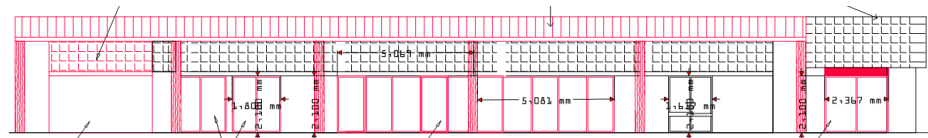




Dural Group
Consulting

SECTION-J (ENERGY EFFICIENCY) REPORT

682 Castlereagh Road, Agnes Banks
Community center development



PREPARED FOR

Corona Projects

PREPARED BY

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REVISION STATUS

Rev No.	Description of Revision	Date	Author/Approved
P1	Preliminary	25/05/2020	<div style="background-color: black; width: 100px; height: 15px; margin-bottom: 5px;"></div> Mahbub Hassan, BSc(Eng),MEng(ME) MIEAust,CpEng,NER

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1 EXECUTIVE SUMMARY

The following report presents a review of the Deemed-to-Satisfy requirements of Section J of the NCC-2019, as applicable to the proposed Alteration & Addition and change of use of the community center on 682 Castlereagh Road, Agnes Banks, NSW 2165. The development falls within Climate Zone 6. The findings of the assessment are summarized below.

Note that, In general the compliance requirement will be applicable to those part of the development which is affected by the proposed alteration and addition. However whole building can be upgraded based on the cost benefit analysis.

SECTION J – PART J1 BUILDING FABRIC:

The following table summarizes the building fabric assessment.

Report Table Ref.	Construction Reference / Description	Required Total R-Value	Proposed Total R-Value (m ² K/W)	Recommended Additions	Compliance Achievable
<i>Roofing/ceiling Construction</i>					
Type-01	Metal Roof	3.2	3.39	Sharking underside of the tile roof and 100 mm bulk insulation (R2.0) to the ceiling	Yes
<i>Floor Construction</i>					
Type-01	Concrete slab on Ground	2.0	2.1	R0.8 rigid foam or equivalent	Yes
<i>External wall & Glazing</i>					
Report Table Ref.	Wall component of glass-wall construction		Proposed Wall Total R-Value (m ² K/W)	Recommended Additions	Compliance Achievable
Type-01	Brick veneer		2.61	R2.0(90mm) Wall bats or equivalent insulation into the wall cavity	Yes
Type-02	Fibro Cavity Panel		2.49	R2.0(90mm) Wall bats or equivalent insulation into the wall cavity	Yes

Table 1.1 – Building Fabric Performance Summary

It has been noted that all constructions including installed insulation must meet the general thermal construction requirements of Section J that are outlined in Section 3 of this report.

Example of Section J compliant external glazing system mentioned below for each orientation.

	Width	Height	Glass Area		Glazing system U val	Glazing system SHGC
West						
D1	1.8	2.1	3.78	Sliding Door	4.6	0.45
D2	1.8	2.1	3.78	Sliding Door	4.6	0.46
D3	5.1	2.1	10.71	Fixed	2.5	0.45
W1	5.1	2.1	10.71	Sliding Window	4.6	0.45
W2	1.6	2.1	3.36	Sliding Window	4.6	0.45
D4	2.4	2.1	5.04	Sliding Window	4.6	0.45
South						
W3	1.0	1.0	1	Sliding Window	5.6	0.75
W4	1.0	0.65	0.65	Sliding Window	5.6	0.75

Table 1.2 – Total glazing System value of glass-wall construction

Note that any glazing system can be used, as long the system value meets the specified requirements.

SECTION J – PART J3 - J8

Reviews of the Section J provisions that are applicable to the development for Section J Part J3 - J8 covering the areas of building sealing, air conditioning and ventilation systems, artificial lighting and power, hot water supply, access for maintenance are presented in Section 3 of this report.

2 INTRODUCTION

Dural group consulting has been commissioned to assess the proposed Alteration & Addition and change of use in Agnes Banks for the NCC/BCA 2019 Section J energy efficiency compliance against the Deemed-To-Satisfy provisions. The proposed development assessed in this report comprises of a single-story Community Center.

PURPOSE

The purpose of the report is to conduct a compliance review of the proposed building design, compared with the relevant Deemed-to-Satisfy (DTS) clauses of Section J, Part J1 and outlines the applicable requirements to the development in the DTS provisions of Part J3 - J8.

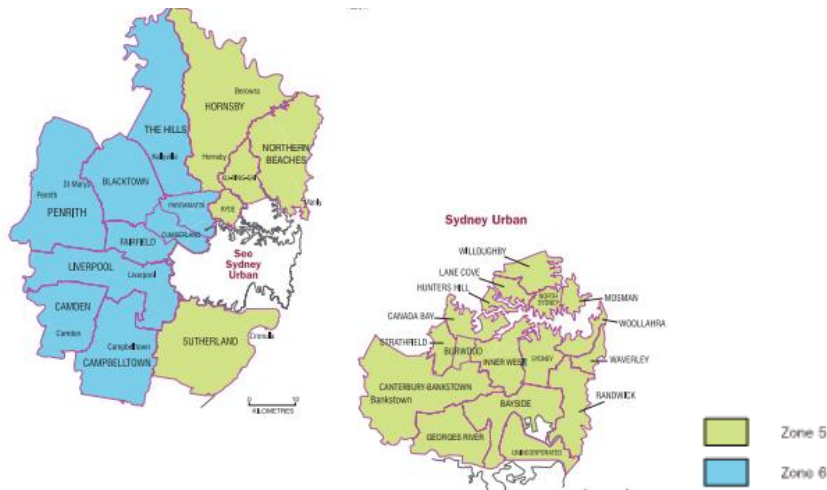
DOCUMENTATION

The following list of documentation was used in preparation of this report:

- Design by RJV -latest drawing issued - 20/11/2018
- BCA 2019 – Volume One
- ASHRAE Fundamentals Handbook
- Australian Standard

CLIMATE ZONE

The proposed development falls within Climate Zone 6 according to Part A1 of the BCA.



BUILDING CLASSIFICATION

The Building has been classified as follows, according to Part A3 of the BCA.:

- Community Center – Class 9b

IMPORTANT TERMINOLOGY

Wall-glazing construction: for the purposes of Section J in Volume One, means the combination of wall and glazing components comprising the envelope of a building

Total R-Value ($m^2.K/W$): for the purposes of Volume One, means the sum of the R-Values of the individual component layers in a composite element including any building material, insulating material, airspace, thermal bridging and associated surface resistances.

Total System U-Value ($W/m^2.K$): for the purposes of Volume One, means the thermal transmittance of the composite element allowing for the effect of any airspaces, thermal bridging and associated surface resistances.

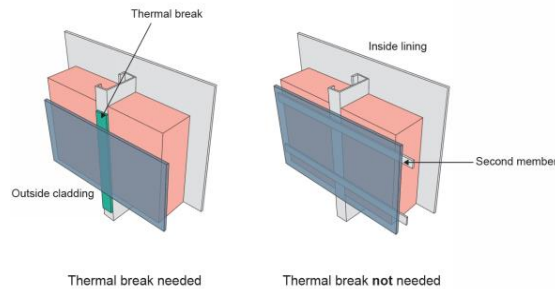
Solar admittance: means the fraction of incident irradiance on a wall-glazing construction that adds heat to a building's space.

3 SECTION J DTS PROVISIONS ASSESSMENT

Following part describes the Energy efficiency provisions for building construction, heating and cooling, power and lighting and hot water supply(J1-J8).

Part J1 – Building Fabric

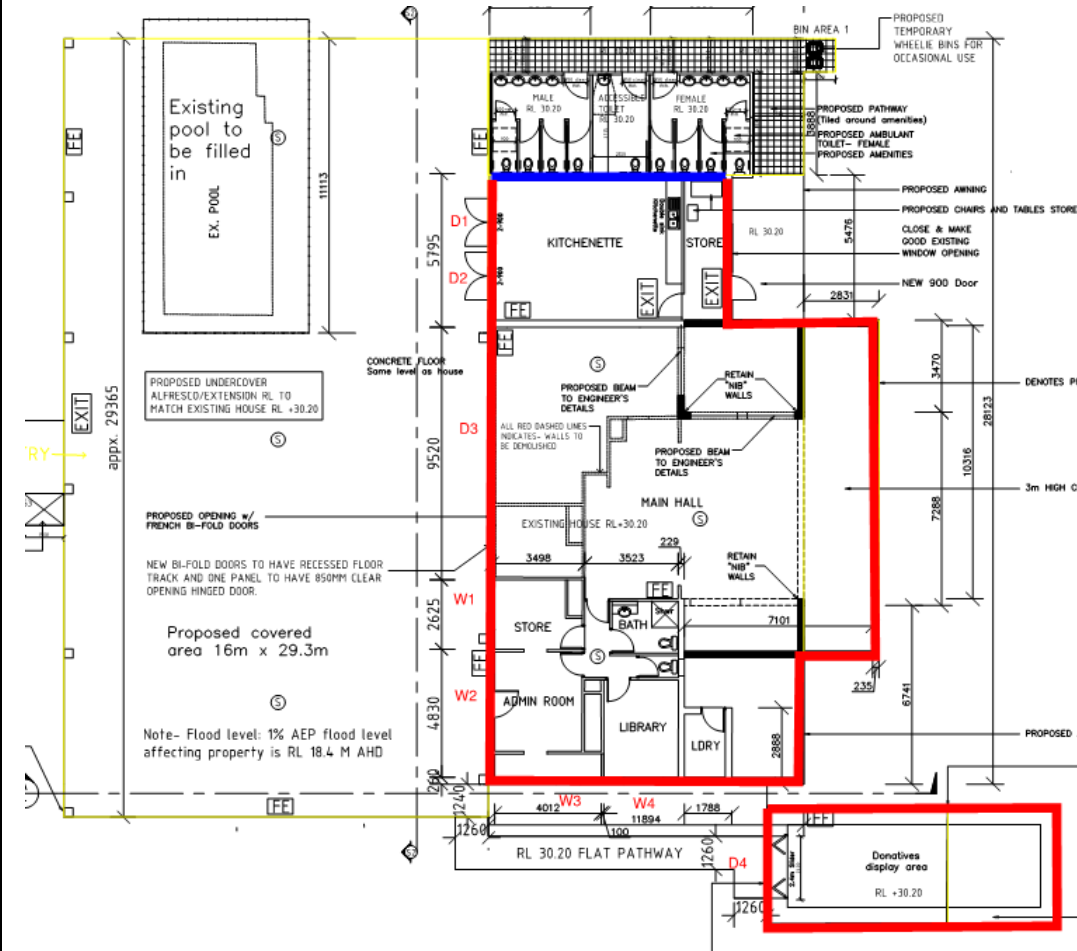
Item	Clause	Requirements	Comments	Remarks
J1.2	Thermal construction – general	<p>All insulation must comply with AS/NZS 4859.1</p> <p>a) Insulation to be installed so that it</p> <ol style="list-style-type: none"> i) Insulation must comply with AS/NZS 4859.1 and be installed is to be fitted tightly with the supporting member. <p>b) Reflective insulation must be installed with</p> <ol style="list-style-type: none"> i) necessary airspace to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding. ii) the reflective insulation closely fitted against any penetration, door or window opening; iii) the reflective insulation adequately supported by framing members; and iv) each adjoining sheet of roll membrane either overlapped not less than 50mm; or taped together. <p>c) Bulk insulation must be installed so that –</p> <ol style="list-style-type: none"> i) it maintains its position and thickness, ii) in a ceiling, where there is no bulk insulation or reflective insulation in the wall beneath, it overlaps the wall by not less than 50 mm. <p>c) Roof, ceiling, wall and floor materials, and associated surfaces are deemed to have the thermal properties as per Specification J1.2 of NCC</p>	<p>All insulation installation must comply with AS/NZS 4859.1</p> <p>Architect to provide required room in the specific fabric construction detail</p>	Readily Achievable



J1.3	Roof and ceiling construction	<p>(a) A roof or ceiling must achieve a Total R-Value greater than or equal to— R3.2 for a downward direction of heat flow</p> <p>(a) Roof type-01</p> <table border="1" data-bbox="383 352 1352 788"> <thead> <tr> <th>Construction Layer</th> <th>Nominal Thickness (mm)</th> <th>Thermal Resistance (m² K/W)</th> </tr> </thead> <tbody> <tr> <td>Outside Air Film (7.0m/s wind)</td> <td>–</td> <td>0.04</td> </tr> <tr> <td>Concrete Tile</td> <td>-</td> <td>0.01</td> </tr> <tr> <td>Foil (Reflective)</td> <td></td> <td>1.12</td> </tr> <tr> <td>Ceiling Air Space</td> <td>–</td> <td>-</td> </tr> <tr> <td>Insulation</td> <td></td> <td>-</td> </tr> <tr> <td>Plasterboard Ceiling</td> <td>13</td> <td>0.06</td> </tr> <tr> <td>Inside Air Film (still air assumed)</td> <td>–</td> <td>0.16</td> </tr> <tr> <td>Total</td> <td></td> <td>1.39</td> </tr> <tr> <td>Deficit from Section J Compliance Thermal Resistance (3.2)</td> <td></td> <td>1.81 (Add Insulation)</td> </tr> </tbody> </table>	Construction Layer	Nominal Thickness (mm)	Thermal Resistance (m ² K/W)	Outside Air Film (7.0m/s wind)	–	0.04	Concrete Tile	-	0.01	Foil (Reflective)		1.12	Ceiling Air Space	–	-	Insulation		-	Plasterboard Ceiling	13	0.06	Inside Air Film (still air assumed)	–	0.16	Total		1.39	Deficit from Section J Compliance Thermal Resistance (3.2)		1.81 (Add Insulation)	Installing 100mm bulk insulation or equivalent in the ceiling cavity which provides an added R2.0. This will achieve a total 'R-value' of R3.39(downwards), which exceeds the required minimum of R3.2.	Readily achievable
Construction Layer	Nominal Thickness (mm)	Thermal Resistance (m ² K/W)																																
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J1.4	Roof lights		No roof lights (sky lights) proposed	Not Applicable																														
J1.5	Walls and glazing	<p>(a) The Total System U-Value of wall-glazing construction must not be greater than— (i) for a 9b building U2.0; and</p> <p>(c) The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification J1.5a.</p>	Refer to Facade calculator	Complies																														

All external wall that forms conditioned envelop are mentioned in figure below

Ground Floor plan



█ External wall & Glazing
█ Internal wall

J1.5	Walls and glazing	<p>(d) Wall components of a wall-glazing construction must achieve a minimum Total R-Value of—</p> <p>(i) where the wall is less than 80% of the area of the wall-glazing construction, R1.0; or</p> <p>(ii) where the wall is 80% or more of the area of the wall-glazing construction, the value is 1.4 as per Table J1.5a</p> <table border="1" data-bbox="725 352 1267 568"> <thead> <tr> <th>Orientation</th> <th>% of Wall of a wall-glazing construction</th> </tr> </thead> <tbody> <tr> <td>South</td> <td>5%</td> </tr> <tr> <td>West</td> <td>56%</td> </tr> <tr> <td>North</td> <td>100%</td> </tr> <tr> <td>East</td> <td>100%</td> </tr> </tbody> </table>	Orientation	% of Wall of a wall-glazing construction	South	5%	West	56%	North	100%	East	100%	Wall R value specified R2.6>R1.4	Complies
		Orientation	% of Wall of a wall-glazing construction											
South	5%													
West	56%													
North	100%													
East	100%													
<p>(e) The solar admittance of externally facing wall-glazing construction must not be greater than—</p> <p>(i) for 9b building 0.13 (All orientation for climate zone 6)- Method-1</p> <table border="1" data-bbox="712 652 1281 868"> <thead> <tr> <th>Orientation</th> <th>Solar admittance of wall-glazing construction</th> </tr> </thead> <tbody> <tr> <td>South</td> <td>0.039</td> </tr> <tr> <td>West</td> <td>0.112</td> </tr> <tr> <td>North</td> <td>0</td> </tr> <tr> <td>East</td> <td>0</td> </tr> </tbody> </table>	Orientation	Solar admittance of wall-glazing construction	South	0.039	West	0.112	North	0	East	0				
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External walls	Wall Type-01: (Brick veneer)			Adding R2.0(90 mm) wall batts or equivalent PIR to the brick wall system. This will achieve a total 'R-value' of R2.61 Facade calculator is mentioned in Appendix-A	Readily Achievable
	Construction Layer	Nominal Thickness (mm)	Thermal Resistance (m² K/W)		
	Outside Air Film (7.0m/s wind assumed)	–	0.04		
	Cavity Brick	110	0.20		
	Air Cavity (Stud)	-	0.17		
	Insulation	90	2.0		
	FC/Plasterboard Sheeting	13	0.08		
	Inside Air Film (still air assumed)	–	0.12		
	Total		2.61		
	Wall Tyoe-02(Fibro Cavity Panel)				
	Construction Layer	Nominal Thickness (mm)	Thermal Resistance (m² K/W)		
	Outside Air Film (7.0m/s wind assumed)	–	0.04		
	FC/Plasterboard Sheeting	13	0.08		
	Air Cavity (Stud)	-	0.17		
	Insulation		2.0		
	FC/Plasterboard Sheeting	13	0.08		
	Inside Air Film (still air assumed)	–	0.12		
	Total		2.49		

	External Glazing	<p>Compliant glazing mentioned below</p> <table border="1"> <thead> <tr> <th></th> <th>Width</th> <th>Height</th> <th colspan="2">Glass Area</th> <th>Glazing system U val</th> <th>Glazing system SHGC</th> </tr> </thead> <tbody> <tr> <td colspan="7">West</td> </tr> <tr> <td>D1</td> <td>1.8</td> <td>2.1</td> <td>3.78</td> <td>Sliding Door</td> <td>4.6</td> <td>0.45</td> </tr> <tr> <td>D2</td> <td>1.8</td> <td>2.1</td> <td>3.78</td> <td>Sliding Door</td> <td>4.6</td> <td>0.46</td> </tr> <tr> <td>D3</td> <td>5.1</td> <td>2.1</td> <td>10.71</td> <td>Fixed</td> <td>2.5</td> <td>0.45</td> </tr> <tr> <td>W1</td> <td>5.1</td> <td>2.1</td> <td>10.71</td> <td>Sliding Window</td> <td>4.6</td> <td>0.45</td> </tr> <tr> <td>W2</td> <td>1.6</td> <td>2.1</td> <td>3.36</td> <td>Sliding Window</td> <td>4.6</td> <td>0.45</td> </tr> <tr> <td>D4</td> <td>2.4</td> <td>2.1</td> <td>5.04</td> <td>Sliding Window</td> <td>4.6</td> <td>0.45</td> </tr> <tr> <td colspan="7">South</td> </tr> <tr> <td>W3</td> <td>1.0</td> <td>1.0</td> <td>1</td> <td>Sliding Window</td> <td>5.6</td> <td>0.75</td> </tr> <tr> <td>W4</td> <td>1.0</td> <td>0.65</td> <td>0.65</td> <td>Sliding Window</td> <td>5.6</td> <td>0.75</td> </tr> </tbody> </table>		Width	Height	Glass Area		Glazing system U val	Glazing system SHGC	West							D1	1.8	2.1	3.78	Sliding Door	4.6	0.45	D2	1.8	2.1	3.78	Sliding Door	4.6	0.46	D3	5.1	2.1	10.71	Fixed	2.5	0.45	W1	5.1	2.1	10.71	Sliding Window	4.6	0.45	W2	1.6	2.1	3.36	Sliding Window	4.6	0.45	D4	2.4	2.1	5.04	Sliding Window	4.6	0.45	South							W3	1.0	1.0	1	Sliding Window	5.6	0.75	W4	1.0	0.65	0.65	Sliding Window	5.6	0.75	Complies	Readily Achievable
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J1.6	Floors	<p>(a)A floor that is part of a building's envelope must achieve R2.0</p> <p>Floor type-01</p> <table border="1"> <thead> <tr> <th>Construction Layer</th> <th>Nominal Thickness (mm)</th> <th>Thermal Resistance (m² K/W)</th> </tr> </thead> <tbody> <tr> <td>Clay Soil</td> <td>–</td> <td>0.6</td> </tr> <tr> <td>Membrane</td> <td></td> <td>0.001</td> </tr> <tr> <td>Concrete</td> <td>150</td> <td>0.1</td> </tr> <tr> <td>Insulation</td> <td></td> <td>-</td> </tr> <tr> <td>Carpet underlay</td> <td></td> <td>0.25</td> </tr> <tr> <td>Carpet</td> <td>150</td> <td>0.16</td> </tr> <tr> <td>Inside Air Film (still air assumed)</td> <td>–</td> <td>0.16</td> </tr> <tr> <td colspan="2">Total</td> <td>1.27</td> </tr> <tr> <td colspan="2"><i>Deficit from Section J Compliance Thermal Resistance (2.0)</i></td> <td><i>0.73</i></td> </tr> </tbody> </table>	Construction Layer	Nominal Thickness (mm)	Thermal Resistance (m ² K/W)	Clay Soil	–	0.6	Membrane		0.001	Concrete	150	0.1	Insulation		-	Carpet underlay		0.25	Carpet	150	0.16	Inside Air Film (still air assumed)	–	0.16	Total		1.27	<i>Deficit from Section J Compliance Thermal Resistance (2.0)</i>		<i>0.73</i>	R0.8 Foam or equivalent insulation either below or the above floor. This will achieve total construction value of R2.1 which exceeded the requirements of R2.0	Readily Achievable																																															
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Part J2 – Left blank

Part J3 – Building Sealing

J3.2	Chimneys and flues		No New Chimney or flues	Not Applicable
J3.3	Roof lights		No Roof light proposed	Not Applicable
J3.4	Windows and doors	(a) a seal to restrict air infiltration must be fitted to each edge of doors, operable windows or the like that separate conditioned spaces from non-conditioned spaces or external areas. (b) This provision is not required for windows complying with Australian Standard AS2047, louvred windows or doors, and fire doors. (c) The seal required may be a foam or rubber compressible strip, fibrous seal or the like.	All window must comply with AS2047	Readily Achievable
J3.5	Exhaust fans	Any miscellaneous exhaust systems must be fitted with a sealing device such as a self closing damper when serving a conditioned space or habitable room.	Exhaust fan serving conditioned space and need to comply with the clause.	Mech engineer to check
J3.6	Construction of roofs, walls and floors	the conditioned areas that the roofs, walls floors and any openings such as for doors and windows must be constructed to minimize air leakage. The construction must enclose conditioned spaces by close fitting internal lining systems at the ceiling, wall and floor junctions or by sealing through caulking, skirting, architraves, cornices or the like. The requirements of this clause do not apply to openings, grilles necessary for smoke hazard management.	Standard construction practice covers that. However, builder need to consider in construction stage	Readily Achievable /Builder
J3.7	Evaporative coolers		No Evaporative cooler	Not Applicable

Part J4 – Blank/Air Movement

Part J5 – Air Conditioning and Ventilation Systems

Part J5 of Section J outlines the provisions that apply to mechanical ventilation and air conditioning systems to ensure these services are used and use energy in an efficient manner.

J5.2	*****	Blank clause		
J5.2 (a) (i)	Unit Activation	An air conditioning unit or system must be capable of being inactivated when the building or part of the building served is unoccupied.	Applicable	Mech Engineer to specify
J5.2 (a) (ii)	Thermostatic Control	When serving more than one air-conditioning zone or area with different heating and cooling needs— (A) thermostatically control the temperature of each zone or area (B) not control the temperature by mixing actively heated air and actively cooled air	Assumed to be VRV system and will be applicable	Mech Engineer to specify
J5.2 (a)(iii)	Economy Cycle			Not applicable

J5.2 (a)(iv)	Control of flow			Not Applicable								
J5.2 (a)(v)	Variable speed fan	When airflow of more than 1000 L/s, must have a variable speed fan when its supply air quantity is capable of being varied.		Mech Engineer to specify								
J5.2 (a)(vi)	Temperature Control		N/A	Not Applicable								
J5.3	Mechanical Ventilation Control	A mechanical ventilation system, including one that is part of an air-conditioning system, must be capable of being inactivated when the space is unoccupied.	Toilet exhaust fans switch off automatically when lights are off.	Complies								
J5.4(a)	Fan System	Fans, ductwork and duct components that form part of an air-conditioning system or mechanical ventilation system must comply separately	Applicable	Mech Engineer to specify								
J5.4(b)	Fan	Fans in systems that have a static pressure of not more than 200 Pa must have an calculated efficiency as prescribed at the full load	Applicable	Mech Engineer to specify								
J5.4 (c)	Ductwork	(i) 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 (ii) Flexible ductwork must not account for more than 6 m in length in any duct run.	Applicable	Mech Engineer to specify								
J5.5(a)	Ductwork insulation	Ductwork and fittings in an air-conditioning system must be provided with insulation— complying with AS/NZS 4859.1; and having an insulation R-Value greater than or equal to— (A) for flexible ductwork, 1.0; or As specified below <table border="1" data-bbox="479 903 1339 1098"> <thead> <tr> <th>Location of ductwork and fittings</th> <th>Minimum insulation R-Value</th> </tr> </thead> <tbody> <tr> <td>Within a conditioned space</td> <td>R1.2 (50mm)</td> </tr> <tr> <td>Where exposed to direct sunlight</td> <td>R3.0 (100mm)</td> </tr> <tr> <td>All other locations</td> <td>R2.0 (75mm)</td> </tr> </tbody> </table>	Location of ductwork and fittings	Minimum insulation R-Value	Within a conditioned space	R1.2 (50mm)	Where exposed to direct sunlight	R3.0 (100mm)	All other locations	R2.0 (75mm)	Applicable	Mech Engineer to specify
Location of ductwork and fittings	Minimum insulation R-Value											
Within a conditioned space	R1.2 (50mm)											
Where exposed to direct sunlight	R3.0 (100mm)											
All other locations	R2.0 (75mm)											
J5.6	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.	Applicable	Mech to specify								
J5.7	Pump systems		N/A									
J5.8	Pipe work insulation	(a) Piping, System that is part of an air-conditioning system, other than in appliances covered by MEPS, must be provided with insulation— (i) complying with AS/NZS 4859.1; and (ii) for piping of heating and cooling fluids, having an insulation R-Value in accordance with NCC		Mech to specify								

J5.9	Space heating		Owner to check	Mech to specify
J5.10	Refrigerant chillers		N/A	Not Applicable
J5.11	Unitary air-conditioning equipment		N/A	Not Applicable
J5.12	Heat rejection		N/A	Not Applicable

Part J6 – Artificial Lighting and Power

Part J6 outlines provisions that apply to artificial lighting and power to ensure energy is used efficiently.

J6.1		Applicable part	All areas																			
J6.2(b)	Aggregate design illumination power load	<p>For artificial lighting, the aggregate illumination power load must not exceed the power load allowance that is a function of the lighting areas, lighting levels and controls in each of the spaces served. As a reference:</p> <table border="1"> <thead> <tr> <th>Lighting Application</th> <th>Maximum illumination Power Density (W/m²)</th> </tr> </thead> <tbody> <tr> <td>Public hall</td> <td>8.0</td> </tr> <tr> <td>Corridors</td> <td>5</td> </tr> <tr> <td>Office</td> <td>4.5</td> </tr> <tr> <td>Entry lobby from outside the building</td> <td>9</td> </tr> <tr> <td>Kitchen and Food Preparation Areas</td> <td>4</td> </tr> <tr> <td>Toilet Areas</td> <td>3</td> </tr> <tr> <td>Storage</td> <td>1.5</td> </tr> <tr> <td>Service area, cleaner's room and the lik</td> <td>1.5</td> </tr> </tbody> </table> <p>The requirements of do not apply to the following:</p> <ul style="list-style-type: none"> (i) Emergency lighting in accordance with Part E4. (ii) Signage and display lighting within cabinets that are fixed in place. 	Lighting Application	Maximum illumination Power Density (W/m ²)	Public hall	8.0	Corridors	5	Office	4.5	Entry lobby from outside the building	9	Kitchen and Food Preparation Areas	4	Toilet Areas	3	Storage	1.5	Service area, cleaner's room and the lik	1.5	Need to comply	By Lighting Designer
Lighting Application	Maximum illumination Power Density (W/m ²)																					
Public hall	8.0																					
Corridors	5																					
Office	4.5																					
Entry lobby from outside the building	9																					
Kitchen and Food Preparation Areas	4																					
Toilet Areas	3																					
Storage	1.5																					
Service area, cleaner's room and the lik	1.5																					
J6.3	Interior artificial lighting and power control	<p>Clause J6.3 outlines methods for the control of artificial lighting and power applicable to this project. The applicable parts of this clause are shown in the following list:</p> <ul style="list-style-type: none"> • The artificial lighting of a room or space must be individually operated by manual switch or control device. • An artificial lighting switch must be located in a visible position within the room being switched or adjacent room where the lighting being switched is visible. 	Need to comply	By Lighting Designer																		

		<ul style="list-style-type: none"> Artificial lighting in a foyer, corridor of more than 250 W within a single zone; and adjacent to windows, must be controlled by a daylight sensor . The provisions outlined above for artificial lighting are not applicable for Emergency lighting or when assumed to operate 24 hours. 		
J6.4	Interior decorative and display lighting	Interior decorative and display lighting, must be controlled— <ul style="list-style-type: none"> separately from other artificial lighting; and by a manual switch for each area by a time switch in accordance with Specification J6 where the display lighting exceeds 1 kW. 	If applicable	By Lighting Designer
J6.5	Exterior artificial lighting	Clause J6.5 contains provisions for artificial lighting exterior of a building. The following list outlines the applicable provisions to the development within this Clause: Exterior artificial lighting attached to or directed at the facade of a building, must be controlled by— <ul style="list-style-type: none"> a daylight sensor; or a time switch that is capable of switching on and off electric power to the system when the total lighting load exceeds 100 W, then) use LED luminaires for 90% of the total lighting load; or be controlled by a motion detector . The requirements do not apply for Emergency lighting . 	Need to comply	By Lighting Designer
J6.6	Boiling and chilled water storage units	Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.	Need to comply	By Hydraulic Consultant (or Plumber)

Part J7 – Hot Water Supply and Swimming Pool & Spa Pool Plant

J7.2	Hot water supply	A hot water supply system for food preparation and sanitary purposes must be designed and installed in accordance with art B2 of NCC Volume Three — Plumbing Code of Australia	Need to comply	By Hydraulic Consultant (or Plumber)
J7.3	Swimming Pool Heating & Pumping		N/A	Not Applicable
J7.4	Spa Pool Heating & Pumping		N/A	Not Applicable

Part J8 – Access for Maintenance and Facilities for Monitoring

J8.3	Energy Management	A building with a floor area of more than 2500 m2 must have an energy meter configured to record the time-of-use consumption of gas and electricity.	The proposed floor area is under 2500m ² ;	Not Applicable
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4 APPENDIX

SPECIFICATIONJ6 – Lighting and power control devices

Lighting Timers

A lighting timer must:

- be located within 2m of every entry door to the space;
- Have an indicator light that is illuminated when the artificial lighting is off;
- not control and area more than 100m² with a single push button timer;
- not control more than 95% of the lights in spaces of area more than 25m²; and
- be capable of maintaining the artificial lighting for not less than 5 minutes, not more than 15 minutes unless reset and without interruption if the timer is reset.

Time Switch

A time switch must be capable of switching on and off electric power systems:

- at variable pre-programmed times and on variable pre-programmed days; and
- to limit the period the system is switched on, to 2 hours beyond the time for which the building is occupied.
- A time switch must be capable of being overridden by a manual switch by a period of up to 2 hours, after which the time switch must resume control.

Motion Detectors

In a Class 9b building, a motion detector must:

- be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means;
- be capable of detecting a person before they are 1 m into the space;
- Lights are turned off when the space is unoccupied for more than 15 minutes;
- Capability to override by a manual switch that only enables the lights to be turned off.

When outside a building, a motion detector must:

- be capable of sensing movement such as by infra-red, ultrasonic or microwave detection or by a combination of these means;
- be capable of detecting a person within a distance from the light equal to twice the mounting height or 80% of the ground area covered by the light's beam;
- not control more than five lights;
- be operated in series with a photoelectric cell or astronomical time switch so that the light will not operate in daylight hours;
- be capable of maintaining the lighting for a minimum of 1 minute and a maximum of 15 minutes unless it is reset; and
- have a manual override which is reset after a maximum period of 4 hours.


Daylight Sensor and Dynamic Lighting Control Device

A daylight sensor and dynamic control device for artificial lighting must:

- when used for switching on and off:

- be capable of having the switching level set point adjusted between 50 and 1000Lux;
- have a delay of more than 2 minutes; and
- have a differential of more than 100Lux for a sensor controlling high pressure discharge lighting, and 50Lux for a sensor controlling other than high pressure discharge lighting; and
- for dimmed or stepped switching, be capable of reducing the power consumed by the controlled lighting in proportion to the incident daylight on the working plane either:
 - continuously down to a power consumption that is less than 50% of full power; or
 - in no less than 4 steps down to a power consumption that is less than 50% of full power. Where a daylight sensor and dynamic control device has a manual override switch, the manual override switch must not be able to switch the lights permanently on or bypass the lighting controls.

Façade Calculator:



Façade

Report



Project Summary

Date
5/22/2020

Name
Mahbub Hassan

Company
Dural Group

Position
Engineer

Building Name / Address
682 Castlereagh Road, Agnes Banks
0

Building State
NSW

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 9b - public halls, function rooms or the like

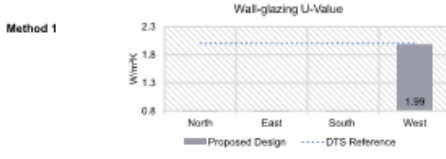
Storeys Above Ground
1

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

Compliant Solution = █
Non-Compliant Solution = █

	North	East	South	West	Method 2 All
Wall-glazing U-Value (W/m².K)	0.00	0.35	0.65	1.99	0.95
Solar Admittance	0.04	0.04	0.04	0.11	0.10

Method 1



Method 2



Project Details

	North	East	South	West
Glazing Area (m²)	0	0	1.85	37.38
Glazing to Façade Ratio	0%	0%	5%	44%
Glazing References			W3 + W4 +	D1 + D2 + D3 + W1 + W2 + D4 +
Glazing System Types			Fixed +	Sliding Door + Fixed + Sliding Window +
Glass Types			SG-5mmClr +	SG-6mm-SP-Ntfl + DG-4+12+4Low E Ntfl +
Frame Types			Aluminium +	Aluminium +
Methodology	WERS (Default module size)			
Average Glazing U-Value (W/m².K)			5.80	4.00
Average Glazing SHGC			0.75	0.43
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	32	83	30	46.98
Wall Types		Wall +	Wall +	Wall +
Methodology	AFRC Calculations			
Wall Construction		Brick Veneer_R2.0 +	Brick Veneer_R2.0 +	Brick Veneer_R2.0 +
Wall Thickness		250 +	250 +	250 +
Average Wall R-value (m²K/W)		2.61	2.61	2.61
Solar Absorbance	0.5	0.5	0.5	0.5

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