

BUILDING CODE OF AUSTRALIA 2014
ENERGY EFFICIENCY CHECKLIST
CLASS 3, 4, 5, 6, 7, 8, 9a, 9b & 9c

BUILDING WORK
Proposed Warehouse & Office

SITE ADDRESS
Lot 10 Inglis Circuit, Gillman

Climate Zone 4 5 6

J1 BUILDING FABRIC

J1.1 Application: - Does not apply to Class 6, 7, 8 or 9b if deemed to not have a conditioned space.

J1.2 Thermal Construction General – Thermal Properties as per Spec J.2

Item	Deemed to satisfy requirement	Outcome	
Insulation materials (complies with AS/NZS 4859.1)	Insulation material overlapping/ abutting other than at supporting members	YES	NO
	Will form a continuous barrier with walls/ceilings & floors to create thermal barrier	YES	NO
	Fitted so as to not effect safe operation of a domestic service or fitting	YES	NO
Reflective insulation	Insulation material fitted with required airspace, closely fitted against any penetration, door or window, adequately supported and overlapping not less than 50mm or tapped together	YES	NO
Bulk insulation	Position and thickness maintained except at battens, water pipes, electrical cabling or the like	YES	NO
	Where no bulk insulation provided, have the ceiling extend past the external wall by 50mm	YES	NO

J1.3 Roof and Ceiling Construction (other than SOU of Class 4)

Item	Criteria	Deemed to satisfy Requirement (Table J1.3)			Outcome
	Climate Zone	4	5	6	
(a) Roof Solar absorption assumed 0.43 (Shale Grey) Minimum Total R-Value	Roof or ceiling generally	3.7	3.7	3.2	Outdoor air film: R0.04 Metal cladding: R0.00 Roof foil: R1.3 Plasterboard: R0.06 Indoor air film: R0.16 Total : 1.56 Required min. additional insulation R Value : R2.14 Specified ceiling insulation R1.3 blanket + R3.0 Ceiling = R 4.3
Direction of heat flow	Downwards	Upwards			
Metal roof/ceiling with lining directly fixed to structural frame	Thermal break provided	R value > 0.2			R1.3 blanket insulation
Adjustment of R-value for loss of ceiling insulation	Revised R-value Table J1.3b if applicable				N/A not applicable

J1.4 Roof lights (forming part of the envelope) - **N/A Not applicable,**

A) Not required for compliance with Part F4 – highlight design requirement

Roof lights shaft index (see Note 1)	Constant	Total area of roof lights serving the room or space as a percentage of the floor area of the room or space			
		Not more than 2%	More than 2% to not more than 3%	More than 3% to not more than 4%	More than 4% to not more than 5%
Less than 0.5	SHGC	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
0.5 to less than 1.0	SHGC	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
1.0 to less than 2.5	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and above	SHGC	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	Total U-Value	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 4

B) Compliance required for Part F4 – **N/A Not Applicable**

Item	Area	Criteria	Deemed to satisfy Requirement	Outcome
Roof lights > 5% floor area to meet Part F4	Not exceed 150% of Part F4	SHGC Value	0.29 max	
		Total U-Value	2.9 max	
Aggregate area of roof lights		Not more than 150% of minimum required by Part F4		

J1.5 Walls (other than Class 4)

Item	Criteria	Deemed to satisfy Requirement Minimum Total R-Value (Table J1.5b)			Outcome
		4	5	6	
Table J1.5a External wall that is part of an envelope	Minimum Total R-Value	2.8	2.8	2.8	R-values: Outdoor air film: R0.04 Metal cladding: R0.08 Steel framing: R0.15 Plasterboard: R0.06 Indoor air film: R0.12 Total: 0.45 Required min.insulation R Value : R2.35 Specified insulation R 2.5
Table J1.5b Any wall other than an external wall that is part of the envelope	Non-conditioned space per (a)	Nil	1.0	1.0	Specified insulation to Walls R 2.5
	Non-conditioned space per (b)	1.8	1.8	1.8	
Lightweight cladding with lining directly fixed to structural frame	Thermal break provided	R value > 0.2			N/A

J1.6 Floors

Item	Criteria	Deemed to satisfy Requirement Direction Heatflow downwards			Outcome
		4	5	6	
Suspended floor without in slab heating		Nil	1.0	1.0	R2.0 insulation
(a) A slab on ground	Without an in-slab heating or cooling system	Nil	Nil	Nil	
	Underneath the slab	1.25	1.25	1.25	
Other than above		2.0	2.0	2.0	
Note: a- In slab heating must have a barrier to prevent convection installed below floor level between the airspace under the floor and any wall cavities b - Be continuous from adjacent ground level to a depth not less than 300mm					

J2 EXTERNAL GLAZING

J2.1 Application: - Only applies to elements forming part of the envelope of a building deemed to have a conditioned space. (Includes internal glazing where separating conditioned from non-conditioned)

J2.4 Glazing

Use ABCB Glazing Calculator or other method

Glazing in each storey	Aggregate air-conditioning allowance (Product of area of façade and Table J2.4a or J2.4b Energy Index)	Deemed to satisfy Requirement for Energy Index Option A or B (Tables J2.4a or J2.4b)			Aggregate air-conditioning value (Product of formulae as stated in Clause J2.4c)	Outcome
Portion	Area	4	5	6	Refer ABCB Glazing Calculator	

J2.5 Shading

Item	Deemed to satisfy requirement	Outcome	
		YES	NO
Required shading as per J2.4 and where applicable to internal glazing Table J2.4e	Construction specifications for shading devices i.e. verandah, balcony, fixed canopy, shading hood, carport or external shading devices such as shutter, blind, screen with 80% blockage and adjustable	Refer ABCB Glazing Calculator	

J3 BUILDING SEALING

J3.1 Application: - Does not apply to opening associated with the ventilation of gas appliances, where mechanical systems provide sufficient pressurization to prevent infiltration and required as Part F4, or to an atrium or solarium that is separated from the remainder of the building and is not a conditioned space, Climate Zone 5 where only evap cooling used or a non conditioned Class 6,7,8 & 9b

J3.2 Chimneys and Flues- Not Applicable

Item	Deemed to satisfy requirement	Outcome	
Chimneys and flues	Damper or flap provided	YES	NO

J3.3 Roof Lights – Not Applicable,

Item	Deemed to satisfy requirement	Outcome	
Roof light serving a habitable space	Sealed or capable of being sealed	YES	NO
	Provided with either of the following: 1. imperforate ceiling diffuser, or	YES	NO

	2. weatherproof seal for a roof window, or 3. shutter system	
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Item	Applicable		Deemed to satisfy requirement	Outcome	
Evaporative Coolers Not Applicable	YES	NO	Serves a heated space and provided with a damper	YES	NO
	YES	NO	Serves a habitable room or a public area and provided with a damper	YES	NO

J3.4 External Windows and Doors

Item	Deemed to satisfy requirement	Outcome	
External swing doors or windows serving a conditioned space or habitable room in Zones 4-6	Sealed to restrict air infiltration	<div>YES</div>	<div>NO</div>
	Complies with max air infiltration rates of AS2047	<div>YES</div>	<div>NO</div>
External Swing Door Seals	Bottom edge seal to be draft protection device	<div>YES</div>	<div>NO</div>
	Edges of external doors provided with foam or rubber compressible strip or fibrous like seal	<div>YES</div>	<div>NO</div>
Café, restaurant or the like, open shop front or the like Not applicable	3m deep unconditioned zone and at all other entrances self closing doors	<div>YES</div>	<div>NO</div>
Entrances to conditioned spaces	Floor area >50m2 – fitted with an airlock, self closing door	<div>YES</div>	<div>NO</div>

J3.5 Exhaust fans

Item	Criteria	Deemed to satisfy requirement	Outcome	
A miscellaneous exhaust fan, such as a Bathroom or domestic kitchen 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	YES	NO
		(b) a habitable room in climate zones 4, 5, 6, 7 & 8	YES	NO

J3.6 Construction of Roofs, Walls and Floors

Item	Criteria	Deemed to satisfy requirement	Outcome	
External walls, floors, roofs & any openings i.e. doors or windows serving a conditioned space	Sealed to restrict leakage	Tight fitting internal lining & wall, floor ceiling junctions	YES	NO
		Junctions sealed by caulking, skirtings, architraves etc	YES	NO

J3.7 Evaporative Coolers- **Not Applicable**

Item	Applicable		Deemed to satisfy requirement	Outcome	
Evaporative Coolers	YES		Serves a heated space and provided with a damper	YES	NO
	YES		Serves a habitable room or a public area and provided with a damper	YES	NO

J5 AIR-CONDITIONING AND VENTILATING SYSTEMS

J5.2 Air-conditioning Systems

Item	Criteria	Deemed to satisfy Requirement	Outcome
Air-conditioning unit	Control from within sole-occupancy unit	Capable of being inactivated	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Motorized or return air dampers Not Applicable	Capable of being closed	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Class 3 sole-occupancy unit Not Applicable	Shut down if any external door open more than 1 minute	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Supply & return air duct	Insulated & sealed as per spec 5.2	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Air-conditioning zones or areas with different heating & cooling needs	Controls when serving multiple zones or areas	Thermostatic control in each zone or area	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
		No hot/cool mix	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Limit re-heating Not Applicable	7.5K rise in temperature	<input type="checkbox"/> YES <input type="checkbox"/> NO
Air conditioning	Other than packaged unit	Have variable speed fan	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Mechanical ventilation (other than when used for humidity control e.g. a Lab, paper store, supermarket frozen food area)	Outdoor air economy cycle Not Applicable	Required if unit capacity is over 35 kW _r	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Class 3 buildings Not Applicable	Sleep setting	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where Air flow > 1000 L/s Maximum fan motor power (W/ (L/s))	Maximum permitted by Table J5.2 – other than for Energy reclaim that preconditions outdoor air High efficiency filters Miscellaneous exhaust systems	Selected fan power	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Mechanical Ventilation System	Control from within bldg or part	Capable of being inactivated	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Serving conditioned space (refer to Clause J5.2 (b)(ii))	Mechanical ventilation limited to < 20% over the Part F4 requirements	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
	Where m ² per person < 1, and air flow > 1000 L/s Not Applicable	Energy reclaiming system that pre-conditions outside air	<input type="checkbox"/> YES <input type="checkbox"/> NO
		Automatic modulation of mechanical ventilation	<input type="checkbox"/> YES <input type="checkbox"/> NO
Provided by other than an air conditioning system air flow >1000L/s other than for Energy reclaim that preconditions outdoor air High efficiency filters Miscellaneous exhaust systems	Without filters	Fan power to air flow ratio of 0.65W(L/s)	<input type="checkbox"/> YES <input type="checkbox"/> NO
	With filters	Fan power to air flow ratio of 0.98W(L/s)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
Serving car-park with more than 40 cars Not Applicable		Provided with AS1668.2 atmospheric contaminant monitoring system	<input type="checkbox"/> YES <input type="checkbox"/> NO
Note: air change rate not applicable if car-park not used after a 2hr period		Maintain an average minimum air change rate of 0.5 air changes p/hr	<input type="checkbox"/> YES <input type="checkbox"/> NO

J5.3 Time Switch

Item	Criteria	Deemed to satisfy Requirement	Outcome
Power supply – other than serving a single SOU in a Class 3, 4 or 9c or 24hr manufacturing or emergency services occupancy	Air-con > 10 kW Ventilation > 1000 L/s Heating > 10 kW _{heating}	Time switch as per Spec J6	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

J5.4 Heating and Cooling Systems: **Not Applicable**

Item	Criteria	Deemed to satisfy Requirement	Outcome
Piping, vessels, heat exchangers or tanks containing heated or chilled fluids	Insulated (other than those covered by MEPS)	As per Spec J5.4	<input type="checkbox"/> YES <input type="checkbox"/> NO
Heating or cooling for air-conditioning systems where water pumped > 2L/s	Maximum Pump Power W/m2 compliance with Table J5.4a	Outcome: W/m2	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Pump capable of varying speed when more than 3 kW pump power	Outcome: W/m2	<input type="checkbox"/> YES <input type="checkbox"/> NO
Multiple boiler, chiller or coil		Provision to stop flow to those not operating	<input type="checkbox"/> YES <input type="checkbox"/> NO
Heater as part of a/c		Energy efficiency ratio as per Table J5.4b	<input type="checkbox"/> YES <input type="checkbox"/> NO
		Use reticulated gas where available at the boundary	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Heating space other than via water and where not connected to reticulated gas	Be either: Solar heater, or Gas heater, or Oil heater, or Heat pump heater, or Solid fuel burning, or Uses reclaimed heat, or Combination of 2 or more of the above Electric where heating capacity not exceeding Table J5.4c, or where annual energy consumption is not more than 15kWh/m2, or induct heater complying with J5.2(a)(v)(c), or Combination of the above	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Heating a bathroom in a Class 3 or 9c can be electric	If heating capacity not more than 1.2kW	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Fixed space heating	Installed outside Automatically turn off when not needed by outdoor sensor, timer, motion detector or the like	<input type="checkbox"/> YES <input type="checkbox"/> NO
Package air-conditioning equipment > 65 kW	Includes split unit and a heat pump	Energy efficiency ratio as per Table J5.4d	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Refrigerant chiller Not more than 350kW	Energy Efficiency ratio as per Table J5.4e	<input type="checkbox"/> YES <input type="checkbox"/> NO
Air cooled condenser fan motor (not in a packaged a/c unit or liquid chilling package)	Not more than 42W of fan power for each kW heat rejected		<input type="checkbox"/> YES <input type="checkbox"/> NO
Cooling tower part of a/c Fan power	Propeller Axial Fan	310 W fan power per L/s	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Propeller Centrifugal fan	590 W fan power per L/s	<input type="checkbox"/> YES <input type="checkbox"/> NO
Closed circuit part of a/c Fan power	Propeller Axial Fan	500 W fan power per L/s	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Propeller Centrifugal fan	670 W fan power per L/s	<input type="checkbox"/> YES <input type="checkbox"/> NO
Evap condenser part of a/c fan power	Propeller Axial Fan	18 W fan power per Kw	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Propeller Centrifugal fan	22 W fan power per Kw	<input type="checkbox"/> YES <input type="checkbox"/> NO
Closed circuit cooler or evap	Spray water pump	<150W pump power per L/s	<input type="checkbox"/> YES <input type="checkbox"/> NO

J5.5 Miscellaneous exhaust systems

Item	Criteria	Deemed to satisfy Requirement	Outcome	
Air flow rate > 1000L/s Not Applicable	Associated with equip with variable demand e.g. stove, chem. Bath etc	Variable speed fan	YES	NO
		Capable of being deactivated when not used	YES	NO
		Able to minimize exhausting of conditioned air	YES	NO

J6 ARTIFICIAL LIGHTING & POWER

J6.2 Interior Artificial Lighting

Item	Criteria	Deemed to satisfy Requirement	Outcome
Artificial lighting	All occupied spaces	Aggregate DIPL < $\Sigma \div$ IPDAF (refer ABCB Lighting Calculator)	
Note: refer to Clause J6.2 (c) for exemptions Legend: DIPL = Design Illumination Power Load Σ = Sum of the allowance in J6.2a of each space IPD = Max Illumination Power Density IPDAF = Illumination Power Density Adjustment Factor in Table J6.2b			

J6.3 Interior Artificial Lighting and Power Control

Item	Criteria	Deemed to satisfy Requirement	Outcome	
Artificial lighting	Individually operated	Switch or other control device	YES	NO
Artificial lighting in Class 3 (other than SOU to Disabled or aged) Not Applicable	Occupant actuated device to cut power to lights, a/c, exhaust fans and bath heater	Security device, motion detector in accord Spec J6 when room becomes unoccupied	YES	NO
Artificial lighting	Class 5 or 8 lab Building > 250m ²	Control < 250m ²	YES	NO
Artificial lighting switch – other than single auditorium, theatre, swim pool, stadium or warehouse	Room or space being served	Located in a visual location	YES	NO
	< 2000m ² floor area	Control < 250m ²	YES	NO
	>2000m ² floor area N/A	Control < 1000m ²	YES	NO
Artificial lighting – applies to 95% - refer to J6.3g for exemptions	Building > 250m ²	Provided with time switch	YES	NO
		Occupant sensing device	YES	NO
Artificial lighting against windows – refer to J6.3(e) & (f) for exemptions – Applies to Class 5,6 or 8	Building > 250m ²	Independently switch controlled	YES	NO
Note: refer to clause J6.3 (f) & (g) for exemptions				

J6.4 Interior Decorative & Display Lighting **Not Applicable**

Item	Criteria	Deemed to satisfy Requirement	Outcome	
Foyer murals or Art Display	Areas not operating at the same time	Individual control Manually switched	YES	NO
	Display lighting > 1 W	Timer switch controlled	YES	NO
Window display lighting	Not applicable	Separately switched	YES	NO

J6.5 Artificial Lighting and Perimeter of building

Item	Criteria	Deemed to satisfy Requirement	Outcome
Perimeter controlled by daylight sensor or time switch	Perimeter lighting load > 100W	Average light source efficacy >60 lumens/W or	<input type="checkbox"/> YES <input type="checkbox"/> NO
		Controlled by motion detector	<input type="checkbox"/> YES <input type="checkbox"/> NO
Decorative purposes e.g. façade/signage		Separately time switched	<input type="checkbox"/> YES <input type="checkbox"/> NO

J6.6 Boiling water and chilled water storage units

Item	Criteria	Deemed to satisfy Requirement	Outcome
Boiling water and chilled water storage units	Controlled by time switch	Complies with Spec J6	<input type="checkbox"/> YES <input type="checkbox"/> NO

J7 HOT WATER SUPPLY

J7.2 Hot Water Supply

Item	Deemed to satisfy requirement	Outcome
Hot water supply	In accordance with Part B2 of NCC Volume Three	<input type="checkbox"/> YES <input type="checkbox"/> NO
Food preparation	Comply with Section 8 of AS/NZS 3500.4	<input type="checkbox"/> YES <input type="checkbox"/> NO

J7.3 Swimming Pool Heating and Pumping: **Not Applicable**

Item	Deemed to satisfy requirement	Outcome
Swimming pool(does not include a spa pool)	solar heater not boosted by electric resistance heating, or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	Reclaimed energy heater; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	gas heater; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	heat pump; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	combination of 2 or more of (i), (ii), (iii) & (iv)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where some or all of the heating is by a gas or heat pump	cover; and a push button and a time switch to control the operation of the heater	<input type="checkbox"/> YES <input type="checkbox"/> NO
	time switch must be provided to control the operation of a circulation pump	<input type="checkbox"/> YES <input type="checkbox"/> NO

J7.4 Spa Pool Heating And Pumping: **Not Applicable**

Item	Deemed to satisfy requirement	Outcome
Spa pool – sharing water reticulation with pool	(i) solar heater; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	(ii) Reclaimed energy heater; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	(iii) gas heater; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	(iv) heat pump; or	<input type="checkbox"/> YES <input type="checkbox"/> NO
	combination of 2 or more of (i), (ii), (iii) & (iv)	<input type="checkbox"/> YES <input type="checkbox"/> NO
Where some or all of the heating is by a gas or heat pump, a spa pool must have:	cover; and a push button and a time switch to control the operation of the heater	<input type="checkbox"/> YES <input type="checkbox"/> NO
A <i>swimming pool</i> other than a spa pool with capacity of less than 680 L	time switch must be provided to control the operation of a circulation pump	<input type="checkbox"/> YES <input type="checkbox"/> NO

J8 ACCESS FOR MAINTENANCE**J8.2 Access for Maintenance**

Item	Deemed to satisfy requirement	Outcome	
Access for Maintenance	Access to all <u>prescribed</u> plant, equipment and components	YES	NO

J8.3 Facilities For Energy Monitoring

Item	Deemed to satisfy requirement	Outcome	
Facility to record gas and elec consumption	Building floor area > 500m2	YES	NO
Facility to record individual energy consumption for buildings > 2500m2	A/C plant	YES	NO
Not Applicable	Artificial lighting	YES	NO
	Appliance power	YES	NO
	Central hot water supply	YES	NO
	Where served by internal transport device	YES	NO
	Other ancillary plant	YES	NO