

Appendix 8

Discharge to Air

Schedule 1 – Emission Requirements Small-scale Solid Fuel Burning Appliances.

Small-scale solid fuel burning appliances must:

- (a) Emit no more than 1.5 grams of total suspended particulate per kilogram of fuel burned, calculated by averaging the total suspended particulate emissions for high, medium and low burn rates, when tested in accordance with AS/NZS4012:1999 and AS/NZS4013:1999 or the functional equivalent for non-batch fed appliances. Where the nominated test fuel is wood then the test must be carried out using softwood in accordance with the requirements of AS/NZS 4014.2:1999; and
- (b) Have a thermal efficiency, for space heating only, as described in AS/NZS 4013:1999, of 65% or greater; and
- (c) Not be modified in any way so as to alter the specifications of the heating device from those tested and stated in a) and b); and
- (d) Be maintained in good operational order and operated in accordance with the manufacturer's instructions (so long as those do not mandate operation that would lead to output that does not comply with a) or b), and be operated with the door shut in the case of enclosed appliances; and
- (e) Be capable of being operated on a high, medium and low burn rate.

Schedule 2 – Stack Requirements Small-scale Solid Fuel Burning Appliances

The discharge into air from any device installed after 9 June 2016 must be to the atmosphere via an emission stack which in all cases extends vertically not less than 4.6m above the floor protector under the appliance, and:

- (a) where the stack is within 3m horizontally, or closer, to the highest point of the roof of the building, the stack must protrude at least 600mm above the high point of the roof; or
- (b) where the stack is further than 3m horizontally from the highest point of the roof of the building, the stack must protrude at least 1000mm above the point of roof penetration; and
- (c) the stack must be sufficiently high so that no building (including the building into which the appliance is being installed), substantial structure or any land, lies in or above a horizontal plane with a radius of 3m drawn around the top of the stack; and
- (d) the discharge must be directed vertically into air (although cowls or weather protectors are permitted).

Schedule 3 – Stack Requirements: Small-scale Fuel Burning Appliances (Gas, Oil and Other Liquid Fuels)

The discharge into air from any device installed after 9 June 2016 (including any pellet burner that complies with AQ2A (AQR.26)) must be via an emission stack to the outside atmosphere such that the discharge point at the end of the stack is above the roof of the building, and:

- (a) be at least 500mm from the nearest part of the roof; and
- (b) in the case of a trafficable roof designed for personal or public use, be at least 2m above roof level and 500mm above any surrounding parapet; and
- (c) in the case of a chimney, be at least 200mm above the top of the chimney, be at least 1m horizontally from a neighbouring structure, or if less than 1m from that structure, at least 500mm above it; and
- (d) be at least 1.5m for any opening into a buildings; and
- (e) be at least 200mm from another stack.

Schedule 4 – Stack Requirements: Stationary Internal Combustion Appliances

The discharge into air from any stationary internal combustion appliance must, after the date of notification of this plan, be via an emission stack where:

- (a) the discharge point is at least 3m above ground level; or
- (b) the discharge point is 2.5m higher than the apex of any building, tree, slope or other structure within a radius of 2.5 times the stack height (whichever discharge point a) or b) is the higher; and
- (c) the exhaust gases are directed vertically into air and the exhaust gases are not impeded by any obstruction that would lower the velocity of the exhaust gases.

Schedule 5 – Chimney Height Schedules for External Combustion

Table 1: Chimney Height Schedules for Diesel, Coal, Wood and Pellet Boilers

Diesel		
PM ₁₀ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
1	40kW	6.0
3	100kW	7.0
6	200kW	7.0
9	300kW	7.0
12	400kW	7.0
15	500kW	7.0
30	1MW	8.0
45	2MW	8.0
90	3MW	9.0
121	4MW	9.0
151	5MW	9.0
181	6MW	10.0
211	7MW	10.0
241	8MW	10.0
271	9MW	10.0
302	10MW	10.0
Coal		
PM ₁₀ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
14	40kW	8.0
36	100kW	10.5
72	200kW	13.0
107	300kW	14.5
175	1MW	20.0
Wood		
PM ₁₀ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
20	40kW	10.0
51	100kW	>12.0*
100	200kW	>12.0
152	300kW	>12.0
203	400kW	>12.0
253	500kW	>12.0

Pellet (Conversions)		
PM₁₀ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
8	40kW	7.0
20	100kW	9.5
40	200kW	10.5
60	300kW	11.5
80	400kW	12.0
100	500kW	13.0
152	700kW	14.0
253	1MW	16.0
Pellet (Custom)		
PM₁₀ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
8	100kW	7.0
15	200kW	9.5
23	300kW	9.5
30	400kW	10.5
38	500kW	10.5
63	700kW	11.5
75	1.0MW	12.0
98	1.3MW	13.0

* chimney height requirement to be assessed through resource consent process.

Table 2: Chimney Height Schedules for Light Fuel Oil (LFO), Heavy Fuel Oil (HFO) and LPG

LFO		
SO₂ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
179	40kW	12.0
448	100kW	>12.0*
896	200kW	>12.0*
2240	500kW	>12.0*
HFO		
SO₂ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
259	40kW	>12.0*
649	100kW	>12.0*
1297	200kW	>12.0*
3243	500kW	>12.0*

LPG		
NO₂ Emission Rate g/hr	Indicative Heat Output	Chimney Height Metres
30	100kW	6.0
75	250kW	6.5
151	500kW	8.0
225	750kW	9.0
302	1.0MW	10.0
605	2.0MW	12.0
907	3.0MW	12.0
1209	4.0MW	12.0
1512	5.0MW	12.0
2116	7.5MW	12.0
3023	10.0MW	12.0

* chimney height requirement to be assessed through resource consent process.