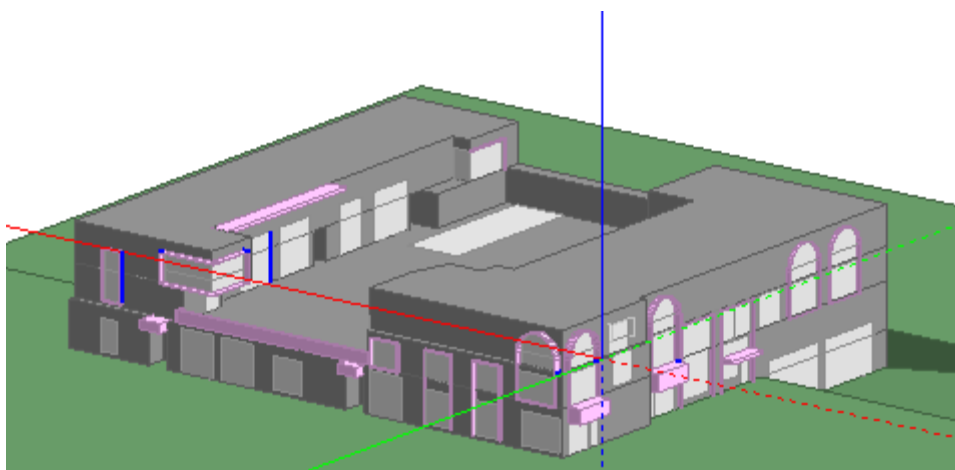




BUILDING & ENERGY
— CONSULTANTS AUSTRALIA —

BUILDING CODE OF AUSTRALIA
Section “J” ASSESSMENT REPORT
for DA only



Description	Proposed industrial Development
Address	35-39 Carter Rd Brookvale NSW
Client	Auto Body Smash Repair
Report No	BC24/142
Date issued	28 October 2024
Revision	A



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1.0 Introduction

B.E.C.A (Building Energy Consultants Australia) Pty, Ltd, have been commissioned to produce a Building Code of Australia (2022) clause-by-clause Section J assessment report (Excluding Part J6 & J7) of the subject development, in order to assess the level of development compliance.

This report only deals with the relevant provisions of section J and does not deal with the following:

- Consideration of the remainder parts of the Building Code of Australia (BCA) 2022, other than Section J (excluding Part J6 And Part J7).
- Consideration of Council's local planning policies.
- Other documentation forming part of the Development application.
- Impact of FRL's by use of insulation

The proposal is to be located at 35-39 Carter St Brookvale NSW. This report has been prepared, subject to the referenced documents, in accordance with the provisions of the Building Code of Australia (**BCA 2022**).

The following document references have been relied upon as prepared by :
Figgis & Jefferson TAPA Pty Ltd

Job No : 3857

Sheets: DA 010 Iss 01 WIP, DA 011 Iss 01 WIP, DA 012 Iss 01 WIP, DA 110 Iss 01 WIP, DA 111 Iss 01 WIP, DA 112 Iss 01 WIP, DA 113 Iss 01 WIP, DA 114 Iss 01 WIP, DA 201 Iss 01 WIP, DA 202 Iss 01 WIP, DA 300 Iss 01 WIP, DA 301 Iss 01 WIP.

1.2 Climate Zone

National Construction Code Series – Volume 1- BCA 2022 **Climate Zone 5**

1.2 Modeled Building Elements – refer to recommendations

Ground Floor & Suspended floor of conditioned space	Concrete
External walls of conditioned space	Concrete Insulated / lightweight insulated
Internal walls of conditioned space	Concrete
Roof/Ceiling	Metal – Insulated



2.0 Recommendations

1. **J1V3 Solar Panel System to be installed. Photo Voltaic Panels require to produce a minimum of 4,500 kWh / Year of the proposed Building allowing for Panel tilt, orientation, onsite shading and all of the System Parameters including System Efficiency.**

Part J4 – Building fabric :

Ensure Total systems R-Value specification is provided from whoever supplies the insulation

2. Builder to ensure Insulation manufacturer supplies Total system R-Value of product and installation procedures. Certification required from installer when applying for an occupation certificate.
3. Insulation must be installed to comply with the requirements set out in Section J4D3 of this report. An installation certificate must be provided by the installer to state compliance with **Section J4D3** of this report & **AS/NZ 4859.1**.
4. **Roof/Ceiling of the conditioned spaces** must be insulated as Per Section J4D3 and J4D4 of this report. Ensure compliant total systems R-Values are provided and installation procedures from manufacturer supplying insulation
5. External Walls and Spandrel areas of the conditioned spaces must be insulated as per Section J4D3 and J4D6 of this report. Ensure compliant total systems R-Values are provided and installation procedures from manufacturer supplying insulation

CONTACT BUILDING & ENERGY CONSULTANTS AUSTRALIA PRIOR TO PURCHASING WINDOWS TO ENSURE WERS RATING COMPLIANCE

6. **Glazing and supporting frames** for this building must achieve a **U-Value and SHGC value as per Section J4D6. Glazing Certificate** to be provided at completion of job from the glazing supplier stating compliance with the nominated figures.

Refer to “**Attachment G**” for outline of conditioned space.

***Note 1:** The principal designer, building contractor and insulation installers are to ensure all insulation materials, reflective foils, thermal breaks and installation componentry utilised as “linings or attachments” to achieve compliance with the thermal comfort criteria of this report, take into careful consideration the Fire Hazard Property requirements nominated under BCA Clause and Specification C1.10 and comply with AS1530.2 and AS1530.3 accordingly.

***Note 2:** The principal designer, building contractor and insulation installers are to ensure all insulation, thermal breaks and installation componentry “associated with the external walls, internal common walls, bounding construction walls, fire resisting walls and services, lifts and stair shaft walls in a Building of Type B Construction or Type A Construction” utilised to achieve compliance with the thermal comfort criteria of this report, take into careful consideration the non-combustible criteria requirements nominated under BCA Clause C1.9 and AS1530.1 accordingly.

***Note 3:** BECA dissolves itself from any responsibility associated with the selection of insulation, sarking type materials, thermal breaks and other componentry which fail to comply with the fire safety requirements provisions under Part C of the BCA.

***Note 4:** Condensation issues have not been dealt with in this report.



Part J5 – Building Sealing :

The recommendations below do not apply if to a ventilation opening that is necessary for the safe operation of a gas appliance & to a building where mechanical ventilation required by Part F4 provides sufficient pressurization to prevent infiltration.

7. 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
 8. An entrance door to the conditioned areas must have an air-lock, self closing door, rapid roller door, revolving door or the like .
 9. Miscellaneous exhaust fans located in the conditioned space must have self closing dampers installed.
 10. 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 when forming part of the envelope. these requirements do not apply to openings, grilles and the like required for smoke hazard management)
-

Part J6 – Air Conditioning & Ventilation System :

11. Air Conditioning & Ventilation systems to be certified by Mechanical Engineer / Consultant

Part J7 – Artificial Lighting & Power :

12. Artificial Lighting & Power to be certified by Electrical Engineer / Consultant
-

Part J8 – Hot Water Supply:

Certification to be provided from a licensed plumber. Documentation to be provided on the Construction certificate plans.

13. A heated water supply system for food preparation and sanity purposes must be designed and installed in accordance with Part B2 of NCC Volume Three – Plumbing Code of Australia

Part J9 – Energy Monitoring & On-site distributed energy resources

14. Electric Vehicle Charging equipment needs to be installed as per section J9D4
15. Solar is not required on this development. See requirements per Section J9D5 for Solar and Batteries.
16. At least 20% of the roof area needs to be left clear for installation of Solar for future use.



3.0 BCA Compliance Assessment Section J – Energy Efficiency

The following provides an assessment of the subject design against the relevant 'Deemed To Satisfy (DTS)' provisions of the BCA.

JV 3 (b) Onsite Renewable Energy Source

J1V3 (b)	The annual Energy Consumption of a Building may be reduced by the amount of energy obtained by (i) An onsite renewable energy Source:	
	J1V3 Solar Panel System to be installed. Photo Voltaic Panels require to produce a minimum of 4,500 kWh / Year of the proposed Building allowing for Panel tilt, orientation, onsite shading and all of the System Parameters including System Efficiency.	Readily achievable

Part J4 Building Fabric

Section	Description	Requirements
J4D2 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to building elements forming the envelope of the conditioned areas. Refer to "Attachment B" for outline of conditioned space	Required to comply
J4D3 Thermal construction general	<p>(1) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—</p> <p>(a) abuts or overlaps adjoining insulation other than at supporting members such as studs, noggings, joists, furring channels and the like where the insulation must be against the member; and</p> <p>(b) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and</p> <p>(c) does not affect the safe or effective operation of a service or fitting.</p> <p>(2) Where required, reflective insulation must be installed with—</p> <p>(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</p> <p>(b) the reflective insulation closely fitted against any penetration, door or window opening; and</p> <p>(c) the reflective insulation adequately supported by framing members; and</p> <p>(d) each adjoining sheet of roll membrane being—</p> <p>(i) overlapped not less than 50 mm; or</p> <p>(ii) taped together.</p> <p>(3) Where required, bulk insulation must be installed so that—</p>	Readily achievable. Must be installed and certified to this section



	<p>(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</p> <p>(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.</p> <p>(4) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties listed in Specification 36.</p> <p>(5) The required Total R-Value and Total System U-Value, including allowance for thermal bridging, must be—</p> <p>(a) calculated in accordance with AS/NZS 4859.2 for a roof or floor; or</p> <p>(b) determined in accordance with Specification 37 for wall-glazing construction; or</p> <p>(c) determined in accordance with Specification 39 or Section 3.5 of CIBSE Guide A for soil or sub-floor spaces</p>	
J4D4 Roof and ceiling construction	<ul style="list-style-type: none"> • The roof / ceiling that is part of the envelope (exposed to the external environment) of the conditioned areas of the all conditioned areas must achieve a minimum Total R-Value of R3.7 Downwards. Using roof rack system or similar with a minimum of R4.0 Bulk Insulation • Solar absorptance of the upper surface of a roof must not be more than 0.45 • Ensure the insulation is not compressed to the point where the R-Value is reduced. <p>All Roof calculations need to allow for thermal Bridging in the calculation process.</p> <ul style="list-style-type: none"> • Where, for operational or safety reasons associated with exhaust fans, flues or recessed downlights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing the R-Value of the insulation in the remainder of the ceiling accordingly <p>Refer to “Attachment B” for outline of conditioned space</p>	Readily achievable
J4D5 Roof lights	Not Applicable	Not Applicable



J4D6 Walls & Glazing	<p>The total System U Value of wall-glazing must be calculated in accordance with Specification 37</p> <p>DTS Values</p> <table><tr><th></th><th colspan="3">DTS Values</th><th colspan="3">Proposed Building Values</th></tr><tr><th></th><th>Wall</th><th>U Value</th><th>SHGC</th><th>Wall</th><th>U Value</th><th>SHGC</th></tr><tr><td>South</td><td>R1.40</td><td>3.50</td><td>0.81</td><td>R1.40</td><td>4.20</td><td>0.46</td></tr><tr><td>North</td><td>R1.40</td><td>3.50</td><td>0.65</td><td>R1.40</td><td>4.20</td><td>0.46</td></tr><tr><td>West</td><td>R1.40</td><td>3.00</td><td>0.60</td><td>R1.40</td><td>4.20</td><td>0.46</td></tr><tr><td>East</td><td>R1.40</td><td>-</td><td>-</td><td>R1.40</td><td>-</td><td>-</td></tr><tr><td>Internal</td><td>R1.40</td><td>5.8</td><td>0.81</td><td>R1.40</td><td>6.00</td><td>0.75</td></tr></table> <p>See Façade Calculator report “Attachment E”</p> <ul style="list-style-type: none">External Concrete wall insulation of the perimeter of the conditioned space must achieve a minimum Total R-Value of R1.4.External Lightweight wall insulation of the perimeter of the conditioned space must achieve a minimum Total R-Value of R1.4. This includes Spandrel areas.Internal concrete wall insulation must achieve a minimum Total R-Value of R1.4.Insulation has been removed from the Internal concrete wall in the J1V3 model.Comfort Plus Grey Glass with Aluminium Frame has been used instead of Various Glass types in the J1V3 model Comfort Plus Grey Glass Total U Value 4.20 SHGC 0.46Clear Glass with Aluminium Frame has been used to Internal Windows instead of Various Glass types in the J1V3 model Clear Glass Total U Value 6.00 SHGC 0.75Insulation to extend to the underside of the floors and roof/ceiling.Shading as per drawings.Insulated walls to have a minimum of R2.5 Bulk insulation and a minimum air gap of 20mm between stud and external concrete wall or cladding. <p>All Wall calculations need to allow for thermal Bridging in the calculation process.</p> <p>Refer to “Attachment B” for conditioned space</p>		DTS Values			Proposed Building Values				Wall	U Value	SHGC	Wall	U Value	SHGC	South	R1.40	3.50	0.81	R1.40	4.20	0.46	North	R1.40	3.50	0.65	R1.40	4.20	0.46	West	R1.40	3.00	0.60	R1.40	4.20	0.46	East	R1.40	-	-	R1.40	-	-	Internal	R1.40	5.8	0.81	R1.40	6.00	0.75	<p>Readily achievable</p> <p>DTS values revised in J1V3 model</p> <p>Alternative Solution to be provided – Refer to Section 4.0 of this report</p>
	DTS Values			Proposed Building Values																																															
	Wall	U Value	SHGC	Wall	U Value	SHGC																																													
South	R1.40	3.50	0.81	R1.40	4.20	0.46																																													
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West	R1.40	3.00	0.60	R1.40	4.20	0.46																																													
East	R1.40	-	-	R1.40	-	-																																													
Internal	R1.40	5.8	0.81	R1.40	6.00	0.75																																													



J4D7 Floors

- ~~Insulation to the suspended floor of the Conditioned area above non Conditioned areas must achieve a minimum Total R-Value of R2.0 Downwards.~~
- Insulation to suspended floors have been removed from the J1V 3 Model.**

A floor must achieve the Total R-Value specified in Table J4D7.

A slab-on-ground that does not have an in-slab heating or cooling system is **considered to achieve a Total R-Value of R2.0,**

Table J4D7: Floors – Minimum Total R-Value

Location	Climate zone 1—upwards heat flow	Climate zones 2 and 3 —upwards and downwards heat flow	Climate zones 4, 5, 6 and 7 —downwards heat flow	Climate zone 8 —downwards heat flow
A floor without an in-slab heating or cooling system	2.0	2.0	2.0	3.5
A floor with an in-slab heating or cooling system	3.25	3.25	3.25	4.75

DTS values revised in J1V3 model

Alternative Solution to be provided – Refer to Section 4.0 of this report



Part J5 Building Sealing

Section	Description	Requirements
J5D2 Application of Part	The Deemed-to-Satisfy Provisions of this Part apply to elements forming the envelope of a Class 2 to 9 building, other than— (a) a building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or (b) a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or (c) a building or space where the mechanical ventilation required by Part F6 provides sufficient pressurisation to prevent infiltration	Required to comply subject to compliance with application
J5D3 Chimneys and flues	Not applicable	Not Applicable
J5D4 Roof lights	Not Applicable	Not Applicable
J5D5 windows and doors	(1) A door, openable window or the like must be sealed— (a) when forming part of the envelope; or (b) in climate zones 4, 5, 6, 7 or 8. (2) The requirements of (1) do not apply to— (a) a window complying with AS 2047; or (b) a fire door or smoke door; or (c) 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— (a) for the bottom edge of a door, must be a draft protection device; and (b) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like. (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— (a) where the conditioned space has a floor area of not more than 50 m ² ; or (b) where a café, restaurant, open front shop or the like has— (i) a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and (ii) at all other entrances to the café, restaurant, open front shop or the like, self-closing doors. (5) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.	Readily achievable
J5D6 Exhaust fans	An exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space or habitable room.	Readily achievable



J5D7 Construction of ceilings, walls and floors	<p>(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)—</p> <p>(a) when forming part of the envelope; or</p> <p>(b) in climate zones 4, 5, 6, 7 or 8.</p> <p>(2) Construction required by (1) must be—</p> <p>(a) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or</p> <p>(b) sealed at junctions and penetrations with—</p> <p>(i) close fitting architrave, skirting or cornice; or</p> <p>(ii) expanding foam, rubber compressible strip, caulking or the like.</p> <p>(3) The requirements of (1) do not apply to openings, grilles or the like required for smoke hazard management.</p>	Readily achievable
J5D8 Evaporative Coolers	Not applicable	Not applicable

Part J6.0 Air-conditioning & Ventilation

Part J 6 to be certified by Mechanical Engineer / Consultant

Part J7 Artificial Lighting & Power

Section	Description	Requirements
Part J 7 to be certified by Electrical Engineer / Consultant		

Part J8 Heated Water Supply And Swimming Pool And Spa Pool Plant

Section	Description	Requirements
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	Readily achievable. Must be installed and certified to this section
J8D3 Swimming pool heating and pumping	Not Applicable	Not Applicable
J8D4 Spa pool heating and pumping	Not Applicable	Not Applicable



Part J9 Energy Monitoring and on-site distributed energy resources

Section	Description	Requirements
J9D2 Application of Part	The <i>Deemed-to-Satisfy Provisions</i> of this Part do not apply within a sole occupancy unit of a Class 2 building or a class 4 part of a building.	Required to comply
J9D3 Facilities for energy monitoring	<p>A building with a floor area of more than 2 500 m² must have energy meters configured to enable individual time-of-use energy data recording, in accordance with (3), of—</p> <ul style="list-style-type: none"> (a) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and (b) artificial lighting; 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. <p>(3) Energy meters required above must be interlinked by a communication system that collates the time-of-use energy data to a single interface monitoring system where it can be stored, analysed and reviewed.</p> <p>(4) The provisions of (2) do not apply to energy meters serving—</p> <ul style="list-style-type: none"> (a) a Class 2 building where the total floor area of the common areas is less than 500 m²; or (b) individual sole-occupancy units with a floor area of less than 2 500 m². 	Readily achievable
J9D4 Facilities for Electric Vehicle Charging Equipment	<p>(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—</p> <ul style="list-style-type: none"> (a) in accordance with Table J9D4 in each storey of the carpark; and (b) labelled to indicate use for electric vehicle charging equipment. <p>(2) Electrical distribution boards dedicated to serving electric vehicle charging in a carpark must—</p> <ul style="list-style-type: none"> (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 (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 (e) be sized to support the future installation of a 7 kW (32 A) type 2 electric vehicle charger in— <ul style="list-style-type: none"> (ii) 10% of car parking spaces associated with a Class 5 or 6 building; (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 	Readily achievable



	<p>future installation of metering equipment.</p> <p>Table J9D4: Electric vehicle distribution board requirement for each storey of a carpark</p> <table><tr><th>Carpark spaces per storey for electric vehicles</th><th>Electrical distribution boards for electric vehicle charging per storey</th></tr><tr><td>0 - 9</td><td>0</td></tr><tr><td>10 - 24</td><td>1</td></tr><tr><td>25 - 48</td><td>2</td></tr><tr><td>49 - 72</td><td>3</td></tr><tr><td>73 - 96</td><td>4</td></tr><tr><td>97 - 120</td><td>5</td></tr><tr><td>121 - 144</td><td>6</td></tr><tr><td>145 - 168</td><td>7</td></tr></table> <p>Table Notes</p> <p>Where there are more than 168 <i>carpark</i> spaces per <i>storey</i>, one additional distribution board must be provided for each additional 24 spaces or part thereof.</p>	Carpark spaces per storey for electric vehicles	Electrical distribution boards for electric vehicle charging per storey	0 - 9	0	10 - 24	1	25 - 48	2	49 - 72	3	73 - 96	4	97 - 120	5	121 - 144	6	145 - 168	7	
Carpark spaces per storey for electric vehicles	Electrical distribution boards for electric vehicle charging per storey																			
0 - 9	0																			
10 - 24	1																			
25 - 48	2																			
49 - 72	3																			
73 - 96	4																			
97 - 120	5																			
121 - 144	6																			
145 - 168	7																			
J9D5 Facilities for Solar Photovoltaics & Battery Systems	<p>(1) The main electrical switchboard of a building must—</p> <p>(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—</p> <p>(i) a solar photovoltaic system; and</p> <p>(ii) a battery system; and</p> <p>(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.</p> <p>(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—</p> <p>(a) with installed solar photovoltaic panels on—</p> <p>(i) at least 20% of the roof area; or</p> <p>(ii) an equivalent generation capacity elsewhere on-site; or</p> <p>(b) where 100% of the roof area is shaded for more than 70% of daylight hours; or</p> <p>(c) with a roof area of not more than 55 m2; or</p> <p>(d) where more than 50% of the roof area is used as a terrace, carpark, roof garden, roof light or the like.</p>	Readily achievable																		



4.0 Alternative Solution Assessment

Summary: An alternative solution has been developed to address the DTS non-compliances identified in Section 2.0 above.

BCA DTS Requirement	J4D6 & J4D7
Non-Compliance with BCA DTS Provision	<ul style="list-style-type: none"> J4D6 – Internal concrete Wall insulation of the Perimeter of the Conditioned areas have been removed in the J1V3 Model. J4D6 – Comfort Plus Grey glazing is to be used in lieu of various types of External glazing in the J1V3 Model. J4D6 – Clear glazing is to be used in lieu of various types of Internal glazing in the J1V3 Model. J4D7 – Insulation has been removed from the Suspended concrete floors of the conditioned areas. In the J1V3 Model.
Relevant Performance Requirements	Pursuant to BCA Clause A2G2(3), all relevant performance requirements from within the same section and any other section must be identified and considered. The following performance requirements are identified as being the only relevant performance requirements JP 1 Energy Use
Assessment Methodology	BCA Clause A2G2(1)(a) complies with the Performance Requirements <ul style="list-style-type: none"> BCA Clause A2G2(2)(b)(i) verification methods in the NCC 2022
Assessment & Analysis	<p>Assessment Method – BCA Volume 1, Part A2G2(1)(a)</p> <p>This Building has been assessed using the J1V3 Verification method using a “reference building” which is a NCC Alternative Solution to the Deemed to Satisfy (DTS) provisions.</p> <p>Simulations were conducted with EnergyPlus software which complies with the ABCB Protocol for Energy Analysis Software. This is in accordance with the requirements of the Verification Method J1V3. Parameters for the energy simulation were taken from Specification JV – Annual Energy Consumption Criteria.</p> <p>Refer to “Attachment H” for a Simulation inputs “Attachment E” for Façade Calculator Report “Attachment F” for PMV Check</p>



Compliance Summary

JP1

This Development has been assessed using energy modeling under Verification method J1V3. This method uses the Deemed to Satisfy (DTS) requirements to create a **“Reference Building”** and set a target for annual energy consumption .

The calculated energy consumption for reference building is **139477.63** kWh.

Compliance is verified when it is determined that the annual energy consumption of the **“Proposed Building”** with its services is not more than the annual energy consumption of the **“Reference Building”**

The **“Proposed Building ”** specification was assessed to achieve an annual energy consumption for the building envelope of **143482.49** kWh.

J1V 3 (b)

The annual Energy consumption of the proposed building in (a) may be reduced by the amount of energy obtained from –

- (i) An on-site renewable energy Source**

Photo Voltaic Panels require to produce a minimum of 4,500 kWh / Year allowing for Panel tilt, orientation, onsite shading and all of the System Parameters including System Efficiency.

The Deemed to Satisfy services are to be used for the proposed building. No changes to DTS Services.

With a Minimum of 4,500 kWh / Year for, the energy consumption of the Proposed Building is less than the Reference Building so compliance with J1V3 and JP1 is achieved.



4.1 Notification + Certificates Required for completion certificate

NOTE: If **Building & Energy Consultants** are engaged for **Inspection & Completion Certificate**.

NOTE: the following states when B.E.C.A needs to carry out an inspection, what will be inspected and what certificates need to be collected.

INSPECTION 1: To be carried out prior to lining the walls/ceilings.

What will be inspected:

- Insulation to determine compliance with Part J4 of this report.

INSPECTION 2: To be carried when the building is complete.

What will be inspected:

- Glazing in accordance with Part J4 of this report
- Building sealing in accordance with Part J5 of this report
- Hot water supply in accordance with Part J8 of this report.
- **Facilities for Energy Monitoring** with Part J9 of this report.

Certificates Required:

- Glazing certificate in accordance with Part J4D6 of this report.
- Certificate from the plumber stating compliance with Section J8
- Certificate from Solar Photovoltaic installer stating compliance with this report.



5.0 Conclusion

This assessment was based on drawings (as stated on page 3) of this report) for the Development application.

The proposed design was assessed against the DTS provisions of Section J of the BCA (refer to Section 2.0 of this report).

The assessment revealed that while the proposed design is generally capable of satisfying the DTS provisions of the BCA (subject compliance with recommendations in Section 4.0), that Clause J4D6 & J4D7 are proposed to be addressed by alternative solution.

An alternative solution to address the relevant Performance Requirement JP1 has been developed using the verification methods in the BCA (namely J1V3). Refer to Section 3.0 of this report.

In summary, subject to the implementation of the recommendations of this report (as contained in Section 4.0, the Performance Requirements of Section J of the Building Code of Australia 2022, will be met.

Prepared by

Thomas Ruck

Grad.Cert.Des.Sc.(Build Serv)
DMN/20/1999

Approved by

Paul Kouklidis

Dip. Health & Building Surveying
Grad.Dip.Build.Serv

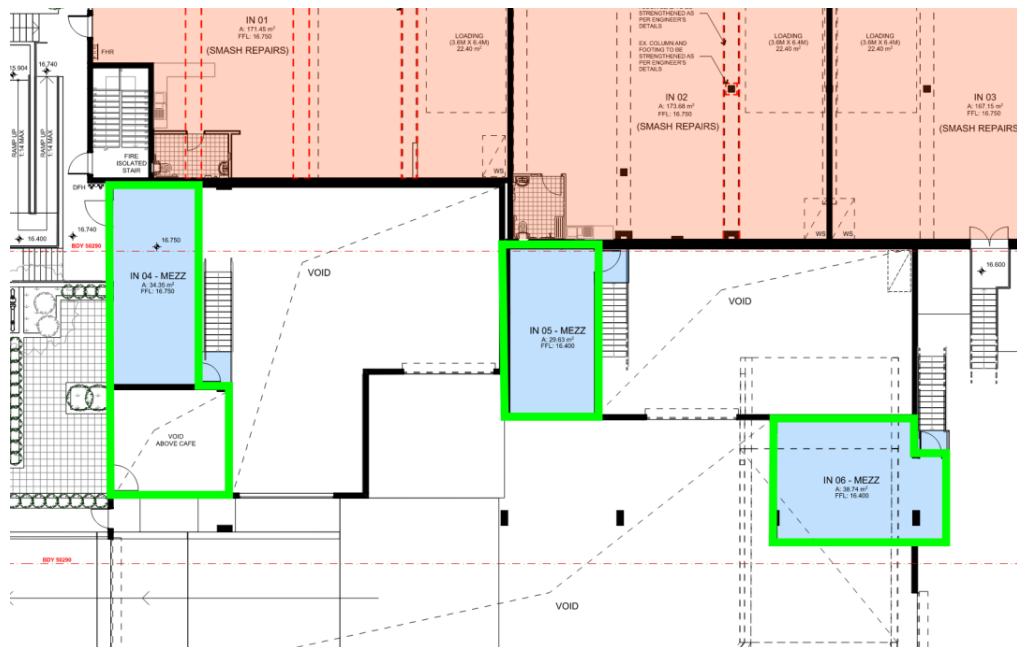
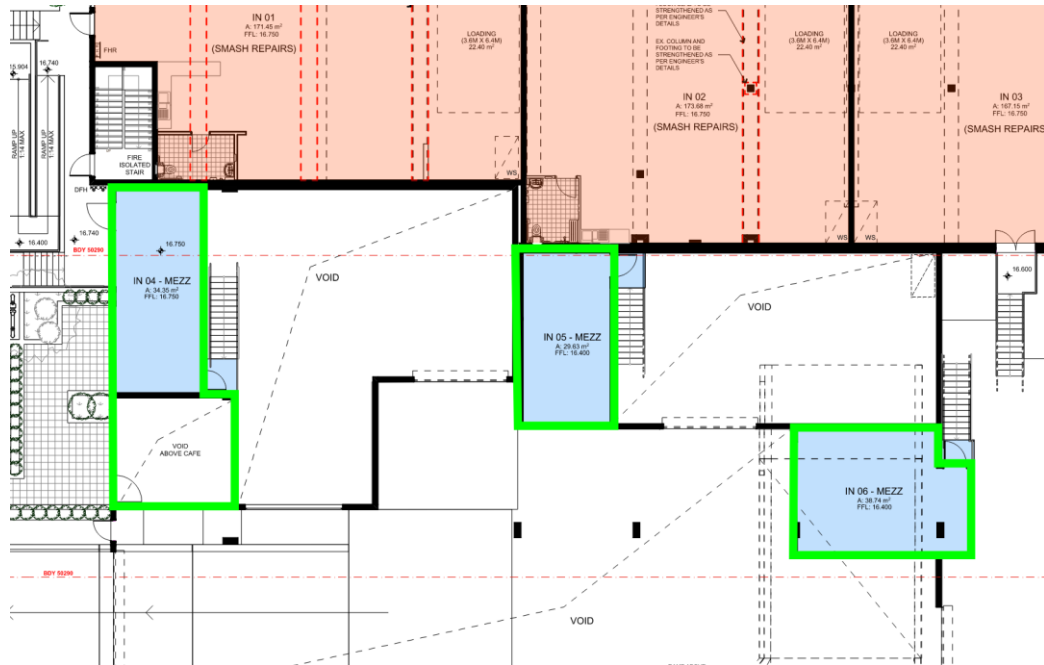
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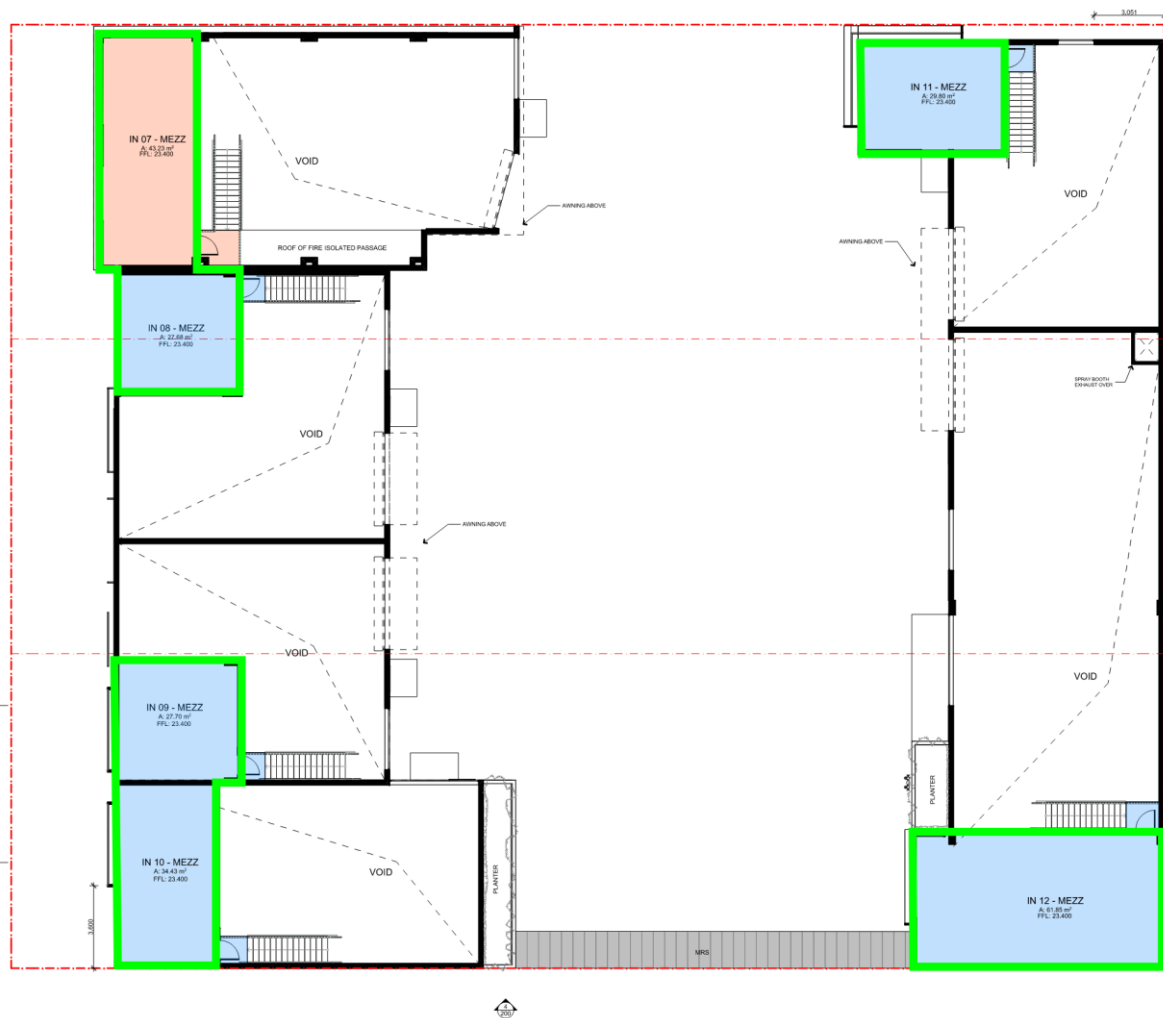
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Attachments

Attachment "B" Conditioned Space







Attachment “C” Simulation Inputs

Weather file	Sydney Airport
External Shading	As per Drawings Supplied
Conditioned space temperature range	21° CDB to 24° CDB for 98% of plant operation times As per Table 2b, Specification JV
Occupancy and Operation Profiles	
Heat Gain per occupant	130 Watts / person (plus hot meals, 30 W/person)
Internal gains from appliances	As per table 2h, Specification JV
Ventilation	Modeled as mechanical ventilation in accordance with Part F4
Infiltration rate	1.5 Air changes /hour to conditioned areas of building
Domestic Hot Water	Omitted from the calculations of both the proposed building and reference building as per J1V3 (e)

	Reference Building	Proposed Building
Roof Total R Value	R3.7	R3.7
Roof Surface Solar absorptance	0.45	0.45
External Wall Total R Value – Concrete	R1.40	R1.40
External Wall Total R Value – Lightweight	R1.40	R1.40
Internal Wall Total R Value – Concrete	R1.40	N/A
(Suspended Floor) Total R Value	R2.0	N/A
External Wall Surface Solar absorptance	0.60	0.60
Lighting Load	DTS Part J6	DTS Part J6
Air - Conditioning	DTS Part J5	DTS Part J5



Attachment “D” Simulation Outputs / Results

	Total Energy [kWh]
Reference Building	139477.63
Proposed Building	143482.49
Savings in energy	-4004.86

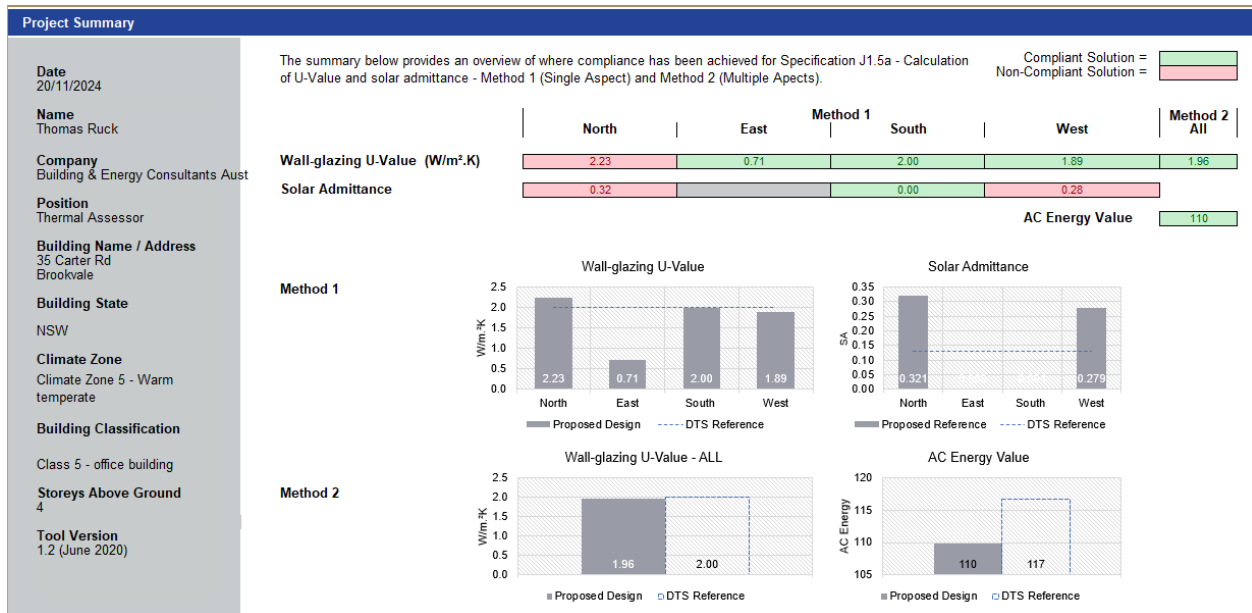
PV Panel System required to generate a minimum of 4,500 kWh / Year

Savings in energy	495.14
Savings in GHG	456.32

The energy loads stated in the above table are generated using design conditions and assumptions specified by Verification Method J1V3 (BCA Section J, 2022), and will not reflect the actual operation of the building. This is in order to compare only the performance of the building fabric and services against the minimum DTS requirements of Section J. As such data listed should not be taken as predictive of realistic energy consumption.



Attachment "E" Facade Calculator





Attachment “F” PMV Check

Temperature Range Check and Thermal Comfort Report

Section J Temperature Range Check. Target temperature range: 21 - 24 degrees (occupied zones). 18 - 25 degrees (transitory occupancy (TO) zones).

All zones pass temperature check - Building : PASS

Block	Zone	Floor Area (m ²)	Fraction Total Floor Area	Building Class	Operation Hours	Operation Hours T below target	Operation Hours T in target range	Operation Hours T above target	Fraction Operation Hours T in target range	Zone temperature meets Section J target (T in target range \geq 98 % Operation Hours)
1 Basement	Cafe	26.6	0.07	Class 6	1460	0	1460	0	1.000	PASS
2 Ground	U5 Office	31.9	0.09	Class 5	2610	0	2610	0	1.000	PASS
2 Ground	U6 Office	39.0	0.11	Class 5	2610	0	2610	0	1.000	PASS
2 Ground	U4 Office	34.8	0.09	Class 5	2610	0	2610	0	1.000	PASS
4 First Floor Mezz U11 & U12	U11 Office	28.9	0.08	Class 5	2610	0	2610	0	1.000	PASS
4 First Floor Mezz U11 & U12	U12 Office	64.7	0.17	Class 5	2610	0	2610	0	1.000	PASS
5 First Floor Mezz U7 - 10	U10 Office	37.8	0.10	Class 5	2610	0	2610	0	1.000	PASS
5 First Floor Mezz U7 - 10	U9 Office	29.8	0.08	Class 5	2610	0	2610	0	1.000	PASS
5 First Floor Mezz U7 - 10	U8 Office	29.6	0.08	Class 5	2610	0	2610	0	1.000	PASS
5 First Floor Mezz U7 - 10	U7 Office	47.9	0.13	Class 5	2610	0	2610	0	1.000	PASS



Section J PMV Thermal Comfort Check. Target PMV range: -1.0 to +1.0

More than 95% (100.0%) of floor area passes PMV check - Building : PASS

Block	Zone	Floor Area (m²)	Fraction Total Floor Area	Building Class	Operation Hours	Operation Hours PMV below -1	Operation Hours PMV between -1 and 1	Operation Hours PMV above 1	Fraction Operation Hours PMV between -1 and 1	Zone PMV meets Section J target (greater than 98 % Operation Hours between -1 and 1)
1 Basement	Cafe	26.6	0.07	Class 6	1460	0	1460	0	1.000	PASS
2 Ground	U5 Office	31.9	0.09	Class 5	2610	0	2610	0	1.000	PASS
2 Ground	U6 Office	39.0	0.11	Class 5	2610	0	2610	0	1.000	PASS
2 Ground	U4 Office	34.8	0.09	Class 5	2610	0	2610	0	1.000	PASS
4 First Floor Mezz U11 & U12	U11 Office	28.9	0.08	Class 5	2610	0	2589	21	0.992	PASS
4 First Floor Mezz U11 & U12	U12 Office	64.7	0.17	Class 5	2610	0	2605	5	0.998	PASS
5 First Floor Mezz U7 - 10	U10 Office	37.8	0.10	Class 5	2610	0	2607	3	0.999	PASS
5 First Floor Mezz U7 - 10	U9 Office	29.8	0.08	Class 5	2610	0	2600	10	0.996	PASS
5 First Floor Mezz U7 - 10	U8 Office	29.6	0.08	Class 5	2610	0	2605	5	0.998	PASS
5 First Floor Mezz U7 - 10	U7 Office	47.9	0.13	Class 5	2610	0	2592	18	0.993	PASS

Attachment “G” Disclaimer

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