

## MECHANICAL CHECKLIST FOR PART J5 OF NCC2016 AIR-CONDITIONING & VENTILATION SYSTEMS

Site Address: 1A Glenburnie Avenue, Plympton  
Project Name: Glenburnie Apartment  
Project Number: B9025

Requirement	Yes	No	N/A
<b>NCC PART J5.2</b>			
<b>The air-conditioning system must:</b>			
▪ Be capable of being deactivated when the whole occupancy unit, building or part of the building served is not occupied; and	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Where there is motorized outside air and return dampers – dampers close when unit or system is inactivated; and	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ When serving a whole occupancy unit of a Class 3 building, not operate when any external door including a door opening to a balcony, patio, courtyard or the like is open for more than 1 minute; and	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
▪ Have any supply and return ductwork insulated & sealed to <b>Specification J5.2b</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ If serves more than one whole occupancy unit or A/C zone with different heating & cooling needs: <ul style="list-style-type: none"> <li>○ thermostatically control temperature in each whole occupancy unit, zone or area</li> <li>○ not control the temp by mixing actively heated air &amp; actively cooled air</li> <li>○ limit reheating to not more than a 7.5 K rise in temperature at the supply air rate for the space served but may be increased or decreased at the same rate that the supply air rate is respectively decreased or increased</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Other than where a packaged air-conditioning unit is used, have a variable speed fan when its supply air quantity is varied	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Where the air-conditioning system provides the required mechanical ventilation (other than in a process application requiring humidity control), have an outdoor air economy cycle: <ul style="list-style-type: none"> <li>○ In Climate Zone 2 &amp; 3, where air-conditioning capacity is over 50 kW<sub>r</sub></li> <li>○ In Climate Zones 4, 5, 6, 7 &amp; 8 when the air-conditioning unit capacity is over 35 kW<sub>r</sub></li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
▪ Be designed so that the total fan power of the air-conditioning supply air and return air fans in the building is in accordance with Section J5.2 Table 3a.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>The following do not need comply with this requirement:</i> (i) The power for process related components such as high efficiency particulate air filters (ii) The power for a fan in an energy reclaiming system that preconditions outdoor air (iii) Fans in inducted air-conditioning units with a supply air capacity of less than 1000 l/s			
<b>A heater used for air-conditioning or as part of an airconditioning system must:</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Comply with Specification J5.2d			

Requirement	Yes	No	N/A
<b>Power supply controlled by a time switch must be:</b>			
Provided in accordance with <b>Specification J6</b> to:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>An air conditioning system of more than 10kW<sub>r</sub>; or</li> <li>A ventilation system with an air flow rate of more than 1000 L/s; or</li> <li>Heating systems of more than 10 kW<sub>heating</sub></li> </ul>			
<i>Exemptions apply where the system serves:</i>			
(i) Only one sole occupancy unit in Class 2 or 3 building; or			
(ii) A Class 4 part of a building; or			
(iii) Only on sole occupancy unit in a class 9c building; or			
(iv) A building where mechanical ventilation is needed for 24 hour occupancy; or			
(v) A Class 8 electricity network substation.			
<b>Mechanical ventilation is provided by means other than an air-conditioning system and the air flow air rate is more than 1000 L/s:</b>			
<ul style="list-style-type: none"> <li>Have a fan power to air flow rate ratio of 0.65 W/(L/s) without filters or 0.98 W/(L/s) with filters for a general mechanical ventilation system; and</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>For carpark exhaust, when serving over 40 vehicle spaces, be controlled by an atmospheric contaminant monitoring system in accordance with AS 1668.2.</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>The requirements of an air-conditioning system and a system that provides mechanical ventilation to other than a soul occupancy unit in a Class 2 building or a Class 4 part of a building, either as part of an air-conditioning system or as a separate ventilation system must not inhibit -</b>			
<ul style="list-style-type: none"> <li>The smoke hazard management operation of air-conditioning and mechanical ventilation systems; and</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>essential ventilation such as for a garbage room, lift motor room, gas meter enclosure or gas regulator enclosure or the like.</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>These provisions do not apply to the following:</i>			
(i) The power for an energy reclaiming system that preconditions outside air.			
(ii) The power for process related components such as high efficiency particulate air filters.			
(iii) The power for a miscellaneous exhaust system complying with J5.5.			
(iv) The power for a mechanical ventilation system for a Class 8 electricity network substation.			
<b>Systems that provide heating and chilling for air-conditioning systems must:</b>			
<ul style="list-style-type: none"> <li>Have piping, vessels, heat exchangers or tanks containing heated or chilled fluid insulated in accordance with <b>Specification J5.2c</b></li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>Where water is circulated by pumping at greater than 2 L/s:               <ul style="list-style-type: none"> <li>Be designed so that the total of the motor shaft power to the air conditioning pump does not exceed the requirements of <b>Table J5.2</b></li> <li>Have the pump capable of varying its speed in response to varying load when it is rated at more than 3kW pump power, except where the pump is needed to run at full speed for a safe or efficient</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>If the system contains more than one boiler, chiller or coil; be capable of stopping the flow of water to those not operating</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<ul style="list-style-type: none"> <li>A boiler must achieve thermal efficiency complying with <b>Specification J5.2d</b> when tested in accordance with BS 7190</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Requirement	Yes	No	N/A
<b>Package air conditioning equipment, including a split unit and a heat pump, and refrigerant chillers used as part of an air-conditioning system</b>			
<ul style="list-style-type: none"> <li>must have an EE ratio complying with <b>Specification J5.2e</b></li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>An air cooled condenser fan motor, other than one which is part of a package air-conditioning equipment or refrigerant chiller in compliance with Specification J5.2e;</b>			
<ul style="list-style-type: none"> <li>must not use more than 42 W of motor shaft power for each kW of heat rejected from the refrigerant when determined in accordance with ARI 460</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>The fan of a cooling tower</b>			
<ul style="list-style-type: none"> <li>must not use more than:               <ul style="list-style-type: none"> <li>If a propeller or axial fan, 310 W of motor shaft power for each L/s of cooling water circulated; and</li> <li>If a centrifugal fan, 590 W of motor shaft power for each L/s of cooling water circulated</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>The fan of a closed circuit cooler</b>			
<ul style="list-style-type: none"> <li>must not use more than:               <ul style="list-style-type: none"> <li>If a propeller or axial fan, 500 W of motor shaft power for each L/s of cooled fluid circulated; and</li> <li>If a centrifugal fan, 670 W of motor shaft power for each L/s of cooled fluid circulated</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>The fan of a evaporative condenser</b>			
<ul style="list-style-type: none"> <li>must not use more than               <ul style="list-style-type: none"> <li>If a propeller or axial fan, 18 W of motor shaft power for each kW of heat rejected; and</li> <li>If a centrifugal fan, 22 W of motor shaft power for each kW of heat rejected.</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>The spray water pump of a closed circuit cooler or evaporative condenser</b>			
<ul style="list-style-type: none"> <li>must not use more than 150 W of pump motor shaft power for each L/s of spray water circulated</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>NCC PART J5.3</b>			
<b>A system that provides mechanical ventilation to other than a soul occupancy unit in a Class 2 building or a Class 4 part of a building, either as part of an air-conditioning system or as a separate ventilation system, must:</b>			
<ul style="list-style-type: none"> <li>Be capable of being inactivated when the building or part of the building served is not occupied; and</li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Requirement	Yes	No	N/A
<ul style="list-style-type: none"> <li>▪ When serving a conditioned space not provide mechanical ventilation in excess of the minimum quantity required by <b>Part F4</b> by more than 20% other than where there is:               <ul style="list-style-type: none"> <li>○ Additional unconditioned outside air supplied to provide free cooling; or to balance required exhaust ventilation (such as from a toilet exhaust) or to balance exhaust from a health-care building or laboratory), or</li> <li>○ Additional exhaust ventilation needed to balance the required mechanical ventilation, or</li> <li>○ An energy reclaiming system that preconditions outside air</li> </ul> </li> </ul>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>▪ In other than Climate Zone 2, where the number of square metres per person is 1 or less as specified in <b>D1.13</b> and the air flow rate is more than 1000 L/s, have:               <ul style="list-style-type: none"> <li>○ an energy reclaiming system that preconditions outside air, or</li> <li>○ the ability to automatically modulate the mechanical ventilation required by Part F4 in proportion to the number of occupants</li> </ul> </li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

## NCC PART J5.4

**Miscellaneous exhaust systems with an air flow rate of more than 1000L/s that is associated with equipment having a variable demand such as a stove in a commercial kitchen or a chemical bath in a factory must:**

- |  |                          |                          |                                     |
|--|--------------------------|--------------------------|-------------------------------------|
| <ul style="list-style-type: none"> <li>▪ Have the means for the operator to:               <ul style="list-style-type: none"> <li>○ Reduce the energy used (such as a variable speed fan) and,</li> <li>○ Stop the motor when the system is not needed; and</li> </ul> </li> <li>▪ Be designed to minimize the exhausting of conditioned air.</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|

*These provisions do not apply to the following:*

- (i) Within a single occupancy unit of Class 2, 3 building, Class 4 part of a building or Class 9c aged care building; or
- (ii) Where additional exhaust ventilation is needed to balance the required outside air for ventilation; or
- (iii) Where the air flow must be maintained for safe operation; or
- (iv) To a Class 8 electricity network substation.

## STATEMENT OF COMPLIANCE:

**Building practitioner: Sam McLean**

Qualification / title: Mechanical Engineer

Company: SECON Consulting Engineers

I have reviewed the design (specifications, drawings and any supporting calculation), completed the attached checklist and certify that, if installed or carried out in accordance with the documentation referred to above, the air-conditioning and ventilation systems (as applicable) will comply with the NCC Section J5. I also confirm that I have appropriate qualification/ expertise to assess the compliance of the air-conditioning and ventilation systems.

Signed:  Dated: 29/04/19