# Appendix E
# Requirements for Chimney Height

1.0 In uncomplicated terrain without the presence of high buildings, or no other significant sources of air-borne contaminants, the height of any chimney discharging the products of combustion from conventional fuel burning equipment from the combustion of:

1.1 Coal or oil where the release of sulphur dioxide or nitrogen oxides is individually less than 2 kg/hr; the minimum chimney height shall 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 meters of the chimney or any part of the building to which the chimney may be attached;

1.2 Natural gas, liquefied gas or wood, where the release of nitrogen oxides is less than 0.5 kg/hour or the heat input is less than 2 MW: the minimum chimney height shall 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 may be attached;

1.3 Coal or oil where the release of sulphur dioxide is equal to or exceeds 2 kg/hour but is less than 50 kg/hour and the maximum energy release is less than 10 MW: the height of the chimney shall be calculated in accordance with Table 1;

1.4 Natural gas, liquefied gas or wood, where the release of nitrogen oxides is equal to or exceeds 0.5 kg/hour but is less than 20 kg/hour and the maximum energy release is less than 50 MW: the minimum chimney height of the chimney shall be calculated in accordance with Table 2.

**Table 1**
**Minimum chimney heights where coal or oil is used as fuel (1.3)**

| Sulphur Dioxide Height (metres) | Chimney Emission (kg/hour) | Sulphur Dioxide Height (metres) | Chimney Emission (kg/hour) |
|---|---|---|---|
| 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 |

| Table 2<br>Minimum chimney heights where natural gas, liquefied gas or wood used as fuel (1.4) | | | | | |
|---|---|---|---|---|---|
| **Heat Input (MW)** | **Nitrogen Oxides Emission (kg/hour)** | **Chimney Height (metres)** | **Heat Input (MW)** | **Nitrogen Oxides Emission (kg/hour)** | **Chimney Height (metres)** |
| 2.0 | 0.5 | 8.3 | 14.0 | 4.5 | 11.7 |
| 2.5 | 0.6 | 8.5 | 15.0 | 4.8 | 11.9 |
| 3.0 | 0.8 | 8.7 | 16.0 | 5.2 | 12.1 |
| 4.0 | 1.1 | 9.1 | 17.0 | 5.6 | 12.3 |
| 5.0 | 1.4 | 9.4 | 18.0 | 5.9 | 12.5 |
| 6.0 | 1.7 | 9.7 | 19.0 | 6.3 | 12.7 |
| 7.0 | 2.0 | 10.0 | 20.0 | 6.7 | 12.8 |
| 8.0 | 2.4 | 10.3 | 25.0 | 8.6 | 13.7 |
| 9.0 | 2.7 | 10.6 | 30.0 | 10.6 | 14.5 |
| 10.0 | 30.0 | 10.8 | 35.0 | 12.7 | 15.2 |
| 11.0 | 3.4 | 11.0 | 40.0 | 14.7 | 15.8 |
| 12.0 | 3.7 | 11.3 | 45.0 | 16.9 | 16.4 |
| 13.0 | 4.1 | 11.5 | 50.0 | 19.0 | 17.0 |

2.0 For any discharge from a chimney:

- Where the maximum energy release from the combustion of
  - coal or oil exceeds 10 MW or the release of sulphur dioxide exceeds 50 kg/hour;
  - natural gas, liquefied gas, or wood exceeds 50 MW; or
- In terrain where the land rises within 5 times the indicative height of the chimney to more than half the indicative height, or in the presence of buildings which have maximum height of more than 0.4 times the indicative height of the chimney, or where there are other significant sources of sulphur dioxide or nitrogen oxides;

the height of the chimney is to be determined so that the discharge will not give rise to contaminant levels in excess if an indicator level based on 40% of the New Zealand Air Quality Guidelines, Ministry for the Environment, 1994.