

Annex D7

Thermal Oxidizer, Landfill
Gas Flare and Landfill Gas
Generator Stack Emission
Monitoring Results

Table D7.1 Thermal Oxidiser Stack Emission Monitoring Results

Parameters	Monitoring Results
NO ₂	0.95 gs ⁻¹
CO	<0.01 gs ⁻¹
SO ₂	<0.01 gs ⁻¹
Benzene	<2.0 x 10 ⁻⁴ gs ⁻¹
Vinyl chloride	<1.3 x 10 ⁻⁴ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	<3.0 x 10 ⁻³ gs ⁻¹
Ammonia	0.0384 gs ⁻¹
Exhaust gas velocity	10.1 ms ⁻¹

Table D7.2 Thermal Oxidiser Stack Continuous Monitoring Results

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) ^(a)
1 Feb 23	918	1232	
2 Feb 23	937	1244	
3 Feb 23	927	1230	
4 Feb 23	930	1241	
5 Feb 23	913	1226	
6 Feb 23	Under Maintenance		
7 Feb 23	Under Maintenance		
8 Feb 23	Under Maintenance		
9 Feb 23	924	957	
10 Feb 23	942	972	
11 Feb 23	906	983	
12 Feb 23	903	925	
13 Feb 23	916	946	
14 Feb 23	922	956	
15 Feb 23	924	959	10.1
16 Feb 23	925	962	
17 Feb 23	922	955	
18 Feb 23	924	956	
19 Feb 23	930	964	
20 Feb 23	902	925	
21 Feb 23	895	937	
22 Feb 23	930	960	
23 Feb 23	924	957	
24 Feb 23	925	959	
25 Feb 23	937	961	
26 Feb 23	935	959	
27 Feb 23	934	960	
28 Feb 23	925	961	
Average	923	1230	-
Min	895	1198	-
Max	942	1256	-

Notes:

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

Table D7.3 Landfill Gas Flare Stack Emission Monitoring Results

Parameters	Monitoring Results (Flare 1 - F601)
NO ₂	0.02 gs ⁻¹
CO	0.16 gs ⁻¹
SO ₂	0.02 gs ⁻¹
Benzene	<1.2 x 10 ⁻⁴ gs ⁻¹
Vinyl chloride	<9.6 x 10 ⁻⁵ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	0.006 gs ⁻¹
Exhaust gas velocity	8.9 ms ⁻¹

Table D7.4 Landfill Gas Flare Stack Continuous Monitoring Results

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
Flare 1 - F601				
1 Feb 23	860	1073		In Operation
2 Feb 23	880	1043		In Operation
3 Feb 23	870	1073		In Operation
4 Feb 23	830	1023		In Operation
5 Feb 23	880	1033		In Operation
6 Feb 23	840	1053		In Operation
7 Feb 23	880	1053		In Operation
8 Feb 23	890	1033		In Operation
9 Feb 23	880	1043		In Operation
10 Feb 23	-	-		Under Maintenance
11 Feb 23	-	-		Under Maintenance
12 Feb 23	-	-		Under Maintenance
13 Feb 23	-	-		Under Maintenance
14 Feb 23	-	-	8.9	Under Maintenance
15 Feb 23	-	-		Under Maintenance
16 Feb 23	-	-		Under Maintenance
17 Feb 23	-	-		Under Maintenance
18 Feb 23	-	-		Under Maintenance
19 Feb 23	-	-		Under Maintenance
20 Feb 23	860	1023		In Operation
21 Feb 23	880	1043		In Operation
22 Feb 23	880	1053		In Operation
23 Feb 23	900	1053		In Operation
24 Feb 23	870	1003		In Operation
25 Feb 23	900	1093		In Operation
26 Feb 23	880	1083		In Operation
27 Feb 23	840	1023		In Operation
28 Feb 23	830	1073		In Operation
Average	869	1049	-	
Min	830	1003	-	
Max	900	1093	-	
Flare 2 - F602				
1 Feb 23	860	1088		In Operation
2 Feb 23	-	-		Under Maintenance
3 Feb 23	-	-		Under Maintenance
4 Feb 23	860	1083		In Operation
5 Feb 23	840	1093		In Operation
6 Feb 23	880	1103		In Operation
7 Feb 23	900	1153		In Operation
8 Feb 23	-	-		Under Maintenance
9 Feb 23	850	1083		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
10 Feb 23	840	1063		In Operation
11 Feb 23	-	-		Under Maintenance
12 Feb 23	870	1053		In Operation
13 Feb 23	870	1073		In Operation
14 Feb 23	860	1093		In Operation
15 Feb 23	880	1083	8.9	In Operation
16 Feb 23	880	1093		In Operation
17 Feb 23	840	1073		In Operation
18 Feb 23	830	1053		In Operation
19 Feb 23	830	1053		In Operation
20 Feb 23	-	-		Under Maintenance
21 Feb 23	840	1053		In Operation
22 Feb 23	820	1073		In Operation
23 Feb 23	880	1083		In Operation
24 Feb 23	880	1083		In Operation
25 Feb 23	-	-		Under Maintenance
26 Feb 23	-	-		Under Maintenance
27 Feb 23	-	-		Under Maintenance
28 Feb 23	890	1093		In Operation
Average	860	1081	-	
Min	820	1053	-	
Max	900	1153	-	

Notes:

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.

Table D7.5 Landfill Gas Generator Stack Emission Monitoring Results

Parameters	Monitoring Results
NO ₂	0.053 gs ⁻¹
CO	0.973 gs ⁻¹
SO ₂	<0.002 gs ⁻¹
Benzene	<1.0 x 10 ⁻⁴ gs ⁻¹
Vinyl chloride	<1.3 x 10 ⁻⁵ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	<3.3 x 10 ⁻³ gs ⁻¹
Exhaust gas velocity	12.1 ms ⁻¹

(a) The Landfill Gas Generator was under maintenance in the reporting period.

Table D7.6 Landfill Gas Generator Stack Continuous Monitoring Results

Date	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
ENGA			
1 Feb 23	868		In Operation
2 Feb 23	868		In Operation
3 Feb 23	868		In Operation
4 Feb 23	869		In Operation
5 Feb 23	870		In Operation
6 Feb 23	865		In Operation
7 Feb 23	867		In Operation
8 Feb 23	866		In Operation
9 Feb 23	872		In Operation
10 Feb 23	867		In Operation
11 Feb 23	867		In Operation
12 Feb 23	870		In Operation
13 Feb 23	871		In Operation
14 Feb 23	860		In Operation
15 Feb 23	868	12.1	In Operation
16 Feb 23	868		In Operation
17 Feb 23	869		In Operation
18 Feb 23	869		In Operation
19 Feb 23	870		In Operation
20 Feb 23	-		Under Maintenance
21 Feb 23	-		Under Maintenance
22 Feb 23	-		Under Maintenance
23 Feb 23	-		Under Maintenance
24 Feb 23	870		In Operation
25 Feb 23	870		In Operation
26 Feb 23	872		In Operation
27 Feb 23	868		In Operation
28 Feb 23	870		In Operation
Average	869	-	
Min	860	-	
Max	872	-	
ENGB			
1 Feb 23	-		Under Maintenance
2 Feb 23	-		Under Maintenance
3 Feb 23	-		Under Maintenance
4 Feb 23	-		Under Maintenance
5 Feb 23	-		Under Maintenance
6 Feb 23	-		Under Maintenance
7 Feb 23	-		Under Maintenance
8 Feb 23	-		Under Maintenance

Date	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
9 Feb 23	-		Under Maintenance
10 Feb 23	-		Under Maintenance
11 Feb 23	-		Under Maintenance
12 Feb 23	-	12.1	Under Maintenance
13 Feb 23	-		Under Maintenance
14 Feb 23	-		Under Maintenance
15 Feb 23	-		Under Maintenance
16 Feb 23	-		Under Maintenance
17 Feb 23	-		Under Maintenance
18 Feb 23	-		Under Maintenance
19 Feb 23	-		Under Maintenance
20 Feb 23	860		In Operation
21 Feb 23	860		In Operation
22 Feb 23	861		In Operation
23 Feb 23	862		In Operation
24 Feb 23	-		Under Maintenance
25 Feb 23	-		Under Maintenance
26 Feb 23	-		Under Maintenance
27 Feb 23	-		Under Maintenance
28 Feb 23	-		Under Maintenance
Average	861	-	
Min	860	-	
Max	862	-	

Notes:

(a) The exhaust gas velocity was calculated based on the cross-section area of the stack and the gas flow and combustion temperature data measured during the stack emission monitoring.