to building form, fabric or services will require approval by this office and potentially additional modelling in order to display J1V3 compliance.

2.4 J1V3 ASSESSMENT

2.4.1 Project Description

The applicable component of the proposed building is classified as Class 5.

2.4.2 Climate Zone

The project is located in Climate Zone 4.

2.4.3 Assessment Scope

The scope of this report is to provide a compliance assessment of the Kyabram Fauna Park (ZOOS VICTORIA), 75 Lake Road, Kyabram VIC 3620 development, with Part J4 of the NCC-BCA 2022 (Volume 1). Compliance via *J1V3 Verification using a reference building* has been assessed.

This building lies within climate zone 4, and the assessment has been carried out on this basis.

2.4.4 Simulation Software

The building has been modelled using EnergyPlus engine version 22.2 which complies with the ABCB 'Protocol for Building Energy Analysis Software for Class 3, 5, 6, 7, 8 and 9 Buildings'. It is an analysis software tested in accordance with ASHRAE Standard 140-2001 using the International Energy Agency BESTEST.

2.4.5 Building Orientation

Accurate building orientation was confirmed using online map data. This allows verification of the north point direction on the architectural drawings so that precise facade orientation information can be entered into the façade calculator and modelling inputs.

3 SECTION J COMPLIANCE REQUIREMENTS

The proposed building information below has been taken from current architectural drawings. Performance parameters noted for the proposed building below must be included within construction documentation to achieve J1V3 compliance.

3.1 SECTION J4: BUILDING FABRIC

Thermal insulation must be installed to create a thermal envelope surrounding the conditioned spaces to separate them from adjacent external or unconditioned areas. All the insulation must be installed in accordance with NCC-BCA 2022 (Volume 1) Section J clause J4D3 as follows.

3.1.1 Thermal Construction – General

- 1) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it:
 - (a) Abuts or overlaps adjoining insulation other than at supporting members such as studs, noggins, joists, furring channels and the like where the insulation must be against the member; and
 - (b) Forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
 - (c) Does not affect the safe or effective operation of a service or fitting.
- 2) Where required, reflective insulation must be installed with:
 - (a) The necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
 - (b) The reflective insulation closely fitted against any penetration, door or window opening; and
 - (c) The reflective insulation adequately supported by framing members; and
 - (d) Each adjoining sheet of roll membrane being –
 - i. Overlapped not less than 50 mm; or
 - ii. Taped together.
- 3) Where required, bulk insulation must be installed so that:
 - (a) It maintains its position and thickness, other than where it is compressed between cladding and supporting members, water pipes, electrical cabling or the like; and
 - (b) In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm.
- 4) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification 36.
- 5) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—
 - (a) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or
 - (b) determined in accordance with Specification 37 for wall-glazing construction; or
 - (c) determined in accordance with Specification 39 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces.

3.1.2 Proposed Building Fabric and Insulation

Building Element	Thermal Insulation/Construction Requirement	Minimum Total Construction R-value
External Walls (Part of the thermal envelope)	Minimum added insulation: R2.5 Refer to Appendix E – Part J4D6: Walls – Proposed Building	R1.4 Total wall system (Considering thermal bridging)
Internal Partitions	No added insulation required Refer to Appendix E – Part J4D6: Walls – Proposed Building	R0.4 Total wall system (Considering thermal bridging)
Roof/Ceiling	Minimum added insulation of R6.0 See Appendix C – Part J4D4: Roof and Ceiling Insulation for required insulation locations.	R5.0 (Maximum external surface solar absorptance of 0.45)
Floors	Concrete slab on ground: No added insulation See Appendix F – Part J4D7: Floor Insulation for required insulation locations.	R2.0

3.1.3 Proposed Glazing

The window and glazing types proposed and modelled in the J1V3 assessment are as per the facade specification with AFRC whole window system thermal performance specifications as follows:

Windows/Glazed Doors Location	Whole Window System Performance	
	Maximum U-value	SHGC
External Glazing	4.00	0.40 ± 10%
Skylight	3.50	0.35 ± 10%

If alternative glazing is to be used, please provide thermal performance information to NJM prior to finalising the assessment for construction. The proposed building must be assessed with the proposed glazing to confirm that it results in a compliant solution.

All glazing or window performance parameters refer to the AFRC whole of window performance, including the effect of the frame and the glass.

Glazing Disclaimer:

The currently assessed window and glazing specifications detailed above are performance-based nominations only. It is the architect and contractor's responsibility to ensure that the final product selections comply with these performance criteria.

The contractor must engage a façade specialist or the window supplier to provide AFRC testing data to confirm that the window performance criteria noted above are satisfied for all external glazed elements.

Our advice relating to glazing selection is performance based. The performance criteria considered are those which affect NCC-BCA Section J compliance, i.e. U-value and SHGC only. The ESD performance requirements provided should be presented to a manufacturer along with installation details and details of other performance requirements (e.g. structural, acoustic) to determine a suitable glazing specification.

3.1.4 Proposed Floors in Contact with Ground

The thermal performance requirements for all floors (or floor area where works are being done) that form part of the building envelope are detailed below. Based on J4D7(2), in climate zone 4, a slab-on-ground that does not have in-slab heating or cooling system is considered to achieve a Total R-Value of R2.0.

Building Element	Construction	NCC Requirement (Total R-value)	Minimum Added Insulation (R-value)
Ground Floor	Concrete slab on ground	R2.0	NIL

3.2 SECTION J5: BUILDING SEALING

Building sealing requirements do not affect the J1V3 modelling inputs. Part J5 requirements relevant to the currently proposed design are outlined below and must be demonstrated by the contractor.

Windows and Doors

All edges of external windows should be fitted with a seal to restrict air infiltration.

External swing doors (except fire and smoke doors) must be fitted with a draft protection device on the bottom edge and seals to restrict air infiltration on the other three edges. For all other edges of openable doors this can be a foam or rubber compression strip, fibrous seal or the like.

Entrance doors that do not lead into an airlock must be self-closing.

Exhaust Fans

All miscellaneous exhaust fans must be fitted with a self-closing damper or the like. For this development compliance should be covered by the mechanical engineer's design and signoff.

Construction of Roofs, Walls and Floors

Roofs, ceilings, walls, floors, and any opening such as a window frame, door frame roof light frame or the like located on the external fabric must be constructed to minimise air leakage. Therefore, they must be either:

- Enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or
- Sealed by caulking, skirting, architraves, cornices or the like.

3.3 SECTION J6: AIR-CONDITIONING AND VENTILATION SYSTEMS

NJM will provide a design compliant with the Section J6 requirements. A report to the building surveyor detailing our calculations will be appended to this report as an appendix.

3.4 SECTION J7: ARTIFICIAL LIGHTING AND POWER

NJM will provide a design compliant with the Section J7 requirements. A report to the building surveyor detailing our calculations will be appended to this report as an appendix.

3.5 SECTION J8: HEATED WATER SUPPLY AND SWIMMING POOL AND SPA POOL PLANT

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.

3.6 SECTION J9: FACILITIES FOR ENERGY MONITORING

3.6.1 J9D3: Facilities for energy monitoring

- (a) A building or sole-occupancy unit with a floor area of more than 500m² 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 2,500m² 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 travelators where there is more than one serving the building; and
 - (vi) on-site renewable energy equipment; and
 - (vii) on site battery systems; and
 - (viii) other ancillary plant.
- (c) Energy meters required by (b) 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 where the total floor area of the common areas is less than 500 sqm; or individual sole-occupancy units with a floor area of less than 2500 sqm.

3.6.2 J9D4: Facilities for electric vehicle charging equipment.

- (a) Subject to (b), 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—
 - (i) in accordance with Table J9D4 in each storey of the carpark; and
 - (ii) labelled to indicate use for electric vehicle charging equipment.
- (b) Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must—
 - (i) 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
 - (ii) 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
 - (iii) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in—
 - A) 10% of car parking spaces associated with a Class 5 or 6 building; or
 - (iv) 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
 - (v) be labelled to indicate the use of the space required by (f) is for the future installation of metering equipment.

J9D4 does not apply to a stand-alone Class 7a building.

3.6.3 J9D5: Facilities for solar photovoltaic and battery systems

- (a) The main electrical switchboard of a building must—
 - (i) contain at least two empty three-phase circuit breaker slots and four DIN rail spaces labelled to indicate the use of each space for—
 - A) a solar photovoltaic system*; and
 - B) a battery system**; and
 - (ii) be sized to accommodate the installation of solar photovoltaic panels producing their maximum electrical output on at least 20% of the building roof area* **.
- (b) At least 20% of the roof area of a building must be left clear for the installation of solar photovoltaic panels, except for buildings—
 - (i) with installed solar photovoltaic panels on-
 - A) at least 20% of the roof area; or
 - B) an equivalent generation capacity elsewhere on-site; or
 - (ii) where 100% of the roof area is shaded for more than 70% of daylight hours; or
 - (iii) with a roof area of not more than 55 m²; or
 - (iv) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.

The requirements marked with ‘*’ do not apply to a building with solar photovoltaic panels installed on at least 20% of the roof area.

The requirements marked with ‘**’ do not apply to a building with battery systems installed.

4 J1V3 MODELLING

The below table details the modelling input parameters used as the basis of this assessment for both the reference and proposed buildings.

Item	NCC 2022 Reference Building	Proposed Building
Climate Data	AUS_VIC_Kyabram.Inst.Sust.Ag.958330_TMYx.2007-2021	As per reference building.
Operating Conditions	As per NCC 2022 Specification 34: Heating 24°C in conditioned areas	As per reference building.
	As per NCC 2022 Specification 34: Cooling 24°C in conditioned areas	As per reference building.
Plant Operating Profile	Operation schedule as per NCC 2022 Specification 35.	As per reference building.
Internal Gains - People	Internal gains from people as per NCC 2022 Table S35C2n: - Sensible heat gain: 75 W/person - Latent heat gain: 55 W/person Maximum occupancy for each space as per NCC 2022 Table D2D18: - Office: 10 m²/person - Patient Care Areas: 10 m²/person - Ancillary spaces (corridors, storage, toilets, stairwells, lift, etc.): no occupancy Occupancy schedule as per NCC 2022 Specification 35.	As per reference building.
Internal Gains - Lighting	Maximum illumination power density for lighting for each space as per NCC 2022 Table J7D3a: - Office: 4.5 W/m² - Patient Care Areas: 2.5 W/m² - Storage/service areas: 1.5 W/m² - Toilets: 3 W/m² Operation schedule as per NCC 2022 Specification 35.	As per reference building.
Internal Gains - Equipment	Internal sensible heat gain rate for each space as per NCC 2022 S35C2l: - Clinic: 11 W/m² - Ancillary spaces (corridors, storage, toilets, stairwells, lift, etc.): 0 W/m² Operation schedule as per NCC 2022 Specification 35.	As per reference building.
Infiltration Values	As per NCC 2022 Specification 34: 0.35 air changes per hour (ac/h) in conditioned zones when plant is in operation;	As per reference building.

Item	NCC 2022 Reference Building	Proposed Building
	0.7 air changes per hour (ac/h) for entire building when plant is not in operation.	
Natural Ventilation	Natural ventilation is not modelled for non-residential building but outside air assigned as per requirements of AS1668.2-2012.	As per reference building.
External Walls	Refer to Appendix D – Part J4D6: Walls and Glazing – Reference Building for details.	See 3.1.2 Proposed Building Fabric and Insulation
Internal Walls	Refer to Appendix D – Part J4D6: Walls and Glazing – Reference Building for details.	See 3.1.2 Proposed Building Fabric and Insulation
Roof/Ceiling	As per DtS requirements. Total construction R-Value of 4.07 and solar absorptance of 0.45. As per town planning 10% improvement to roof insulation.	See 3.1.2 Proposed Building Fabric and Insulation
Floor	As per DtS requirements. Concrete slab on ground– Total construction R-Value of 2.2. As per town planning 10% improvement to floor insulation.	See 3.1.2 Proposed Building Fabric and Insulation
External Shading	Shading was incorporated in the reference model and subsequently selected the glazing values for reference calculator	As per reference building.
Glazing	Whole of window performance. Refer to Appendix D – Part J4D6: Walls and Glazing – Reference Building for details.	See 3.1.3 Proposed glazing

5 MODEL IMAGES

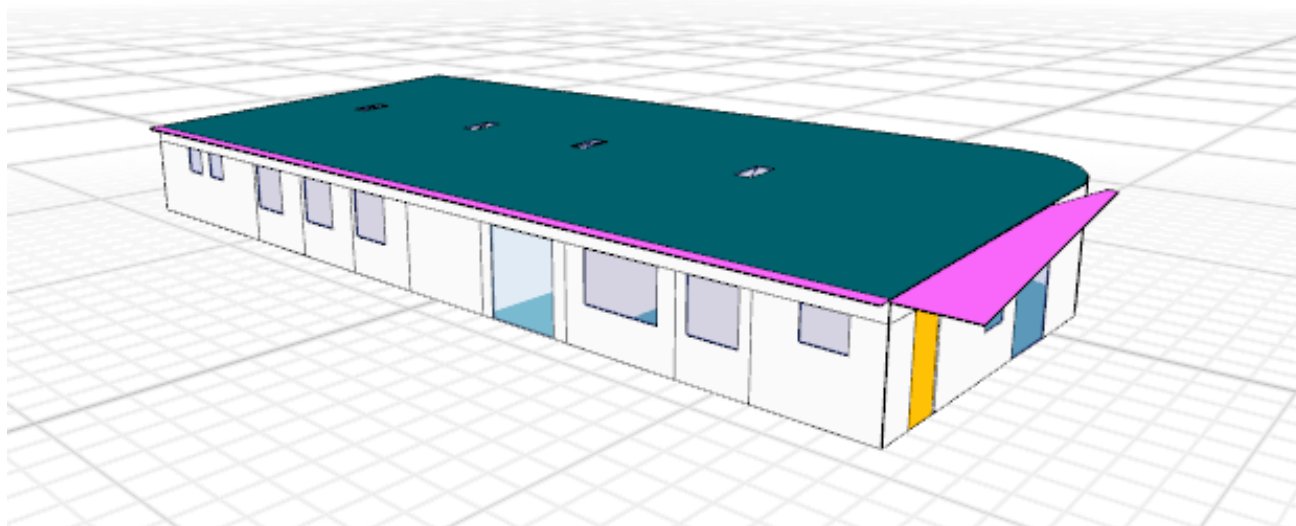


Figure 1: South-east view.

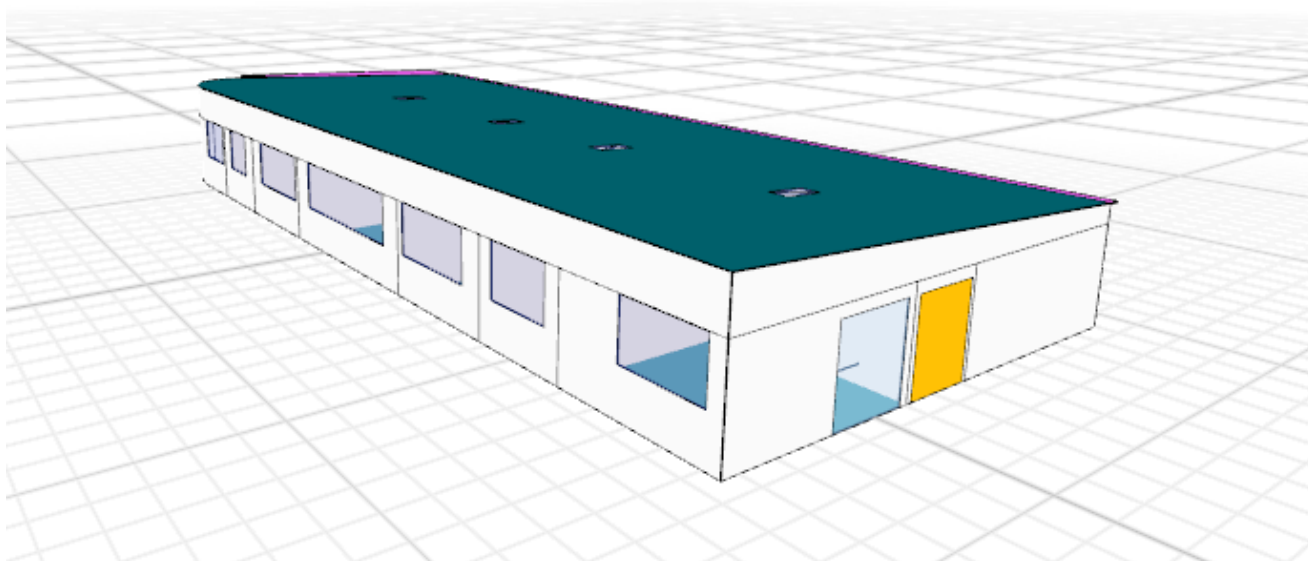


Figure 2: North-west view.

6 CONCLUSIONS AND RECOMMENDATIONS

Results from the dynamic thermal and energy modelling are shown below for both energy consumption and thermal comfort. Note that it is conservatively assumed that the lighting and HVAC equipment performs at minimum DtS performance efficiencies.

	Heating	Cooling	Lighting	Equipment	On-site Renewable Energy Generation	Total	GHG (kgCO ₂)/m ²
Annual Energy Use (MWh)							
Reference building with DtS services	3.8	3.4	7.4	18.4	-	33.0	85.74
Proposed building with DtS services	3.6	3.2	7.4	18.4	-	32.6	84.80
					Result	PASS	

Proposed Building Thermal Comfort - Predicted Mean Vote - % Hours in Range		
Applicable Floor Area		>-1.00 to ≤1.00
Weighted Total	Conditioned Areas	> 98%

The proposed building when modelled with the DtS services consumed less energy annually and therefore had lower annual greenhouse gas emissions than the reference building without the requirement of offset through renewable energy generation or reclaimed energy.

In addition, the proposed building achieved a thermal comfort level of between a predicted mean vote of -1 and +1 across 95% of the floor area for not less than 98% of the annual hours of operation of the building while also complying with Specification 33 requirements.

Level	Zone	Area m ²	Assessed Hrs ☉	Pass Hrs ☉	Ratio ☉	Pass
1	4. 19 NECROPSY	24.54	2,340	2,301	98.33	✓
1	3. 02 WAITING AREA	36.93	2,340	2,335	99.79	✓
1	12. RECEPTION	15.38	2,340	2,335	99.79	✓
1	8. 05 OFFICE	19.61	2,340	2,309	98.68	✓
1	10. 06 STAFF	17.59	2,340	2,317	99.02	✓
1	6. 20 CLINICAL 01	20.89	2,340	2,335	99.79	✓
1	9. 07 PHARMACY	17.65	2,340	2,338	99.91	✓
1	7. 21 CLINICAL 02	20.62	2,340	2,335	99.79	✓
1	5. 16/17 STERI & LAB	22.69	2,340	2,332	99.66	✓
1	1. CORRIDOR	52.57	2,340	2,331	99.62	✓
Pass						✓

The modelling was complete in accordance with ANSI/ASHRAE Standard 140 and Specification 34.

As such, **compliance with J1V3 has been confirmed.**

7 APPENDICES

7.1 APPENDIX A – PART J4D2: BUILDING ENVELOPE

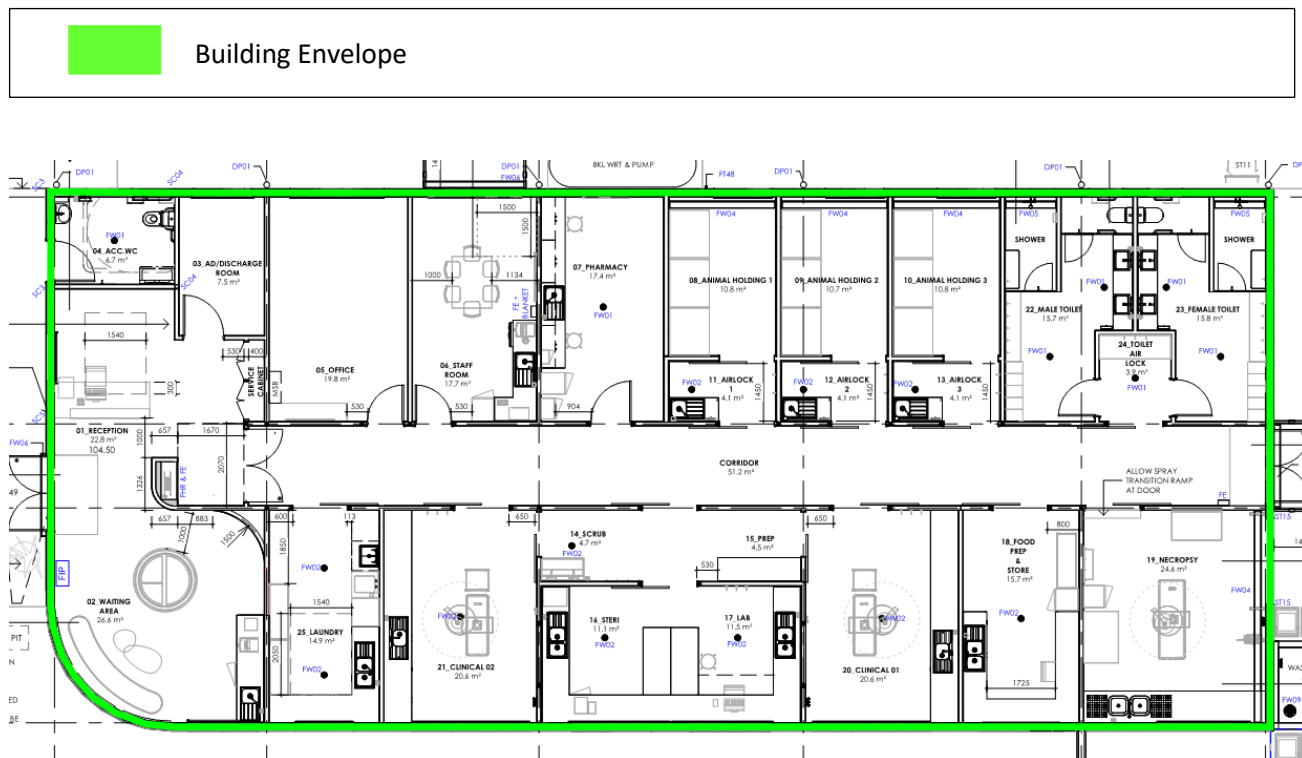


Figure 3: Building Envelope

7.2 APPENDIX B – PART J4D3: THERMAL CONSTRUCTION REQUIREMENTS

Part J1.2 Thermal Construction Requirements		Compliance	Comments
(a)	Insulation must comply with AS/NZS 4859.1 and be installed appropriately as per this NCC clause.		Architectural specification to comply.
(i)	The insulation must abut or overlap adjoining insulation; or butt against supporting members.		Architectural specification to comply.
(ii)	The insulation must form a continuous barrier with ceiling, walls, bulkheads, floors, or the like.		Architectural drawings to comply.
i(iii)	The insulation must not affect the safe or effective operation of a service fitting.		
(b)	Reflective insulation must be installed with –		
(i)	The necessary airspace to achieve the required R-value; and		Architectural specification to comply.
(ii)	The reflective insulation closely fitted against any penetration, door or window opening; and		Architectural specification to comply.
(iii)	The reflective insulation adequately supported by framing members; and		Architectural specification to comply.
(iv)	Each adjoining sheet of roll membrane being –		
(A)	Overlapped not less than 50mm; or		Architectural specification to comply.
(B)	Taped together		Architectural specification to comply.
(c)	Bulk insulation must be installed so that		
(i)	It maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling, or the like; and		Architectural specification to comply.
(ii)	In a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall not less than 50mm.		Architectural specification to comply.

7.3 APPENDIX C – PART J4D4: ROOF AND CEILING INSULATION



Roof insulation required – Minimum added insulation R6.0

Roof Colour - maximum solar absorptance of 0.45.

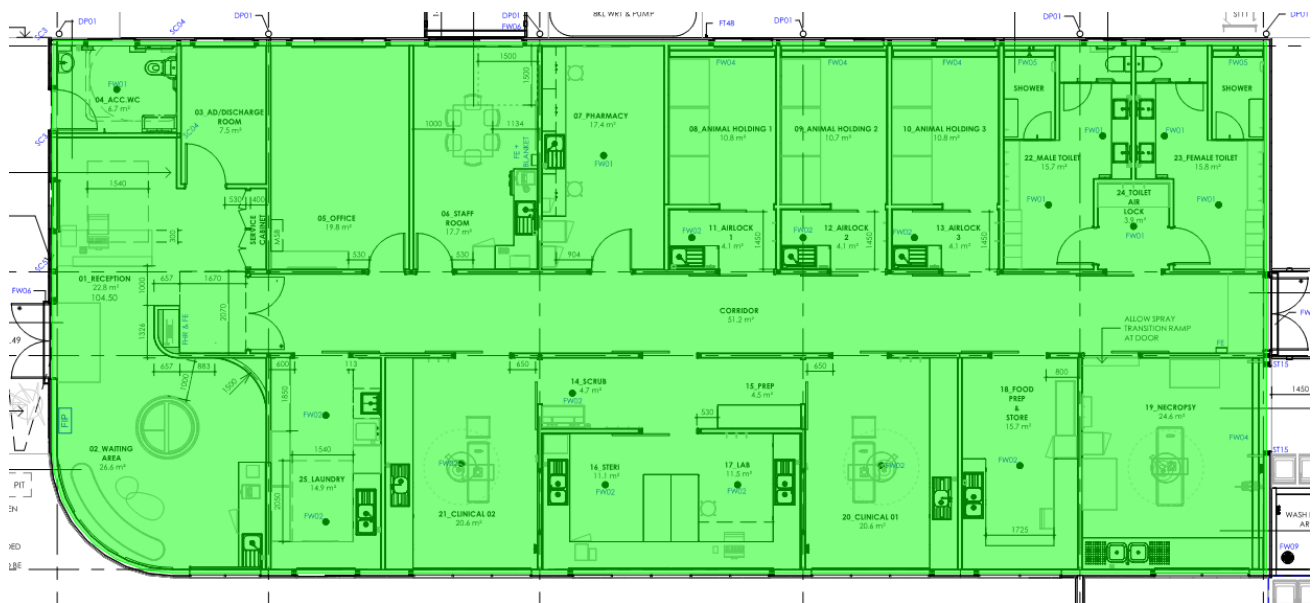


Figure 4: Roof Insulation Requirements

7.4 APPENDIX D – PART J4D6: WALLS AND GLAZING – REFERENCE BUILDING

Under specification 34 of the NCC 2022, modelling parameters for the reference building must comply with DtS provisions for walls and glazing. Part J4D6 of the NCC outlines the requirements for wall-glazing construction. Elements of wall-glazing construction that are excluded from the façade construction assessed are display glazing¹, opaque non-glazed openings such as doors, vents, penetrations and shutters.

Simulation inputs for the reference building have been calculated using the ABCB façade calculator, taking into account building geometry, orientation, and the thermal envelope as defined in the 2022 NCC.

The façade calculator provides two methods to achieve compliance:

- Method 1, where each aspect of wall-glazing construction is required to individually meet the applicable Total System U-Value and SHGC for the respective aspect of the building, or
- Method 2, where a single Total System U-Value and AC Value for the whole development must be met.

Wall and glazing inputs for the reference building achieve compliance under method 2.

Additionally, wall components of a wall-glazing construction must achieve a minimum Total R-Value in accordance with J4D6 (4) and Table J4D6a, as follows:

- Where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or
- Where the wall is 80% or more of the area of the wall-glazing construction in climate zone 4, for a class 5 building, R1.4

The wall values listed below were used for modelling the reference building.

Reference Walls:

Reference	Title	Class	R-Value m ² .°K/W	Solar Abs.	Area m ²
Exposed to Unconditioned	Concept	5	1.40	0.6	12.24
External	Concept	5	1.40	0.6	165.96

Reference Glazing:

Reference	Title	Class	U-value W/m ² .°K	SHGC	Area m ²
External	Concept	5	5.74	0.44	49.73

7.5 APPENDIX E – PART J4D6: WALLS – PROPOSED BUILDING

For the proposed building, internal and external walls forming the thermal envelope have been modelled as per section **3.1.2 Building Fabric and Insulation** of this report.

Calculation of total wall system R-values under the 2022 NCC (Volume 1) considers the effect of thermal bridging, which can decrease the effectiveness of installed insulation. The total construction R-value of each wall system forming part of the building envelope has been calculated using the ABCB 2022 Façade Calculator, as detailed in the table below.

Material	Thickness	R-Value
External walls (example)		
Outdoor Air Film	-	R0.03
Various cladding	-	-
R2.5 Glass wool insulation	90mm	R1.20
Plaster board	10mm	R0.06
Indoor Air Film	-	R0.12
Total System		R1.41



Walls insulation Mark-ups.

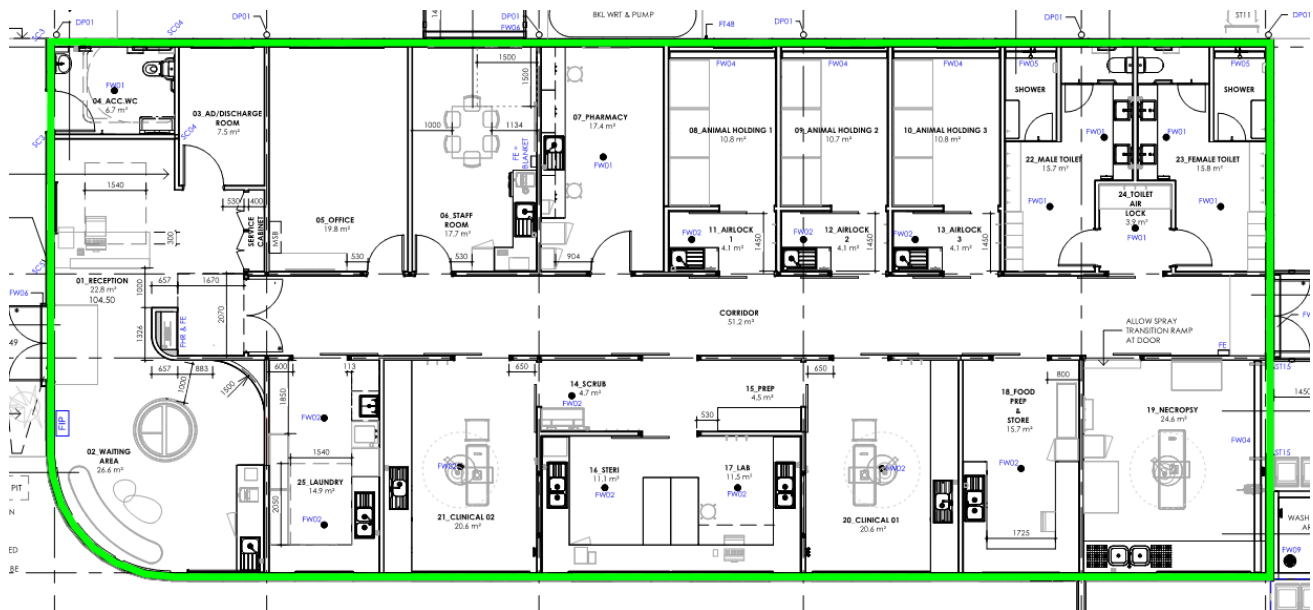


Figure 5: Walls Insulation Requirements

7.6 APPENDIX F – PART J4D7: FLOOR INSULATION

No Floor insulation required

7.7 APPENDIX G – PART J5: COMPLIANCE CHECKLIST

Part J5D3 Chimneys and flues		Compliance	Comments
	The chimney or flue of an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.	N/A	
Part J5D4 Roof lights		Compliance	Comments
(a)	A roof light must be sealed, or capable of being sealed, when serving –		
(i)	a conditioned space; or	N/A	
(ii)	a habitable room in climate zones 4, 5, 6, 7 or 8.	N/A	
(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	N/A	
(ii)	a weatherproof seal; or	N/A	
(iii)	a shutter system readily operated either manually, mechanically or electronically by the occupant.	N/A	
Part J5D5 Windows and doors		Compliance	Comments
(a)	A door, openable window or the like must be sealed		
(i)	When forming part of the envelope; or		Architectural drawings to comply.
(ii)	In climate zones 4, 5, 6, 7 or 8.		Architectural drawings to comply.
(a)	A seal to restrict air infiltration must be fitted to each edge of a door, openable window or the like forming part of –		
(i)	the envelope of a conditioned space; or		Architectural drawings to comply.
(ii)	the external fabric of a habitable room or public area in climate zones 4, 5, 6, 7 or 8.		Architectural drawings to comply.
(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 required by (a) –		
(i)	for the bottom edge of an external swing door, must be a draft protection device; and		Architectural drawings to comply.
(ii)	for the other edges of an external 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.		Architectural drawings to comply.
(d)	An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like, other than –		
(i)	where the conditioned space has a floor area of not more than 50 m ² ; or		
(ii)	where a café, restaurant, open front shop or the like has –		
(A)	a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space;		
(B)	at all other entrances to the café, restaurant, open front shop or the like, self-closing doors.		
(e)	A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like		
Part J5D6 Exhaust fans		Compliance	Comments
	An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving –		
(a)	a conditioned space; or		
(b)	a habitable room in climate zones 4, 5, 6, 7 or 8		
Part J5D7 Construction of roofs, walls and floors		Compliance	Comments
(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 by caulking, skirting, architraves, cornices or the like.		
(A)	Close fitting architrave, skirting or cornice; or		
(B)	Expanding foam, rubber compressible strip, caulking or the like.		
(c)	The requirement of (a) do not apply to openings, grilles or the like required for smoke hazard management		
Part J5D8 Evaporative coolers		Compliance	Comments
	An evaporative cooler must be fitted with a self-closing damper or the like when serving –		
(a)	a heated space; or		
(b)	in climate zones 4, 5, 6, 7 or 8.		

7.8 APPENDIX H – PART J6: AIR-CONDITIONING AND VENTILATION SYSTEMS

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7.9 APPENDIX I – PART J7: ARTIFICIAL LIGHTING AND POWER

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