Arcadis

Flow and Composition Survey (FACS) October 2019

Jake Stevenson

10th January 2020

ENVIRONMENTAL MONITORING SOLUTIONS LTD.
Unit 7 President Buildings . Savile Street East
Sheffield S4 7UQ

P. +44 (0) 114 272 2270
F. +44 (0) 114 272 2271
E. info@em-solutions.co.uk

www.em-solutions.co.uk

Contents

1 Introduction

EMS were contracted to install and commission flow and sampling equipment by Arcadis Consulting (UK) ltd. The survey was carried out at two Caerphilly Council locations; Tir Y Berth Depot and Coed Top Hill Landfill Site.

EMS installed equipment at both locations and provided user training on the operation of the samplers and collection of samples.

Flow rate and flow volume was monitored continuously and data logged at 2-minute intervals. An automatic sampler was installed and programmed to collect discrete and composite samples. The samples were then collected by courier and delivered for analysis at UKAS accredited laboratory ALS in Coventry for the pre-agreed analysis suite.

Section 2 describes the flow survey site.

Section 3 describes the equipment and methods used in the survey.

Section 4 presents the results of the survey.

Section 5 outlines the conclusions.

Section 6 provides recommendations.

2 Site Description

Figure 1 & 2 show a plan view of the Caerphilly Council locations; Tir Y Berth Depot and Coed Top Hill Landfill sites and identifies the monitoring locations.

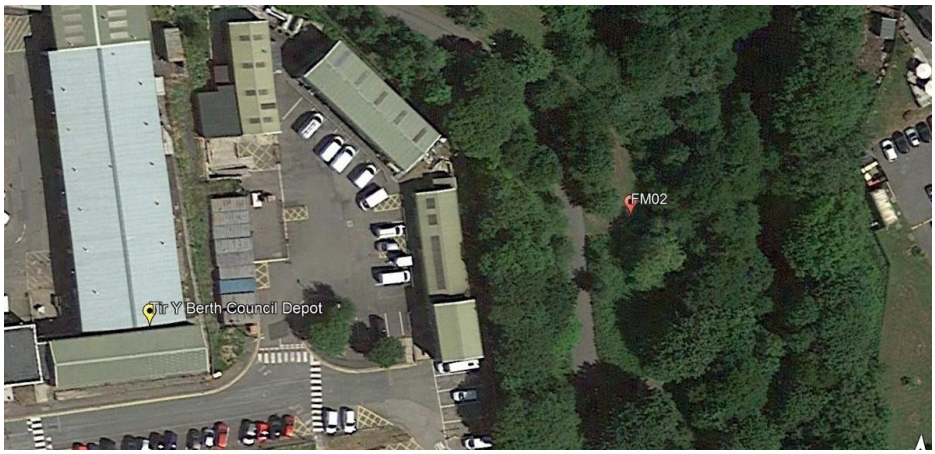


Figure 1 Plan View of the Caerphilly Council Monitoring Locations

Figure 2 Plan View of the Coed Top Hill Landfill site

3 Equipment and Methods

3.1 Equipment

The flow measurement and sampling equipment used during the survey is described in the following section of the report.

3.1.1 Flow Meters

A Detectronic MSFM area velocity flow meter was used to record flow. This a stand-alone unit comprising an area velocity flow module, battery and low-profile area velocity sensor shown in Figure 2

Figure 2 Detectronic MSFM Area Velocity

The sensor contains a pressure transducer to measure level and a pair of ultrasonic transducers to measure velocity. The flow meter calculates flow rate based on the cross-sectional area of the flow stream and its velocity using the continuity equation:

$$Q = VA$$

Where Q is the flow rate (m^3/s); V is the flow velocity (m/s) and A is the cross-sectional area of the pipe (m^2).

3.1.2 Automatic Samplers

An Hach AS950 Sampler (shown in Figure 3) was used to collect samples during the survey. The sampler is designed for intense and irregular sampling regimes and collects samples based on time-paced or flow-paced intervals into a number of bottle configurations. On this occasion, time-paced samples were collected into a single composite bottle.

Figure 3 Hach AS950 Sampler

3.2 Method

Table 1 shows the breakdown of the monitoring points at each location.

Location	Flow Monitoring Point	Rain Monitoring Point	Sampling Points	Comments
Coed Top Landfill	FM01	RG01	Landfill SPT1	
			Landfill SPT2	
			Landfill SPT3	
Depot	FM02	n/a	Depot SPT1	
			Depot SPT2	

Table 1 – Equipment Summary

At the flow monitoring point, a flow meter was used to record the depth, velocity and flow rate of the effluent at 2-minute intervals for the duration of the monitoring period.

The sampler was programmed to extract samples at varying intervals based on the specific sampling program provided. The sample was decanted daily and delivered to the laboratory.

Table 2 shows a summary of the sampling regime at the Landfill Site –

Day	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Sample Composition	24 Hour Composite	24 Hour Composite	24 Hour Composite	6 x 4 Hour Composites	24 Hour Composite	24 Hour Composite	24 Hour Composite

Table 2 – Sampling Summary at the Landfill Site

Table 3 shows a summary of the sampling regime at the Depot/Offices Site –

Day	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Sample Composition	24 Hour Composite	24 Hour Composite	2 x 12 Hour Composite	6 x 4 Hour Composites	24 Hour Composite	24 Hour Composite	24 Hour Composite

Table 3 – Sampling Summary at the Depot/Office Site

4 Results

Data and laboratory results are summarised in this section. Flow graphs and tables, water quality graphs and sample analysis certificates of the results are included in Appendix 7.

Data is presented in the following tables for each discharge:

- The first table provides a summary of the flow results for the survey period.
- The second table shows daily flow results recorded.
- Third table provides a summary of the sample analysis results.

4.1.1 Landfill Flow Monitoring

	Result
Flow Rate Max (l/s)	19.7
Flow Rate Avg. (l/s)	0.2
Avg. Daily Vol. (m^3)	13.8
Total Volume (m^3)	1119.6

Table 4 - Overview of Flow Results

Date	Flow Min	Flow Max	Flow Av	Total Flow
13/09/2019	0	2.1	0	2.5
14/09/2019	0	0	0	0
15/09/2019	0	0	0	0
16/09/2019	0	0	0	0
17/09/2019	0	0	0	0
18/09/2019	0	0	0	0
19/09/2019	0	3	0	0.8
20/09/2019	0	4.9	0	2.2
21/09/2019	0	0	0	0
22/09/2019	0	0.8	0	0.5
23/09/2019	0	1	0	2.8
24/09/2019	0	4.3	0.1	11.8
25/09/2019	0	4.3	0.1	7.2
26/09/2019	0	10.8	0.1	11.5
27/09/2019	0	2.2	0.1	11.8
28/09/2019	0	2.6	0.3	26.5
29/09/2019	0	2.4	0.1	8
30/09/2019	0	4.1	0.1	9.3
01/10/2019	0	5	0.4	31.2
02/10/2019	0	4.1	0.1	8.2
03/10/2019	0	3.9	0.3	21.8
04/10/2019	0	0	0	0
05/10/2019	0	0	0	0
06/10/2019	0	0	0	0
07/10/2019	0	0	0	0
08/10/2019	0	0	0	0
09/10/2019	0	0	0	0
10/10/2019	0	0	0	0
11/10/2019	0	0	0	0
12/10/2019	0	0	0	0
13/10/2019	0	0	0	0
14/10/2019	0	3.7	0.1	6.9
15/10/2019	0	3.6	0.1	5.4
16/10/2019	0	8.2	0.1	10.2
17/10/2019	0	5	0.1	6.5
18/10/2019	0	4.5	0.7	57.1
19/10/2019	0	4.8	0.1	7.2
20/10/2019	0	0	0	0
21/10/2019	0	2.5	0.1	6.7
22/10/2019	0	3.8	0.1	8.3
23/10/2019	0	2.1	0	3.2
24/10/2019	0	8.7	0.1	4.8
25/10/2019	0	6.2	1.2	102.8
26/10/2019	0	18.1	1	88.6
27/10/2019	0	0.1	0	1
28/10/2019	0	1.7	0	3.9
29/10/2019	0	7	0.2	13.4
30/10/2019	0	7.3	0.1	9.4
31/10/2019	0.1	5.8	0.4	36.4

01/11/2019	0.1	3.6	0.4	31.6
02/11/2019	0	7.6	0.6	55.8
03/11/2019	0	2	0.1	5.2
04/11/2019	0	6.9	0.2	16.2
05/11/2019	0	3.2	0.1	4.8
06/11/2019	0	5.5	0.2	17
07/11/2019	0	4.3	0.3	24.1
08/11/2019	0	3.1	0.1	4.5
09/11/2019	0	2.8	0.1	9.6
10/11/2019	0	0.8	0	4.1
11/11/2019	0	4.3	0.2	18.1
12/11/2019	0	14.2	0.2	18.2
13/11/2019	0	3.3	0.4	35.1
14/11/2019	0	5.4	0.6	51.6
15/11/2019	0	3	0.1	7.8
16/11/2019	0	3.8	0.1	4.5
17/11/2019	0	0	0	0
18/11/2019	0	3.2	0	3.3
19/11/2019	0	3.2	0.3	23.5
20/11/2019	0	0.9	0.1	8.6
21/11/2019	0	9.8	0.3	28.9
22/11/2019	0.1	4.7	0.6	54.7
23/11/2019	0	2.1	0.4	34.9
24/11/2019	0	0.1	0	3.4
25/11/2019	0.1	8.3	0.5	44.7
26/11/2019	0	19.7	0.6	48.5
27/11/2019	0	3.7	0.1	7.8
28/11/2019	0	0.7	0	3
29/11/2019	0	3.1	0.1	7
30/11/2019	0	0.1	0	3.1
01/12/2019	0	0.1	0	1.2
02/12/2019	0	3.3	0.1	10.8

Table 5 - Summary of Daily Flow Results

4.1.1 Landfill Sample Monitoring – SPT1

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Carbon											
Organic Carbon, Total	mg/l	37.4	67.4	77.8	101	-	99	-	95.4	95.9	148
Inorganics											
Ammoniacal Nitrogen as N	mg/l	2.51	3.16	3.27	3.89	4.04	4.09	4.17	5.41	5.83	6.08
Conductivity @ 20 deg°C	mS/cm	0.789	0.825	0.715	0.798	-	0.825	-	0.841	0.881	0.923
Nitrogen, Kjeldahl	mg/l	3.22	3.98	4.58	5.7	-	6.06	-	6.97	7.76	8.17
pH	pH Units	7.57	7.44	7.28	7.02	-	7.01	6.96	7.42	7.54	7.76
Sulphate	mg/l	11.7	11.8	11.9	13.5	-	14.6	-	20	11.7	<2
Chloride	mg/l	178	185	148	148	-	144	-	145	150	154
COD, filtered	mg/l	81.4	161	135	229	248	122	161	293	236	255
COD, unfiltered	mg/l	70	101	174	534	259	363	383	297	352	390
Nitrogen, Total	mg/l	3.22	3.98	4.58	5.7	-	6.06	-	6.97	7.76	8.17
Ammoniacal Nitrogen as NH3	mg/l	3.05	3.83	3.96	4.72	-	4.97	-	6.57	7.07	7.38
BOD, filtered	mg/l	49.5	88.6	80	>46.8	>152	>145	>146	133	199	>159
BOD, unfiltered	mg/l	55.8	102	97.9	>211	>232	>213	200	222	229	250
Alkalinity, Total as CaCO3	mg/l	150	177	195	228	-	231	-	260	280	300
Suspended solids, Total	mg/l	39.5	58.3	142	235	188	171	182	6	144	164
Total Oxidised Nitrogen as N	mg/l	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Filtered (Dissolved) Metals											
Cadmium (diss.filt)	µg/l	<0.08	<0.08	-	-	-	-	-	-	-	<0.08
Chromium (diss.filt)	µg/l	<1	<1	-	-	-	-	-	-	-	1.31
Copper (diss.filt)	µg/l	1.69	3.1	-	-	-	-	-	-	-	1.18
Lead (diss.filt)	µg/l	1.2	3.48	-	-	-	-	-	-	-	0.593
Manganese (diss.filt)	µg/l	863	1230	-	-	-	-	-	-	-	2550
Nickel (diss.filt)	µg/l	2.81	3.44	-	-	-	-	-	-	-	3.6
Zinc (diss.filt)	µg/l	15.8	12.7	-	-	-	-	-	-	-	4.5
Sodium (Dis.Filt)	mg/l	97.2	108	-	-	-	-	-	-	-	82.3
Magnesium (Dis.Filt)	mg/l	7.7	10.9	-	-	-	-	-	-	-	18.2
Potassium (Dis.Filt)	mg/l	9.78	14.7	-	-	-	-	-	-	-	23
Calcium (Dis.Filt)	mg/l	48.3	63.2	-	-	-	-	-	-	-	105
Iron (Dis.Filt)	mg/l	0.232	0.535	-	-	-	-	-	-	-	1.02
Cadmium (diss.filt)	µg/l	<0.08	<0.08	-	-	-	-	-	-	-	<0.08
Chromium (diss.filt)	µg/l	<1	<1	-	-	-	-	-	-	-	1.31
Copper (diss.filt)	µg/l	1.69	3.1	-	-	-	-	-	-	-	1.18
Lead (diss.filt)	µg/l	1.2	3.48	-	-	-	-	-	-	-	0.593
Manganese (diss.filt)	µg/l	863	1230	-	-	-	-	-	-	-	2550
Nickel (diss.filt)	µg/l	2.81	3.44	-	-	-	-	-	-	-	3.6
Zinc (diss.filt)	µg/l	15.8	12.7	-	-	-	-	-	-	-	4.5
Sodium (Dis.Filt)	mg/l	97.2	108	-	-	-	-	-	-	-	82.3
Magnesium (Dis.Filt)	mg/l	7.7	10.9	-	-	-	-	-	-	-	18.2
Potassium (Dis.Filt)	mg/l	9.78	14.7	-	-	-	-	-	-	-	23
Calcium (Dis.Filt)	mg/l	48.3	63.2	-	-	-	-	-	-	-	105
Iron (Dis.Filt)	mg/l	0.232	0.535	-	-	-	-	-	-	-	1.02

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Unfiltered (Total) Metals											
Phosphorus (tot.unfilt)	µg/l	316	506	944	1250	1290	1250	1340	1080	1330	1070
Mineral Oil / Oils & Greases											
TPH / Oil & Greases	mg/l	2.48	2.93	4.89	10.2	9.8	6.84	-	33.3	<20	<5
PCB's - (Solids)											
PCB congener 28	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 52	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 101	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 118	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 138	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 153	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 180	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
Sum of detected EC7 PCB's	µg/l	<0.105	<0.105	-	-	-	-	-	-	-	<0.105
PCB congener 77	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 81	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 105	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 114	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 123	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 126	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 156	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 157	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 167	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 169	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 189	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Volatile Organic Compounds (VOCs)											
Dibromofluoromethane**	%	109	113	103	105	-	112	-	108	111	126
Toluene-d8**	%	99.7	98.2	97.3	98.4	-	98.5	-	101	99.6	100
4-Bromofluorobenzene**	%	98.1	98.8	98	93.3	-	97	-	96	96.4	97.7
Dichlorodifluoromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Chloromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Vinyl chloride	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Bromomethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Chloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Trichlorofluoromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,1-Dichloroethene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Carbon disulphide	µg/l	<1	<1	<1	<1	-	<1	-	1.44	1.18	1.36
Dichloromethane	µg/l	<3	<3	<3	<3	-	<3	-	<3	<3	<3
Methyl tertiary butyl ether (MTBE)	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
trans-1,2-Dichloroethene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,1-Dichloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
cis-1,2-Dichloroethene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
2,2-Dichloropropane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Bromochloromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Chloroform	µg/l	<1	<1	<1	1.17	-	1.2	-	<1	<1	<1
1,1,1-Trichloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,1-Dichloropropene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Carbontetrachloride	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2-Dichloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Benzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Trichloroethene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2-Dichloropropane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Dibromomethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Bromodichloromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
cis-1,3-Dichloropropene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Toluene	µg/l	<1	1.97	6.73	6.64	-	8.07	-	5.96	5.51	5.14
trans-1,3-Dichloropropene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,1,2-Trichloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,3-Dichloropropane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Tetrachloroethene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Dibromochloromethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2-Dibromoethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1

Chlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,1,1,2-Tetrachloroethane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2,3-Trichloropropane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Bromobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Propylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
2-Chlorotoluene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,3,5-Trimethylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
4-Chlorotoluene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
tert-Butylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2,4-Trimethylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
sec-Butylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
4-iso-Propyltoluene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,3-Dichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,4-Dichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
n-Butylbenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2-Dichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2-Dibromo-3-chloropropane	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2,4-Trichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Hexachlorobutadiene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
tert-Amyl methyl ether (TAME)	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
Naphthalene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,2,3-Trichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1
1,3,5-Trichlorobenzene	µg/l	<1	<1	<1	<1	-	<1	-	<1	<1	<1

Table 6 – Summary of Sample Analysis Results – Landfill SPT1

* Reported as being analysed outside recommended stability times by the laboratory. COD 1 Hour settled not used for loading calculations.

4.1.2 Landfill Sample Monitoring – SPT2

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Carbon											
Organic Carbon, Total	mg/l	9.99	18.3	-	-	-	-	-	-	-	-
Inorganics											
Ammoniacal Nitrogen as N	mg/l	7.93	7.72	6.79	9.15	10.8	12.7	15.4	11.4	14.4	14.2
Conductivity @ 20 deg.C	mS/cm	-	-	-	-	-	-	-	-	-	-
Nitrogen, Kjeldahl	mg/l	7.93	7.65	-	-	-	-	-	-	-	-
pH	pH	-	-	-	7.5	8.17	7.7	7.69	-	-	-
Sulphate	mg/l	-	-	-	-	-	-	-	-	-	-
Chloride	mg/l	-	-	-	-	-	-	-	-	-	-
COD, filtered	mg/l	16.2	35.8	38.7	56	22.1	19.9	21.5	39.6	41.7	73
COD, unfiltered	mg/l	30.6	54.6	71.5	52.5	34.3	42.6	27.1	58.4	59	78.7
Nitrogen, Total	mg/l	8.71	8.21	-	-	-	-	-	-	-	-
Ammoniacal Nitrogen as NH3	mg/l	9.63	9.37	-	-	-	-	-	-	-	-
BOD, filtered	mg/l	2.98	6.69	5.1	22.9	4.74	2.64	2.24	4.76	5.56	25.4
BOD, unfiltered	mg/l	4.32	11.5	21.5	17.3	17	8.04	4.66	36	10.8	22.4
Alkalinity, Total as CaCO3	mg/l	-	-	-	-	-	-	-	-	-	-
Suspended solids, Total	mg/l	9.4	17	40.1	32.7	25.4	19.8	11.4	566	40.4	36.4
Total Oxidised Nitrogen as N	mg/l	0.781	0.563	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Filtered (Dissolved) Metals											
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Unfiltered (Total) Metals											
Phosphorus (tot.unfilt)	µg/l	-	-	264	239	332	426	220	242	173	244
Mineral Oil / Oils & Greases											
TPH / Oil & Greases	mg/l	<1	<1	<2	-	-	-	-	1.72	<2	<2
PCB's - (Solids)											
PCB congener 28	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 52	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 101	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 118	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 138	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 153	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 180	µg/l	-	-	-	-	-	-	-	-	-	-
Sum of detected EC7 PCB's	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 77	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 81	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 105	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 114	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 123	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 126	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 156	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 157	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 167	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 169	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 189	µg/l	-	-	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Volatile Organic Compounds (VOCs)											
Dibromofluoromethane**	%	-	-	-	-	-	-	-	-	-	-
Toluene-d8**	%	-	-	-	-	-	-	-	-	-	-
4-Bromofluorobenzene**	%	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/l	-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
Carbon disulphide	µg/l	-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Methyl tertiary butyl ether (MTBE)	µg/l	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloroform	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
Carbontetrachloride	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
Benzene	µg/l	-	-	-	-	-	-	-	-	-	-
Trichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Dibromomethane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
Toluene	µg/l	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	µg/l	-	-	-	-	-	-	-	-	-	-

Chlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
Propylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
4-iso-Propyltoluene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/l	-	-	-	-	-	-	-	-	-	-
tert-Amyl methyl ether (TAME)	µg/l	-	-	-	-	-	-	-	-	-	-
Naphthalene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3,5-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-

Table 7 – Summary of Sample Analysis Results – Landfill SPT2

4.1.3 Landfill Sample Monitoring – SPT3

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Carbon											
Organic Carbon, Total	mg/l	9.62	9.95	8.49	-	-	-	-	9.37	8.65	8.31
Inorganics											
Ammoniacal Nitrogen as N	mg/l	6.25	5.98	5.23	5.04	4.96	4.83	4.74	4.32	3.75	3.25
Conductivity @ 20 deg.C	mS/cm	0.635	0.649	0.654	-	-	-	-	0.622	0.6	0.594
Nitrogen, Kjeldahl	mg/l	6.22	5.41	5.22	-	-	-	-	4.11	3.35	2.89
pH	pH	8.2	8.12	7.99	8.02	8.04	8.09	7.91	7.97	8.03	8.27
Sulphate	mg/l	6.5	7.1	5.9	-	-	-	-	6.8	6.6	6.5
Chloride	mg/l	61.4	67	66.1	-	-	-	-	66.1	67.2	67.6
COD, filtered	mg/l	27.8	30.4	21.2	25.8	18.1	26.7	16.8	16.8	25.8	24.1
COD, unfiltered	mg/l	12.6	28.5	30.7	31.7	33.2	22.3	19.1	27.7	38.7	27.9
Nitrogen, Total	mg/l	8.54	8.19	8.07	-	-	-	-	7.14	7.08	7.15
Ammoniacal Nitrogen as NH3	mg/l	7.59	7.26	6.35	-	-	-	-	5.24	4.55	3.94
BOD, filtered	mg/l	<1	<1	<1	<1	<1	<1	<1	2	<1	<1
BOD, unfiltered	mg/l	2.18	<1	2.33	<1	<1	<1	<1	<1	2.61	<1
Alkalinity, Total as CaCO3	mg/l	272	272	258	-	-	-	-	255	250	245
Suspended solids, Total	mg/l	<6	<4	<4	2.55	2.35	<4	<2	27.2	<2	2.25
Total Oxidised Nitrogen as N	mg/l	2.32	2.78	2.85	-	-	-	-	3.03	3.73	4.26

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Filtered (Dissolved) Metals											
Cadmium (diss.filt)	µg/l	<0.08	<0.08	-	-	-	-	-	-	-	<0.08
Chromium (diss.filt)	µg/l	<1	<1	-	-	-	-	-	-	-	<1
Copper (diss.filt)	µg/l	1.54	1.24	-	-	-	-	-	-	-	0.823
Lead (diss.filt)	µg/l	<0.2	<0.2	-	-	-	-	-	-	-	<0.2
Manganese (diss.filt)	µg/l	54.1	21.8	-	-	-	-	-	-	-	28.5
Nickel (diss.filt)	µg/l	1.53	1.56	-	-	-	-	-	-	-	1.64
Zinc (diss.filt)	µg/l	6.01	3.79	-	-	-	-	-	-	-	12.4
Sodium (Dis.Filt)	mg/l	40.5	44.6	-	-	-	-	-	-	-	44.9
Magnesium (Dis.Filt)	mg/l	18.6	20.7	-	-	-	-	-	-	-	18.7
Potassium (Dis.Filt)	mg/l	15.4	17.8	-	-	-	-	-	-	-	15.3
Calcium (Dis.Filt)	mg/l	61.5	66.7	-	-	-	-	-	-	-	66.3
Iron (Dis.Filt)	mg/l	0.116	0.264	-	-	-	-	-	-	-	0.0543
Cadmium (diss.filt)	µg/l	<0.08	<0.08	-	-	-	-	-	-	-	<0.08
Chromium (diss.filt)	µg/l	<1	<1	-	-	-	-	-	-	-	<1
Copper (diss.filt)	µg/l	1.54	1.24	-	-	-	-	-	-	-	0.823
Lead (diss.filt)	µg/l	<0.2	<0.2	-	-	-	-	-	-	-	<0.2
Manganese (diss.filt)	µg/l	54.1	21.8	-	-	-	-	-	-	-	28.5
Nickel (diss.filt)	µg/l	1.53	1.56	-	-	-	-	-	-	-	1.64
Zinc (diss.filt)	µg/l	6.01	3.79	-	-	-	-	-	-	-	12.4
Sodium (Dis.Filt)	mg/l	40.5	44.6	-	-	-	-	-	-	-	44.9
Magnesium (Dis.Filt)	mg/l	18.6	20.7	-	-	-	-	-	-	-	18.7
Potassium (Dis.Filt)	mg/l	15.4	17.8	-	-	-	-	-	-	-	15.3
Calcium (Dis.Filt)	mg/l	61.5	66.7	-	-	-	-	-	-	-	66.3
Iron (Dis.Filt)	mg/l	0.116	0.264	-	-	-	-	-	-	-	0.0543

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Unfiltered (Total) Metals											
Phosphorus (tot.unfilt)	µg/l	48.6	38.3	<20	41.1	57.7	37.3	36.9	34.8	36.9	36.3
Mineral Oil / Oils & Greases											
TPH / Oil & Greases	mg/l	<1	<1	<2	-	-	-	-	1.72	<2	<2
PCB's - (Solids)											
PCB congener 28	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 52	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 101	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 118	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 138	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 153	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 180	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
Sum of detected EC7 PCB's	µg/l	<0.105	<0.105	-	-	-	-	-	-	-	<0.105
PCB congener 77	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 81	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 105	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 114	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 123	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 126	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 156	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 157	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 167	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 169	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015
PCB congener 189	µg/l	<0.015	<0.015	-	-	-	-	-	-	-	<0.015

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1	03/10/2019 – Sample 2	03/10/2019 – Sample 3	03/10/2019 – Sample 4	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**										
Volatile Organic Compounds (VOCs)											
Dibromofluoromethane**	%	112	110	108	-	-	-	-	110	133	115
Toluene-d8**	%	99.4	99.2	99.3	-	-	-	-	106	100	99.7
4-Bromofluorobenzene**	%	98.1	100	97.1	-	-	-	-	95.6	100	97.6
Dichlorodifluoromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Chloromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Vinyl chloride	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Bromomethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Chloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Trichlorofluoromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1-Dichloroethene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Carbon disulphide	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Dichloromethane	µg/l	<3	<3	<3	-	-	-	-	<3	<3	<3
Methyl tertiary butyl ether (MTBE)	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
trans-1,2-Dichloroethene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1-Dichloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
cis-1,2-Dichloroethene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
2,2-Dichloropropane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Bromochloromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Chloroform	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1,1-Trichloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1-Dichloropropene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Carbontetrachloride	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2-Dichloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Benzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Trichloroethene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2-Dichloropropane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Dibromomethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Bromodichloromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
cis-1,3-Dichloropropene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Toluene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
trans-1,3-Dichloropropene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1,2-Trichloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,3-Dichloropropane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Tetrachloroethene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Dibromochloromethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2-Dibromoethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1

Chlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,1,1,2-Tetrachloroethane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2,3-Trichloropropane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Bromobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Propylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
2-Chlorotoluene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,3,5-Trimethylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
4-Chlorotoluene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
tert-Butylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2,4-Trimethylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
sec-Butylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
4-iso-Propyltoluene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,3-Dichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,4-Dichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
n-Butylbenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2-Dichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2-Dibromo-3-chloropropane	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2,4-Trichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Hexachlorobutadiene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
tert-Amyl methyl ether (TAME)	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
Naphthalene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,2,3-Trichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1
1,3,5-Trichlorobenzene	µg/l	<1	<1	<1	-	-	-	-	<1	<1	<1

Table 8 – Summary of Sample Analysis Results – Landfill SPT3

4.2.1 Offices/Depot Flow Monitoring

	Result
Flow Rate Max (l/s)	23.5
Flow Rate Avg. (l/s)	0.2
Avg. Daily Vol. (m^3)	17.2
Total Volume (m^3)	1391.1

Table 9 - Overview of Offices/Depot Flow Results

Date	Flow Min	Flow Max	Flow Av	Total Flow
13/09/2019	0	1.6	0	0.3
14/09/2019	0	0	0	0
15/09/2019	0	0	0	0
16/09/2019	0	0	0	0
17/09/2019	0	0	0	0
18/09/2019	0	0	0	0
19/09/2019	0	0	0	0
20/09/2019	0	0	0	0
21/09/2019	0	0	0	0
22/09/2019	0	2.9	0	1.5
23/09/2019	0	2.4	0.1	8.6
24/09/2019	0	23.5	1.1	96.8
25/09/2019	0	1.3	0.1	11.5
26/09/2019	0	6.2	0.3	24.4
27/09/2019	0	12.9	0.6	50.2
28/09/2019	0	10.2	1.1	97.3
29/09/2019	0	7.1	0.9	75.8
30/09/2019	0	5.6	0.5	39.1
01/10/2019	0	5.6	0.4	37.2
02/10/2019	0	0.4	0	0.3
03/10/2019	0	2	0.2	18.2
04/10/2019	0	0.2	0	0.6
05/10/2019	0	0	0	0
06/10/2019	0	0	0	0
07/10/2019	0	0	0	0
08/10/2019	0	0	0	0
09/10/2019	0	0	0	0
10/10/2019	0	0	0	0
11/10/2019	0	0	0	0
12/10/2019	0	0	0	0
13/10/2019	0	0	0	0
14/10/2019	0	0.4	0	1.3
15/10/2019	0	0.7	0	1.3
16/10/2019	0	1.4	0.1	4.9
17/10/2019	0	7.5	0.2	20.5
18/10/2019	0	15.9	2	172.9
19/10/2019	0.3	1.9	0.6	49.5
20/10/2019	0.1	0.7	0.4	38.1

21/10/2019	0	0.2	0	3.3
22/10/2019	0	0.2	0	0
23/10/2019	0	0.1	0	0.1
24/10/2019	0	4.5	0	3.7
25/10/2019	0	7.2	2.1	184.9
26/10/2019	0.5	5.4	1.8	157.2
27/10/2019	0.3	0.5	0.4	31.6
28/10/2019	0	0.4	0.2	13.8
29/10/2019	0	0.1	0	0
30/10/2019	0	0	0	0
31/10/2019	0	1.3	0.2	13.6
01/11/2019	0	5.1	0.4	30.6
02/11/2019	0	7.5	0.6	55.7
03/11/2019	0	1.3	0	1.9
04/11/2019	0	3.5	0.1	7.2
05/11/2019	0	0	0	0
06/11/2019	0	0.3	0	0.3
07/11/2019	0	0	0	0
08/11/2019	0	0	0	0
09/11/2019	0	2.7	0	4.3
10/11/2019	0	0.7	0	2
11/11/2019	0	2.1	0.1	6.4
12/11/2019	0	0.1	0	0
13/11/2019	0	5.4	0.3	24.8
14/11/2019	0	1.5	0.3	28.5
15/11/2019	0	0	0	0
16/11/2019	0	0	0	0
17/11/2019	0	0	0	0
18/11/2019	0	0	0	0
19/11/2019	0	0	0	0
20/11/2019	0	1.3	0	0.4
21/11/2019	0	1	0	3.3
22/11/2019	0	2.5	0.2	20.7
23/11/2019	0	2.5	0.3	21.9
24/11/2019	0	0	0	0
25/11/2019	0	2.6	0.1	11.6
26/11/2019	0	1.2	0.1	10.9
27/11/2019	0	1.1	0	2.2
28/11/2019	0	0	0	0
29/11/2019	0	0	0	0
30/11/2019	0	0	0	0
01/12/2019	0	0	0	0
02/12/2019	0	0	0	0

Table 10 - Summary of Offices/Depot Daily Flow Results

4.2.2 Offices/Depot Sample Monitoring – SPT1

Date		29/09/2019	30/09/2019	03/10/2019	04/10/2019
Parameter	**Units**				
Carbon					
Organic Carbon, Total	mg/l	-	-	-	-
Inorganics					
Ammoniacal Nitrogen as N	mg/l	-	-	-	-
Conductivity @ 20 deg.C	mS/cm	-	-	-	-
Nitrogen, Kjeldahl	mg/l	-	-	-	-
pH	pH Units	-	-	-	-
Sulphate	mg/l	-	-	-	-
Chloride	mg/l	-	-	-	-
COD, filtered	mg/l	-	-	-	-
COD, unfiltered	mg/l	-	-	-	-
Nitrogen, Total	mg/l	-	-	-	-
Ammoniacal Nitrogen as NH3	mg/l	-	-	-	-
BOD, filtered	mg/l	-	-	-	-
BOD, unfiltered	mg/l	-	-	-	-
Alkalinity, Total as CaCO3	mg/l	-	-	-	-
Suspended solids, Total	mg/l	-	-	-	-
Total Oxidised Nitrogen as N	mg/l	-	-	-	-

Date		29/09/2019	30/09/2019	03/10/2019	04/10/2019
Parameter	**Units**				
Filtered (Dissolved) Metals					
Cadmium (diss.filt)	µg/l	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-
Cadmium (diss.filt)	µg/l	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1
Parameter	**Units**				
Unfiltered (Total) Metals					
Phosphorus (tot.unfilt)	µg/l	316	506	944	1250
Mineral Oil / Oils & Greases					
TPH / Oil & Greases	mg/l	2.48	2.93	4.89	10.2
PCB's - (Solids)					
PCB congener 28	µg/l	<0.015	<0.015	-	-
PCB congener 52	µg/l	<0.015	<0.015	-	-
PCB congener 101	µg/l	<0.015	<0.015	-	-
PCB congener 118	µg/l	<0.015	<0.015	-	-
PCB congener 138	µg/l	<0.015	<0.015	-	-
PCB congener 153	µg/l	<0.015	<0.015	-	-
PCB congener 180	µg/l	<0.015	<0.015	-	-
Sum of detected EC7 PCB's	µg/l	<0.105	<0.105	-	-
PCB congener 77	µg/l	<0.015	<0.015	-	-
PCB congener 81	µg/l	<0.015	<0.015	-	-
PCB congener 105	µg/l	<0.015	<0.015	-	-
PCB congener 114	µg/l	<0.015	<0.015	-	-
PCB congener 123	µg/l	<0.015	<0.015	-	-
PCB congener 126	µg/l	<0.015	<0.015	-	-
PCB congener 156	µg/l	<0.015	<0.015	-	-
PCB congener 157	µg/l	<0.015	<0.015	-	-
PCB congener 167	µg/l	<0.015	<0.015	-	-
PCB congener 169	µg/l	<0.015	<0.015	-	-
PCB congener 189	µg/l	<0.015	<0.015	-	-

Date		29/09/2019	30/09/2019	01/10/2019	03/10/2019 – Sample 1
Parameter	**Units**				
Volatile Organic Compounds (VOCs)					
Dibromofluoromethane**	%	-	-	-	-
Toluene-d8**	%	-	-	-	-
4-Bromofluorobenzene**	%	-	-	-	-
Dichlorodifluoromethane	µg/l	-	-	-	-
Chloromethane	µg/l	-	-	-	-
Vinyl chloride	µg/l	-	-	-	-
Bromomethane	µg/l	-	-	-	-
Chloroethane	µg/l	-	-	-	-
Trichlorofluoromethane	µg/l	-	-	-	-
1,1-Dichloroethene	µg/l	-	-	-	-
Carbon disulphide	µg/l	-	-	-	-
Dichloromethane	µg/l	-	-	-	-
Methyl tertiary butyl ether (MTBE)	µg/l	-	-	-	-
trans-1,2-Dichloroethene	µg/l	-	-	-	-
1,1-Dichloroethane	µg/l	-	-	-	-
cis-1,2-Dichloroethene	µg/l	-	-	-	-
2,2-Dichloropropane	µg/l	-	-	-	-
Bromochloromethane	µg/l	-	-	-	-
Chloroform	µg/l	-	-	-	-
1,1,1-Trichloroethane	µg/l	-	-	-	-
1,1-Dichloropropene	µg/l	-	-	-	-
Carbontetrachloride	µg/l	-	-	-	-
1,2-Dichloroethane	µg/l	-	-	-	-
Benzene	µg/l	-	-	-	-
Trichloroethene	µg/l	-	-	-	-
1,2-Dichloropropane	µg/l	-	-	-	-
Dibromomethane	µg/l	-	-	-	-
Bromodichloromethane	µg/l	-	-	-	-
cis-1,3-Dichloropropene	µg/l	-	-	-	-
Toluene	µg/l	-	-	-	-
trans-1,3-Dichloropropene	µg/l	-	-	-	-
1,1,2-Trichloroethane	µg/l	-	-	-	-
1,3-Dichloropropane	µg/l	-	-	-	-
Tetrachloroethene	µg/l	-	-	-	-
Dibromochloromethane	µg/l	-	-	-	-
1,2-Dibromoethane	µg/l	-	-	-	-

Chlorobenzene	µg/l	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	-	-	-	-
1,2,3-Trichloropropane	µg/l	-	-	-	-
Bromobenzene	µg/l	-	-	-	-
Propylbenzene	µg/l	-	-	-	-
2-Chlorotoluene	µg/l	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	-	-	-	-
4-Chlorotoluene	µg/l	-	-	-	-
tert-Butylbenzene	µg/l	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	-	-	-	-
sec-Butylbenzene	µg/l	-	-	-	-
4-iso-Propyltoluene	µg/l	-	-	-	-
1,3-Dichlorobenzene	µg/l	-	-	-	-
1,4-Dichlorobenzene	µg/l	-	-	-	-
n-Butylbenzene	µg/l	-	-	-	-
1,2-Dichlorobenzene	µg/l	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	-	-	-	-
Hexachlorobutadiene	µg/l	-	-	-	-
tert-Amyl methyl ether (TAME)	µg/l	-	-	-	-
Naphthalene	µg/l	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	-	-	-	-
1,3,5-Trichlorobenzene	µg/l	-	-	-	-

Table 11 – Summary of Sample Analysis Results – Offices/Depot SPT1

* Reported as being analysed outside recommended stability times by the laboratory. COD 1 Hour settled not used for loading calculations.

4.2.3 Offices/Depot Sample Monitoring – SPT2

Date		29/09/2019	30/09/2019	01/10/2019 – Sample 1	01/10/2019 – Sample 2	01/10/2019 – Sample 3	01/10/2019 – Sample 4	01/10/2019 – Sample 5	01/10/2019 – Sample 6	01/10/2019 – Sample 7	01/10/2019 – Sample 8
Parameter	**Units**										
Carbon											
Organic Carbon, Total	mg/l	-	-	-	-	-	-	-	-	-	-
Inorganics											
Ammoniacal Nitrogen as N	mg/l	0.293	2.39	-	-	-	-	-	-	-	-
Conductivity @ 20 deg.C	mS/cm	-	-	0.247	0.215	0.212	0.245	0.313	0.328	0.316	0.307
Nitrogen, Kjeldahl	mg/l	<1	2.25	-	-	-	-	-	-	-	-
pH	pH	7.5	7.56	7.46	7.45	7.32	7.4	7.57	7.66	7.53	7.57
Sulphate	mg/l	21.9	13.1	-	-	-	-	-	-	-	-
Chloride	mg/l	28	25.8	-	-	-	-	-	-	-	-
COD, filtered	mg/l	13.1	13.3	<10	12.7	19.6	10.4	16	<10	19.5	17.9
COD, unfiltered	mg/l	<7	49.1	36.9	44.8	57.9	19.4	19.1	35.6	24.6	21.6
Nitrogen, Total	mg/l	3.74	5.81	-	-	-	-	-	-	-	-
Ammoniacal Nitrogen as NH3	mg/l	-	-	1.8	5.14	5.97	8.46	12.9	12	9.02	8.69
BOD, filtered	mg/l	<1.5	<1	<1	2.27	<1	<1	2.28	<1	<1	<1
BOD, unfiltered	mg/l	2.53	4.65	8.39	11.9	10.9	4.47	6.06	3.95	5.51	4.3
Alkalinity, Total as CaCO3	mg/l	80.5	69.6	-	-	-	-	-	-	-	-
Suspended solids, Total	mg/l	6	17	24.3	8.15	94.1	28	33.7	17.5	9.4	9.8
Total Oxidised Nitrogen as N	mg/l	3.13	3.56	-	-	-	-	-	-	-	-

Date		02/10/2019 – Sample 9	02/10/2019 – Sample 10	02/10/2019 – Sample 11	02/10/2019 – Sample 12	03/10/2019	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**								
Carbon									
Organic Carbon, Total	mg/l	-	-	-	-	-	-	-	-
Inorganics									
Ammoniacal Nitrogen as N	mg/l	-	-	-	-	12.4	15.1	9.89	9.52
Conductivity @ 20 deg.C	mS/cm	0.298	0.308	0.302	0.314	-	-	-	-
Nitrogen, Kjeldahl	mg/l	-	-	-	-	-	-	-	-
pH	pH	7.57	7.51	7.44	7.41	7.34	7.07	7.61	7.18
Sulphate	mg/l	-	-	-	-	-	-	-	-
Chloride	mg/l	-	-	-	-	-	-	-	-
COD, filtered	mg/l	23.1	<10	21.2	<10	18	28.9	22	30.8
COD, unfiltered	mg/l	20.6	42.6	18.7	52.5	31.7	167	39.7	73.9
Nitrogen, Total	mg/l	-	-	-	-	-	-	-	-
Ammoniacal Nitrogen as NH3	mg/l	8.03	7.34	5.54	2.41	-	-	-	-
BOD, filtered	mg/l	<1	<1	<1	3.08	<1	<1	<1	2.16
BOD, unfiltered	mg/l	2.7	3.13	3.79	3.05	5.5	55.4	4.7	13.9
Alkalinity, Total as CaCO3	mg/l	-	-	-	-	-	-	-	75
Suspended solids, Total	mg/l	6.8	4.85	4.6	5.62	9.35	<4	7.15	63.6
Total Oxidised Nitrogen as N	mg/l	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019 – Sample 1	01/10/2019 – Sample 2	01/10/2019 – Sample 3	01/10/2019 – Sample 4	01/10/2019 – Sample 5	01/10/2019 – Sample 6	01/10/2019 – Sample 7	01/10/2019 – Sample 8
Parameter	**Units**										
Filtered (Dissolved) Metals											
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-	-	-

Date		02/10/2019 – Sample 9	02/10/2019 – Sample 10	02/10/2019 – Sample 11	02/10/2019 – Sample 12	03/10/2019	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**								
Filtered (Dissolved) Metals									
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Cadmium (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Chromium (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Copper (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Lead (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Manganese (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Nickel (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Zinc (diss.filt)	µg/l	-	-	-	-	-	-	-	-
Sodium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Magnesium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Potassium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Calcium (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-
Iron (Dis.Filt)	mg/l	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019 – Sample 1	01/10/2019 – Sample 2	01/10/2019 – Sample 3	01/10/2019 – Sample 4	01/10/2019 – Sample 5	01/10/2019 – Sample 6	01/10/2019 – Sample 7	01/10/2019 – Sample 8
Parameter	**Units**										
Unfiltered (Total) Metals											
Phosphorus (tot.unfilt)	µg/l	848	780	755	1270	1050	1050	1420	1320	1110	1250
Mineral Oil / Oils & Greases											
TPH / Oil & Greases	mg/l	<1	<1	-	-	-	-	-	-	-	-
PCB's - (Solids)											
PCB congener 28	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 52	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 101	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 118	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 138	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 153	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 180	µg/l	-	-	-	-	-	-	-	-	-	-
Sum of detected EC7 PCB's	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 77	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 81	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 105	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 114	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 123	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 126	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 156	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 157	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 167	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 169	µg/l	-	-	-	-	-	-	-	-	-	-
PCB congener 189	µg/l	-	-	-	-	-	-	-	-	-	-

Date		02/10/2019 – Sample 9	02/10/2019 – Sample 10	02/10/2019 – Sample 11	02/10/2019 – Sample 12	03/10/2019	04/10/2019	07/10/2019	08/10/201
Parameter	**Units**								
Unfiltered (Total) Metals									
Phosphorus (tot.unfilt)	µg/l	1170	1240	1300	1330	3020	4300	2550	3730
Mineral Oil / Oils & Greases									
TPH / Oil & Greases	mg/l	-	-	-	-	-	-	-	<1
PCB's - (Solids)									
PCB congener 28	µg/l	-	-	-	-	-	-	-	
PCB congener 52	µg/l	-	-	-	-	-	-	-	
PCB congener 101	µg/l	-	-	-	-	-	-	-	
PCB congener 118	µg/l	-	-	-	-	-	-	-	
PCB congener 138	µg/l	-	-	-	-	-	-	-	
PCB congener 153	µg/l	-	-	-	-	-	-	-	
PCB congener 180	µg/l	-	-	-	-	-	-	-	
Sum of detected EC7 PCB's	µg/l	-	-	-	-	-	-	-	
PCB congener 77	µg/l	-	-	-	-	-	-	-	
PCB congener 81	µg/l	-	-	-	-	-	-	-	
PCB congener 105	µg/l	-	-	-	-	-	-	-	
PCB congener 114	µg/l	-	-	-	-	-	-	-	
PCB congener 123	µg/l	-	-	-	-	-	-	-	
PCB congener 126	µg/l	-	-	-	-	-	-	-	
PCB congener 156	µg/l	-	-	-	-	-	-	-	
PCB congener 157	µg/l	-	-	-	-	-	-	-	
PCB congener 167	µg/l	-	-	-	-	-	-	-	
PCB congener 169	µg/l	-	-	-	-	-	-	-	
PCB congener 189	µg/l	-	-	-	-	-	-	-	

Date		29/09/2019	30/09/2019	01/10/2019 – Sample 1	01/10/2019 – Sample 2	01/10/2019 – Sample 3	01/10/2019 – Sample 4	01/10/2019 – Sample 5	01/10/2019 – Sample 6	01/10/2019 – Sample 7	01/10/2019 – Sample 8
Parameter	**Units**										
Filtered (Dissolved) Metals											
Dibromofluoromethane**	%	-	-	-	-	-	-	-	-	-	-
Toluene-d8**	%	-	-	-	-	-	-	-	-	-	-
4-Bromofluorobenzene**	%	-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/l	-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
Carbon disulphide	µg/l	-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Methyl tertiary butyl ether (MTBE)	µg/l	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromochloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chloroform	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
Carbontetrachloride	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
Benzene	µg/l	-	-	-	-	-	-	-	-	-	-
Trichloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Dibromomethane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/l	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
Toluene	µg/l	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/l	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/l	-	-	-	-	-	-	-	-	-	-

Date		29/09/2019	30/09/2019	01/10/2019 – Sample 1	01/10/2019 – Sample 2	01/10/2019 – Sample 3	01/10/2019 – Sample 4	01/10/2019 – Sample 5	01/10/2019 – Sample 6	01/10/2019 – Sample 7	01/10/2019 – Sample 8
Parameter	**Units**										
1,2-Dibromoethane	µg/l	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
m,p-Xylene	µg/l	-	-	-	-	-	-	-	-	-	-
o-Xylene	µg/l	-	-	-	-	-	-	-	-	-	-
Styrene	µg/l	-	-	-	-	-	-	-	-	-	-
Bromoform	µg/l	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
Bromobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
Propylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
4-iso-Propyltoluene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/l	-	-	-	-	-	-	-	-	-	-
tert-Amyl methyl ether (TAME)	µg/l	-	-	-	-	-	-	-	-	-	-
Naphthalene	µg/l	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-
1,3,5-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-	-	-

Table 7 – Summary of Sample Analysis Results – Landfill SPT2

Date		02/10/2019 – Sample 9	02/10/2019 – Sample 10	02/10/2019 – Sample 11	02/10/2019 – Sample 12	03/10/2019	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**								
Filtered (Dissolved) Metals									
Dibromofluoromethane**	%	-	-	-	-	-	-	-	-
Toluene-d8**	%	-	-	-	-	-	-	-	-
4-Bromofluorobenzene**	%	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	µg/l	-	-	-	-	-	-	-	-
Chloromethane	µg/l	-	-	-	-	-	-	-	-
Vinyl chloride	µg/l	-	-	-	-	-	-	-	-
Bromomethane	µg/l	-	-	-	-	-	-	-	-
Chloroethane	µg/l	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/l	-	-	-	-	-	-	-	-
1,1-Dichloroethene	µg/l	-	-	-	-	-	-	-	-
Carbon disulphide	µg/l	-	-	-	-	-	-	-	-
Dichloromethane	µg/l	-	-	-	-	-	-	-	-
Methyl tertiary butyl ether (MTBE)	µg/l	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-
1,1-Dichloroethane	µg/l	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	µg/l	-	-	-	-	-	-	-	-
2,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-
Bromochloromethane	µg/l	-	-	-	-	-	-	-	-
Chloroform	µg/l	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	µg/l	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/l	-	-	-	-	-	-	-	-
Carbontetrachloride	µg/l	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/l	-	-	-	-	-	-	-	-
Benzene	µg/l	-	-	-	-	-	-	-	-
Trichloroethene	µg/l	-	-	-	-	-	-	-	-
1,2-Dichloropropane	µg/l	-	-	-	-	-	-	-	-
Dibromomethane	µg/l	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/l	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-
Toluene	µg/l	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	µg/l	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	µg/l	-	-	-	-	-	-	-	-
1,3-Dichloropropane	µg/l	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/l	-	-	-	-	-	-	-	-

Dibromochloromethane	µg/l	-	-	-	-	-	-	-	-

Date		02/10/2019 – Sample 9	02/10/2019 – Sample 10	02/10/2019 – Sample 11	02/10/2019 – Sample 12	03/10/2019	04/10/2019	07/10/2019	08/10/2019
Parameter	**Units**								
1,2-Dibromoethane	µg/l	-	-	-	-	-	-	-	-
Chlorobenzene	µg/l	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	-	-	-	-	-	-	-	-
Ethylbenzene	µg/l	-	-	-	-	-	-	-	-
m,p-Xylene	µg/l	-	-	-	-	-	-	-	-
o-Xylene	µg/l	-	-	-	-	-	-	-	-
Styrene	µg/l	-	-	-	-	-	-	-	-
Bromoform	µg/l	-	-	-	-	-	-	-	-
Isopropylbenzene	µg/l	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	-	-	-	-	-	-	-	-
1,2,3-Trichloropropane	µg/l	-	-	-	-	-	-	-	-
Bromobenzene	µg/l	-	-	-	-	-	-	-	-
Propylbenzene	µg/l	-	-	-	-	-	-	-	-
2-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-
4-Chlorotoluene	µg/l	-	-	-	-	-	-	-	-
tert-Butylbenzene	µg/l	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	-	-	-	-	-	-	-	-
sec-Butylbenzene	µg/l	-	-	-	-	-	-	-	-
4-iso-Propyltoluene	µg/l	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-
n-Butylbenzene	µg/l	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	µg/l	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-
Hexachlorobutadiene	µg/l	-	-	-	-	-	-	-	-
tert-Amyl methyl ether (TAME)	µg/l	-	-	-	-	-	-	-	-
Naphthalene	µg/l	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-
1,3,5-Trichlorobenzene	µg/l	-	-	-	-	-	-	-	-

Table 12 – Summary of Sample Analysis Results – Offices/Depot SPT1

5 Summary of Results

5.1 Landfill Summary

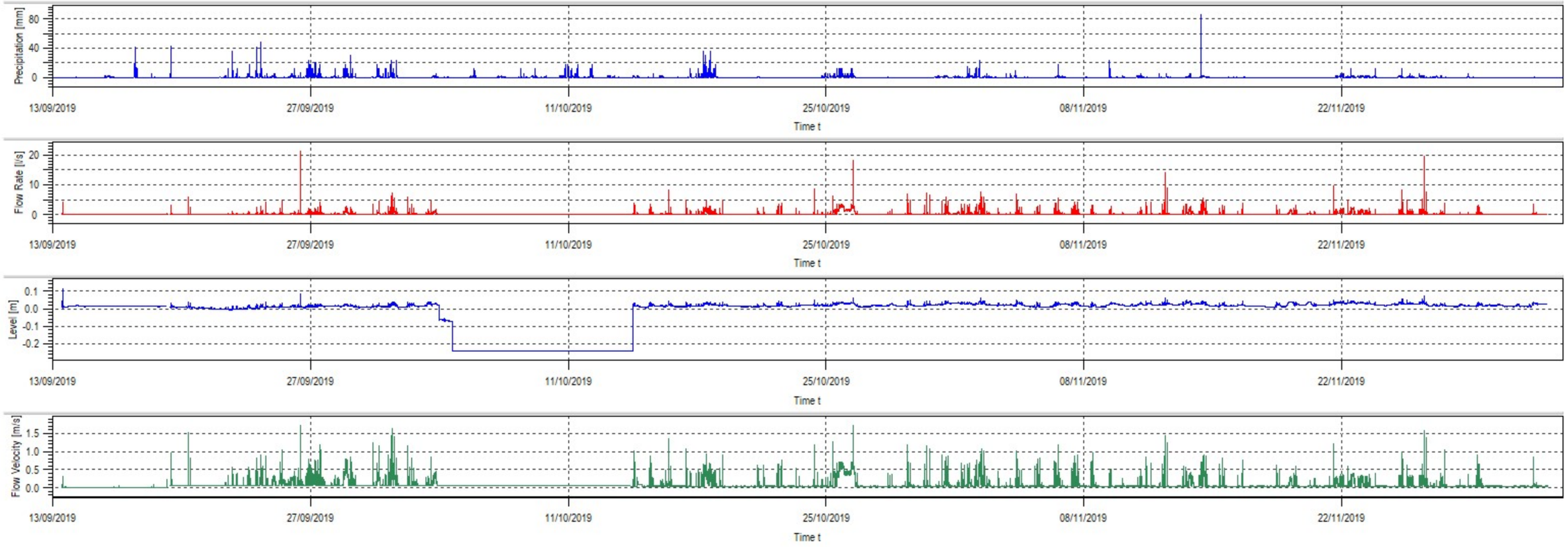
- The minimum flow rate recorded was 0 l/s.
- The maximum flow rate recorded was 19.7 l/s, which occurred on the 26th November 2019.
- The maximum daily volume recorded was 102.8m^3, which occurred on the 25th October 2019.
- The minimum daily volume recorded was 0m^3 which occurred on multiple dates.
- The average daily volume recorded was 13.8m^3.
- The total volume recorded through the site was 1119.6m^3.

5.2 Office/Depot Summary

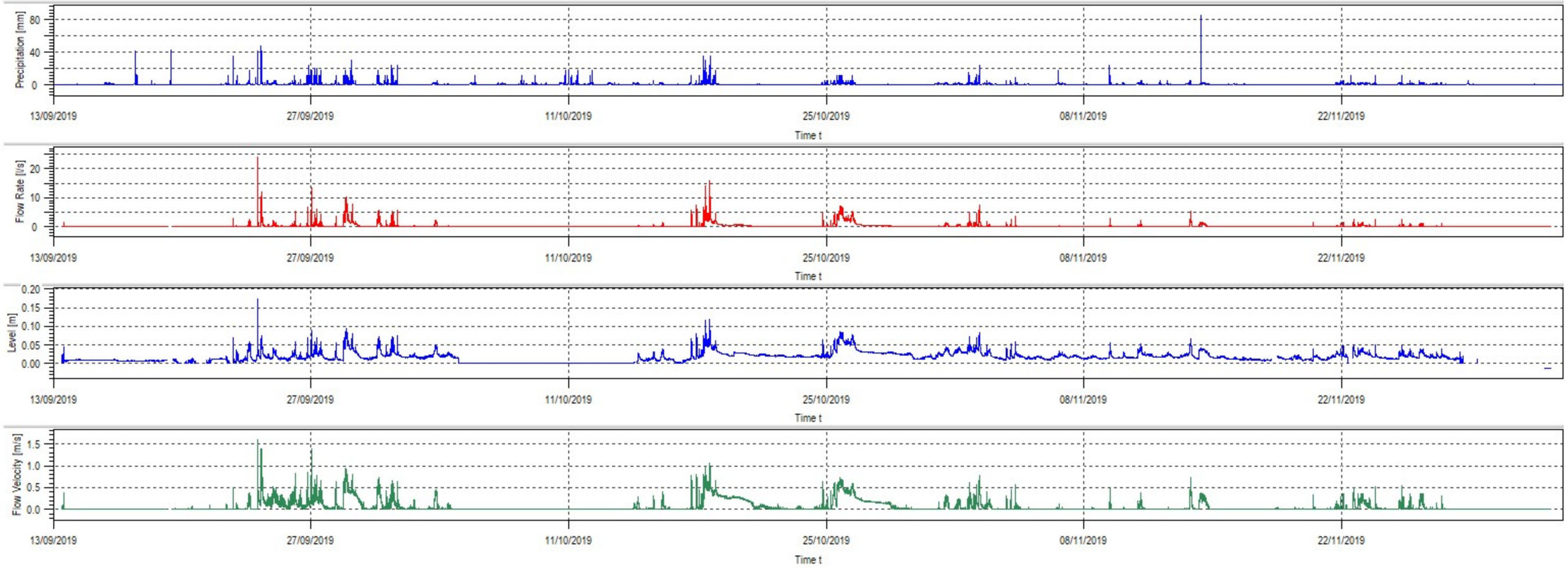
- The minimum flow rate recorded was 0 l/s.
- The maximum flow rate recorded was 23.5 l/s, which occurred on the 24th September 2019.
- The maximum daily volume recorded was 184.9m^3, which occurred on the 25th October 2019.
- The minimum daily volume recorded was 0m^3 which occurred on multiple dates.
- The average daily volume recorded was 17.2m^3.
- The total volume recorded through the site was 1391.1m^3

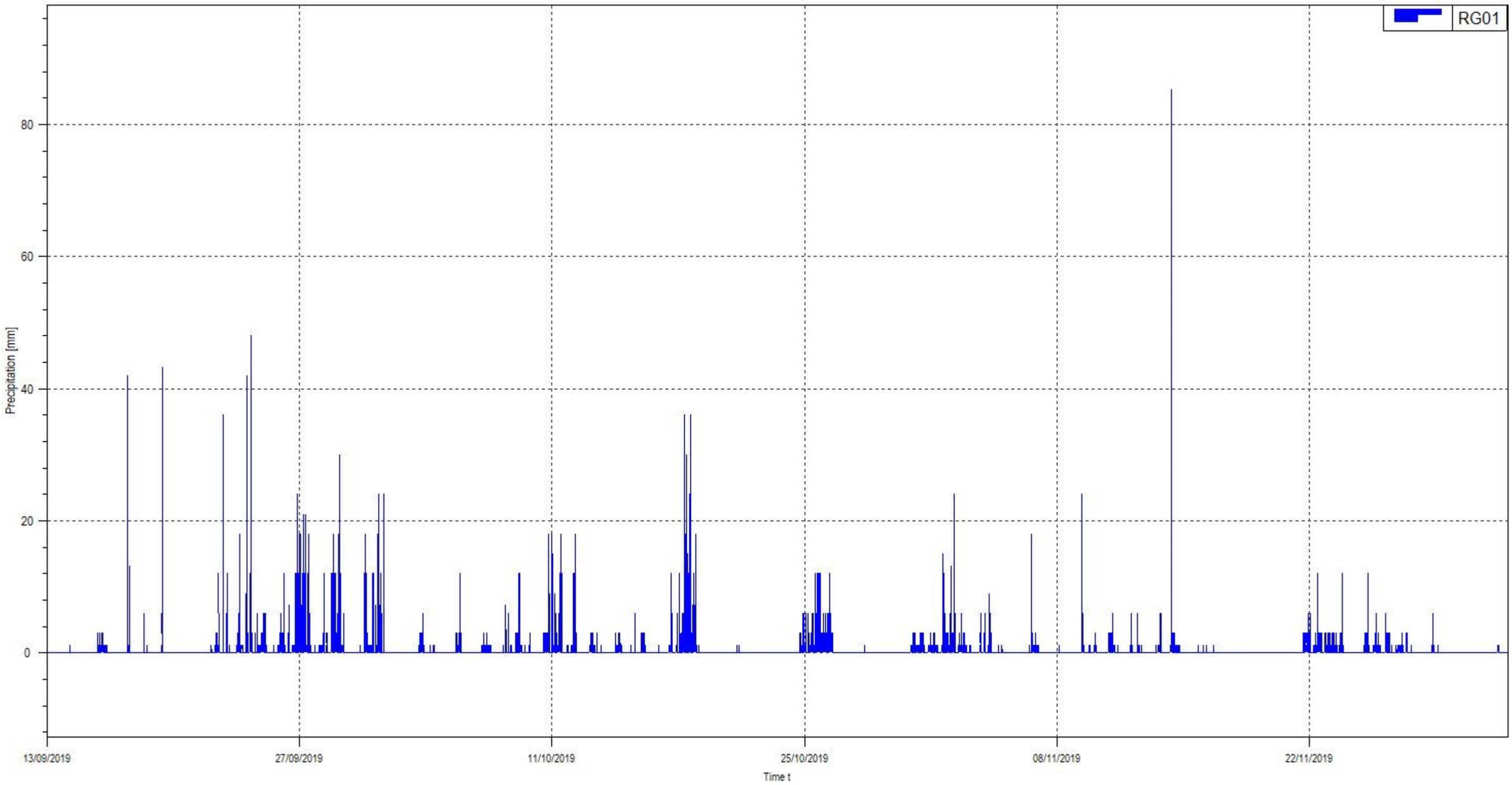
4 Results

Arcadis - FM01



Arcadis - FM02




RG01
80
60
40
20
0
Precipitation [mm]
13/09/2019
27/09/2019
11/10/2019
25/10/2019
08/11/2019
22/11/2019
Time t