

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	0.14 gs ⁻¹
CO	0.03 gs ⁻¹
SO ₂	<0.01 gs ⁻¹
Benzene	<1.0 x 10 ⁻⁴ gs ⁻¹
Vinyl chloride	<9.0 x 10 ⁻⁵ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	0.009 gs ⁻¹
Ammonia	0.0361 gs ⁻¹
Exhaust gas velocity	8.7 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 Aug 23	921	1224	
2 Aug 23	944	1228	
3 Aug 23	907	1218	
4 Aug 23	944	1222	
5 Aug 23	885	1180	
6 Aug 23	929	1221	
7 Aug 23	921	1218	
8 Aug 23	903	1212	
9 Aug 23	895	1208	
10 Aug 23	898	1206	
11 Aug 23	931	1220	
12 Aug 23	917	1195	
13 Aug 23	939	1212	
14 Aug 23	923	1212	
15 Aug 23	930	1224	
16 Aug 23	937	1218	8.7
17 Aug 23	924	1206	
18 Aug 23	910	1205	
19 Aug 23	933	1214	
20 Aug 23	955	1227	
21 Aug 23		Under Maintenance	
22 Aug 23		Under Maintenance	
23 Aug 23		Under Maintenance	
24 Aug 23		Under Maintenance	
25 Aug 23		Under Maintenance	
26 Aug 23		Under Maintenance	
27 Aug 23		Under Maintenance	
28 Aug 23		Under Maintenance	
29 Aug 23		Under Maintenance	
30 Aug 23		Under Maintenance	
31 Aug 23	922	1180	
Average	922	1212	-
Min	885	1180	-
Max	955	1228	-

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	0.08 gs ⁻¹
SO ₂	0.06 gs ⁻¹
Benzene	<1.22 x 10 ⁻⁴ gs ⁻¹
Vinyl chloride	<0.98 x 10 ⁻⁵ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	0.003 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 Aug 23	877	1043		In Operation
2 Aug 23	830	1023		In Operation
3 Aug 23	835	993		In Operation
4 Aug 23	850	1003		In Operation
5 Aug 23	850	1043		In Operation
6 Aug 23	-	-		Under Maintenance
7 Aug 23	860	1033		In Operation
8 Aug 23	860	1023		In Operation
9 Aug 23	980	1133		In Operation
10 Aug 23	970	1063		In Operation
11 Aug 23	950	1103		In Operation
12 Aug 23	880	1053		In Operation
13 Aug 23	860	1033		In Operation
14 Aug 23	850	1043		In Operation
15 Aug 23	870	1023		In Operation
16 Aug 23	910	1093	8.9	In Operation
17 Aug 23	980	1083		In Operation
18 Aug 23	950	1123		In Operation
19 Aug 23	870	1053		In Operation
20 Aug 23	830	1023		In Operation
21 Aug 23	860	1053		In Operation
22 Aug 23	880	1063		In Operation
23 Aug 23	860	1053		In Operation
24 Aug 23	850	1063		In Operation
25 Aug 23	840	1043		In Operation
26 Aug 23	860	1073		In Operation
27 Aug 23	860	1053		In Operation
28 Aug 23	860	1063		In Operation
29 Aug 23	860	1053		In Operation
30 Aug 23	865	1085		In Operation
31 Aug 23	890	1073		In Operation
Average	878	1056	-	
Min	830	993	-	
Max	980	1133	-	
Flare 2 - F602				
1 Aug 23	830	1063		In Operation
2 Aug 23	840	1053		In Operation
3 Aug 23	890	1003		In Operation
4 Aug 23	830	1053		In Operation

Date	Gas Combustion Temperature (°C)	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
5 Aug 23	860	1083		In Operation
6 Aug 23	860	1083		In Operation
7 Aug 23	900	1093		In Operation
8 Aug 23	830	1033		In Operation
9 Aug 23	870	1083		In Operation
10 Aug 23	870	1073		In Operation
11 Aug 23	880	1023		In Operation
12 Aug 23	930	1123		In Operation
13 Aug 23	850	1063		In Operation
14 Aug 23	820	1023		In Operation
15 Aug 23	860	1043	8.9	In Operation
16 Aug 23	820	1053		In Operation
17 Aug 23	860	1053		In Operation
18 Aug 23	840	1053		In Operation
19 Aug 23	820	1023		In Operation
20 Aug 23	840	1053		In Operation
21 Aug 23	840	1063		In Operation
22 Aug 23	870	1116		In Operation
23 Aug 23	840	1063		In Operation
24 Aug 23	830	1083		In Operation
25 Aug 23	830	1043		In Operation
26 Aug 23	890	1053		In Operation
27 Aug 23	860	1053		In Operation
28 Aug 23	850	1083		In Operation
29 Aug 23	880	1103		In Operation
30 Aug 23	840	1083		In Operation
31 Aug 23	890	1073		In Operation
Average	855	1063	-	
Min	820	1003	-	
Max	930	1123	-	

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	0.024 gs ⁻¹
CO	0.895 gs ⁻¹
SO ₂	<0.001 gs ⁻¹
Benzene	6.9 × 10 ⁻⁵ gs ⁻¹
Vinyl chloride	<1.1 × 10 ⁻⁵ gs ⁻¹
Non-Methane Organic Carbons (NMOC)	1.9 × 10 ⁻³ gs ⁻¹
Exhaust gas velocity	13.1 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 Aug 23	866		In Operation
2 Aug 23	848		In Operation
3 Aug 23	870		In Operation
4 Aug 23	876		In Operation
5 Aug 23	867		In Operation
6 Aug 23	847		In Operation
7 Aug 23	846		In Operation
8 Aug 23	849		In Operation
9 Aug 23	851		In Operation
10 Aug 23	861		In Operation
11 Aug 23	873		In Operation
12 Aug 23	876		In Operation
13 Aug 23	846		In Operation
14 Aug 23	874		In Operation
15 Aug 23	847		In Operation
16 Aug 23	873	13.1	In Operation
17 Aug 23	847		In Operation
18 Aug 23	876		In Operation
19 Aug 23	874		In Operation
20 Aug 23	847		In Operation
21 Aug 23	876		In Operation
22 Aug 23	875		In Operation
23 Aug 23	875		In Operation
24 Aug 23	874		In Operation
25 Aug 23	875		In Operation
26 Aug 23	875		In Operation
27 Aug 23	875		In Operation
28 Aug 23	875		In Operation
29 Aug 23	874		In Operation
30 Aug 23	-		Under Maintenance
31 Aug 23	872		In Operation
Average	865	-	
Min	846	-	
Max	876	-	
ENGB			
1 Aug 23	852		In Operation
2 Aug 23	865		In Operation
3 Aug 23	845		In Operation

Date	Exhaust Temperature (K)	Exhaust Gas Velocity (ms ⁻¹) (a)	Operation Status
4 Aug 23	843		In Operation
5 Aug 23	847		In Operation
6 Aug 23	845		In Operation
7 Aug 23	872		In Operation
8 Aug 23	874		In Operation
9 Aug 23	850		In Operation
10 Aug 23	875		In Operation
11 Aug 23	843		In Operation
12 Aug 23	844		In Operation
13 Aug 23	845	13.1	In Operation
14 Aug 23	846		In Operation
15 Aug 23	846		In Operation
16 Aug 23	850		In Operation
17 Aug 23	870		In Operation
18 Aug 23	846		In Operation
19 Aug 23	847		In Operation
20 Aug 23	846		In Operation
21 Aug 23	846		In Operation
22 Aug 23	-		Under Maintenance
23 Aug 23	-		Under Maintenance
24 Aug 23	-		Under Maintenance
25 Aug 23	-		Under Maintenance
26 Aug 23	-		Under Maintenance
27 Aug 23	-		Under Maintenance
28 Aug 23	-		Under Maintenance
29 Aug 23	875		In Operation
30 Aug 23	874		In Operation
31 Aug 23	871		In Operation
Average	855	-	
Min	843	-	
Max	875	-	

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.