



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

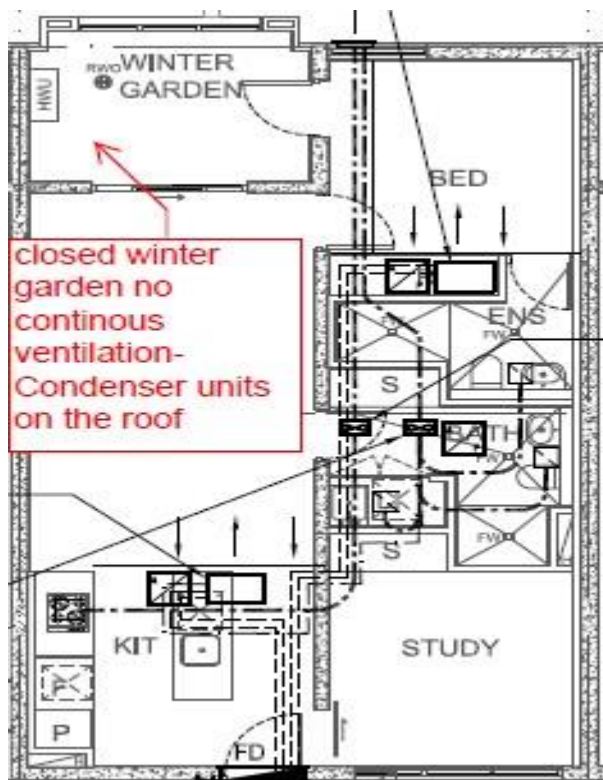
info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C

MECHANICAL SERVICE DESIGN REPORT

Attention: Leon Kmita

Created Date: 03/10/2017
Site Address: 23 Pacific Parade, Dee Why, 2099
Engineer: Serhan Irmak

All Seasons Air Pty Ltd confirms that we have exhausted every option possible to avoid installing the Condensing units on the roof of the building. You will note that, where possible, we have installed the condensers on balconies. Unfortunately this was not a possibility for all apartment units. The outdoor condensers require permanent natural ventilation, opened to the atmosphere, to comply with the manufacturer's specification and Australian standard 1668.2 (2012). Enclosed winter gardens **do not** meet the required ventilation for outdoor condensers (Figure 1&3).



(Figure 1 unit is installed on the roof)



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C

Initially, we considered installing the condensing units in the basement levels. However, due to the heat generated from those condensers this option was omitted. If we were to increase the capacity of the carpark ventilation system to cope with the heat gain, we would need to increase the size of the duct. This would have interfered with the 2200mm head heights leading to a non-comply with Australian standards AS/NZS 2890.1:2004.

B6 HEADROOM

The height of all passenger cars and station wagons is below 1.5 metres. The clear height between floors must also cater for persons walking with reasonable comfort and safety. The 99th percentile height of the Australian male is 1.88 m.

Vans and off-road vehicles used as private passenger vehicles need to be catered for. As noted in Paragraph A5, whilst the majority of these are below 2000 mm in height, there are some commonly used vehicles whose height is approaching 2200 mm. Furthermore, vehicles in this category are commonly used by people with disabilities who require headroom for a vehicle of up to 2200 mm in height.

Taking these factors into account the general minimum headroom requirement specified in Clause 5.3.1 has been set at 2.2 m with a further requirement that warning gauges be provided when the headroom is less than 2.3 m.

NOTE: A blanket requirement of 2.3 m minimum headroom applies to all travel paths to and from parking spaces for people with disabilities, together with additional headroom above such spaces for unloading roof-mounted wheelchairs, see AS/NZS 2890.6*.

(Figure 2 unit installed on the roof)

According to the manufacturer's specifications, condensers require a free area around the unit to operate without failure (Figure 3). Where these requirements are met, we have located condensers on balconies. Winter gardens were not an option due to it being an enclosed space. Manufacturers specifications (Figure 3).

2. Installation location

2.4. Ventilation and service space

2.4.1. When installing a single outdoor unit

Minimum dimensions are as follows, except for Max., meaning Maximum dimensions, indicated.

Refer to the figures for each case.

- ① Obstacles at rear only (Fig. 2-2)
- ② Obstacles at rear and above only (Fig. 2-3)
 - Do not install the optional air outlet guides for upward airflow.
- ③ Obstacles at rear and sides only (Fig. 2-4)
- ④ Obstacles at front only (Fig. 2-5)
 - When using an optional air outlet guide, the clearance is 500 mm or more.
- ⑤ Obstacles at front and rear only (Fig. 2-6)
 - When using an optional air outlet guide, the clearance is 500 mm or more.
- ⑥ Obstacles at rear, sides, and above only (Fig. 2-7)
 - Do not install the optional air outlet guides for upward airflow.

2.4.2. When installing multiple outdoor units

Leave 10 mm space or more between the units.

- ① Obstacles at rear only (Fig. 2-8)
- ② Obstacles at rear and above only (Fig. 2-9)
 - No more than three units must be installed side by side. In addition, leave space as shown.
 - Do not install the optional air outlet guides for upward airflow.
- ③ Obstacles at front only (Fig. 2-10)
 - When using an optional air outlet guide, the clearance is 1000 mm or more.
- ④ Obstacles at front and rear only (Fig. 2-11)
 - When using an optional air outlet guide, the clearance is 1000 mm or more.
- ⑤ Single parallel unit arrangement (Fig. 2-12)
 - When using an optional air outlet guide installed for spread airflow, the clearance is 1000 mm or more.
- ⑥ Multiple parallel unit arrangement (Fig. 2-13)
 - When using an optional air outlet guide installed for spread airflow, the clearance is 1500 mm or more.
- ⑦ Stacked unit arrangement (Fig. 2-14)
 - The units can be stacked up to two units high.
 - No more than two stacked units must be installed side by side. In addition, leave space as shown.



Fig. 2-2

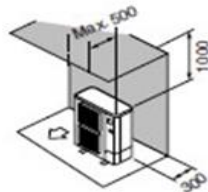


Fig. 2-3

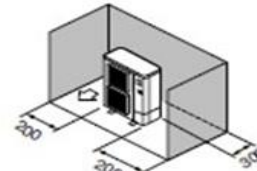


Fig. 2-4

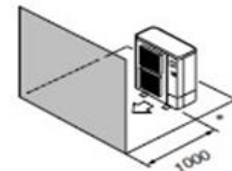


Fig. 2-5

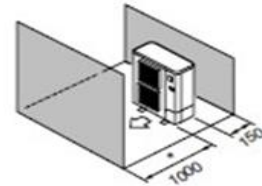


Fig. 2-6

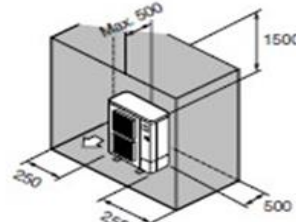


Fig. 2-7

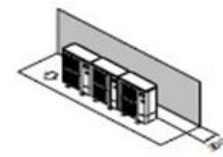


Fig. 2-8

(Figure 3 Mitsubishi Condenser Specification)

Condensers require both ventilation and service space. Only balconies with both specifications met can be considered as suitable for installation. There was also the need to stay 1 m clear of hand rails as to not become climbing hazards, a requirement of both BCA and NCA. (Figure 4)



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C



(Figure 4 condenser unit is located on the balcony where possible)



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C

Below is the list of the apartments and locations of the outdoor units:

LEVEL	UNIT NO.	LOCATION	COMMENT
GROUND	G01	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G02	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G03	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G04	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G05	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G06	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G10	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G11	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G12	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G13	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G14	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G15	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G16	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G17	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
GROUND	G18	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
1	101	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	102	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	103	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	104	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	105	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	106	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	107	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	108	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	109	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	110	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	111	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	112	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	113	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	114	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	115	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	116	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	117	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	118	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
1	119	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	201	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C

2	202	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	203	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	204	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	205	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	206	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	207	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	208	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	209	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	210	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	211	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	212	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	213	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	214	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	215	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	216	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	217	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	218	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
2	219	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	301	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	302	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	303	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	304	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	305	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	306	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	307	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	308	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	309	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	310	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	311	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	312	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	313	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	314	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	315	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	316	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	317	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	318	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
3	319	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
4	401	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	402	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	403	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	404	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)



All Seasons Air Pty Ltd
Unit 16, 332 Hoxton Park Road
Prestons NSW 2170
Tel. 02 9825 8858

info@asair.com.au
www.asair.com.au
ABN 85 149 103 748
Licence# 235404C

4	405	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	406	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	407	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	408	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	409	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	410	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	411	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	412	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	413	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	414	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	415	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
4	416	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
5	501	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
5	502	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	503	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	504	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	505	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	506	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	507	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	508	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
5	509	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
6	601	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)
6	602	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
6	603	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
6	604	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
6	605	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
6	606	ROOF	NO PERMENANT NATURAL VENTILATION OR ENOUGH SPACE (FIGURE 1)
6	607	Balcony	PERMENANT NATURAL VENTILATION IS PRESENT SPACE (FIGURE 4)

In conclusion, as all the remaining apartments consist of Winter Gardens, no permanent natural ventilation is present. Hence the roof level being the most suitable location, complying with AS 1668 and the manufacturer's requirements.

Regards,

Serhan Irmak

Mechanical Engineer (M. IEAUST:3417047, M. AIRAH: 40477)