

**APPENDIX H17: CALCULATION OF CHIMNEY HEIGHTS**

In terrain where the land does not rise to more than half and buildings do not rise to more than 0.4 times the indicative height of the chimney within a ground distance of five times the indicative height, and where there are no other significant sources of air-borne contaminants, the height of any chimney discharging the products of combustion from fuel burning equipment will be determined generally in accordance with the following guidelines:

- a) **For any discharge from the combustion of coal or oil where the release of sulphur dioxide or nitrogen oxides is individually less than 2 kg/h:** The minimum chimney height should be the higher of either 8 metres above finished ground level or 3 metres above the highest substantial part of any building located within 40 metres of the chimney or any part of the building to which the chimney is attached.
- b) **For any discharge from the combustion of natural gas, liquefied gas or untreated wood, where the release of nitrogen oxides is less than 0.5 kg/h or the heat input is less than 2 megawatts.** The minimum chimney height should be the higher of either 8 metres above finished ground level or 3 metres above the highest substantial part of any building located within 40 metres of the chimney or any part of the building to which the chimney is attached.
- c) **For any discharge from the combustion of coal or oil where the release of sulphur dioxide is equal to or exceeds 2 kg/h but is less than 50 kg/h and the maximum energy release is less than 10 megawattw.** The height of the chimney should be calculated in accordance with Table 1 or be 3.5 metres above the highest substantial part of any building located within 40 metres of the chimney or any part of the building to which the chimney may be attached, whichever is higher.

**Table 2 – Coal and Oil Used as Fuel**

S0 <sub>2</sub> (kg/h)	Chimney height above ground (m)	S0 <sub>2</sub> (kg/h)	Chimney height above ground (m)
2.0	8.5	14.0	20.3
2.5	9.5	15.0	20.6
3.0	10.4	16.0	20.9
4.0	12.0	17.0	21.1
5.0	13.4	18.0	21.4
6.0	14.7	19.0	21.6
7.0	15.9	20.0	21.8
8.0	17.0	25.0	22.8
9.0	18.0	30.0	23.7
10.0	19.0	35.0	24.4
11.0	19.4	40.0	25.1
12.0	19.7	45.0	25.7
13.0	20.0	50.0	26.2

- d) **For any discharge from the combustion of natural gas, liquified gas or untreated wood, where the release of nitrogen oxides is equal to or exceeds 0.5 kg/h but is less than 20 kg/h and the maximum energy release is less than 50 megawatts.** The height of the chimney should be calculated in accordance with Table 3 (with the minimum height being whichever is the greater height of those corresponding to the heat input (MW) and the nitrogen oxides discharge (kg/h)), or be 3.3 metres above the highest substantial part of any building located within 40 metres of the chimney or any part of the building to which the chimney may be attached, whichever is higher.

Table 3 -

Heat input (MW)	Nitrogen oxides (kg/h)	Chimney height above ground (m)
2.0	0.5	8.3
2.5	0.6	8.5
3.0	0.8	8.7
4.0	1.1	9.1
5.0	1.4	9.4
6.0	1.7	9.7
7.0	2.0	10.0
8.0	2.4	10.3
9.0	2.7	10.6
10.0	3.0	10.8
11.0	3.4	11.0
12.0	3.7	11.3
13.0	4.1	11.5
14.0	4.5	11.7
15.0	4.8	11.9
16.0	5.2	12.1
17.0	5.6	12.3
18.0	5.9	12.5
19.0	6.3	12.7
20.0	6.7	12.8
25.0	8.6	13.7
30.0	10.6	14.5
35.0	12.7	15.2
40.0	16.9	16.4
45.0	16.9	16.4
50.0	19.0	17.0

In the following circumstances, the height of the chimney should generally be determined using the 99.9% modeled percentile:

- a) For any discharge from a chimney where the maximum energy release from the combustion of coal or oil exceeds 10 megawatts or the release of sulphur dioxide exceeds 50 kg/h;
- b) For any discharge from a chimney where the maximum energy release from the combustion of natural gas, liquefied gas or wood exceeds 50 megawatts;
- c) In terrain where the land rises to more than half or buildings rise to more than 0.4 times the indicative height of the chimney, within a ground distance of five times the indicative height; and
- d) Where there are other sources of nitrogen oxides within close proximity such that cumulative effects may occur.