

Appendix 10.5 - Event Tree Analysis

E01 Gasholder Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)
Gasholder Release (size = 1,600m <sup>3</sup> )	Leak, 300mm hole (~ 18.4kg/s) 7.07E-04	Immediate		Jet Fire	2.47E-05
		Delay 0.035	Yes 0.12	VCE	2.97E-06
			No 0.88	Flash Fire	2.18E-05
		No 0.93		No Consequence	6.58E-04
	Rupture (release quantity = 1,600m <sup>3</sup> ) 3.91E-05	Immediate		Fire Ball	5.87E-06
		Delay 0.15	Yes 0.3	VCE	1.76E-06
			No 0.7	Flash Fire	4.11E-06
		No 0.7		No Consequence	2.74E-05

Note: There are 2 nos. of gasholders on-duty with 1,600m<sup>3</sup> each.

Appendix 10.5 - Event Tree Analysis

E02 Digester Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)
Digester Release (biogas volume = 330m <sup>3</sup> )	Leak, 300mm hole (~ 18.1kg/s) 8.07E-04	Immediate		Jet Fire	2.82E-05
		Delay 0.035	Yes 0.12	VCE	3.39E-06
			No 0.88	Flash Fire	2.49E-05
		No 0.93		No Consequence	7.51E-04
	Rupture (release quantity = 330m <sup>3</sup> ) 4.91E-05	Immediate		Fire Ball	7.37E-06
		Delay 0.15	Yes 0.3	VCE	2.21E-06
			No 0.7	Flash Fire	5.16E-06
		No 0.7		No Consequence	3.44E-05

Note: There are 3 nos. of digesters on-duty with 330m<sup>3</sup> each.

Appendix 10.5 - Event Tree Analysis

E03 Sulphur Absorption Vessel Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)
Sulphur Absorption Vessel Release (size = 50m <sup>3</sup> of methane)	Leak, 10mm hole (~ 0.02kg/s) 5.00E-04	Immediate		Jet Fire	2.50E-06
		0.005	Yes	VCE	1.00E-07
		Delay	0.04	Flash Fire	2.40E-06
		0.005	No	No Consequence	4.95E-04
	Rupture (release quantity = 50m <sup>3</sup> ) 3.91E-05	Immediate		Fire Ball	5.87E-06
		0.15	Yes	VCE	1.76E-06
		Delay	0.3	Flash Fire	4.11E-06
		0.15	No	No Consequence	2.74E-05
		No	0.7		
		0.7			

Note: There are 2 nos. of sulphur absorption vessels on-duty with 50m<sup>3</sup> each.

Appendix 10.5 - Event Tree Analysis

E04 Aboveground Piping Release

	Leak Size	Ignition	Explosion	Outcome	Frequency (per year)
Aboveground Piping Release	Leak, 15mm hole (~ 0.05kg/s) 2.79E-04	Immediate		Jet Fire	1.40E-06
		Delay	Yes	VCE	5.59E-08
			No	Flash Fire	1.34E-06
		No	No Consequence	2.76E-04	
	Rupture, 150mm dia. (~4.6kg/s) 9.74E-05	Immediate		Jet Fire	3.41E-06
		Delay	Yes	VCE	4.09E-07
			No	Flash Fire	3.00E-06
		No	No Consequence	9.06E-05	

Note: 100m length of DN150 aboveground pipeline is assumed.