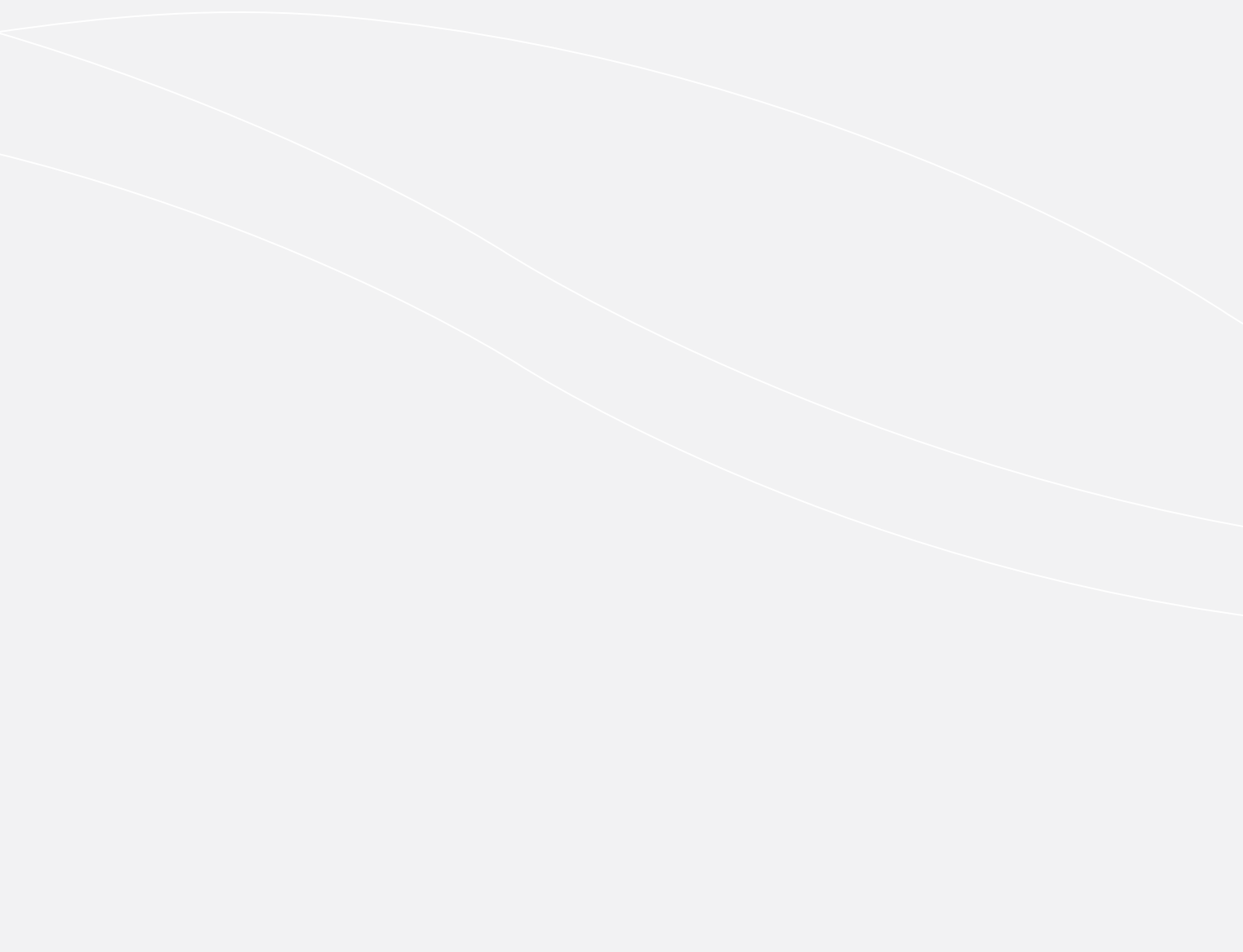


Appendix 17a

Greenhouse Emissions Methodology





Carbon Emissions Methodology

The National Greenhouse and Energy Reporting System (NGERS) Technical Guidelines have a section on waste incineration. It is the closest form of process to waste gasification available under the guidelines.

It is under Section 5.5. In this section, we only have two options for determining carbon emissions – Method 1 under section 5.53 (calculation using standard factors) and Method 4 under Part 1.3 (direct measurement).

As we do not have a facility to measure, we will use Method 1 under section 5.53. The method is quoted below, direct from the guidelines:

Method 1 is:

$$E_i = Q_i \times CC_i \times FCC_i \times OF_i \times 3.664$$

where:

E_i is the emissions of carbon dioxide released from the incineration of waste type (*i*) by the plant during the year measured in CO₂-e tonnes.

Q_i is the quantity of waste type (*i*) incinerated by the plant during the year measured in tonnes of wet weight value in accordance with:

- (a) Division 2.2.5 for solid fuels; and
- (b) Division 2.3.6 for gaseous fuels; and
- (c) Division 2.4.6 for liquid fuels.

CC_i is the carbon content of waste type (*i*).

FCC_i is the proportion of carbon in waste type (*i*) that is of fossil origin.

OF_i is the oxidation factor for waste type (*i*).

- (2) If waste materials other than clinical wastes have been incinerated by the plant, appropriate values for the carbon content of the waste material incinerated must be derived from Schedule 3.

Q is the quantity of waste and determined by New Energy.

OF is oxidation factor and will be 1 in all cases, as the organics are completely oxidized.

The major uncertainty is deciding the fossil-original carbon content.



NGERS Technical Guidelines advise the user that they “must” derive carbon content from Schedule 3. This is a limited table giving carbon content of standard fuels. The only fuels really relevant are quoted below:

<i>Fuels derived from recycled materials</i>	
Industrial materials and tyres that are derived from fossil fuels, if recycled and combusted to produce heat or electricity	0.585
Non-biomass municipal materials, if recycled and combusted to produce heat or electricity	0.250
<i>Primary solid biomass fuels</i>	
Biomass municipal and industrial materials, if recycled and combusted to produce heat or electricity	0

We have applied the non-biomass municipal carbon content to plastics and textiles in our waste stream.

We have obviously considered all biomass to have a zero fossil-origin carbon content (as per the “biomass municipal and industrial materials...” detailed in the table above).