Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL120 Pit



TPL120 Spoil

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL121 Pit



TPL121 Spoil

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL122 Pit



TPL122 Spoil

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL123 Pit



TPL123 Spoil

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL124 Pit



TPL124 Spoil

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL125 Arisings 0.0m to 1.5m



TPL125 Arisings 1.5m to 3.0m

geotechnics

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPL125 Pit



TPW101 Pit

Project Number : PE201646

Project : Ground Investigation for an Inert Landfill at Challonsleigh Farm



TPW101 Spoil

APPENDIX 10

Soakaway Test Results

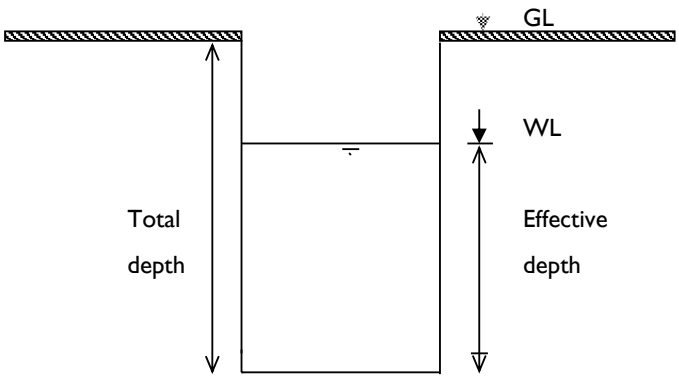
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	1
		Project No	PE201646
Client	Atkins Global	Date	24.7.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.80	2.20	100.00
1.00	0.82	2.18	99.18
2.00	0.84	2.16	98.36
3.00	0.86	2.14	97.23
4.00	0.89	2.11	96.09
5.00	0.90	2.10	95.45
6.00	0.93	2.08	94.32
7.00	0.94	2.06	93.73
8.00	0.97	2.03	92.45
9.00	0.99	2.01	91.27
10.00	1.01	1.99	90.45
12.00	1.06	1.94	88.14
14.00	1.10	1.90	86.36
16.00	1.14	1.86	84.36
18.00	1.18	1.82	82.64
20.00	1.22	1.78	80.95
25.00	1.30	1.70	77.27
30.00	1.38	1.62	73.68
35.00	1.44	1.56	70.73
40.00	1.51	1.49	67.82
50.00	1.64	1.36	62.00
60.00	1.73	1.27	57.86
130.00	2.22	0.78	35.64

TRIAL PIT SOAKAWAY



Trial pit length	=	3.350	m
Trial pit width	=	1.350	m
Trial pit depth	=	3.000	m
Effective depth (Head of Water)	=	2.200	m

Initial depth from GL	=	0.800m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	1.650	1.350	28.00
25%	0.550	2.450	160.00
Vp75-25	=	4.975	m3
ap50	=	14.863	m2
tp75-25	=	132.000	min
Soil Infiltration, f	=	**4.23E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

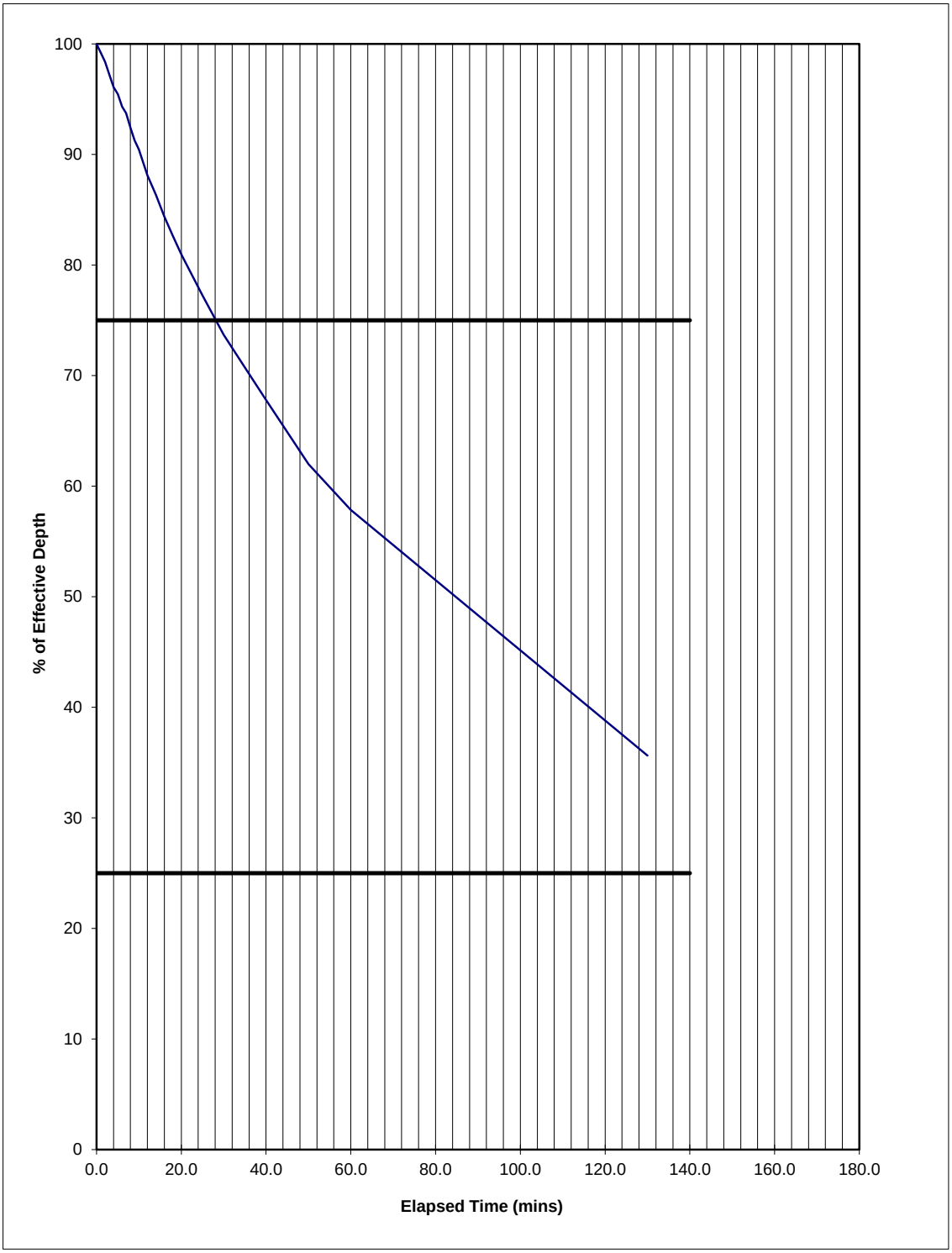
Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	1
		Project No	PE201646
Client	Atkins Global	Date	24.7.20



tp75	=	28.00
tp25	=	160.00

Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

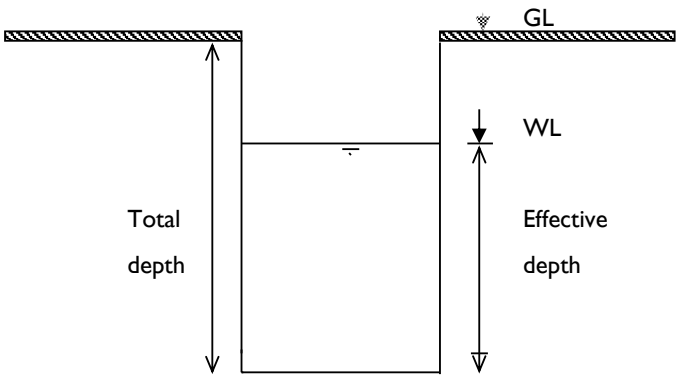
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	2
		Project No	PE201646
Client	Atkins Global	Date	24.7.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.70	2.30	100.00
1.00	0.71	2.29	99.48
2.00	0.72	2.28	99.00
3.00	0.73	2.27	98.78
4.00	0.73	2.27	98.70
5.00	0.74	2.26	98.09
6.00	0.75	2.25	97.74
7.00	0.76	2.24	97.22
8.00	0.78	2.22	96.57
9.00	0.79	2.21	96.22
10.00	0.80	2.20	95.78
12.00	0.81	2.19	95.35
14.00	0.84	2.16	94.09
16.00	0.85	2.15	93.48
18.00	0.87	2.13	92.48
20.00	0.89	2.11	91.65
25.00	0.94	2.06	89.57
30.00	0.99	2.01	87.30
35.00	1.04	1.96	85.22
40.00	1.08	1.92	83.48
50.00	1.18	1.83	79.35
60.00	1.26	1.74	75.52
130.00	1.78	1.22	52.91
175.00	2.08	0.92	40.13

TRIAL PIT SOAKAWAY



Trial pit length	=	3.350	m
Trial pit width	=	1.350	m
Trial pit depth	=	3.000	m
Effective depth (Head of Water)	=	2.300	m

Initial depth from GL	=	0.700m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	1.725	1.275	62.00
25%	0.575	2.425	240.00
Vp75-25	=	5.201	m3
ap50	=	15.333	m2
tp75-25	=	178.000	min
Soil Infiltration, f	=	**3.18E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

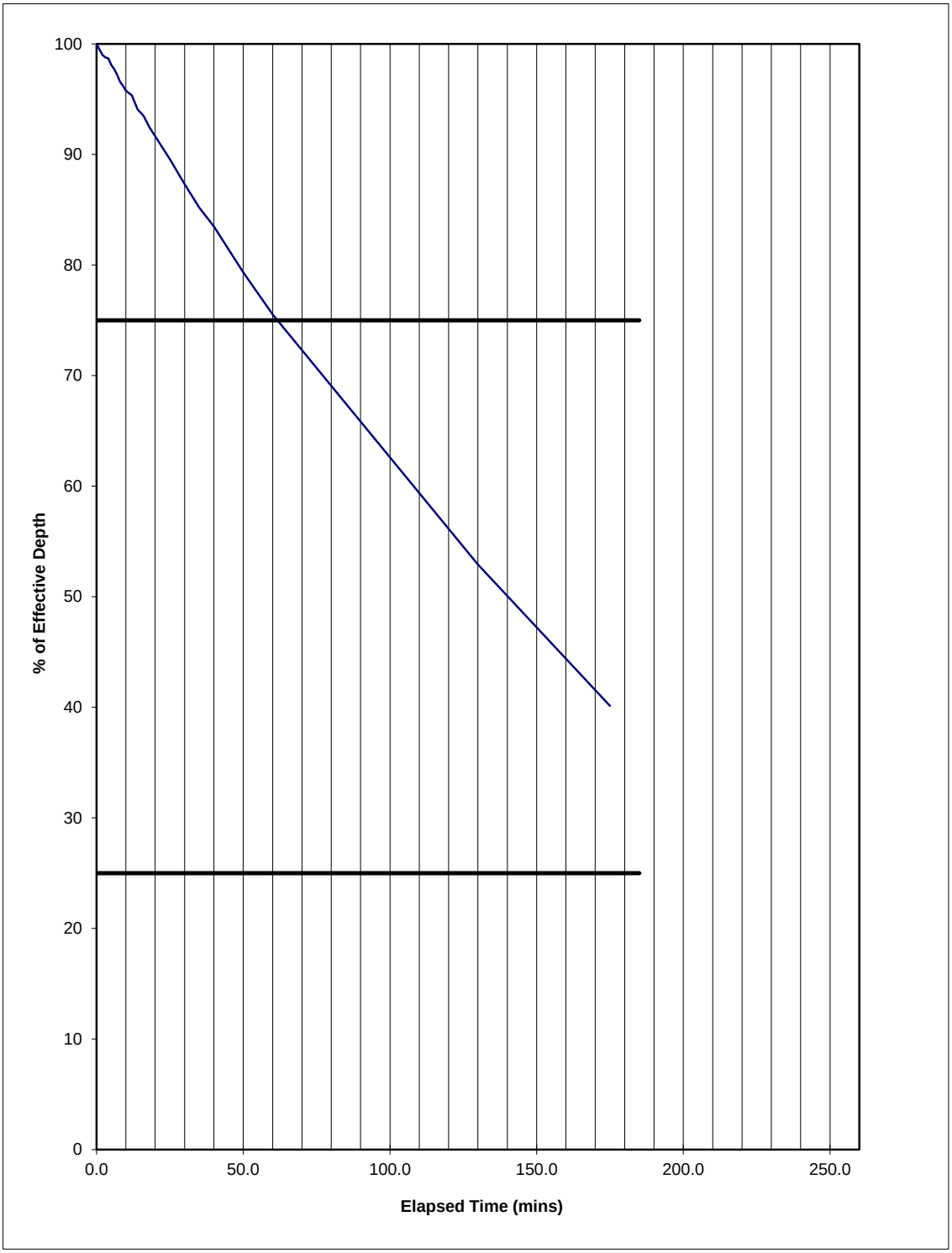
Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	2
		Project No	PE201646
Client	Atkins Global	Date	24.7.20



tp75	=	62.00
tp25	=	240.00

Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

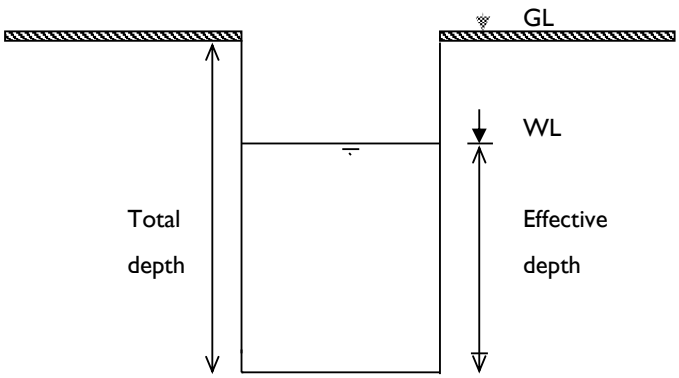
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	3
		Project No	PE201646
Client	Atkins Global	Date	24.7.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.81	2.19	100.05
1.00	0.82	2.18	99.45
2.00	0.83	2.17	99.09
3.00	0.84	2.16	98.77
4.00	0.84	2.16	98.45
5.00	0.85	2.15	98.04
6.00	0.86	2.14	97.58
7.00	0.87	2.13	97.21
8.00	0.88	2.12	96.85
9.00	0.89	2.11	96.48
10.00	0.90	2.10	96.07
12.00	0.92	2.08	94.93
14.00	0.93	2.07	94.38
16.00	0.95	2.05	93.70
18.00	0.97	2.03	92.83
20.00	0.98	2.02	92.19
25.00	1.02	1.98	90.27
30.00	1.07	1.93	88.08
35.00	1.12	1.89	86.07
40.00	1.15	1.85	84.43
45.00	1.20	1.80	82.19
50.00	1.24	1.77	80.59
60.00	1.31	1.69	77.17
210.00	2.24	0.77	34.93

TRIAL PIT SOAKAWAY



Trial pit length	=	3.350	m
Trial pit width	=	1.350	m
Trial pit depth	=	3.000	m
Effective depth (Head of Water)	=	2.190	m

Initial depth from GL	=	0.809m	

% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	1.643	1.358	68.00
25%	0.548	2.453	250.00

Vp75-25	=	4.952	m3
ap50	=	14.816	m2
tp75-25	=	182.000	min
Soil Infiltration, f	=	**3.06E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

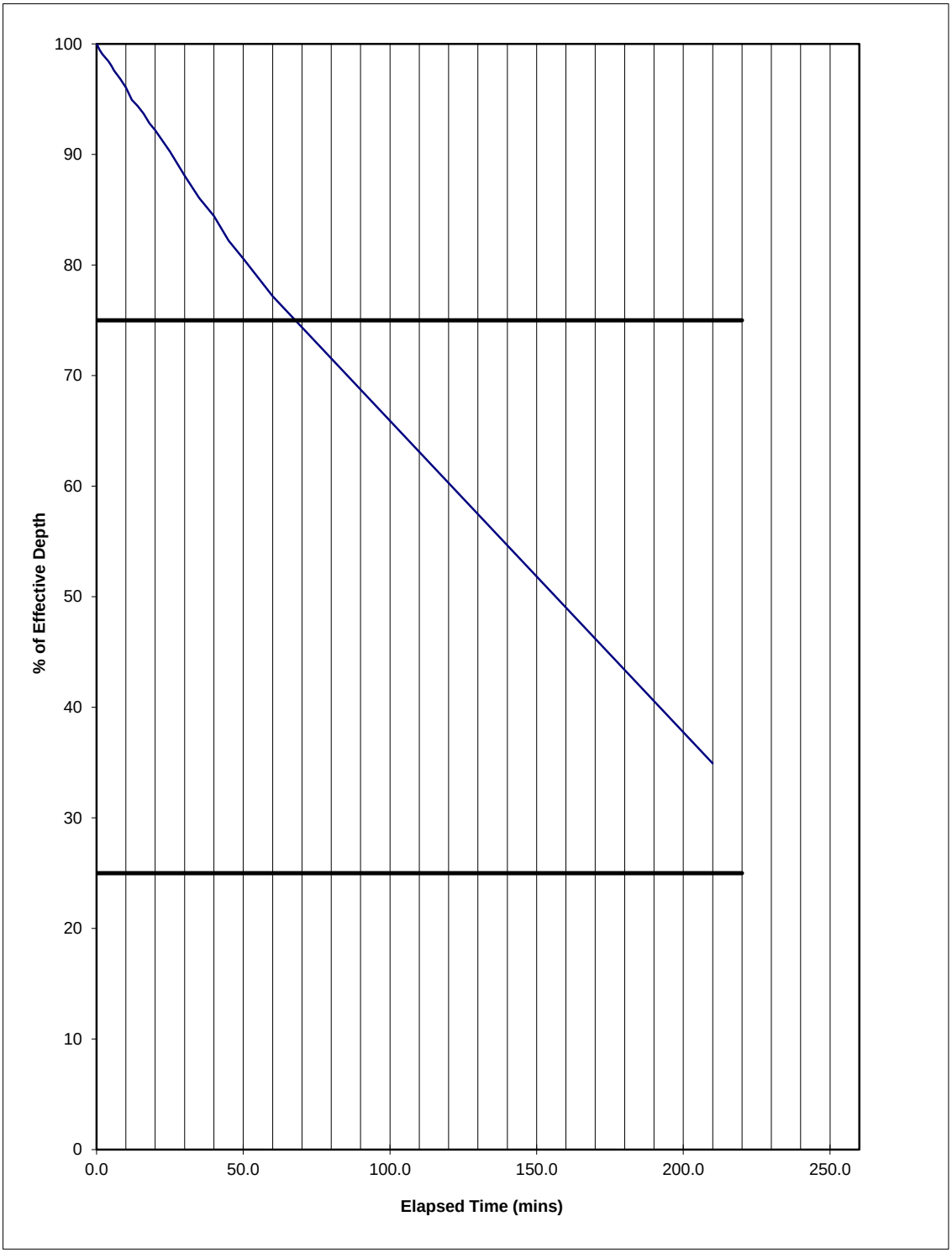
Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPW101
		Test No	3
		Project No	PE201646
Client	Atkins Global	Date	24.7.20



tp75	=	68.00
tp25	=	250.00

Remarks Soil Infiltration Value is based on extrapolated line to 25% effective depth and is therefore approximate only.

GEOTECHNICS

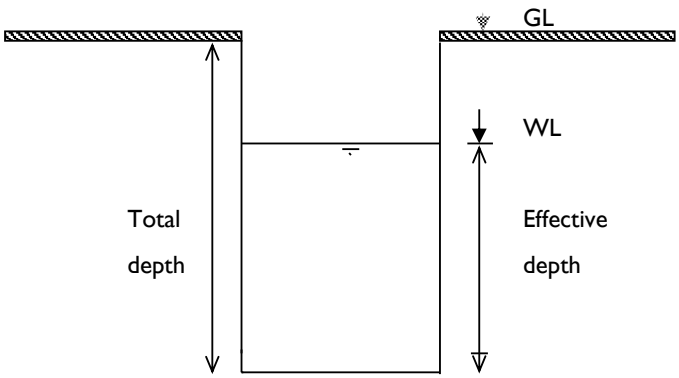
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF01
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.31	0.69	100.00
1.00	0.34	0.66	96.23
2.00	0.35	0.65	94.64
3.00	0.36	0.64	92.32
4.00	0.38	0.63	90.58
5.00	0.39	0.61	88.90
6.00	0.40	0.60	87.35
7.00	0.41	0.59	85.88
8.00	0.42	0.58	84.61
9.00	0.43	0.58	83.33
10.00	0.43	0.57	82.12
11.00	0.44	0.56	80.59
12.00	0.45	0.55	79.74
13.00	0.46	0.54	78.86
14.00	0.46	0.54	78.00
15.00	0.47	0.53	77.10
20.00	0.49	0.51	73.33
25.00	0.52	0.48	70.14
30.00	0.54	0.46	67.10
45.00	0.59	0.41	59.28
60.00	0.63	0.37	53.19
90.00	0.71	0.29	42.32
120.00	0.77	0.23	33.04
150.00	0.82	0.18	26.23
180.00	0.86	0.14	19.86
210.00	0.88	0.12	17.83

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.690	m

Initial depth from GL	=	0.310m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.518	0.483	18.00
25%	0.173	0.828	156.00
Vp75-25	=	0.031	m3
ap50	=	0.504	m2
tp75-25	=	138.000	min
Soil Infiltration, f	=	**7.44E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

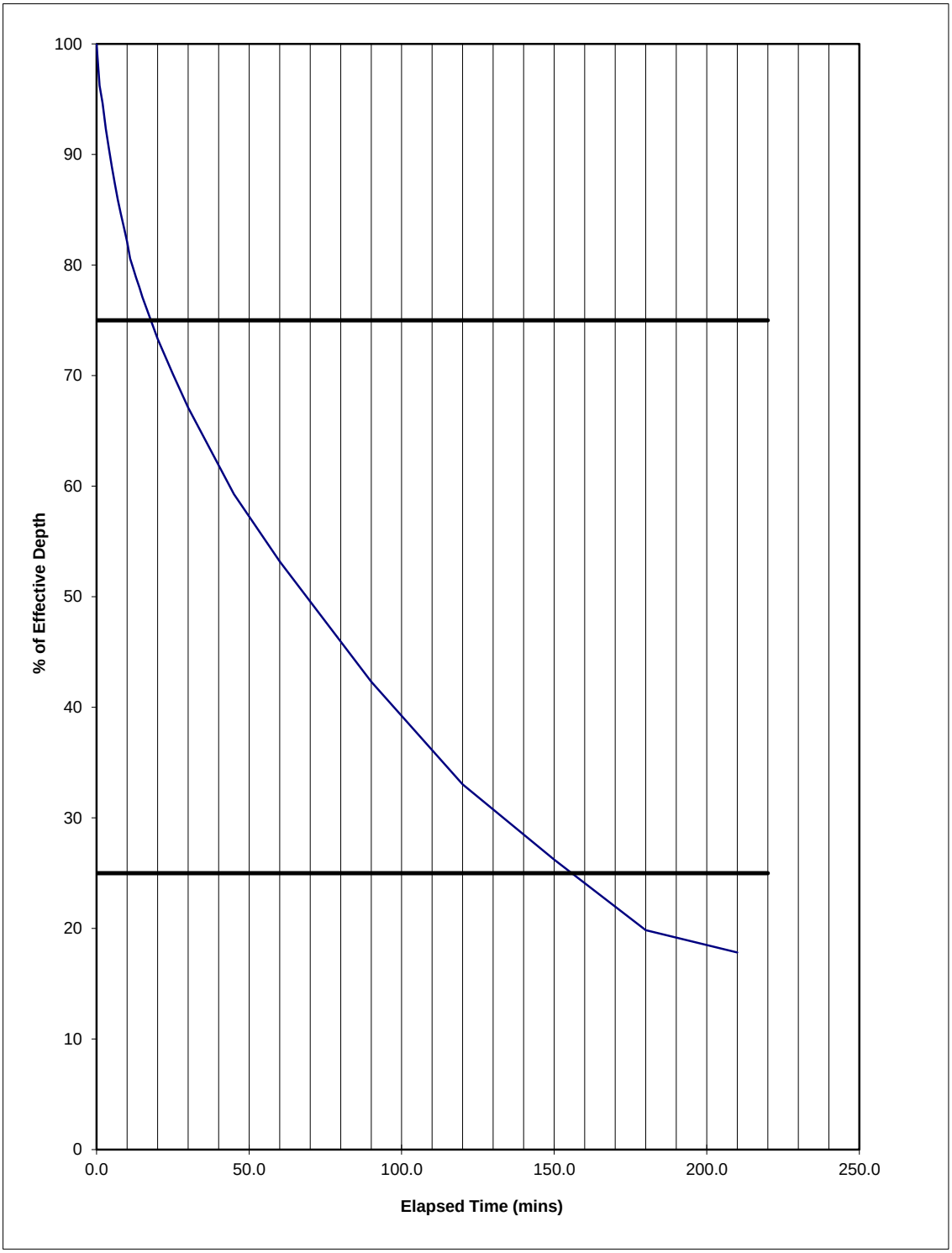
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF01
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20



tp75	=	18.00
tp25	=	156.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

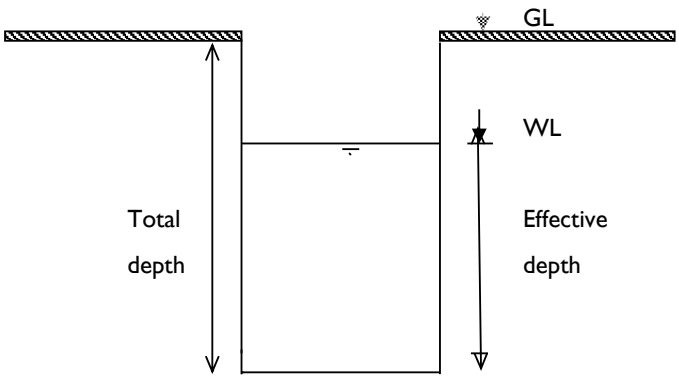
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF01
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.31	0.69	100.00
1.00	0.31	0.69	99.71
2.00	0.32	0.68	98.99
3.00	0.32	0.68	98.12
4.00	0.33	0.67	97.39
5.00	0.33	0.67	96.84
6.00	0.34	0.66	96.14
7.00	0.34	0.66	95.49
8.00	0.35	0.66	94.93
9.00	0.35	0.65	94.33
10.00	0.35	0.65	93.77
11.00	0.36	0.64	93.16
12.00	0.36	0.64	92.57
13.00	0.37	0.63	91.93
14.00	0.37	0.63	91.42
15.00	0.37	0.63	90.91
20.00	0.39	0.61	88.41
25.00	0.41	0.59	86.09
30.00	0.42	0.58	83.62
45.00	0.47	0.53	76.52
60.00	0.50	0.50	72.17
90.00	0.56	0.44	63.48
120.00	0.61	0.39	56.67
150.00	0.66	0.34	49.42
180.00	0.69	0.31	44.49
210.00	0.74	0.26	38.12
240.00	0.77	0.23	33.19

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.690	m

Initial depth from GL	=	0.310m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.518	0.483	50.00
25%	0.173	0.828	297.00
Vp75-25	=	0.031	m3
ap50	=	0.504	m2
tp75-25	=	247.000	min
Soil Infiltration, f	=	**4.16E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

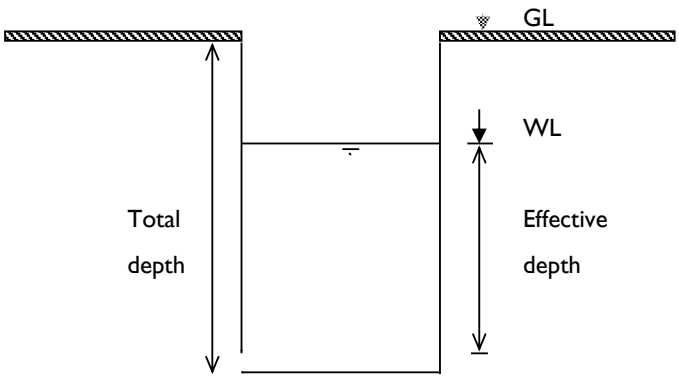
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF01
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
270.00	0.81	0.194	28.1
300.00	0.83	0.170	24.6
330.00	0.86	0.140	20.3

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.690	m

Initial depth from GL	=	0.310m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.518	0.483	50.00
25%	0.173	0.828	297.00
Vp75-25	=	0.031	m3
ap50	=	0.504	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**4.16E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

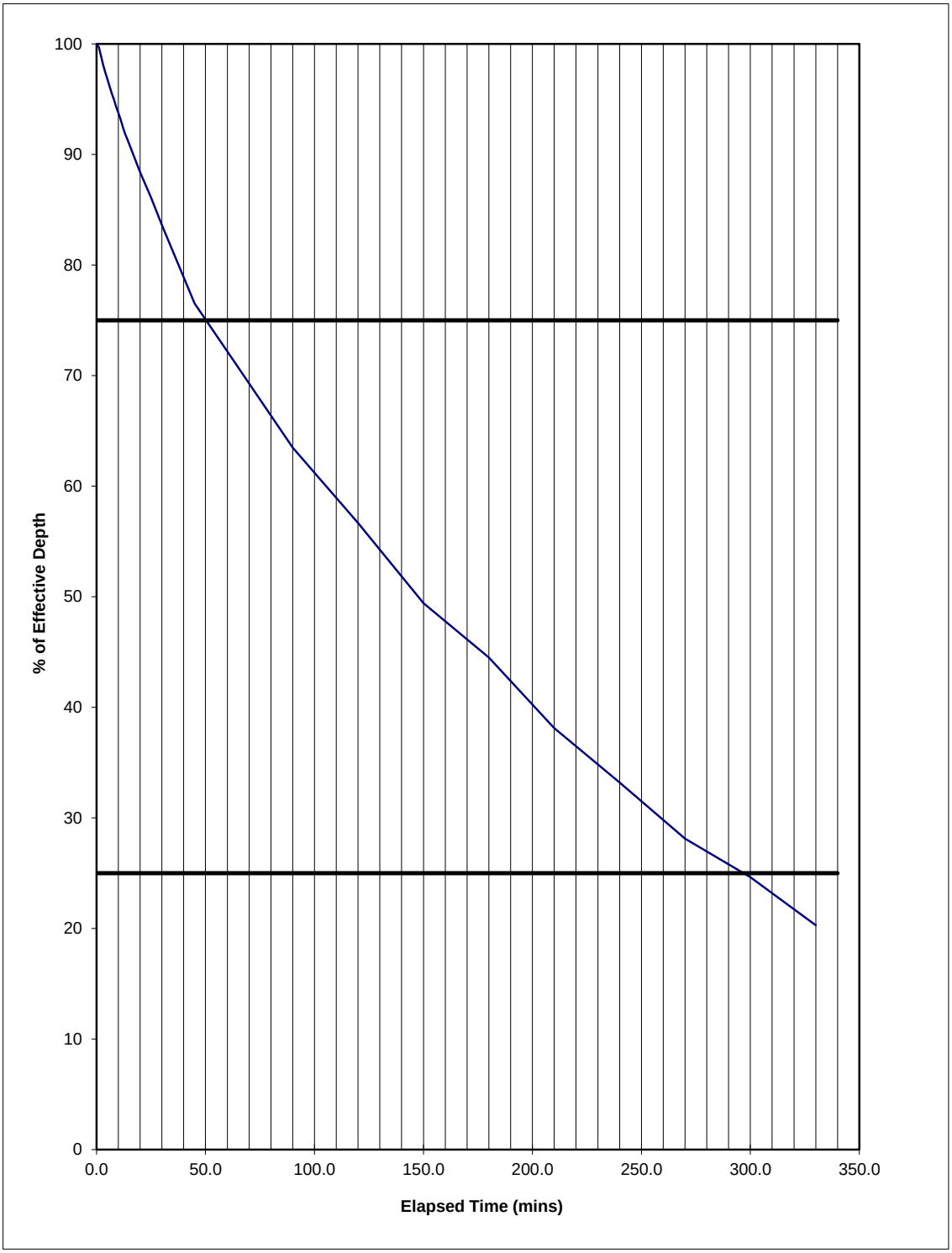
Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF01
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	24.07.20



tp75	=	50.00
tp25	=	297.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

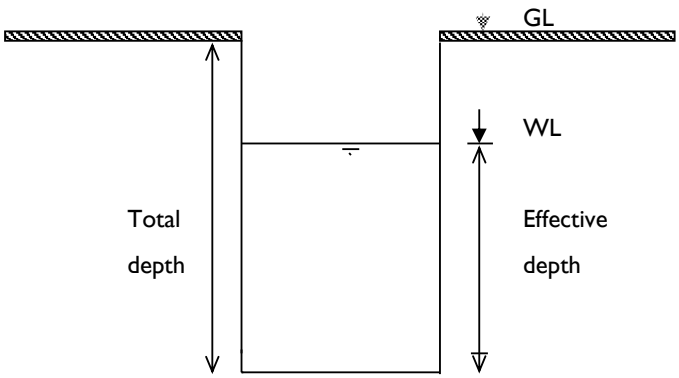
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF02
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.36	0.64	100.00
1.00	0.43	0.57	89.38
2.00	0.48	0.52	80.75
3.00	0.55	0.45	70.44
4.00	0.59	0.41	64.66
5.00	0.64	0.36	56.39
6.00	0.67	0.33	51.45
7.00	0.69	0.31	47.89
8.00	0.73	0.27	41.98
9.00	0.75	0.25	39.08
10.00	0.76	0.24	37.09
11.00	0.79	0.21	33.02
12.00	0.81	0.19	30.31
13.00	0.81	0.19	29.27
14.00	0.82	0.18	28.41
15.00	0.83	0.17	27.23
16.00	0.84	0.16	25.66
17.00	0.86	0.14	22.63
18.00	0.87	0.13	20.63
19.00	0.88	0.12	19.00

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.640	m

Initial depth from GL	=	0.360m	

% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.480	0.520	2.60
25%	0.160	0.840	16.20

Vp75-25	=	0.029	m3
ap50	=	0.474	m2
tp75-25	=	13.600	min
Soil Infiltration, f	=	**7.45E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

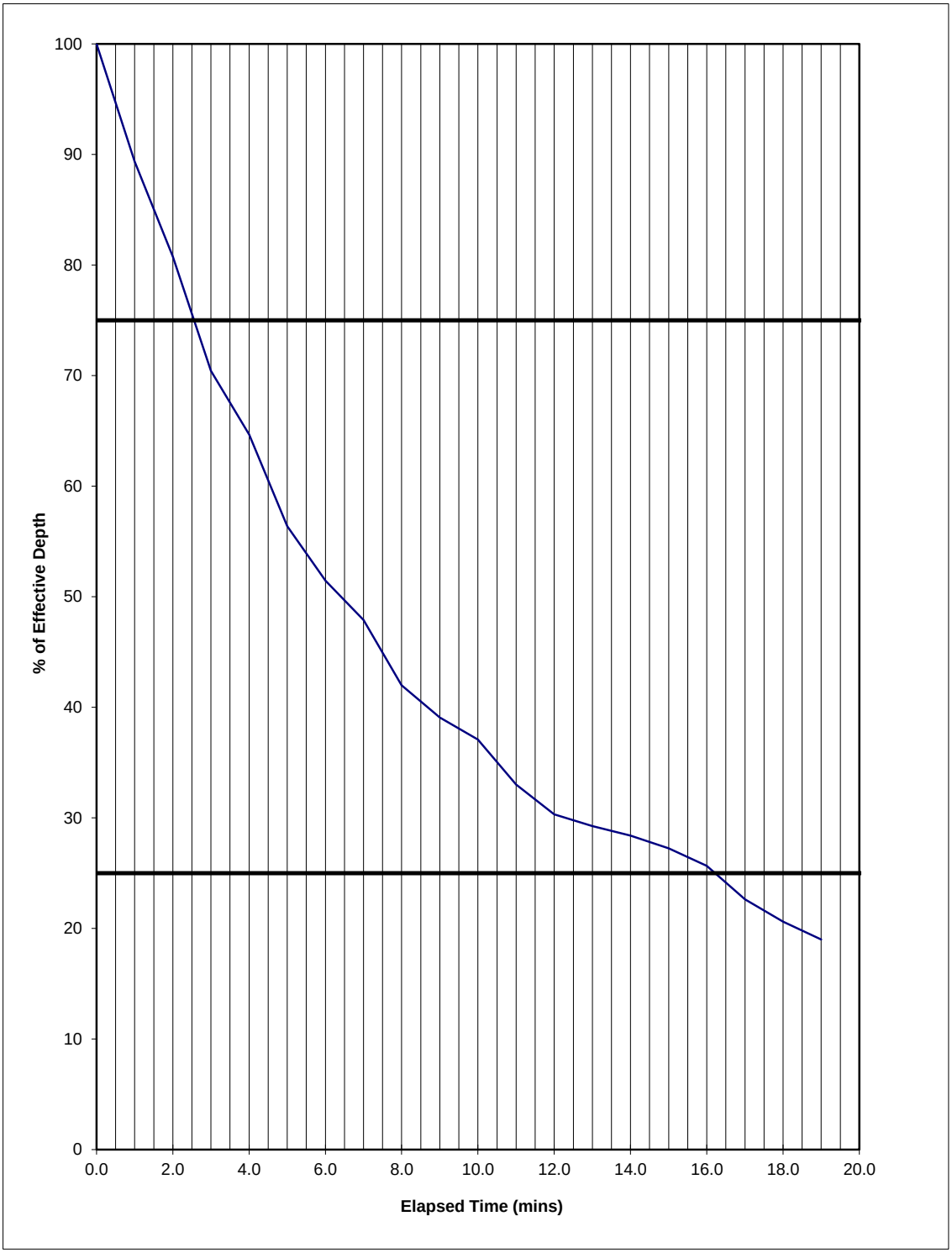
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF02
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20



tp75	=	2.60
tp25	=	16.20

Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

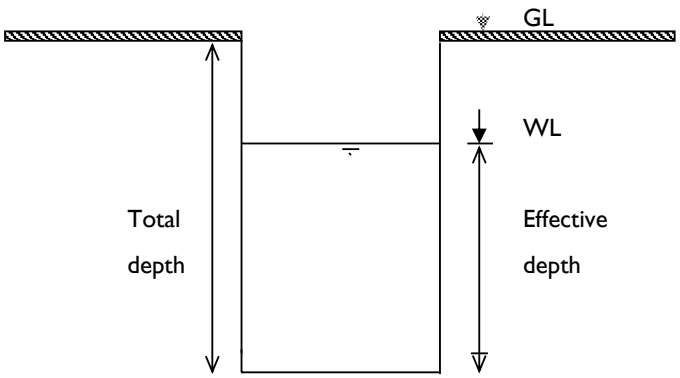
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF02
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.39	0.61	100.00
1.00	0.44	0.56	92.46
2.00	0.46	0.54	88.52
3.00	0.47	0.53	86.23
4.00	0.51	0.49	80.74
5.00	0.53	0.47	77.16
6.00	0.54	0.46	75.11
7.00	0.56	0.44	72.23
8.00	0.59	0.41	67.05
9.00	0.60	0.40	65.48
10.00	0.61	0.39	63.64
11.00	0.63	0.37	61.26
12.00	0.65	0.35	56.95
13.00	0.66	0.34	55.08
14.00	0.67	0.33	54.02
15.00	0.68	0.32	52.61
20.00	0.74	0.27	43.44
25.00	0.77	0.23	38.36
30.00	0.80	0.21	33.61
35.00	0.82	0.18	29.18
40.00	0.84	0.16	25.90
45.00	0.86	0.14	22.95

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.610	m

Initial depth from GL	=	0.390m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.458	0.543	6.00
25%	0.153	0.848	41.50
Vp75-25	=	0.027	m3
ap50	=	0.456	m2
tp75-25	=	35.500	min
Soil Infiltration, f	=	**2.83E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

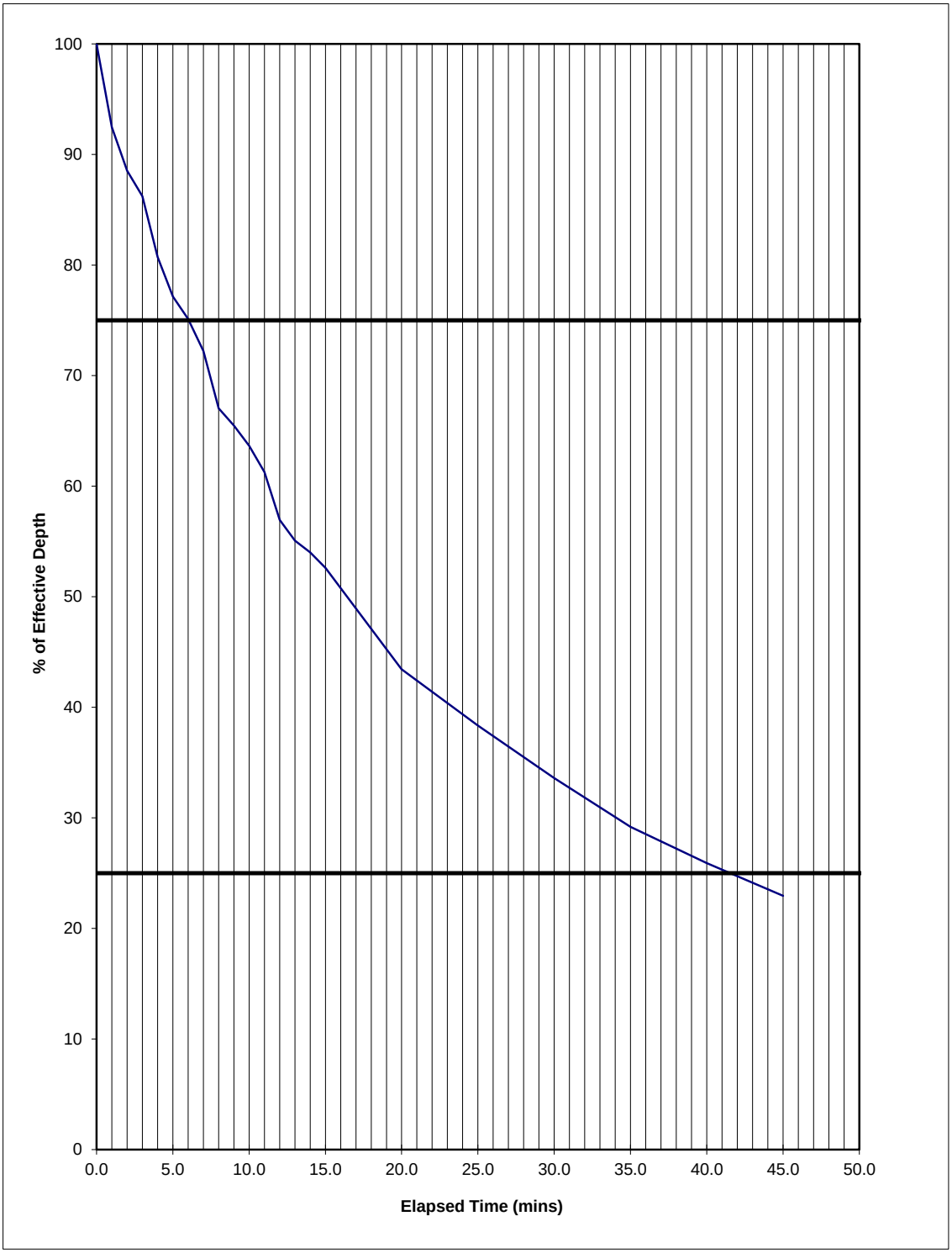
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF02
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	24.07.20



tp75	=	6.00
tp25	=	41.50

Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

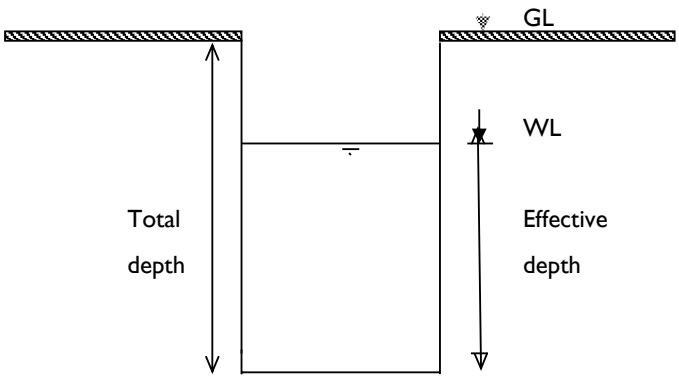
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF03
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.36	0.64	100.00
5.00	0.36	0.64	99.94
10.00	0.36	0.64	99.30
15.00	0.36	0.64	99.31
20.00	0.37	0.64	99.22
25.00	0.37	0.63	98.95
30.00	0.37	0.63	98.64
60.00	0.38	0.63	97.66
120.00	0.38	0.62	96.25
240.00	0.39	0.61	94.69
360.00	0.41	0.59	92.03
480.00	0.42	0.58	91.25
600.00	0.44	0.56	88.13
720.00	0.45	0.55	85.94
840.00	0.46	0.54	84.22
960.00	0.47	0.53	83.28
1080.00	0.48	0.52	81.88
1200.00	0.49	0.51	80.16
1320.00	0.49	0.51	79.22
1440.00	0.53	0.47	73.44
1560.00	0.52	0.48	75.47
1680.00	0.52	0.49	75.78
1800.00	0.52	0.48	74.69
1920.00	0.52	0.48	75.16
2040.00	0.53	0.47	72.97
2160.00	0.55	0.45	70.94
2280.00	0.55	0.45	69.69

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.640	m

Initial depth from GL	=	0.360m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.480	0.520	
25%	0.160	0.840	
Vp75-25	=		m3
ap50	=		m2
tp75-25	=		min
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 24th and 27th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

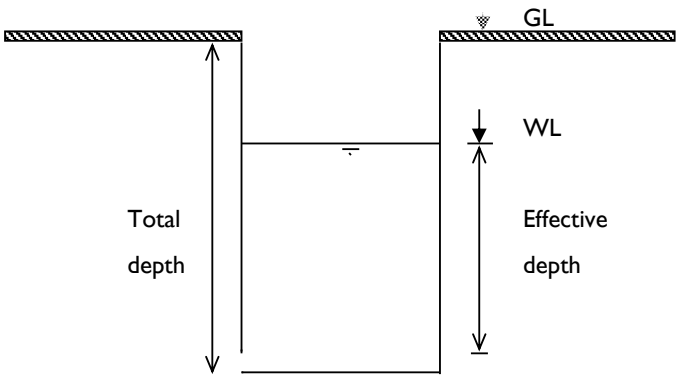
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF03
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
2400.00	0.56	0.441	68.9
2520.00	0.56	0.437	68.3
2640.00	0.58	0.420	65.6
2760.00	0.58	0.422	65.9
2880.00	0.59	0.413	64.5
3000.00	0.60	0.403	63.0
3120.00	0.61	0.390	60.9
3240.00	0.62	0.384	60.0
3360.00	0.62	0.382	59.7
3480.00	0.63	0.368	57.5
3600.00	0.65	0.347	54.2
3720.00	0.65	0.350	54.7
3840.00	0.66	0.342	53.4
3960.00	0.67	0.330	51.6
4080.00	0.67	0.328	51.3
4200.00	0.66	0.339	53.0

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.640	m

Initial depth from GL	=	0.360m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.480	0.520	
25%	0.160	0.840	
Vp75-25	=		m3
ap50	=		m2
tp75-25	=		min
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

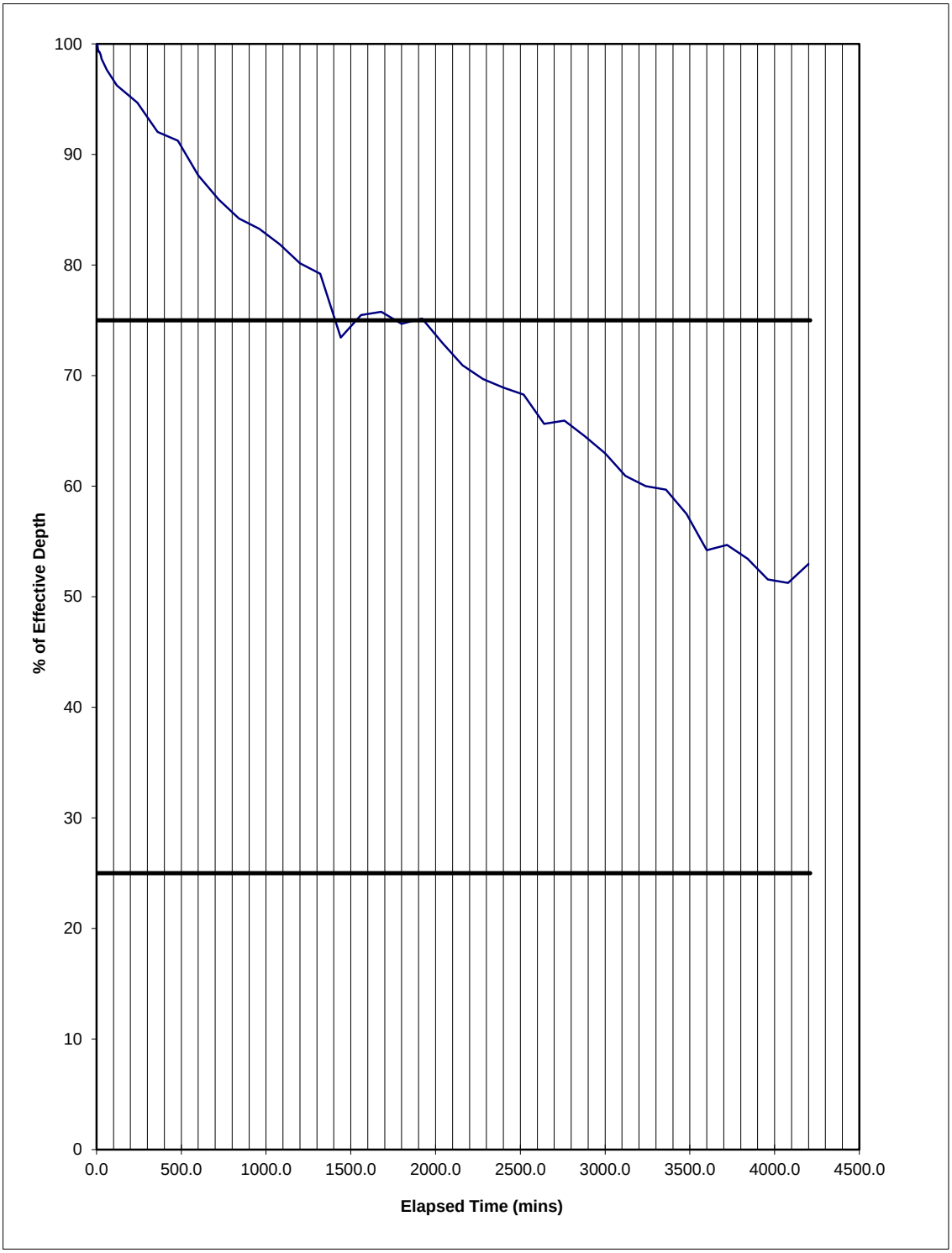
Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 24th and 27th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF03
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	24.07.20



tp75	=
tp25	=

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 24th and 27th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

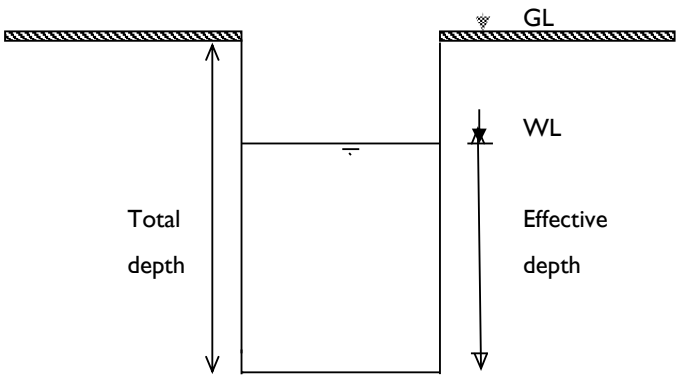
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF04
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.27	0.73	100.00
1.00	0.28	0.72	98.85
2.00	0.28	0.72	98.41
3.00	0.28	0.72	98.04
4.00	0.29	0.71	97.70
5.00	0.29	0.71	97.29
6.00	0.29	0.71	97.05
7.00	0.29	0.71	96.64
8.00	0.30	0.70	96.21
9.00	0.30	0.70	95.95
10.00	0.30	0.70	95.66
11.00	0.30	0.70	95.34
12.00	0.31	0.69	94.95
13.00	0.31	0.69	94.60
14.00	0.31	0.69	94.27
15.00	0.31	0.69	93.92
30.00	0.35	0.65	89.30
60.00	0.40	0.60	82.59
120.00	0.46	0.54	74.41
180.00	0.50	0.50	68.52
240.00	0.52	0.48	65.19
300.00	0.55	0.45	61.81
360.00	0.58	0.42	56.90
420.00	0.60	0.40	54.25
480.00	0.63	0.37	51.22
540.00	0.65	0.35	47.27
600.00	0.67	0.33	45.10

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.730	m

Initial depth from GL	=	0.270m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.548	0.453	170.00
25%	0.183	0.818	1425.00
Vp75-25	=	0.033	m3
ap50	=	0.528	m2
tp75-25	=	1,255.000	min
Soil Infiltration, f	=	**8.26E-07**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.

GEOTECHNICS

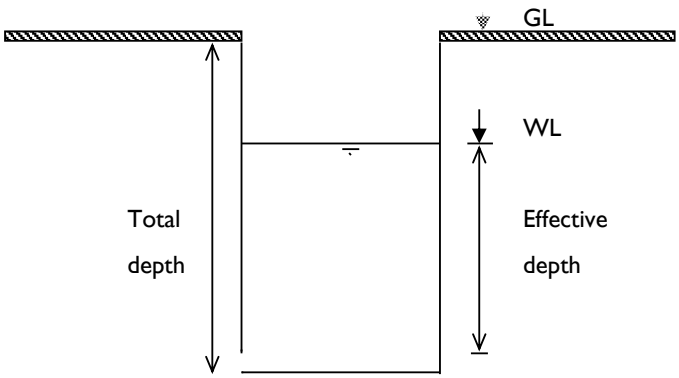
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF04
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
660.00	0.68	0.315	43.2
720.00	0.70	0.303	41.5
780.00	0.71	0.290	39.7
840.00	0.72	0.279	38.2
900.00	0.73	0.265	36.3
960.00	0.75	0.250	34.3
1020.00	0.76	0.237	32.5
1080.00	0.76	0.237	32.5
1140.00	0.77	0.226	30.9
1200.00	0.78	0.217	29.7
1260.00	0.79	0.209	28.6
1320.00	0.80	0.200	27.5
1380.00	0.81	0.194	26.6
1440.00	0.82	0.185	25.3
1500.00	0.82	0.178	24.4
1560.00	0.83	0.172	23.5
1620.00	0.84	0.163	22.3
1680.00	0.85	0.152	20.8

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.730	m

Initial depth from GL	=	0.270m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.548	0.453	170.00
25%	0.183	0.818	1425.00
Vp75-25	=	0.033	m3
ap50	=	0.528	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**8.26E-07**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

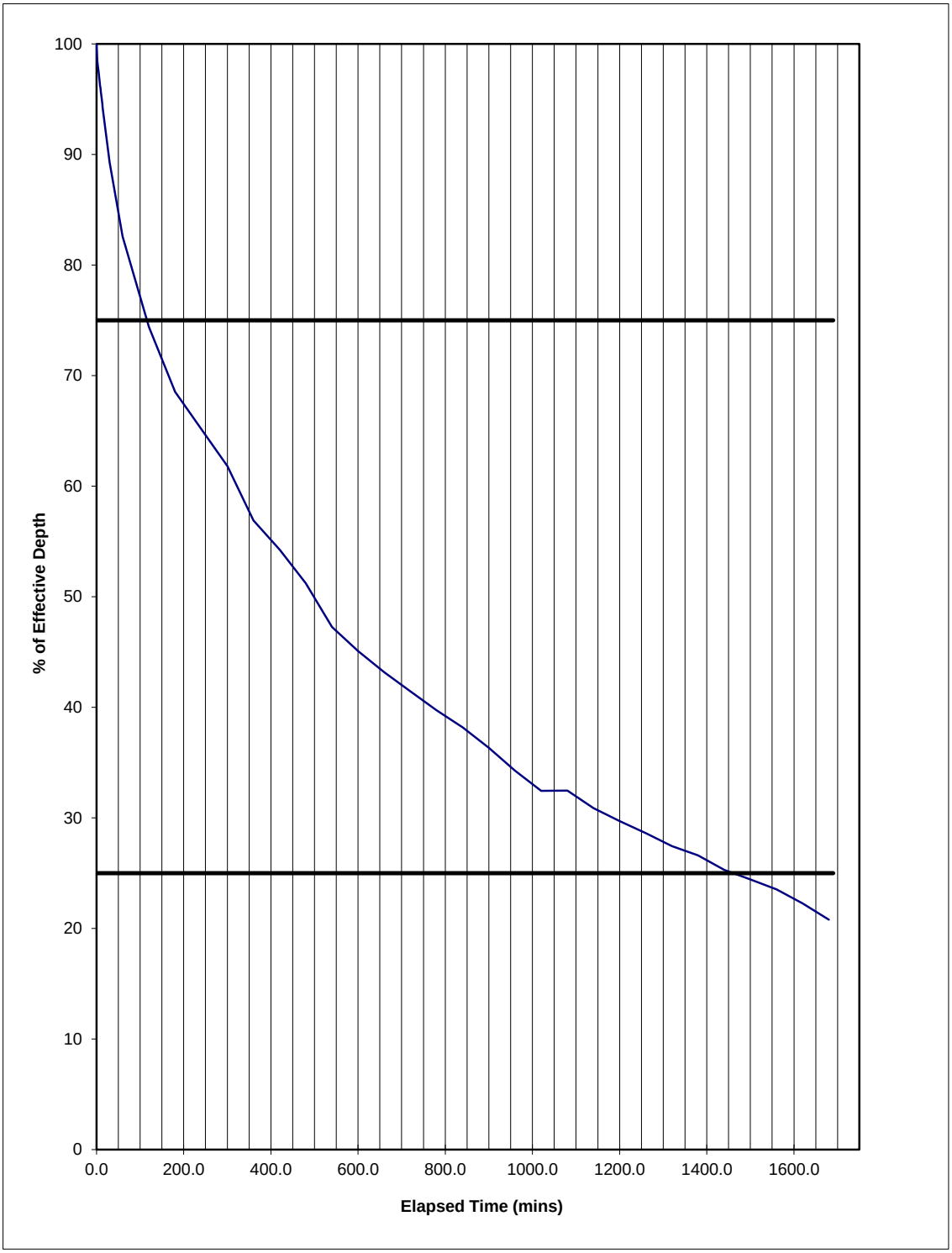
Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF04
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=	170.00
tp25	=	1425.00

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.

GEOTECHNICS

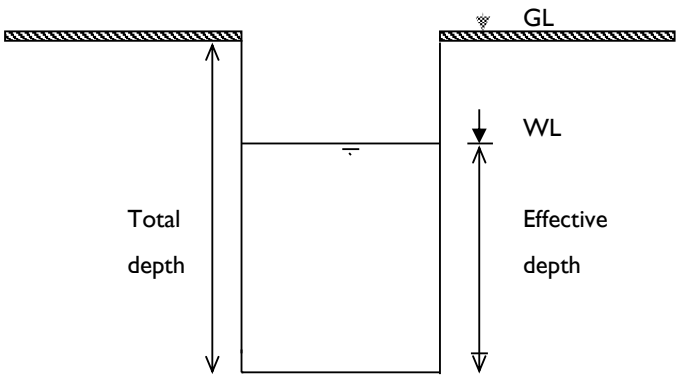
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF05
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.28	0.72	100.00
1.00	0.33	0.67	92.63
2.00	0.37	0.63	87.21
3.00	0.40	0.60	83.43
4.00	0.43	0.57	79.78
5.00	0.45	0.55	77.07
6.00	0.47	0.53	73.72
7.00	0.49	0.51	71.06
8.00	0.50	0.50	68.79
9.00	0.52	0.48	66.17
10.00	0.54	0.46	64.22
11.00	0.55	0.45	62.24
12.00	0.57	0.43	59.96
13.00	0.58	0.42	58.21
14.00	0.59	0.41	56.53
15.00	0.60	0.40	54.99
20.00	0.66	0.34	47.46
30.00	0.73	0.27	37.36
40.00	0.78	0.22	30.25
50.00	0.81	0.19	25.92
60.00	0.83	0.17	23.28
70.00	0.85	0.15	20.51
80.00	0.86	0.14	19.86
90.00	0.86	0.14	19.63
100.00	0.86	0.14	19.63
110.00	0.86	0.14	19.57

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.720	m

Initial depth from GL	=	0.280m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.540	0.460	5.50
25%	0.180	0.820	54.80
Vp75-25	=	0.032	m3
ap50	=	0.522	m2
tp75-25	=	49.300	min
Soil Infiltration, f	=	**2.10E-05**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

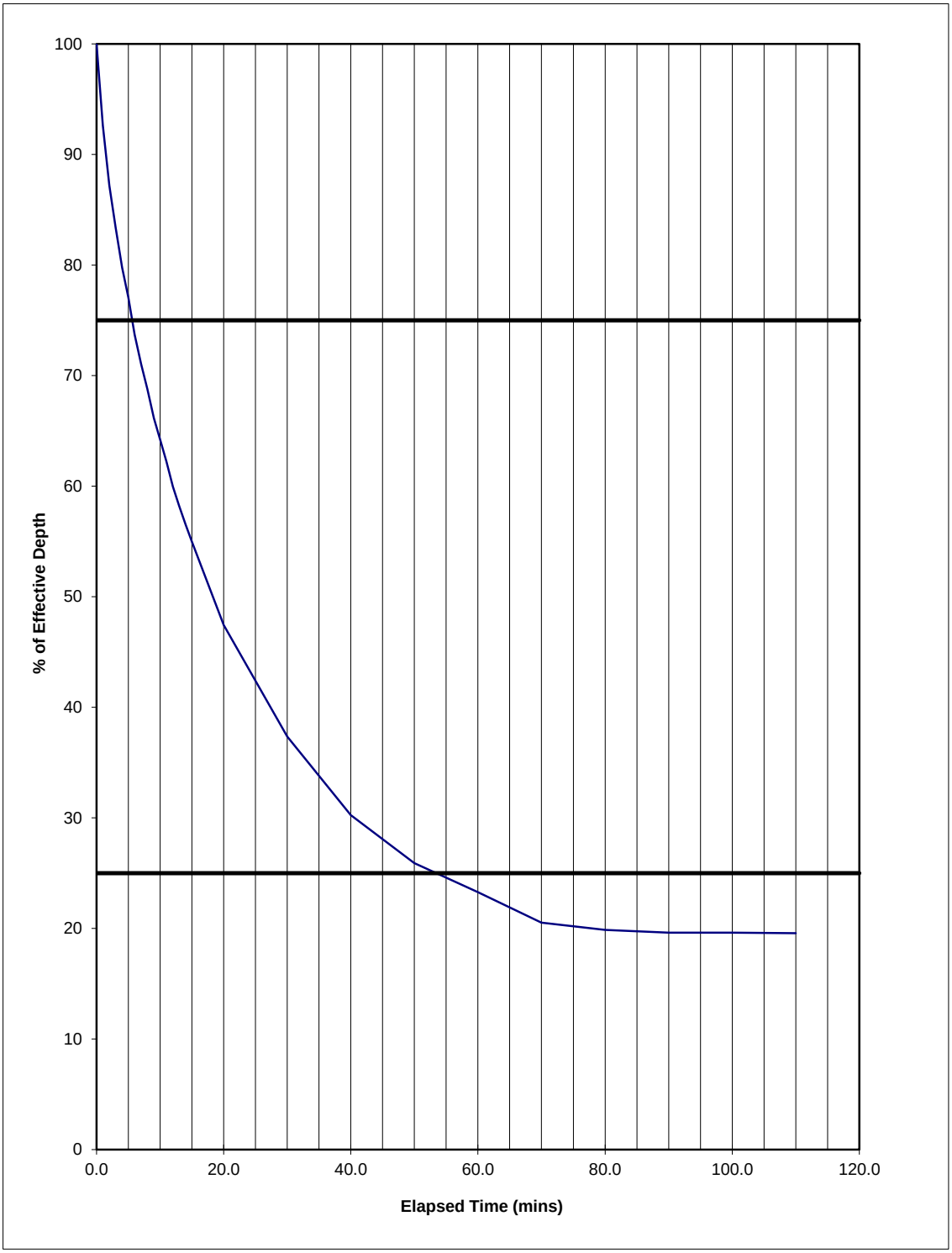
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF05
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=	5.50
tp25	=	54.80

Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

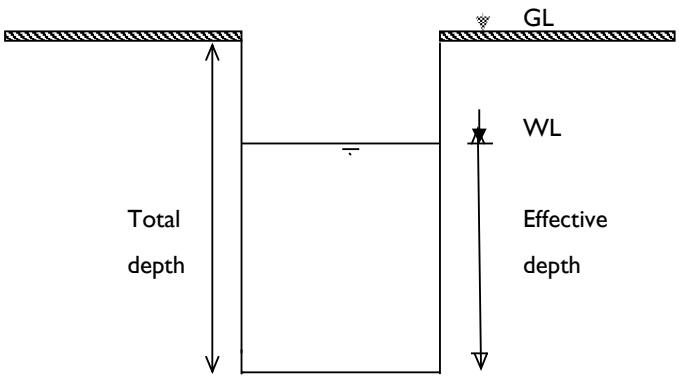
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF05
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.32	0.68	100.00
1.00	0.33	0.67	98.43
2.00	0.34	0.66	96.60
3.00	0.35	0.65	94.97
4.00	0.36	0.64	93.40
5.00	0.37	0.63	92.12
6.00	0.38	0.62	90.90
7.00	0.39	0.61	89.34
8.00	0.40	0.60	88.12
9.00	0.41	0.59	86.84
10.00	0.42	0.58	85.75
11.00	0.43	0.57	84.38
12.00	0.43	0.57	83.47
13.00	0.44	0.56	82.26
14.00	0.45	0.55	81.18
15.00	0.45	0.55	80.28
20.00	0.49	0.51	75.21
30.00	0.55	0.45	66.40
40.00	0.60	0.40	59.12
50.00	0.64	0.36	53.06
60.00	0.68	0.32	47.63
70.00	0.71	0.29	43.24
80.00	0.73	0.27	39.37
90.00	0.76	0.24	35.88
100.00	0.77	0.23	33.46
110.00	0.79	0.21	30.56

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.680	m

Initial depth from GL	=	0.320m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.510	0.490	20.00
25%	0.170	0.830	135.00
Vp75-25	=	0.031	m3
ap50	=	0.498	m2
tp75-25	=	115.000	min
Soil Infiltration, f	=	**8.91E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

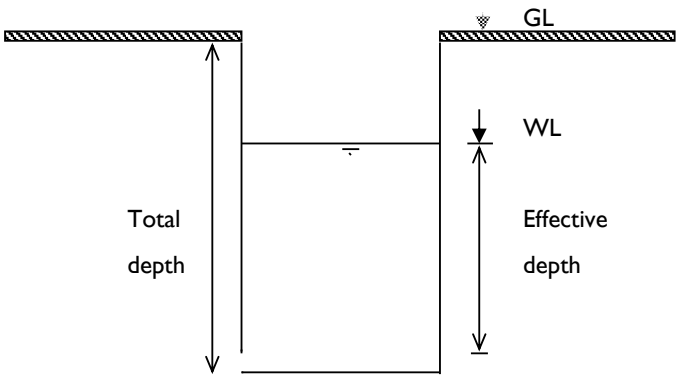
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF05
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
120.00	0.81	0.192	28.2
130.00	0.82	0.176	25.9
140.00	0.84	0.163	23.9
150.00	0.85	0.151	22.2
160.00	0.85	0.148	21.7
170.00	0.85	0.146	21.4

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.680	m

Initial depth from GL	=	0.320m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.510	0.490	20.00
25%	0.170	0.830	135.00
Vp75-25	=	0.031	m3
ap50	=	0.498	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**8.91E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

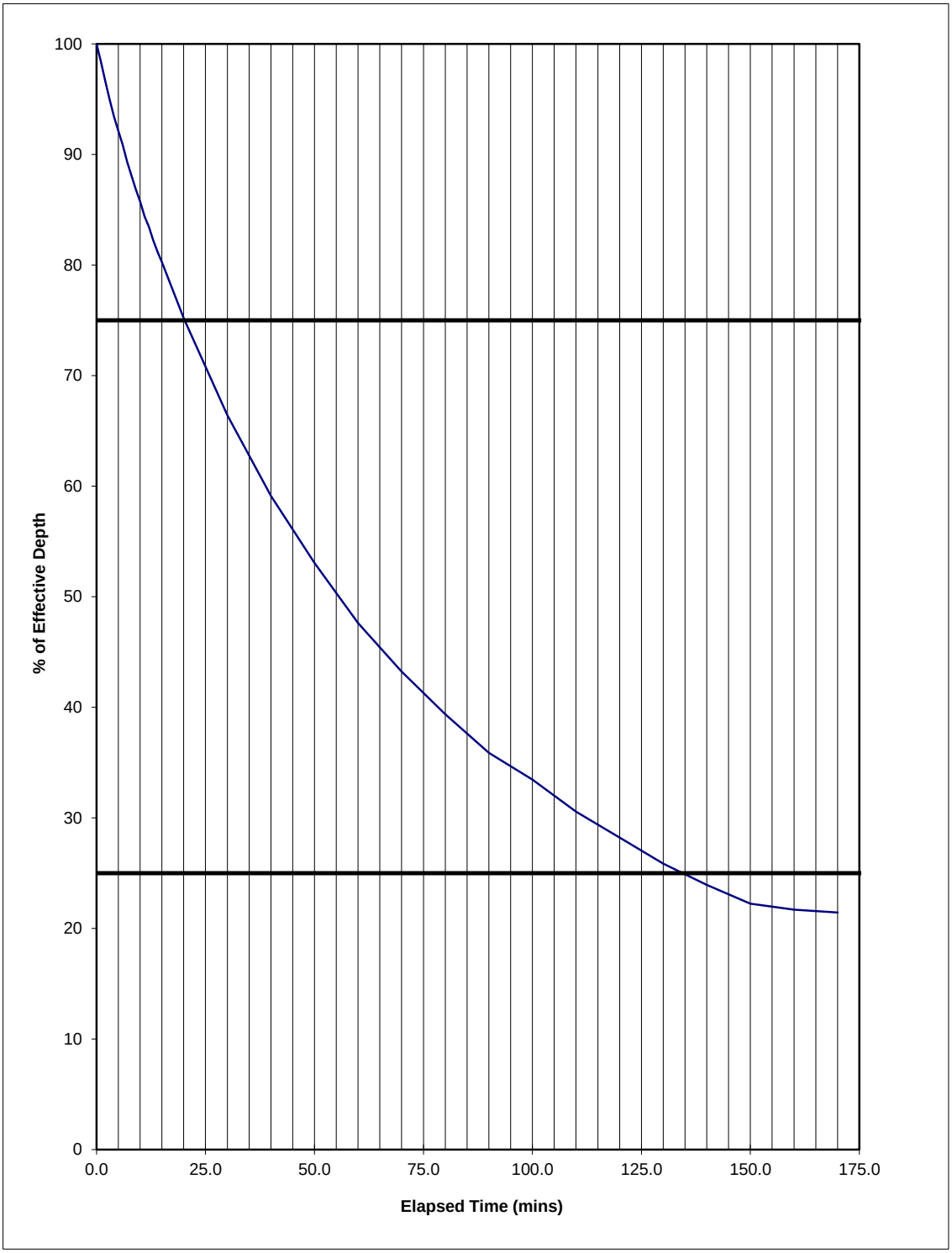
Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF05
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=	20.00
tp25	=	135.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

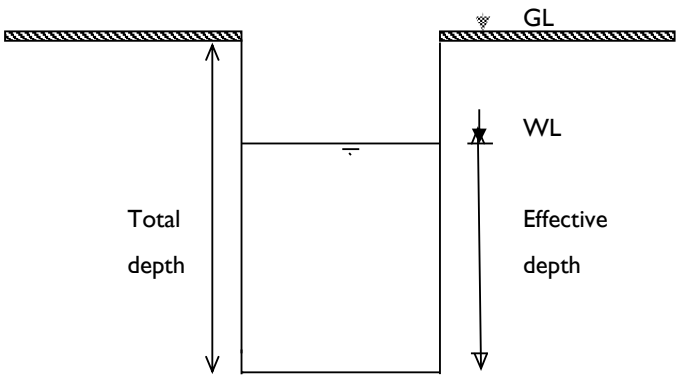
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.33	0.67	100.00
1.00	0.37	0.63	94.21
2.00	0.40	0.60	90.04
3.00	0.42	0.58	87.06
4.00	0.43	0.57	84.84
5.00	0.45	0.55	82.78
6.00	0.46	0.54	80.73
7.00	0.47	0.53	78.73
8.00	0.49	0.51	76.58
9.00	0.50	0.50	74.91
10.00	0.51	0.49	73.48
11.00	0.53	0.47	70.63
12.00	0.53	0.47	69.60
13.00	0.54	0.46	68.67
14.00	0.55	0.45	67.57
15.00	0.55	0.45	66.58
20.00	0.59	0.41	61.82
30.00	0.64	0.36	54.13
40.00	0.67	0.33	49.43
50.00	0.69	0.31	45.81
60.00	0.71	0.29	42.90
70.00	0.73	0.27	40.46
80.00	0.74	0.26	38.10
90.00	0.76	0.24	36.16
100.00	0.77	0.23	34.25
110.00	0.78	0.22	32.82
120.00	0.79	0.21	31.43

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.670	m

Initial depth from GL	=	0.330m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.503	0.498	8.00
25%	0.168	0.833	165.00
Vp75-25	=	0.030	m3
ap50	=	0.492	m2
tp75-25	=	157.000	min
Soil Infiltration, f	=	**6.51E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.
Soil infiltration is calculated by extrapolating the water level beyond the 25% effective depth line and is therefore approximate.

GEOTECHNICS

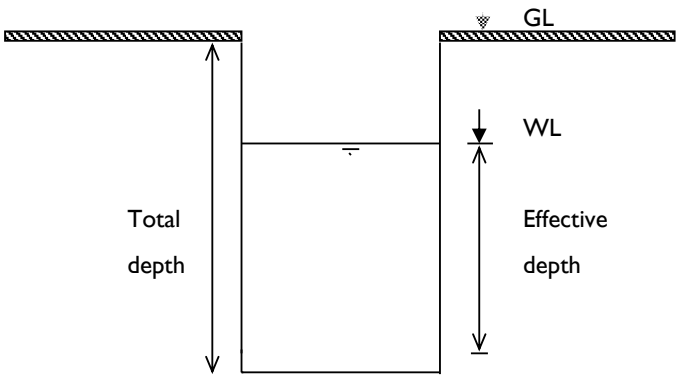
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
130.00	0.80	0.202	30.1
140.00	0.81	0.192	28.7

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300 m
Trial pit width	=	0.300 m
Trial pit depth	=	1.000 m
Effective depth (Head of Water)	=	0.670 m

Initial depth from GL	=	0.330m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.503	0.498	8.00
25%	0.168	0.833	165.00
Vp75-25	=	0.030	m3
ap50	=	0.492	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**6.51E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

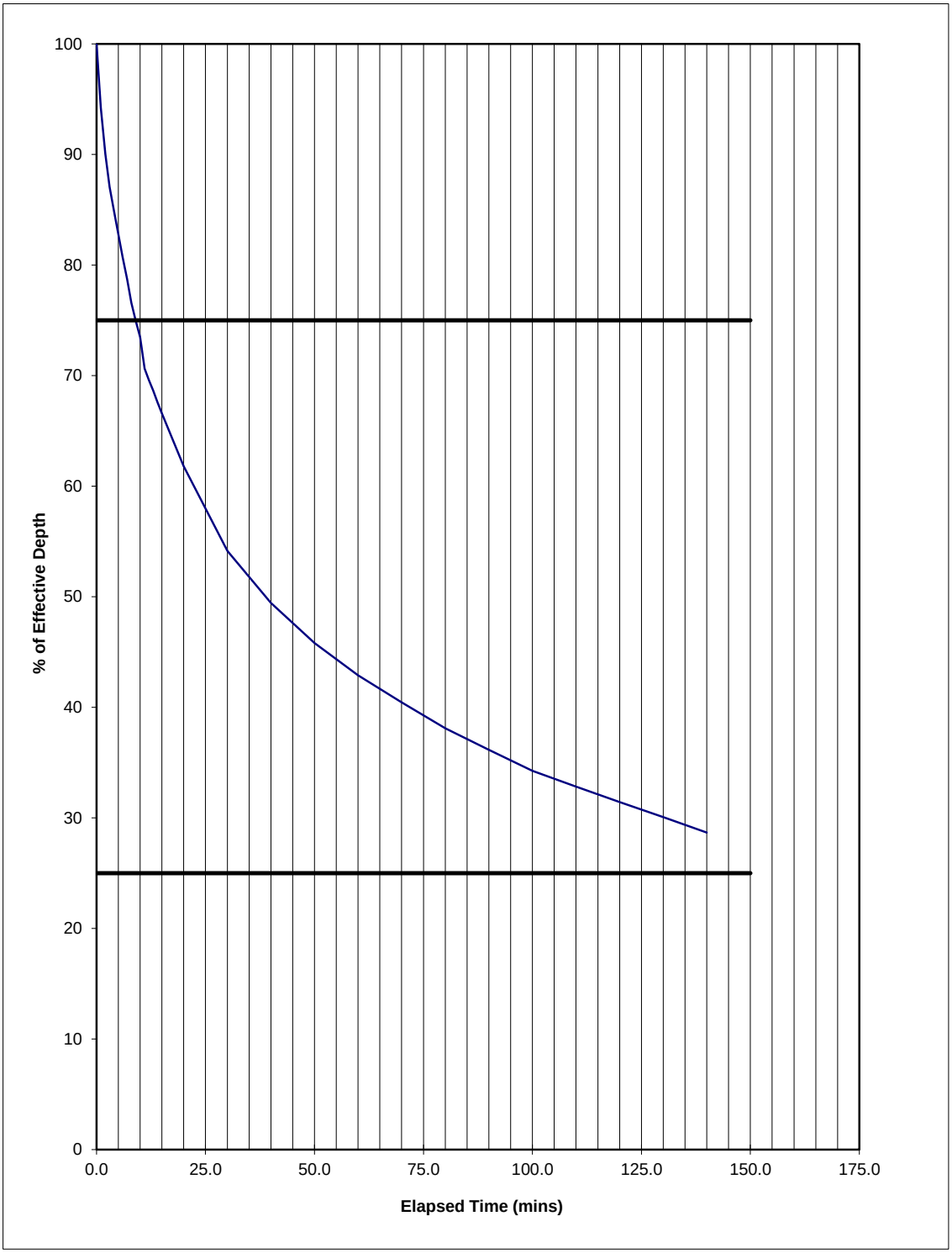
Remarks Data recorded using an automatic water level logger suspended in the pit.
Soil infiltration is calculated by extrapolating the water level beyond the 25% effective depth line and is therefore approximate.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20



tp75	=	8.00
tp25	=	165.00

Remarks Data recorded using an automatic water level logger suspended in the pit.
Soil infiltration is calculated by extrapolating the water level beyond the 25% effective depth line and is therefore approximate.

GEOTECHNICS

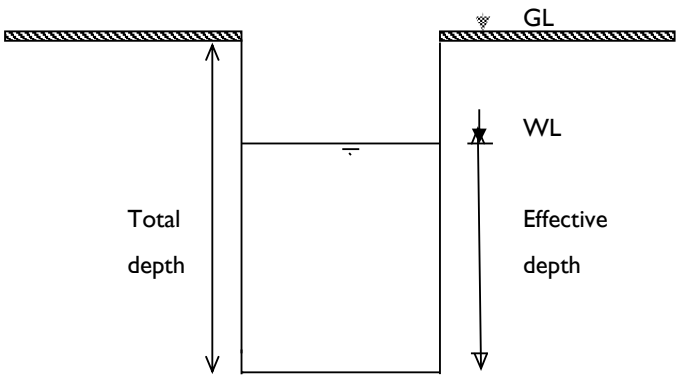
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.28	0.72	100.00
1.00	0.29	0.71	98.76
2.00	0.30	0.70	96.94
3.00	0.31	0.69	95.51
4.00	0.34	0.66	92.15
5.00	0.35	0.65	90.93
6.00	0.35	0.65	89.93
7.00	0.36	0.64	89.04
8.00	0.37	0.63	88.17
9.00	0.37	0.63	87.08
10.00	0.38	0.62	86.10
11.00	0.39	0.61	85.03
12.00	0.40	0.60	83.99
13.00	0.40	0.60	82.94
14.00	0.42	0.58	80.28
15.00	0.43	0.57	79.47
20.00	0.45	0.55	76.71
30.00	0.53	0.47	65.44
40.00	0.56	0.44	60.74
50.00	0.58	0.42	58.15
60.00	0.61	0.39	53.90
70.00	0.65	0.35	48.86
80.00	0.67	0.33	45.75
90.00	0.69	0.31	43.07
100.00	0.71	0.29	40.42
110.00	0.73	0.27	38.07
120.00	0.74	0.26	35.99

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.720	m

Initial depth from GL	=	0.280m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.540	0.460	22.00
25%	0.180	0.820	186.00
Vp75-25	=	0.032	m3
ap50	=	0.522	m2
tp75-25	=	164.000	min
Soil Infiltration, f	=	**6.31E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

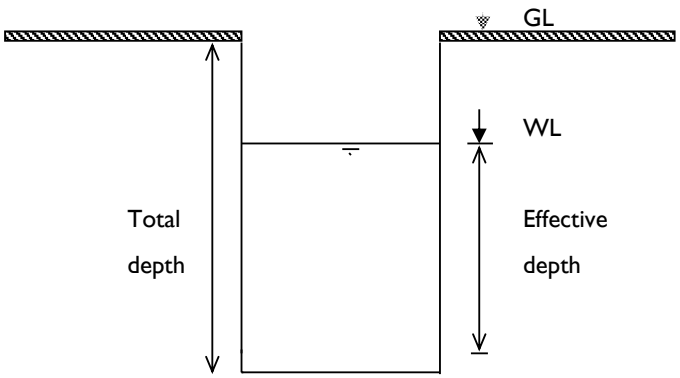
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
130.00	0.76	0.244	33.9
140.00	0.77	0.229	31.9
150.00	0.78	0.217	30.1
160.00	0.79	0.205	28.5
170.00	0.81	0.194	26.9
180.00	0.81	0.185	25.8
190.00	0.82	0.176	24.4
200.00	0.83	0.168	23.3
210.00	0.84	0.164	22.8
220.00	0.84	0.160	22.2
230.00	0.84	0.155	21.5
240.00	0.85	0.151	21.0

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.720	m

Initial depth from GL	=	0.280m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.540	0.460	22.00
25%	0.180	0.820	186.00
Vp75-25	=	0.032	m3
ap50	=	0.522	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**6.31E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

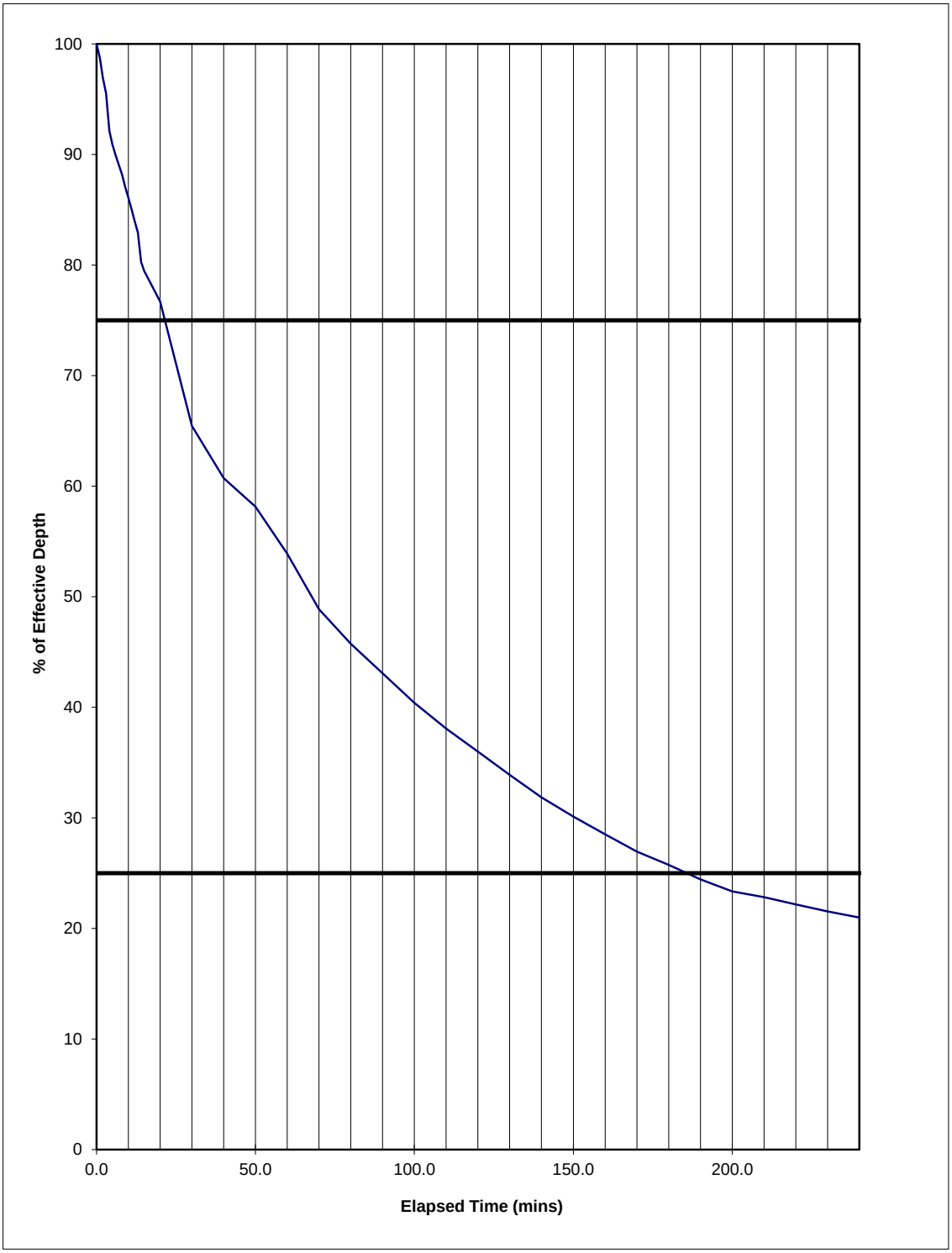
Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF06
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20



tp75	=	22.00
tp25	=	186.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

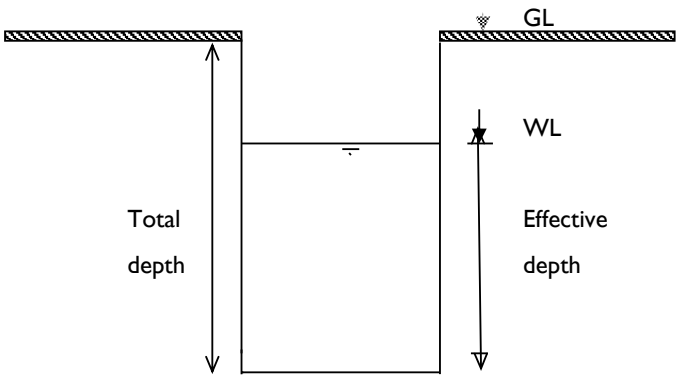
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.29	0.71	100.00
1.00	0.31	0.69	96.49
2.00	0.34	0.66	92.63
3.00	0.36	0.64	89.96
4.00	0.38	0.62	87.61
5.00	0.39	0.61	85.66
6.00	0.40	0.60	83.82
7.00	0.42	0.58	82.13
8.00	0.43	0.57	80.69
9.00	0.44	0.56	79.24
10.00	0.45	0.55	77.83
11.00	0.46	0.54	76.54
12.00	0.47	0.53	75.20
13.00	0.47	0.53	74.04
14.00	0.48	0.52	72.83
15.00	0.49	0.51	71.79
20.00	0.53	0.48	66.90
30.00	0.58	0.42	58.92
40.00	0.63	0.37	52.62
50.00	0.66	0.34	47.45
60.00	0.70	0.30	42.89
70.00	0.72	0.28	38.87
80.00	0.75	0.25	35.24
90.00	0.77	0.23	32.01
100.00	0.79	0.21	29.10
110.00	0.81	0.19	26.49
120.00	0.83	0.17	24.17

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.710	m

Initial depth from GL	=	0.290m		
% of effective depth	Head (m)	Depth from GL (m)		Time (mins)
75%	0.533	0.468		12.00
25%	0.178	0.823		117.00
Vp75-25	=	0.032	m3	
ap50	=	0.516	m2	
tp75-25	=	105.000	min	
Soil Infiltration, f	=	**9.83E-06**	m/sec	

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

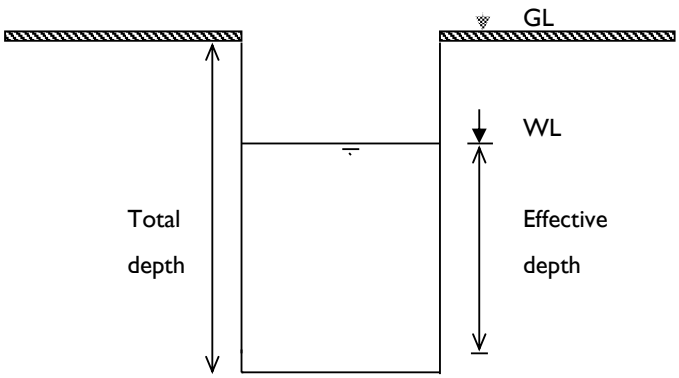
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
130.00	0.84	0.156	22.0

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.710	m

Initial depth from GL	=	0.290m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.533	0.468	12.00
25%	0.178	0.823	117.00
Vp75-25	=	0.032	m3
ap50	=	0.516	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**9.83E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

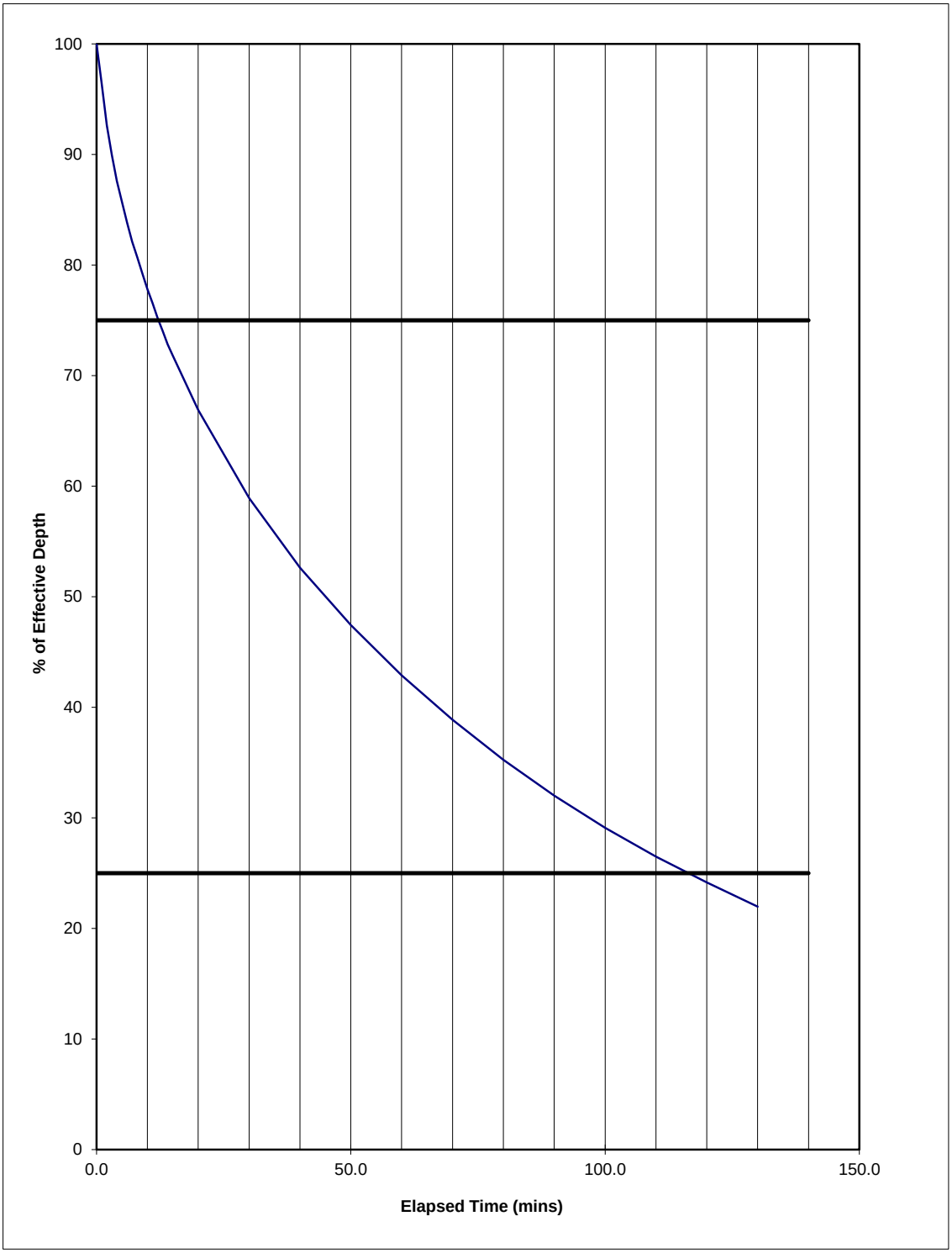
Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20



tp75	=	12.00
tp25	=	117.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

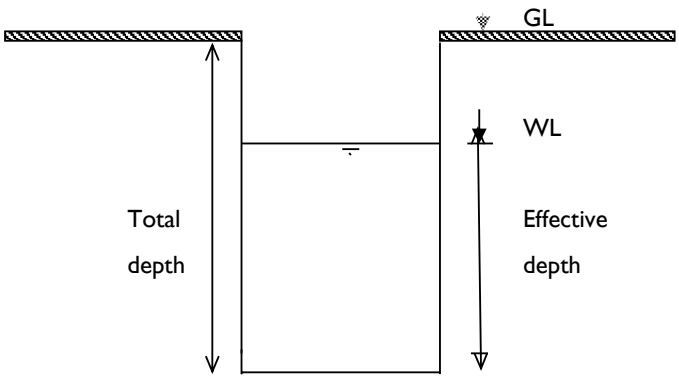
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.27	0.73	100.00
1.00	0.28	0.72	98.52
2.00	0.29	0.71	97.01
3.00	0.30	0.70	95.92
4.00	0.31	0.69	95.05
5.00	0.31	0.69	94.32
6.00	0.32	0.68	93.64
7.00	0.32	0.68	92.96
8.00	0.33	0.67	92.34
9.00	0.33	0.67	91.64
10.00	0.33	0.67	91.14
11.00	0.34	0.66	90.47
12.00	0.34	0.66	90.01
13.00	0.35	0.65	89.40
14.00	0.35	0.65	88.86
15.00	0.36	0.64	88.32
20.00	0.37	0.63	85.84
30.00	0.40	0.60	82.82
60.00	0.48	0.52	70.95
90.00	0.55	0.45	61.74
120.00	0.60	0.40	54.33
150.00	0.65	0.35	48.12
180.00	0.68	0.32	43.32
210.00	0.71	0.29	39.12
240.00	0.74	0.26	35.27
270.00	0.77	0.23	32.15
300.00	0.79	0.21	28.86

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.730	m

Initial depth from GL	=	0.270m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.548	0.453	50.00
25%	0.183	0.818	350.00
Vp75-25	=	0.033	m3
ap50	=	0.528	m2
tp75-25	=	300.000	min
Soil Infiltration, f	=	**3.46E-06**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

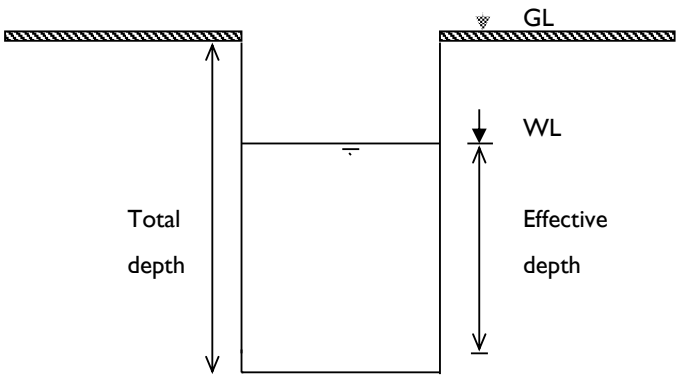
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
330.00	0.81	0.193	26.5
360.00	0.82	0.178	24.3
390.00	0.84	0.163	22.3

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300 m
Trial pit width	=	0.300 m
Trial pit depth	=	1.000 m
Effective depth (Head of Water)	=	0.730 m

Initial depth from GL	=	0.270m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.548	0.453	50.00
25%	0.183	0.818	350.00
Vp75-25	=	0.033	m3
ap50	=	0.528	m2
tp75-25	=	0.000	min
Soil Infiltration, f	=	**3.46E-06**	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

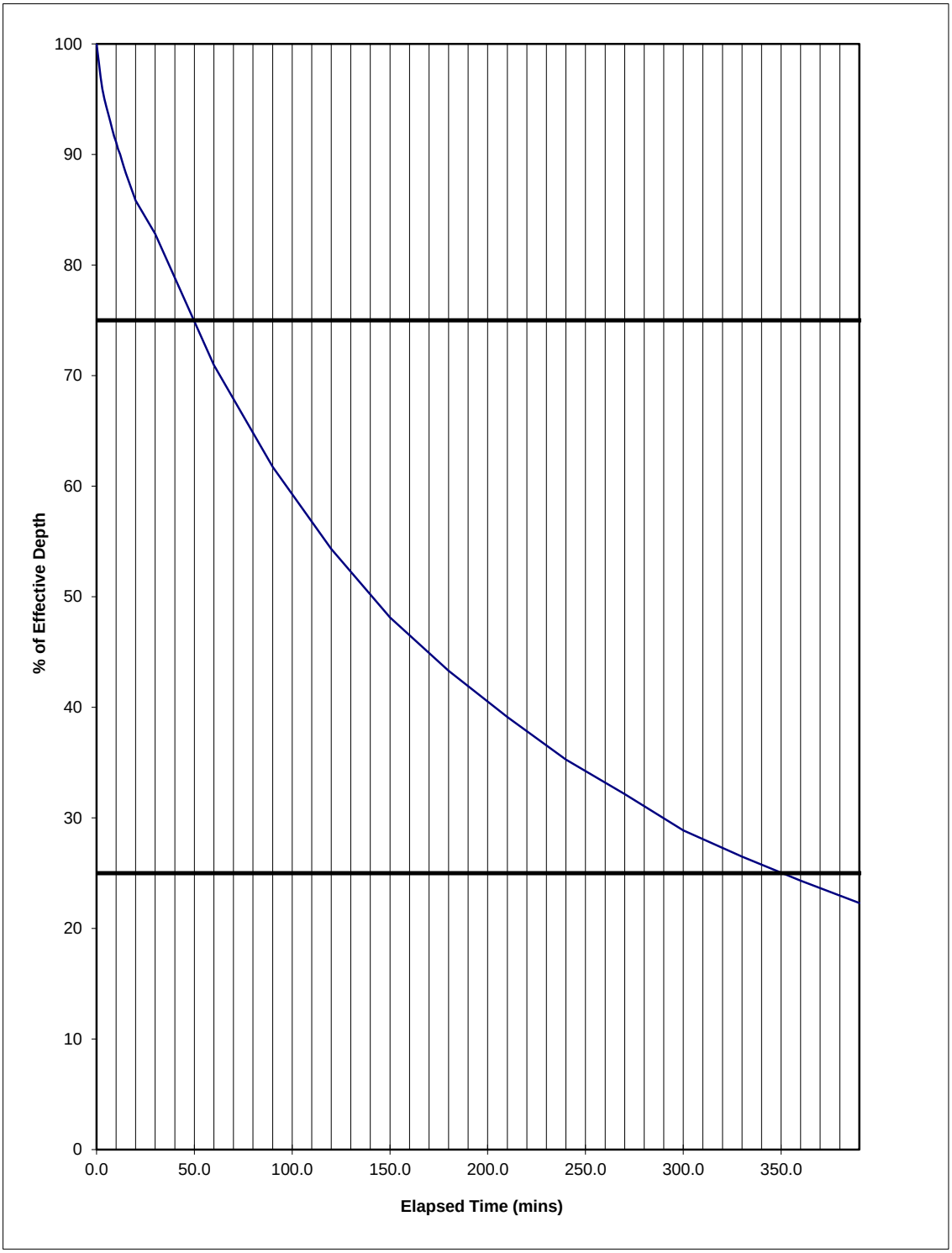
Remarks Data recorded using an automatic water level logger suspended in the pit.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF07
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	29.07.20



tp75	=	50.00
tp25	=	350.00

Remarks Data recorded using an automatic water level logger suspended in the pit.

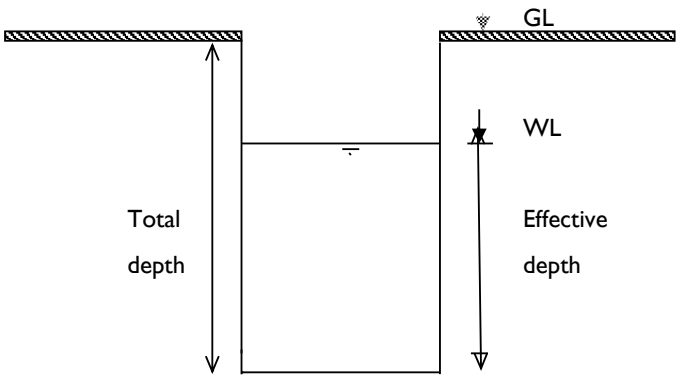
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF08
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.25	0.75	100.00
1.00	0.26	0.74	98.85
2.00	0.26	0.74	98.60
3.00	0.26	0.74	98.40
4.00	0.26	0.74	98.35
5.00	0.26	0.74	98.19
6.00	0.27	0.73	97.97
7.00	0.27	0.73	97.88
8.00	0.27	0.73	97.72
9.00	0.27	0.73	97.59
10.00	0.27	0.73	97.37
11.00	0.27	0.73	97.33
12.00	0.27	0.73	97.13
13.00	0.27	0.73	96.99
14.00	0.27	0.73	96.87
15.00	0.27	0.73	96.68
30.00	0.29	0.71	94.89
60.00	0.31	0.69	91.47
120.00	0.35	0.65	86.13
180.00	0.39	0.61	81.63
240.00	0.42	0.58	77.45
300.00	0.45	0.55	73.20
360.00	0.48	0.52	69.39
420.00	0.51	0.49	65.64
480.00	0.53	0.47	62.37
540.00	0.56	0.44	59.16
600.00	0.58	0.42	56.35

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.750	m

Initial depth from GL	=	0.250m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.563	0.438	
25%	0.188	0.813	
Vp75-25	=		m3
ap50	=		m2
tp75-25	=		min
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 29th and 30th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

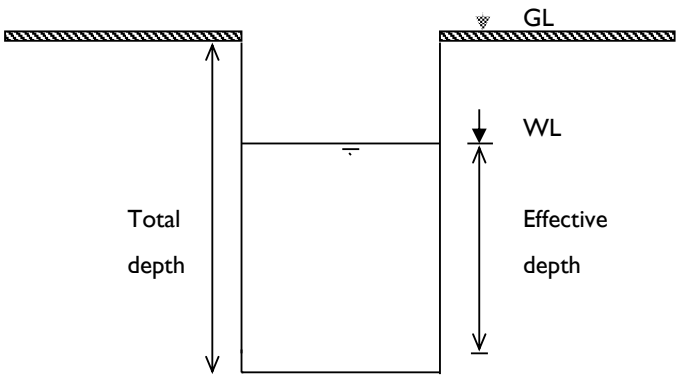
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF08
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
660.00	0.60	0.402	53.5
720.00	0.62	0.383	51.1

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.750	m

Initial depth from GL	=	0.250m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.563	0.438	
25%	0.188	0.813	
Vp75-25	=		m3
ap50	=		m2
tp75-25	=		min
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

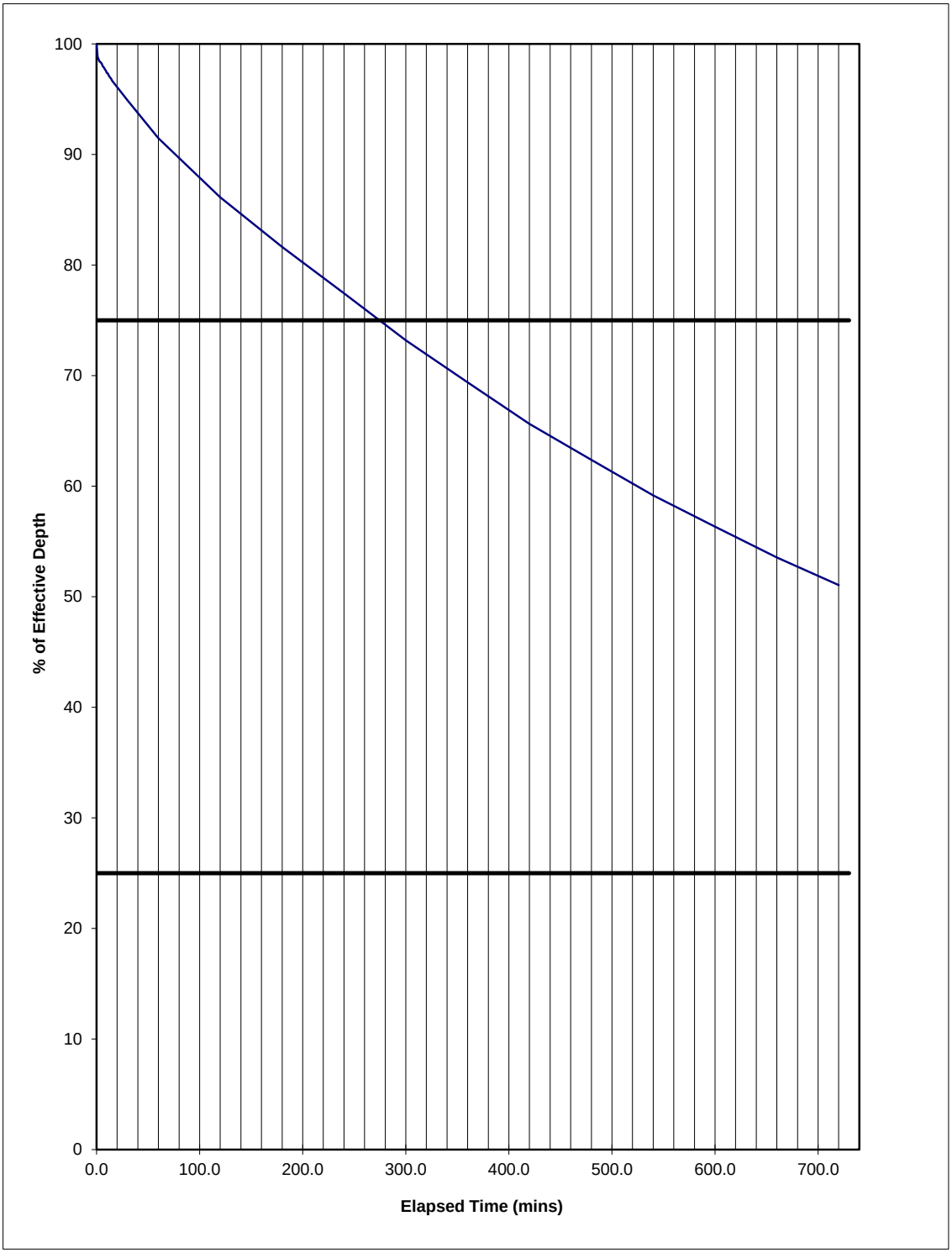
Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 29th and 30th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF08
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	29.07.20



tp75	=
tp25	=

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 29th and 30th July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

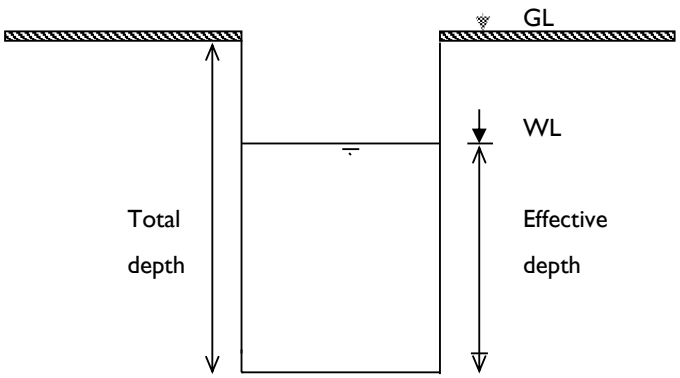
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF09
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.28	0.72	100.00
0.10	0.45	0.55	75.83
0.20	0.58	0.42	58.46
0.30	0.66	0.34	46.75
0.40	0.72	0.28	38.61
0.50	0.77	0.23	32.42
1.00	0.80	0.20	27.64
1.20	0.83	0.17	23.32
1.30	0.86	0.14	19.51
1.40	0.86	0.14	19.15
1.50	0.86	0.14	18.82

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.720	m

Initial depth from GL	=	0.280m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.540	0.460	0.10
25%	0.180	0.820	1.10
Vp75-25	=	0.032	m3
ap50	=	0.522	m2
tp75-25	=	1.000	min
Soil Infiltration, f	=	**1.03E-03**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

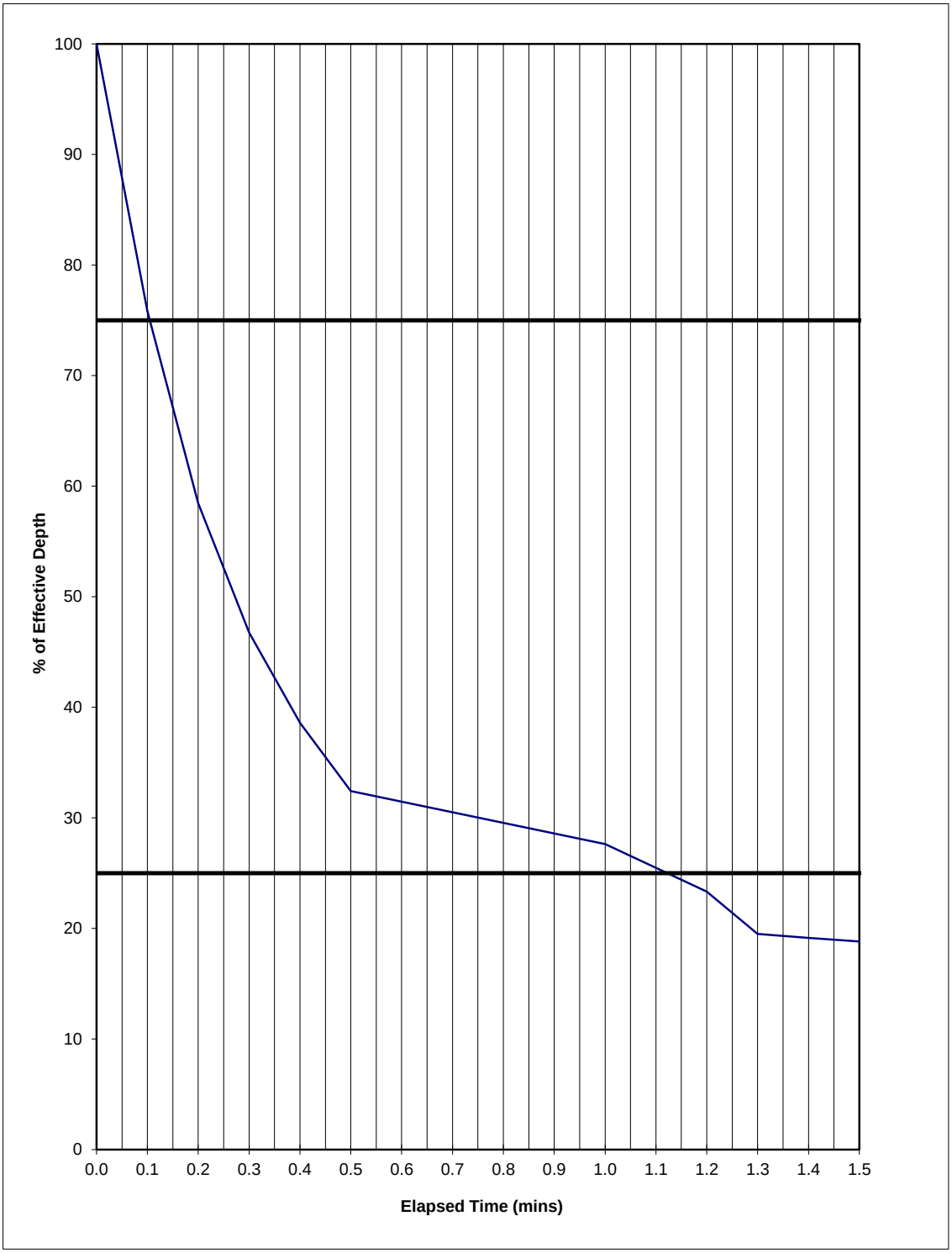
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF09
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=	0.10
tp25	=	1.10

Remarks Data recorded using an automatic water level logger suspended in the pit.

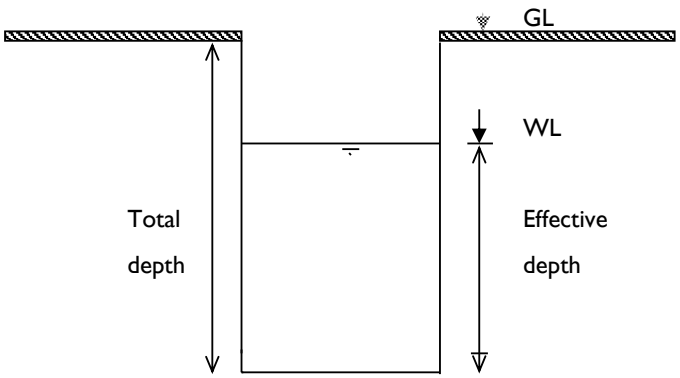
INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF09
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.35	0.65	100.00
0.10	0.36	0.64	98.95
0.20	0.46	0.54	82.85
0.30	0.54	0.46	70.55
0.40	0.61	0.39	60.22
0.50	0.66	0.34	52.32
1.00	0.70	0.30	46.66
1.10	0.73	0.27	41.49
1.20	0.75	0.25	37.91
1.30	0.77	0.23	34.71
1.40	0.79	0.21	31.85
1.50	0.81	0.19	29.17
2.00	0.83	0.18	26.92
2.10	0.84	0.16	24.71
2.20	0.85	0.15	22.91
2.30	0.86	0.14	21.08
2.40	0.87	0.13	19.88
2.50	0.87	0.13	19.88
3.00	0.87	0.13	19.89
3.10	0.87	0.13	19.86
3.20	0.87	0.13	19.68
3.30	0.89	0.11	17.26
3.40	0.89	0.11	17.02

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.000	m
Effective depth (Head of Water)	=	0.650	m

Initial depth from GL	=	0.350m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.488	0.513	0.27
25%	0.163	0.838	2.09
Vp75-25	=	0.029	m3
ap50	=	0.480	m2
tp75-25	=	1.820	min
Soil Infiltration, f	=	**5.58E-04**	m/sec

Depth to top of Granular Fill if used (m bgl) = x

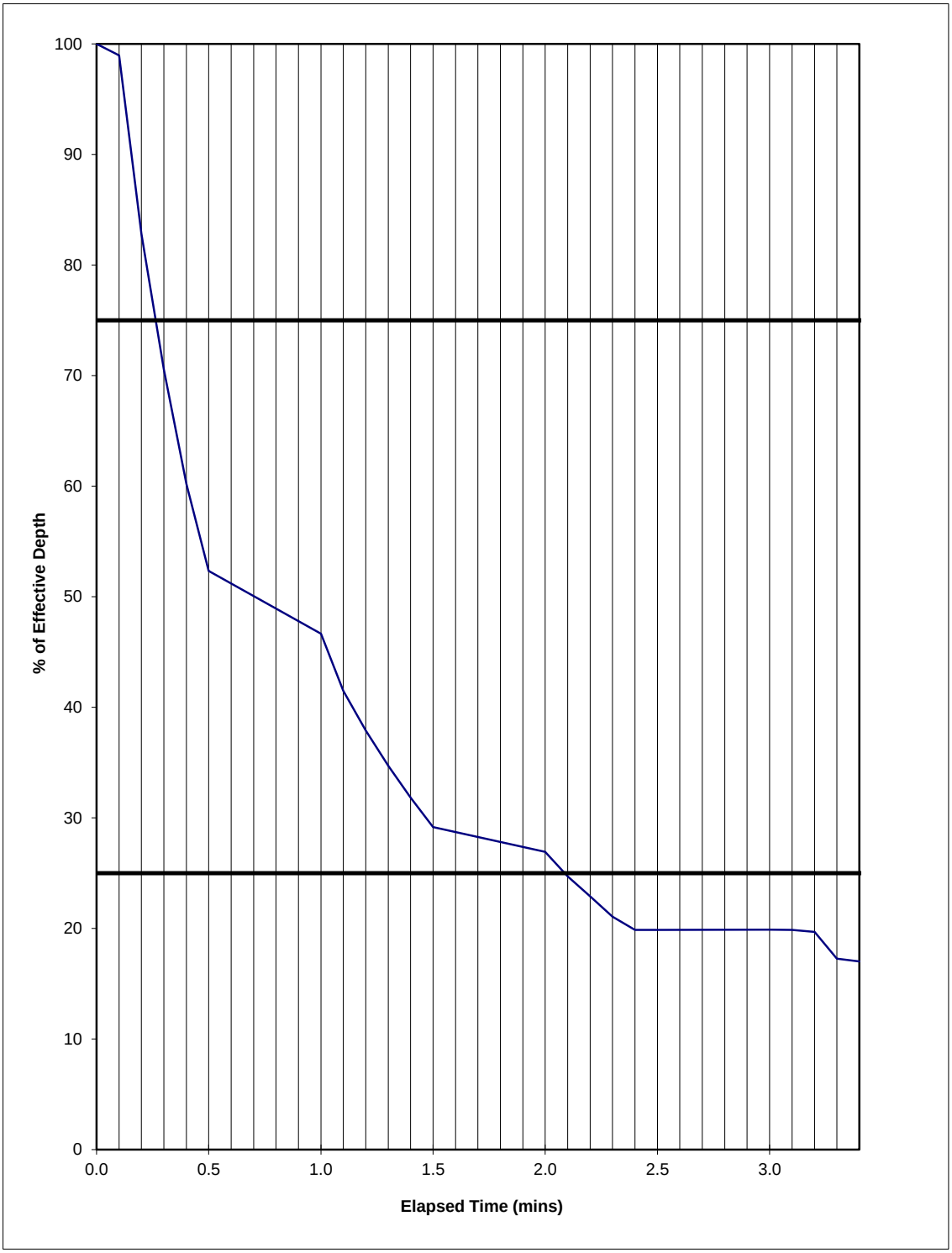
Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.

INSITU TESTING - Soakaway Test

Form INS009 Rev 7

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF09
		Test No	2
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=	0.27
tp25	=	2.09

Remarks Data recorded using an automatic water level logger suspended in the pit.

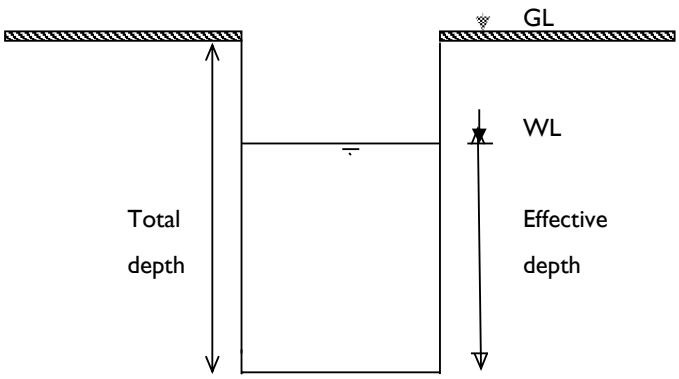
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF10
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
0.00	0.26	0.84	100.00
1.00	0.26	0.84	99.80
2.00	0.26	0.84	99.80
3.00	0.26	0.84	99.76
4.00	0.26	0.84	99.71
5.00	0.26	0.84	99.51
6.00	0.26	0.84	99.43
7.00	0.27	0.83	99.32
8.00	0.27	0.83	99.39
9.00	0.27	0.83	99.33
10.00	0.27	0.83	99.19
11.00	0.27	0.83	99.14
12.00	0.27	0.83	99.10
13.00	0.27	0.83	98.99
14.00	0.27	0.83	99.00
15.00	0.27	0.83	98.77
30.00	0.28	0.82	97.85
60.00	0.28	0.82	97.14
120.00	0.31	0.79	93.90
180.00	0.33	0.77	91.19
240.00	0.35	0.75	89.39
300.00	0.36	0.74	87.93
360.00	0.40	0.70	83.50
420.00	0.41	0.69	81.73
480.00	0.43	0.67	79.74
540.00	0.45	0.65	77.50
600.00	0.47	0.63	75.44

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.100	m
Effective depth (Head of Water)	=	0.840	m

Initial depth from GL	=	0.260m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.630	0.470	
25%	0.210	0.890	
Vp75-25	=		m3
ap50	=		m2
tp75-25	=		min
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (m bgl) = x

Porosity of Gravel Fill if used (%) = x

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

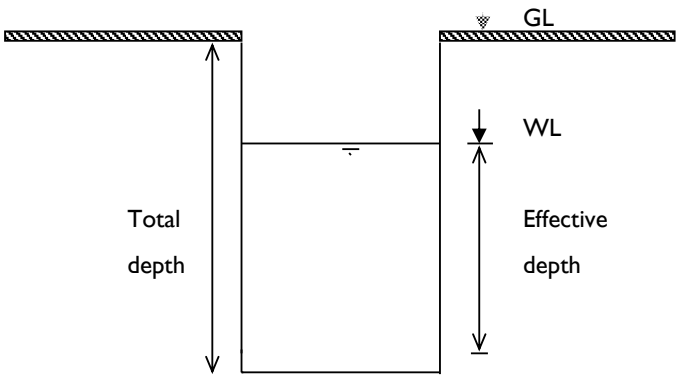
INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF10
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20

ELAPSED TIME (mins)	DEPTH of water below ground level (m)	HEAD (m)	HEAD (%)
660.00	0.48	0.615	73.3
720.00	0.50	0.600	71.5
780.00	0.51	0.589	70.2
840.00	0.52	0.579	69.0
900.00	0.53	0.568	67.6
960.00	0.54	0.556	66.2
1020.00	0.56	0.540	64.3

TRIAL PIT SOAKAWAY



Trial pit length	=	0.300	m
Trial pit width	=	0.300	m
Trial pit depth	=	1.100	m
Effective depth (Head of Water)	=	0.840	m

Initial depth from GL	=	0.260m	
% of effective depth	Head (m)	Depth from GL (m)	Time (mins)
75%	0.630	0.470	
25%	0.210	0.890	
Vp75-25	=	m3	
ap50	=	m2	
tp75-25	=	min	
Soil Infiltration, f	=	*	m/sec

Depth to top of Granular Fill if used (x
Porosity of Gravel Fill if used (%) = x

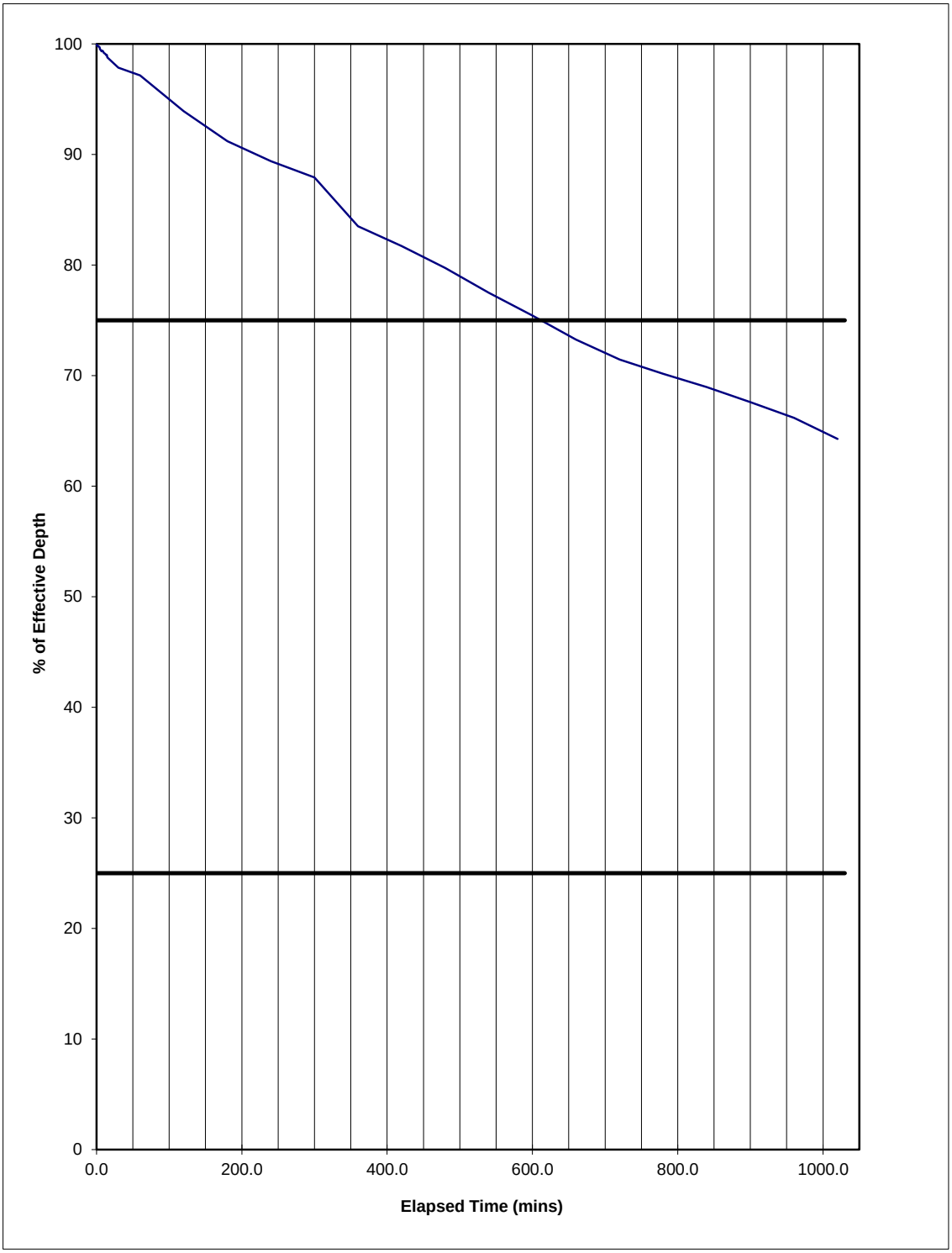
Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

INSITU TESTING - Soakaway Test

Form INS009 Rev 6

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Trial Pit	TPIF10
		Test No	1
		Project No	PE201646
Client	Dorton Group	Date	30.07.20



tp75	=
tp25	=

Remarks Data recorded using an automatic water level logger suspended in the pit.
Test took place between 30th and 31st July 2020.
Pit filled initially, then topped up. Data presented is after top up.
Soil infiltration rate not able to be calculated.

GEOTECHNICS

APPENDIX 11

River Water Monitoring Results

INSITU TESTING - Multi-parameter Probe

GEOTECHNICS

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Location	RH1
		Project No	PE201646
Client	Dorton Group	Date	03.08.2020

Date Time	Specific Conductivity (µS/cm)	Total Dissolved Solids (ppt)	DO Concentration (mg/L)	DO Saturation (%Sat)	pH (pH)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Temperature (°C)
03/08/2020 09:41	17.7945	0.01156641	9.06382	99.44798	6.91	0	0	19.88
03/08/2020 09:42	130.2675	0.08553118	9.50665	94.30933	7.23	0	0	15.14
03/08/2020 09:43	134.2202	0.08724311	10.18651	98.56460	6.97	0	0	13.98
03/08/2020 09:44	137.7651	0.08954731	10.32471	99.34822	6.86	0	0	13.73
03/08/2020 09:45	136.0556	0.08833129	10.34541	99.51726	6.86	0	0	13.72
03/08/2020 09:46	134.0181	0.08711173	10.31936	99.30585	6.77	0	0	13.74
03/08/2020 09:47	132.8325	0.08634114	10.31345	99.32578	6.77	0	0	13.77
03/08/2020 09:48	133.8422	0.08699746	10.30350	99.27281	6.72	0	0	13.79
03/08/2020 09:49	131.9575	0.08577240	10.32242	99.50687	6.70	0	0	13.81
03/08/2020 09:50	130.4955	0.08482209	10.31598	99.42401	6.73	0	0	13.80
03/08/2020 09:51	130.8351	0.08504280	10.31880	99.45826	6.68	0	0	13.81
03/08/2020 09:52	129.2580	0.08401769	10.31210	99.45605	6.70	0	0	13.83
03/08/2020 09:53	128.7300	0.08367450	10.32468	99.57624	6.68	0	0	13.84
03/08/2020 09:54	129.2378	0.08400454	10.31161	99.59247	6.68	0	0	13.86
03/08/2020 09:55	127.7415	0.08303201	10.32769	99.62762	6.68	0	0	13.85
03/08/2020 09:56	129.4313	0.08413033	10.31258	99.54600	6.68	0	0	13.88
03/08/2020 09:57	126.8328	0.08244133	10.32086	99.63364	6.65	0.3229655	0	13.88
03/08/2020 09:58	126.1383	0.08198989	10.32199	99.66426	6.65	0	0	13.89
03/08/2020 09:59	126.3839	0.08214955	10.32481	99.68589	6.64	0	0	13.88
03/08/2020 10:00	126.5720	0.08227179	10.33480	99.81508	6.66	0	0	13.90
03/08/2020 10:01	126.4504	0.08219276	10.32373	99.72639	6.68	0	0	13.91
03/08/2020 10:02	127.2457	0.08270972	10.32776	99.79329	6.67	0	0	13.92
03/08/2020 10:03	126.5270	0.08224253	10.32373	99.79115	6.69	0	0	13.93
03/08/2020 10:04	126.8253	0.08243646	10.34419	99.96060	6.72	0	0	13.92
03/08/2020 10:05	126.9705	0.08253080	10.32681	99.83457	6.72	0	0	13.94

INSITU TESTING - Multi-parameter Probe

GEOTECHNICS

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Location	RH2
		Project No	PE201646
Client	Dorton Group	Date	03.08.2020

Date Time	Specific Conductivity (µS/cm)	Total Dissolved Solids (ppt)	DO Concentration (mg/L)	DO Saturation (%Sat)	pH (pH)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Temperature (°C)
03/08/2020 10:15	133.0991	0.08651443	10.28768	99.53194	6.83	0	0	13.98
03/08/2020 10:16	133.3165	0.08665571	10.29491	99.58723	6.83	0	0	13.97
03/08/2020 10:17	132.8974	0.08638329	10.30231	99.61912	6.82	0	0	13.95
03/08/2020 10:18	132.8609	0.08635955	10.29749	99.59894	6.82	0	0	13.96
03/08/2020 10:19	133.3498	0.08664615	10.29237	99.61692	6.82	0	0	13.96
03/08/2020 10:20	133.0197	0.08646280	10.29070	99.55395	6.82	0	0	13.97
03/08/2020 10:21	133.0955	0.08651206	10.30145	99.63894	6.81	0	0	13.96
03/08/2020 10:22	133.0501	0.08648256	10.29318	99.56076	6.81	0	0	13.96
03/08/2020 10:23	132.8644	0.08636189	10.29446	99.59133	6.81	0	0	13.97
03/08/2020 10:24	133.0977	0.08651350	10.28839	99.51398	6.81	0	0	13.96
03/08/2020 10:25	133.0213	0.08654492	10.28983	99.55953	6.81	0	0	13.98
03/08/2020 10:26	133.0682	0.08649430	10.28844	99.53877	6.81	0	0	13.97
03/08/2020 10:27	132.9775	0.08643781	10.28639	99.53897	6.81	0	0	13.98
03/08/2020 10:28	133.1285	0.08653355	10.28540	99.53880	6.81	0	0	13.99
03/08/2020 10:29	133.0212	0.08646379	10.29035	99.59663	6.82	0	0	13.99
03/08/2020 10:30	132.8717	0.08636661	10.28407	99.51610	6.82	0.2540029	0	13.98
03/08/2020 10:31	132.9439	0.08641356	10.29102	99.58469	6.82	0	0	13.98
03/08/2020 10:32	132.7829	0.08630890	10.27807	99.48901	6.82	0	0	14.00
03/08/2020 10:33	132.9491	0.08641692	10.29290	99.63100	6.82	0	0	13.99
03/08/2020 10:34	132.9615	0.08642497	10.28944	99.60979	6.82	0	0	14.00
03/08/2020 10:35	132.6872	0.08624665	10.29830	99.70825	6.82	0	0	14.00
03/08/2020 10:36	132.7530	0.08628945	10.29068	99.65379	6.83	0	0	14.01
03/08/2020 10:37	132.5989	0.08618930	10.28875	99.69100	6.83	0	0	14.02
03/08/2020 10:38	132.3395	0.08602067	10.29993	99.76043	6.83	0	0	14.02
03/08/2020 10:39	132.1742	0.08591323	10.29431	99.69697	6.84	0	0	14.02

INSITU TESTING - Multi-parameter Probe

GEOTECHNICS

Project	Ground Investigation for an Inert Landfill at Challonsleigh Farm	Location	RH3
		Project No	PE201646
Client	Dorton Group	Date	03.08.2020

Date Time	Specific Conductivity (µS/cm)	Total Dissolved Solids (ppt)	DO Concentration (mg/L)	DO Saturation (%Sat)	pH (pH)	Turbidity (NTU)	Total Suspended Solids (mg/L)	Temperature (°C)
03/08/2020 10:46	137.3412	0.08927178	10.24431	99.71600	6.86	0	0	14.12
03/08/2020 10:47	137.3594	0.08928360	10.22726	99.23095	6.85	0	0	14.11
03/08/2020 10:48	138.2549	0.08986565	10.23501	99.29340	6.85	0	0	14.11
03/08/2020 10:49	137.6657	0.08948269	10.22523	99.15997	6.84	0	0	14.09
03/08/2020 10:50	138.0603	0.08973920	10.23555	99.25994	6.84	0	0	14.09
03/08/2020 10:51	137.4827	0.08936374	10.22546	99.16132	6.84	0	0	14.09
03/08/2020 10:52	136.8797	0.08897178	10.23228	99.24102	6.84	0	0	14.10
03/08/2020 10:53	137.0781	0.08910075	10.24053	99.31033	6.84	0	0	14.09
03/08/2020 10:54	138.3697	0.08994032	10.22689	99.23076	6.84	0	0	14.12
03/08/2020 10:55	137.5471	0.08940560	10.22182	99.17138	6.84	0	0	14.11
03/08/2020 10:56	137.5042	0.08937773	10.23653	99.32660	6.84	0	0	14.12
03/08/2020 10:57	136.6697	0.08883532	10.23178	99.27359	6.84	0	0	14.11
03/08/2020 10:58	137.0429	0.08907790	10.24141	99.36307	6.85	0	0	14.11
03/08/2020 10:59	136.6746	0.08883848	10.24968	99.45615	6.85	0	0	14.12
03/08/2020 11:00	136.5672	0.08876871	10.24050	99.39948	6.84	0	0	14.13
03/08/2020 11:01	136.5938	0.08873374	10.24132	99.39613	6.85	0	0	14.13
03/08/2020 11:02	136.3657	0.08863769	10.23199	99.32098	6.85	0	0	14.14
03/08/2020 11:03	136.4682	0.08870430	10.23845	99.37997	6.86	0	0	14.13
03/08/2020 11:04	136.1626	0.08850571	10.24186	99.39257	6.86	0	0	14.13
03/08/2020 11:05	136.0800	0.08845197	10.24283	99.42397	6.86	0	0	14.14
03/08/2020 11:06	137.0696	0.08909522	10.23372	99.33183	6.86	0	0	14.13
03/08/2020 11:07	137.0954	0.08911204	10.23040	99.30267	6.86	0	0	14.14
03/08/2020 11:08	136.4015	0.08866097	10.23164	99.31246	6.87	0	0	14.14
03/08/2020 11:09	137.7079	0.08951011	10.22653	99.26007	6.87	0	0	14.14
03/08/2020 11:10	136.9457	0.08899696	10.22483	99.23698	6.87	0	0	14.13

APPENDIX 12

Monitoring Results

FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL01**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **13.00m**
Filter Zone **-**
Date Installed **23 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **70.85 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	09:00:00								
3-Aug-2020	09:01:00		<0.1	<2	0.7	19.8	<1	<1	
3-Aug-2020	09:02:00		<0.1	<2	0.6	19.2	<1	<1	
3-Aug-2020	09:03:00		<0.1	<2	0.6	19.2	<1	<1	
3-Aug-2020	09:04:00		<0.1	<2	0.6	19.1	<1	<1	
3-Aug-2020	09:05:00		<0.1	<2	0.6	19.1	<1	<1	
3-Aug-2020	09:06:00	6.09							
8-Sep-2020	10:20:00								
8-Sep-2020	10:20:05								
8-Sep-2020	10:20:30								
8-Sep-2020	10:21:00		<0.1	<2	0.3	19.5	<1	<1	
8-Sep-2020	10:22:00		<0.1	<2	1.7	16.7	<1	<1	
8-Sep-2020	10:23:00		<0.1	<2	1.7	16.1	<1	<1	
8-Sep-2020	10:24:00		<0.1	<2	1.7	16.0	<1	<1	
8-Sep-2020	10:25:00	5.58							
29-Sep-2020	08:38:00								
29-Sep-2020	08:38:05								
29-Sep-2020	08:38:30								
29-Sep-2020	08:39:00		<0.1	<2	0.2	19.1	<1	<1	
29-Sep-2020	08:40:00		<0.1	<2	2.1	16.1	<1	<1	
29-Sep-2020	08:41:00		<0.1	<2	2.1	15.6	<1	<1	
29-Sep-2020	08:42:00		<0.1	<2	2.1	15.5	<1	<1	
29-Sep-2020	08:43:00	5.93							

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL01**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **13.00m**
Filter Zone **-**
Date Installed **23 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **70.85 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	09:00:00	1010	<0.1	<0.1		
3-Aug-2020	09:01:00				1.0	
3-Aug-2020	09:02:00				1.0	
3-Aug-2020	09:03:00				1.0	
3-Aug-2020	09:04:00				1.0	
3-Aug-2020	09:05:00				1.0	
3-Aug-2020	09:06:00					
8-Sep-2020	10:20:00	1019	<0.1	<0.1		
8-Sep-2020	10:20:05		<0.1	<0.1		
8-Sep-2020	10:20:30		<0.1	<0.1		
8-Sep-2020	10:21:00				1.0	
8-Sep-2020	10:22:00				1.0	
8-Sep-2020	10:23:00				1.0	
8-Sep-2020	10:24:00				1.0	
8-Sep-2020	10:25:00					
29-Sep-2020	08:38:00	1008	<0.1	<0.1		
29-Sep-2020	08:38:05		<0.1	<0.1		
29-Sep-2020	08:38:30		<0.1	<0.1		
29-Sep-2020	08:39:00				1.0	
29-Sep-2020	08:40:00				1.0	
29-Sep-2020	08:41:00				1.0	
29-Sep-2020	08:42:00				1.0	
29-Sep-2020	08:43:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL02**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Standpipe piezometer**
Depth to Base **12.00m**
Filter Zone **-**
Date Installed **29 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **48.99 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	10:30:00								
3-Aug-2020	10:31:00		<0.1	<2	0.6	19.7	<1	<1	
3-Aug-2020	10:32:00		<0.1	<2	0.6	19.6	<1	<1	
3-Aug-2020	10:33:00		<0.1	<2	0.6	19.5	<1	<1	
3-Aug-2020	10:34:00		<0.1	<2	0.6	19.5	<1	<1	
3-Aug-2020	10:35:00		<0.1	<2	0.6	19.5	<1	<1	
3-Aug-2020	10:36:00	5.13							
8-Sep-2020	12:04:00								
8-Sep-2020	12:04:05								
8-Sep-2020	12:04:30								
8-Sep-2020	12:05:00		<0.1	<2	0.6	19.1	<1	<1	
8-Sep-2020	12:06:00		<0.1	<2	2.4	16.4	<1	<1	
8-Sep-2020	12:07:00		<0.1	<2	2.4	16.0	<1	<1	
8-Sep-2020	12:08:00		<0.1	<2	2.4	15.9	<1	<1	
8-Sep-2020	12:09:00	4.37							
29-Sep-2020	11:50:00								
29-Sep-2020	11:50:05								
29-Sep-2020	11:50:30								
29-Sep-2020	11:51:00		<0.1	<2	0.6	19.0	<1	<1	
29-Sep-2020	11:52:00		<0.1	<2	2.3	16.6	<1	<1	
29-Sep-2020	11:53:00		<0.1	<2	2.3	16.3	<1	<1	
29-Sep-2020	11:54:00		<0.1	<2	2.3	16.2	<1	<1	
29-Sep-2020	11:55:00	4.55							

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL02**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Standpipe piezometer**
Depth to Base **12.00m**
Filter Zone **-**
Date Installed **29 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **48.99 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	10:30:00	1013	<0.1	<0.1		
3-Aug-2020	10:31:00				1.0	
3-Aug-2020	10:32:00				1.0	
3-Aug-2020	10:33:00				1.0	
3-Aug-2020	10:34:00				1.0	
3-Aug-2020	10:35:00				1.0	
3-Aug-2020	10:36:00					
8-Sep-2020	12:04:00	1020	<0.1	<0.1		
8-Sep-2020	12:04:05		<0.1	<0.1		
8-Sep-2020	12:04:30		<0.1	<0.1		
8-Sep-2020	12:05:00				1.0	
8-Sep-2020	12:06:00				1.0	
8-Sep-2020	12:07:00				1.0	
8-Sep-2020	12:08:00				1.0	
8-Sep-2020	12:09:00					
29-Sep-2020	11:50:00	1010	<0.1	<0.1		
29-Sep-2020	11:50:05		<0.1	<0.1		
29-Sep-2020	11:50:30		<0.1	<0.1		
29-Sep-2020	11:51:00				1.0	
29-Sep-2020	11:52:00				1.0	
29-Sep-2020	11:53:00				1.0	
29-Sep-2020	11:54:00				1.0	
29-Sep-2020	11:55:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL03**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **6.50m**
Filter Zone **-**
Date Installed **24 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **52.94 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	09:30:00								
3-Aug-2020	09:31:00		<0.1	<2	1.6	19.9	<1	<1	
3-Aug-2020	09:32:00		<0.1	<2	1.9	19.9	<1	<1	
3-Aug-2020	09:33:00		<0.1	<2	1.9	19.0	<1	<1	
3-Aug-2020	09:34:00		<0.1	<2	1.9	19.9	<1	<1	
3-Aug-2020	09:35:00		<0.1	<2	1.9	19.9	<1	<1	
3-Aug-2020	09:36:00	3.45							
8-Sep-2020	10:35:00								
8-Sep-2020	10:35:05								
8-Sep-2020	10:35:30								
8-Sep-2020	10:36:00		<0.1	<2	0.1	19.3	<1	<1	
8-Sep-2020	10:37:00		<0.1	<2	2.1	18.1	<1	<1	
8-Sep-2020	10:38:00		<0.1	<2	2.1	17.9	<1	<1	
8-Sep-2020	10:39:00		<0.1	<2	2.1	17.8	<1	<1	
8-Sep-2020	10:40:00	2.77							
29-Sep-2020	10:17:00								
29-Sep-2020	10:17:05								
29-Sep-2020	10:17:30								
29-Sep-2020	10:18:00		<0.1	<2	0.4	19.1	<1	<1	
29-Sep-2020	10:19:00		<0.1	<2	2.2	18.1	<1	<1	
29-Sep-2020	10:20:00		<0.1	<2	2.2	18.0	<1	<1	
29-Sep-2020	10:21:00		<0.1	<2	2.2	18.0	<1	<1	
29-Sep-2020	10:22:00								

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL03**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **6.50m**
Filter Zone **-**
Date Installed **24 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **52.94 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	09:30:00	1013	<0.1	<0.1		
3-Aug-2020	09:31:00				1.0	
3-Aug-2020	09:32:00				1.0	
3-Aug-2020	09:33:00				1.0	
3-Aug-2020	09:34:00				1.0	
3-Aug-2020	09:35:00				1.0	
3-Aug-2020	09:36:00					
8-Sep-2020	10:35:00	1020	<0.1	<0.1		
8-Sep-2020	10:35:05		<0.1	<0.1		
8-Sep-2020	10:35:30		<0.1	<0.1		
8-Sep-2020	10:36:00				1.0	
8-Sep-2020	10:37:00				1.0	
8-Sep-2020	10:38:00				1.0	
8-Sep-2020	10:39:00				1.0	
8-Sep-2020	10:40:00					
29-Sep-2020	10:17:00	1011	<0.1	<0.1		
29-Sep-2020	10:17:05		<0.1	<0.1		
29-Sep-2020	10:17:30		<0.1	<0.1		
29-Sep-2020	10:18:00				1.0	
29-Sep-2020	10:19:00				1.0	
29-Sep-2020	10:20:00				1.0	
29-Sep-2020	10:21:00				1.0	
29-Sep-2020	10:22:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL04**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **8.30m**
Filter Zone **-**
Date Installed **22 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **47.00 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	08:30:00								
3-Aug-2020	08:31:00		<0.1	<2	0.8	19.8	<1	<1	
3-Aug-2020	08:32:00		<0.1	<2	1.3	19.2	<1	<1	
3-Aug-2020	08:33:00		<0.1	<2	1.3	19.1	<1	<1	
3-Aug-2020	08:34:00		<0.1	<2	1.3	19.1	<1	<1	
3-Aug-2020	08:35:00		<0.1	<2	1.3	19.1	<1	<1	
3-Aug-2020	08:36:00	4.50							
8-Sep-2020	11:42:00								
8-Sep-2020	11:42:05								
8-Sep-2020	11:42:30								
8-Sep-2020	11:43:00		<0.1	<2	0.5	19.2	<1	<1	
8-Sep-2020	11:44:00		<0.1	<2	2.1	17.1	<1	-34	
8-Sep-2020	11:45:00		-0.3	<2	2.0	16.6	<1	<1	
8-Sep-2020	11:46:00		<0.1	<2	2.0	16.5	<1	<1	
8-Sep-2020	11:47:00		<0.1	<2	2.0	16.5	<1	<1	
8-Sep-2020	11:48:00		<0.1	<2	2.1	16.5	<1	<1	
8-Sep-2020	11:49:00	3.73							
29-Sep-2020	13:56:00								
29-Sep-2020	13:56:05								
29-Sep-2020	13:56:30								
29-Sep-2020	13:57:00		<0.1	<2	0.6	18.9	<1	-10	
29-Sep-2020	13:58:00		<0.1	<2	2.2	17.2	<1	,1	
29-Sep-2020	13:59:00		0.6	8.3	2.2	17.1	<1	-10	
29-Sep-2020	14:00:00		<0.1	<2	2.3	17.0	<1	<1	
29-Sep-2020	14:01:00		-0.1	<<<<	2.2	17.0	<1	-10	
29-Sep-2020	14:02:00	3.98							

Remarks

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FIELDWORK - Insitu Gas Monitoring - Instrument Record

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL04**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **8.30m**
Filter Zone **-**
Date Installed **22 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **47.00 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	08:30:00	1015	<0.1	<0.1		
3-Aug-2020	08:31:00				1.0	
3-Aug-2020	08:32:00				1.0	
3-Aug-2020	08:33:00				1.0	
3-Aug-2020	08:34:00				1.0	
3-Aug-2020	08:35:00				1.0	
3-Aug-2020	08:36:00					
8-Sep-2020	11:42:00	1021	<0.1	<0.1		
8-Sep-2020	11:42:05		<0.1	<0.1		
8-Sep-2020	11:42:30		<0.1	<0.1		
8-Sep-2020	11:43:00				1.0	
8-Sep-2020	11:44:00				1.0	
8-Sep-2020	11:45:00				1.0	
8-Sep-2020	11:46:00				1.0	
8-Sep-2020	11:47:00				1.0	
8-Sep-2020	11:48:00				1.0	
8-Sep-2020	11:49:00					
29-Sep-2020	13:56:00	1011	<0.1	<0.1		
29-Sep-2020	13:56:05		<0.1	<0.1		
29-Sep-2020	13:56:30		<0.1	<0.1		
29-Sep-2020	13:57:00				1.0	
29-Sep-2020	13:58:00				1.0	
29-Sep-2020	13:59:00				1.0	
29-Sep-2020	14:00:00				1.0	
29-Sep-2020	14:01:00				1.0	
29-Sep-2020	14:02:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL05**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **7.00m**
Filter Zone **-**
Date Installed **27 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **44.52 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	10:00:00								
3-Aug-2020	10:01:00		<0.1	<2	<0.1	19.9	<1	<1	
3-Aug-2020	10:02:00		<0.1	<2	0.7	19.0	<1	<1	
3-Aug-2020	10:03:00		<0.1	<2	0.7	18.9	<1	<1	
3-Aug-2020	10:04:00		<0.1	<2	0.7	18.9	<1	<1	
3-Aug-2020	10:05:00		<0.1	<2	0.7	18.9	<1	<1	
3-Aug-2020	10:06:00	3.23							
8-Sep-2020	10:45:00								
8-Sep-2020	10:45:05								
8-Sep-2020	10:46:00		<0.1	<2	0.3	19.6	<1	<1	
8-Sep-2020	10:47:00		<0.1	<2	0.9	18.3	<1	<1	
8-Sep-2020	10:48:00		<0.1	<2	0.9	18.4	<1	<1	
8-Sep-2020	10:49:00	2.55							
29-Sep-2020	11:33:00								
29-Sep-2020	11:33:05								
29-Sep-2020	11:33:30								
29-Sep-2020	11:34:00		<0.1	<2	0.7	19.2	<1	<1	
29-Sep-2020	11:35:00		<0.1	<2	4.6	14.3	<1	<1	
29-Sep-2020	11:36:00		<0.1	<2	4.7	13.5	<1	<1	
29-Sep-2020	11:37:00		<0.1	<2	4.7	13.3	<1	<1	
29-Sep-2020	11:38:00		<0.1	<2	4.7	13.3	<1	<1	
29-Sep-2020	11:39:00	2.80							

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL05**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **7.00m**
Filter Zone **-**
Date Installed **27 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **44.52 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	10:00:00	1015	<0.1	<0.1		
3-Aug-2020	10:01:00				1.0	
3-Aug-2020	10:02:00				1.0	
3-Aug-2020	10:03:00				1.0	
3-Aug-2020	10:04:00				1.0	
3-Aug-2020	10:05:00				1.0	
3-Aug-2020	10:06:00					
8-Sep-2020	10:45:00	1020	<0.1	<0.1		
8-Sep-2020	10:45:05		<0.1	<0.1		
8-Sep-2020	10:46:00				1.0	
8-Sep-2020	10:47:00				1.0	
8-Sep-2020	10:48:00				1.0	
8-Sep-2020	10:49:00					
29-Sep-2020	11:33:00	1012	<0.1	<0.1		
29-Sep-2020	11:33:05		<0.1	<0.1		
29-Sep-2020	11:33:30		<0.1	<0.1		
29-Sep-2020	11:34:00				1.0	
29-Sep-2020	11:35:00				1.0	
29-Sep-2020	11:36:00				1.0	
29-Sep-2020	11:37:00				1.0	
29-Sep-2020	11:38:00				1.0	
29-Sep-2020	11:39:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL06**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Standpipe piezometer**
Depth to Base **7.00m**
Filter Zone **-**
Date Installed **27 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **42.95 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	08:00:00								
3-Aug-2020	08:01:00		<0.1	<2	0.5	20.2	<1	<1	
3-Aug-2020	08:02:00		<0.1	<2	0.7	20.0	<1	<1	
3-Aug-2020	08:03:00		<0.1	<2	0.8	20.1	<1	<1	
3-Aug-2020	08:04:00		<0.1	<2	0.9	20.0	<1	<1	
3-Aug-2020	08:05:00	2.88							
8-Sep-2020	10:57:00								
8-Sep-2020	10:57:05								
8-Sep-2020	10:57:30								
8-Sep-2020	10:58:00								
8-Sep-2020	10:59:00								
8-Sep-2020	11:00:00								
8-Sep-2020	11:01:00		<0.1	<2	0.1	19.5	<1	<1	
8-Sep-2020	11:02:00		<0.1	<2	0.9	17.5	<1	<1	
8-Sep-2020	11:03:00		<0.1	<2	1.0	16.8	<1	<1	
8-Sep-2020	11:04:00		<0.1	<2	1.4	15.7	<1	<1	
8-Sep-2020	11:05:00		<0.1	<2	1.5	15.6	<1	<1	
8-Sep-2020	11:06:00	2.33							
29-Sep-2020	13:35:00								
29-Sep-2020	13:35:05								
29-Sep-2020	13:35:30								
29-Sep-2020	13:36:00		<0.1	<2	0.4	19.0	<1	<1	
29-Sep-2020	13:37:00		<0.1	<2	2.1	14.0	<1	<1	
29-Sep-2020	13:38:00		<0.1	<2	2.1	13.3	<1	<1	
29-Sep-2020	13:39:00		<0.1	<2	2.1	13.2	<1	<1	
29-Sep-2020	13:40:00	2.54							

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL06**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type **Standpipe piezometer**
Depth to Base **7.00m**
Filter Zone **-**
Date Installed **27 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **42.95 m OD**

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	08:00:00	1014	<0.1	<0.1		
3-Aug-2020	08:01:00				1.0	
3-Aug-2020	08:02:00				1.0	
3-Aug-2020	08:03:00				1.0	
3-Aug-2020	08:04:00				1.0	
3-Aug-2020	08:05:00					
8-Sep-2020	10:57:00	1020	-22	-360		
8-Sep-2020	10:57:05		-25	-330		
8-Sep-2020	10:57:30		-13	-173		
8-Sep-2020	10:58:00		-0.3	-2		
8-Sep-2020	10:59:00		<0.1	<0.1		
8-Sep-2020	11:00:00		<0.1	<0.1		
8-Sep-2020	11:01:00				1.0	
8-Sep-2020	11:02:00				1.0	
8-Sep-2020	11:03:00				1.0	
8-Sep-2020	11:04:00				1.0	
8-Sep-2020	11:05:00				1.0	
8-Sep-2020	11:06:00					
29-Sep-2020	13:35:00	1011	<0.1	<0.1		
29-Sep-2020	13:35:05		<0.1	<0.1		
29-Sep-2020	13:35:30		<0.1	<0.1		
29-Sep-2020	13:36:00				1.0	
29-Sep-2020	13:37:00				1.0	
29-Sep-2020	13:38:00				1.0	
29-Sep-2020	13:39:00				1.0	
29-Sep-2020	13:40:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL08** **(P1)**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Standpipe piezometer**
Depth to Base **11.00m**
Filter Zone **-**
Date Installed **30 July 2020**

Diameter **50mm**
Cover Type **Upright lockable protective cover**
Ground Level **57.26 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	11:00:00								
3-Aug-2020	11:01:00		<0.1	<2	0.12	19.0	<1	<1	
3-Aug-2020	11:02:00		<0.1	<2	3.8	5.6	<1	<1	
3-Aug-2020	11:03:00		<0.1	<2	3.9	5.4	<1	<1	
3-Aug-2020	11:04:00		<0.1	<2	3.9	5.2	<1	<1	
3-Aug-2020	11:05:00		<0.1	<2	3.9	5.2	<1	<1	
3-Aug-2020	11:06:00	9.80							
8-Sep-2020	12:20:00								
8-Sep-2020	12:20:05								
8-Sep-2020	12:20:30								
8-Sep-2020	12:21:00		<0.1	<2	1.3	18.9	<1	<1	
8-Sep-2020	12:22:00		<0.1	<2	6.5	2.9	<1	<1	
8-Sep-2020	12:23:00		<0.1	<2	6.6	1.0	<1	<1	
8-Sep-2020	12:24:00		<0.1	<2	6.6	0.8	<1	<1	
8-Sep-2020	12:25:00		<0.1	<2	6.6	0.7	<1	<1	
8-Sep-2020	12:26:00	9.59							
29-Sep-2020	15:34:00								
29-Sep-2020	15:34:05								
29-Sep-2020	15:34:30								
29-Sep-2020	15:35:00		<0.1	<2	1.9	19.0	<1	<1	
29-Sep-2020	15:36:00		<0.1	<2	8.0	4.2	<1	<1	
29-Sep-2020	15:37:00		<0.1	<2	8.1	2.1	<1	<1	
29-Sep-2020	15:38:00		<0.1	<2	8.2	2.0	<1	<1	
29-Sep-2020	15:39:00	9.76							

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL08** **(P1)**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type	**Standpipe piezometer**	Diameter	**50mm**
Depth to Base	**11.00m**	Cover Type	**Upright lockable protective cover**
Filter Zone	**-**	Ground Level	**57.26 m OD**
Date Installed	**30 July 2020**		

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	11:00:00	1014	<0.1	<0.1		
3-Aug-2020	11:01:00				1.0	
3-Aug-2020	11:02:00				1.0	
3-Aug-2020	11:03:00				1.0	
3-Aug-2020	11:04:00				1.0	
3-Aug-2020	11:05:00				1.0	
3-Aug-2020	11:06:00					
8-Sep-2020	12:20:00	1019	<0.1	<0.1		
8-Sep-2020	12:20:05		<0.1	<0.1		
8-Sep-2020	12:20:30		<0.1	<0.1		
8-Sep-2020	12:21:00				1.0	
8-Sep-2020	12:22:00				1.0	
8-Sep-2020	12:23:00				1.0	
8-Sep-2020	12:24:00				1.0	
8-Sep-2020	12:25:00				1.0	
8-Sep-2020	12:26:00					
29-Sep-2020	15:34:00	1008	<0.1	<0.1		
29-Sep-2020	15:34:05		<0.1	<0.1		
29-Sep-2020	15:34:30		<0.1	<0.1		
29-Sep-2020	15:35:00				1.0	
29-Sep-2020	15:36:00				1.0	
29-Sep-2020	15:37:00				1.0	
29-Sep-2020	15:38:00				1.0	
29-Sep-2020	15:39:00					

Remarks

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FIELDWORK - *Insitu Gas Monitoring - Instrument Record*

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL08** **(P2)**

Sheet No. **1 (1 of 2)**

Installation Details

Installation Type **Gas monitoring pipe**
Depth to Base **4.50m**
Filter Zone **-**
Date Installed **30 July 2020**

Diameter **19mm**
Cover Type **Upright lockable protective cover**
Ground Level **57.26 m OD**

Date	Time	Depth to Water (m bgl)	Methane CH4 (% VOL)	Methane CH4 (% LEL)	Carbon Dioxide CO2 (% VOL)	Oxygen O2 (% VOL)	Hydrogen Sulphide H2S (ppm)	Carbon Monoxide CO (ppm)	Remarks
3-Aug-2020	11:10:00								
3-Aug-2020	11:11:00		<0.1	<2	3.9	7.5	<1	<1	
3-Aug-2020	11:12:00		<0.1	<2	4.8	7.9	<1	<1	
3-Aug-2020	11:13:00		<0.1	<2	5.9	6.4	<1	<1	
3-Aug-2020	11:14:00		<0.1	<2	6.6	4.9	<1	<1	
3-Aug-2020	11:15:00		<0.1	<2	6.6	4.9	<1	<1	
3-Aug-2020	11:16:00		<0.1	<2	6.6	4.8	<1	<1	
3-Aug-2020	11:17:00	Dry							
8-Sep-2020	12:30:00								
8-Sep-2020	12:30:05								
8-Sep-2020	12:30:30								
8-Sep-2020	12:31:00		1.0	40.0	2.0	18.0	<1	<1	
8-Sep-2020	12:32:00		4.3	99.4	8.0	1.8	<1	<1	
8-Sep-2020	12:33:00		4.4	99.2	8.1	0.2	<1	<1	
8-Sep-2020	12:34:00		4.2	94.0	8.0	<0.1	<1	<1	
8-Sep-2020	12:35:00		3.7	84.9	7.9	<0.1	<1	<1	
8-Sep-2020	12:36:00		3.3	75.5	7.8	<0.1	<1	<1	
8-Sep-2020	12:37:00		3.2	74.7	7.6	0.2	<1	<1	
8-Sep-2020	12:38:00		2.8	65.7	7.9	<0.1	<1	-90	
8-Sep-2020	12:39:00		3.2	70.7	7.8	<0.1	<1	<1	
8-Sep-2020	12:40:00		2.9	67.4	7.8	<0.1	<1	<1	
8-Sep-2020	12:41:00		2.9	66.3	7.8	<0.1	<1	<1	
8-Sep-2020	12:42:00		2.8	65.9	7.8	<0.1	<1	<1	
8-Sep-2020	12:43:00	Dry							
29-Sep-2020	15:23:00								
29-Sep-2020	15:23:05								
29-Sep-2020	15:23:30								
29-Sep-2020	15:24:00		2.0	75.0	4.0	17.0	<1	<1	
29-Sep-2020	15:25:00		5.2	>>>>	8.2	1.7	<1	<1	
29-Sep-2020	15:26:00		5.4	>>>>	8.3	0.1	<1	<1	
29-Sep-2020	15:27:00		5.1	>>>>	8.3	<0.1	<1	<1	
29-Sep-2020	15:28:00		4.9	>>>>	8.3	<0.1	<1	<1	
29-Sep-2020	15:29:00		4.7	>>>>	8.4	<0.1	<1	<1	
29-Sep-2020	15:30:00		4.6	>>>>	8.4	<0.1	<1	<1	
29-Sep-2020	15:31:00		4.5	>>>>	8.4	<0.1	<1	<1	
29-Sep-2020	15:32:00	Dry							

Remarks

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FIELDWORK - Insitu Gas Monitoring - Instrument Record

Project **GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM**

Client **Dorton Group**

Project No **PE201646**

Borehole **BHL08** **(P2)**

Sheet No. **1 (2 of 2)**

Installation Details

Installation Type	**Gas monitoring pipe**	Diameter	**19mm**
Depth to Base	**4.50m**	Cover Type	**Upright lockable protective cover**
Filter Zone	**-**	Ground Level	**57.26 m OD**
Date Installed	**30 July 2020**		

Date	Time	Barometric Pressure (mbar)	Diff. Pressure (Pa)	Flow Rate (l/hr)	PID Average (ppm)	Remarks
3-Aug-2020	11:10:00	1014	<0.1	<0.1		
3-Aug-2020	11:11:00				1.0	
3-Aug-2020	11:12:00				1.0	
3-Aug-2020	11:13:00				1.0	
3-Aug-2020	11:14:00				1.0	
3-Aug-2020	11:15:00				1.0	
3-Aug-2020	11:16:00				1.0	
3-Aug-2020	11:17:00					
8-Sep-2020	12:30:00	1019	<0.1	<0.1		
8-Sep-2020	12:30:05		<0.1	<0.1		
8-Sep-2020	12:30:30		<0.1	<0.1		
8-Sep-2020	12:31:00				3.7	
8-Sep-2020	12:32:00				3.7	
8-Sep-2020	12:33:00				3.7	
8-Sep-2020	12:34:00				3.7	
8-Sep-2020	12:35:00				3.6	
8-Sep-2020	12:36:00				3.5	
8-Sep-2020	12:37:00				3.5	
8-Sep-2020	12:38:00				3.6	
8-Sep-2020	12:39:00				3.5	
8-Sep-2020	12:40:00				3.3	
8-Sep-2020	12:41:00				3.2	
8-Sep-2020	12:42:00				3.0	
8-Sep-2020	12:43:00					
29-Sep-2020	15:23:00	1008	<0.1	<0.1		
29-Sep-2020	15:23:05		<0.1	<0.1		
29-Sep-2020	15:23:30		<0.1	<0.1		
29-Sep-2020	15:24:00				3.8	
29-Sep-2020	15:25:00				4.2	
29-Sep-2020	15:26:00				4.2	
29-Sep-2020	15:27:00				3.9	
29-Sep-2020	15:28:00				3.8	
29-Sep-2020	15:29:00				3.8	
29-Sep-2020	15:30:00				3.8	
29-Sep-2020	15:31:00				3.8	
29-Sep-2020	15:32:00					

Remarks

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APPENDIX 13

Laboratory Test Results - Geotechnical

DATA SHEET - Laboratory Test Symbols

Classification and Strength

Symbol	**C - Clay**	**M - Silt**
	(0 - containing organic matter)	
	Plasticity	L - Low
		I - Intermediate
		H - High
		V - Very High
		E - Extremely High
Ip	Plasticity Index	
%	% retained on 425 µm sieve, shown under Ip value	
w_L	Liquid Limit	
w_P	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
P_d	Particle Density	
Test	**Quick undrained triaxial tests**	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm²)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - $\sqrt{t}$

Rock

UF	Unacceptable Failure

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO_3 %, value in brackets expressed as SO_4 %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5	= 2.5 kg Rammer
	4.5	= 4.5 kg Rammer
	V	= Vibrating Hammer
γ_b	Bulk Density	
γ_d	Dry Density	

CBR California Bearing Ratio

Type	2.5	= Test on Specimen Recompacted using 2.5 kg Rammer
	4.5	= As above but using 4.5 kg Rammer
	V	= As above but using Vibrating Hammer
	M	= Test on open drive mould specimen cut in field
	S	= Soaked Specimen
Top	CBR at top of mould	
Bottom	CBR at bottom of mould	
ND	None Detected	
*	In the Sample Description denotes a laboratory only description	

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Geotechnics Ltd The Geotechnical Centre 5 Orchard Court, Heron Road Sowton Industrial Estate Exeter, EX2 7LL	**Date of issue**	09/10/2020
		Issue No.	2
		Client Ref. No.	N/A
		Samples / Material Source	
		Samples Recv'd	14/08/20 & 28/08/20
Testing Start Date	14/08/2020	Sample State	As received
Testing Complete	19/10/2020	Sampled by	Geotechnics Limited
Comments	Issue 2 superseedes issue 1 - Additional testing		
Project No	PE201646		
Project Name	GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	46	Yes
BS EN ISO 17892-3:2015 Cl. 5.1	Particle Density by Fluid Pycnometer	7	Yes
BS EN ISO 17892-12:2018 Cl. 5.3.14 & 5.6	Liquid Limit and Plastic Limit (1 Point Method)	3	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit (4 Points Method)	22	Yes
BS 1377-4:1990 Cl. 3.3	2.5 kg Rammer Dry Density/Moisture Content Relationship (Compaction)	8	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	18	Yes
BS EN ISO 17892-4:2016 Cl. 5.4	Particle Size Distribution by Pipette Method	8	Yes
BS 1377-7:1990 Cl. 9	Shear Strength by Quick Undrained Triaxial Test - Multistage	4	Yes
BS EN ISO 17892-10:2018	Shear Strength by Direct Shear (Small Shear Box Apparatus)	1	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.
The results within this report relate only to the samples tested and received from the client.

UKAS TESTING
1365

Test Results checked and approved for issue.
Signed for and on behalf of Geotechnics Limited

Schiano

Stephane Schiano (Laboratory Testing Manager)

GEOTECHNICS
geotechnical and geoenvironmental specialists

203 Torrington Avenue, Tile Hill,
Coventry, CV4 9UT

LABORATORY RESULTS - *Classification and Strength*

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
TPIF03	0.10-0.20 (0.10)	D	E14238	TOPSOIL: brown slightly sandy slightly gravelly clay with roots.					26.4						
TPIF03	0.40-0.60 (0.40)	D	E14239	Brown slightly sandy slightly gravelly SILT.					16.8						
TPIF04	0.10-0.30 (0.10)	B	E14240	TOPSOIL: brown slightly sandy slightly gravelly clay with roots.					24.1 24.1 24.1	MS-Rem	1.76 1.76 1.76	25 50 100	180 189 280	90 95 140	108
TPIF04	0.10-0.30 (0.10)	D	E14241	Brown slightly sandy slightly gravelly CLAY.					24.2						
TPIF04	0.55-0.70 (0.55)	B	E14242	Brown sandy silty GRAVEL. (See Test Remarks Sheet for further information)					14.2 14.2 14.2	MS-Rem	2.02 2.02 2.02	25 50 100	179 197 289	89 98 145	111
TPIF04	0.55-0.70 (0.55)	D	E14243	Brown sandy silty GRAVEL.					12.1						
TPIF05	0.40-0.60 (0.40)	B	E14244	Brownish grey sandy silty GRAVEL.					16.8 16.8 16.8	MS-Rem	1.99 1.99 1.99	25 50 100	155 207 288	77 103 144	108
TPIF05	0.40-0.60 (0.40)	D	E14245	Brownish grey sandy silty GRAVEL.					18.9						
TPIF06	0.15-0.30 (0.15)	B	E14247	Brown slightly sandy slightly gravelly SILT.					37.5 37.5 37.5	MS-Rem	1.61 1.61 1.61	45 90 180	123 179 233	61 90 116	89
TPIF06	0.15-0.30 (0.15)	D	E14246	Brown slightly sandy slightly gravelly SILT.					38.4						
TPIF07	0.10-0.30 (0.10)	D	E14249	Brown slightly sandy slightly gravelly CLAY.		(7%)	68	NP	35.6						
TPIF09	0.10-0.20 (0.10)	D	E14251	Brown slightly sandy slightly gravelly CLAY.		(34%)	58	NP	35.2						
TPL101	0.30 (0.30)	D	E14185	Brown slightly sandy gravelly SILT.	MH	22 (59%)	53	31	17.9						
TPL101	0.80 (0.80)	B	E14186	Brown slightly gravelly SILT.					20.2 (2.81)						
TPL101	0.80 (0.80)	D	E14187	Brown slightly gravelly SILT.		(42%)	55	NP	19.1 (2.81)						

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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geotechnical and geoenvironmental specialists

LABORATORY RESULTS - *Classification and Strength*

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
TPL101	2.10 (2.10)	D	E14189	Brown gravelly SILT.		(27%)	45	NP	28.6						
TPL102	0.50 (0.50)	D	E14190	Greyish brown sandy slightly silty GRAVEL. (See Test Remarks Sheet for further information)	MH	24 (75%)	56	32	14.4						
TPL103	0.50-0.60 (0.50)	D	E14192	Brown sandy clayey GRAVEL.	CI	24 (71%)	50	26	14.0						
TPL103	1.30 (1.30)	B	E14193	Brown sandy silty GRAVEL.					10.8 (2.80)						
TPL103	1.30 (1.30)	D	E14194	Brown sandy clayey GRAVEL. (See Test Remarks Sheet for further information)	CH	38 (84%)	67	29	8.2						
TPL104	0.60 (0.60)	D	E14196	Brown sandy slightly silty GRAVEL.	MH	30 (85%)	64	34	7.9						
TPL104	1.50 (1.50)	D	E14197	Brown sandy very silty GRAVEL.					8.7						
TPL105	0.60 (0.60)	D	E14199	Brown sandy silty GRAVEL.					12.8						
TPL106	1.00 (1.00)	D	E14202	Brown very sandy silty GRAVEL of slate.	MI	19 (71%)	50	31	18.5						
TPL107	0.80 (0.80)	D	E14203	Greyish brown sandy clayey GRAVEL.	CI	21 (72%)	46	25	13.9						
TPL108	0.80 (0.80)	B	E14204	Brown sandy slightly silty GRAVEL.					19.2						
TPL108	0.80 (0.80)	D	E14205	Brown sandy slightly silty GRAVEL.		(70%)	61	NP	13.1						
TPL108	2.00 (2.00)	D	E14206	Brown sandy slightly silty GRAVEL.					11.5						
TPL109	0.90 (0.90)	D	E14208	Brown sandy very silty GRAVEL.		(70%)	45	NP	11.3						
TPL109	2.50 (2.50)	D	E14210	Greyish brown sandy slightly silty GRAVEL of slate.		(91%)	35	NP	8.3						
TPL110	0.20-0.50 (0.20)	D	E14211	Brown slightly sandy slightly gravelly SILT.	MH	23 (16%)	61	38	27.1						
TPL111	0.50 (0.50)	B	E14212	Brown slightly sandy slightly gravelly SILT.					24.6 (2.71)						
TPL111	1.00 (1.00)	D	E14214	Light brown and grey slightly sandy slightly gravelly SILT.		(38%)	46	NP	20.8						

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Classification and Strength*

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1 - \sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
TPL113	0.10-0.20 (0.10)	D	E14216	Brown slightly sandy slightly gravelly SILT.		(15%)	68	NP	34.0						
TPL114	0.20 (0.20)	B	E14217	Brown slightly sandy slightly gravelly SILT.					50.4 (2.54)						
TPL114	0.20 (0.20)	D	E14218	Brown slightly sandy slightly gravelly SILT.		(12%)	68	NP	40.9						
TPL115	0.60 (0.60)	B	E14220	Brown slightly sandy slightly gravelly SILT.					29.1						
TPL115	0.60 (0.60)	D	E14221	Friable brown slightly sandy slightly gravelly SILT.		(20%)	57	NP	25.8						
TPL117	0.80 (0.80)	D	E14224	Brown sandy silty GRAVEL.	CH	26 (84%)	53	27	10.9						
TPL118	0.30 (0.30)	B	E14225	Brown sandy very silty GRAVEL.					14.3 (2.80)						
TPL118	0.30 (0.30)	D	E14226	Brown sandy very silty GRAVEL.		(82%)	54	NP	13.4						
TPL119	0.30 (0.30)	B	E14227	Brown very sandy very silty GRAVEL with a low cobble content.					23.5						
TPL119	0.30 (0.30)	D	E14228	Brown very sandy very silty GRAVEL with a low cobble content.		(48%)	52	NP	23.7						
TPL120	0.40 (0.40)	B	E14229	MADE GROUND: Brown slightly sandy slightly gravelly silt.					(2.71)						
TPL120	0.40 (0.40)	D	E14230	MADE GROUND: Brown slightly sandy slightly gravelly silt.		(47%)	51	NP	21.9						
TPL122	1.00 (1.00)	D	E14232	MADE GROUND: Brown sandy silty gravel. (See Test Remarks Sheet for further information)		(73%)	47	NP	9.6						
TPL123	1.00 (1.00)	D	E14234	MADE GROUND: Brown sandy silty gravel.		(80%)	38	NP	8.0						

Remarks AGS

NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Atterberg Limit*

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data: Cone Pene.	Point Data: Water % (Factor)	Symbol	þ %	>425 sieve µm	w_L %	w_p %
TPIF07	0.10-0.30 (0.10)	D	E14249	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					7%	68	NP
TPIF09	0.10-0.20 (0.10)	D	E14251	Brown slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					34%	58	NP
TPL101	0.30 (0.30)	D	E14185	Brown slightly sandy gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MH	22	59%	53	31
TPL101	0.80 (0.80)	D	E14187	Brown slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					42%	55	NP
TPL101	2.10 (2.10)	D	E14189	Brown gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					27%	45	NP
TPL102	0.50 (0.50)	D	E14190	Greyish brown sandy slightly silty GRAVEL. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.8 20.4	51.50 51.19 (1.098)	MH	24	75%	56	32
TPL103	0.50-0.60 (0.50)	D	E14192	Brown sandy clayey GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	24	71%	50	26
TPL103	1.30 (1.30)	D	E14194	Brown sandy clayey GRAVEL. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.4 20.8	61.86 60.42 (1.098)	CH	38	84%	67	29
TPL104	0.60 (0.60)	D	E14196	Brown sandy slightly silty GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MH	30	85%	64	34
TPL106	1.00 (1.00)	D	E14202	Brown very sandy silty GRAVEL of slate.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MI	19	71%	50	31
TPL107	0.80 (0.80)	D	E14203	Greyish brown sandy clayey GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	21	72%	46	25

Remarks AGS

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LABORATORY RESULTS - Atterberg Limit

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data: Cone Pene.	Point Data: Water % (Factor)	Symbol	þ %	>425 sieve µm	w_L %	w_p %
TPL108	0.80 (0.80)	D	E14205	Brown sandy slightly silty GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					70%	61	NP
TPL109	0.90 (0.90)	D	E14208	Brown sandy very silty GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					70%	45	NP
TPL109	2.50 (2.50)	D	E14210	Greyish brown sandy slightly silty GRAVEL of slate.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					91%	35	NP
TPL110	0.20-0.50 (0.20)	D	E14211	Brown slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MH	23	16%	61	38
TPL111	1.00 (1.00)	D	E14214	Light brown and grey slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					38%	46	NP
TPL113	0.10-0.20 (0.10)	D	E14216	Brown slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					15%	68	NP
TPL114	0.20 (0.20)	D	E14218	Brown slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					12%	68	NP
TPL115	0.60 (0.60)	D	E14221	Friable brown slightly sandy slightly gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					20%	57	NP
TPL117	0.80 (0.80)	D	E14224	Brown sandy silty GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CH	26	84%	53	27
TPL118	0.30 (0.30)	D	E14226	Brown sandy very silty GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					82%	54	NP
TPL119	0.30 (0.30)	D	E14228	Brown very sandy very silty GRAVEL with a low cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					48%	52	NP

Remarks AGS

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LABORATORY RESULTS - *Atterberg Limit*

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data: Cone Pene.	Point Data: Water % (Factor)	Sym-bol	þ %	>425 sieve µm	w_L %	w_p %
TPL120	0.40 (0.40)	D	E14230	MADE GROUND: Brown slightly sandy slightly gravelly silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					47%	51	NP
TPL122	1.00 (1.00)	D	E14232	MADE GROUND: Brown sandy silty gravel. Test Remark: 1-point cone	Fall Cone 1pt with increasing water content, cone type: 80g/30, washed over 425um sieve	20.3 20.7	43.28 43.06 (1.094)			73%	47	NP
TPL123	1.00 (1.00)	D	E14234	MADE GROUND: Brown sandy silty gravel.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					80%	38	NP

Remarks AGS

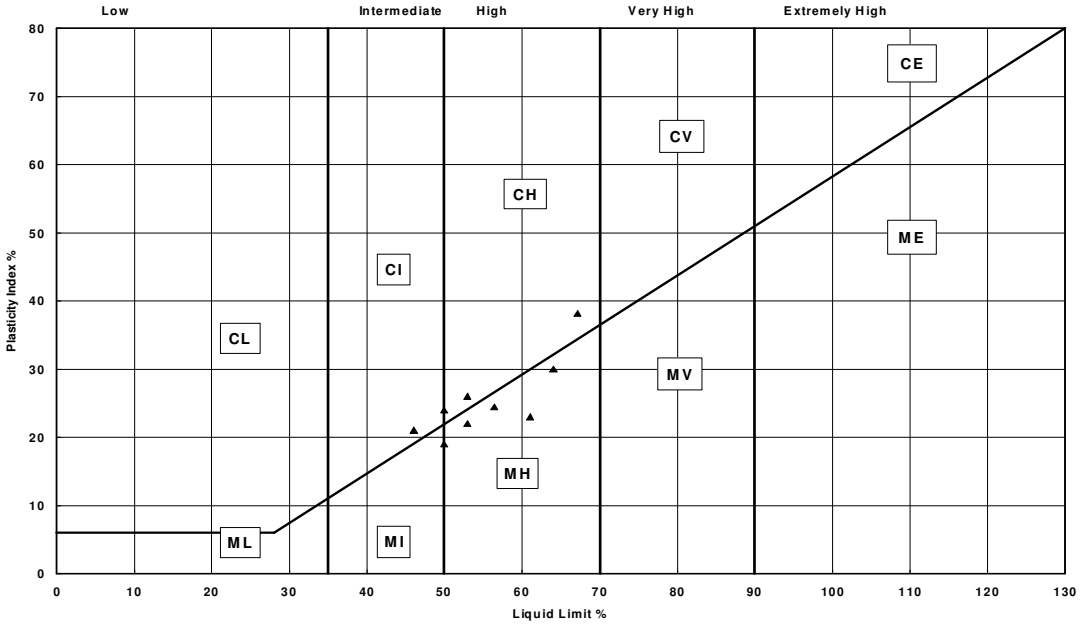
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LABORATORY RESULTS - *Classification Chart*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT
for all items tested



Soil Type	Plasticity Characterisics
C Clay	L Low
	I Intermediate
M Silt	H High
	V Very High
	E Extremely High

Table of Soil Types and Plasticity Characteristics from BS 5930 : 1999

Remarks

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LABORATORY RESULTS - Particle Size Distribution

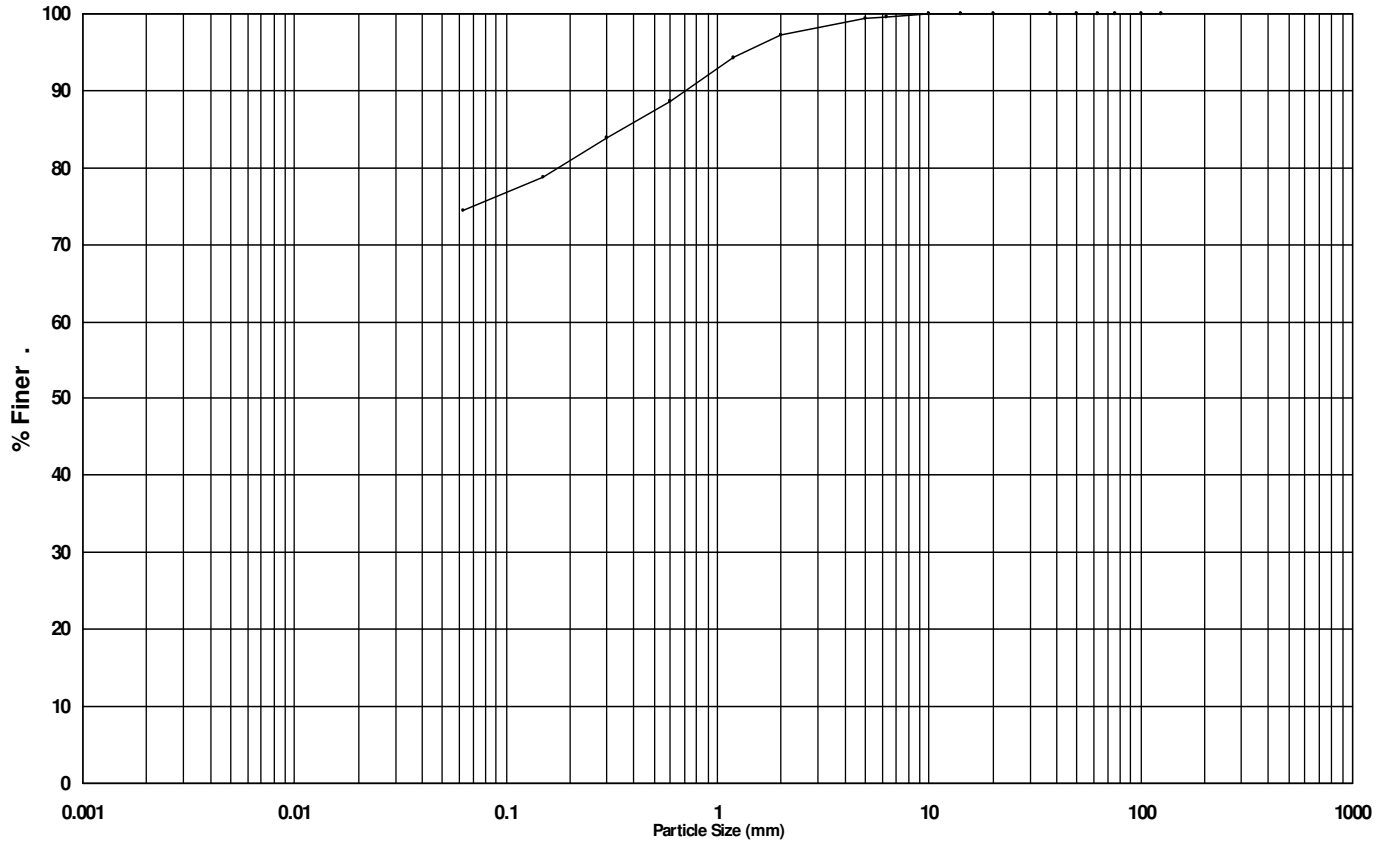
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPIF01
Sample Depth	0.10-0.20m
Sample Type	D
Sample Ref	E14237

Sample Description

Brown slightly sandy slightly gravelly CLAY.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	75
SAND	22
GRAVEL	3
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	99
2 mm	97
1.18 mm	94
600 µm	89
300 µm	84
150 µm	79

Size	% Finer
63 µm	75

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

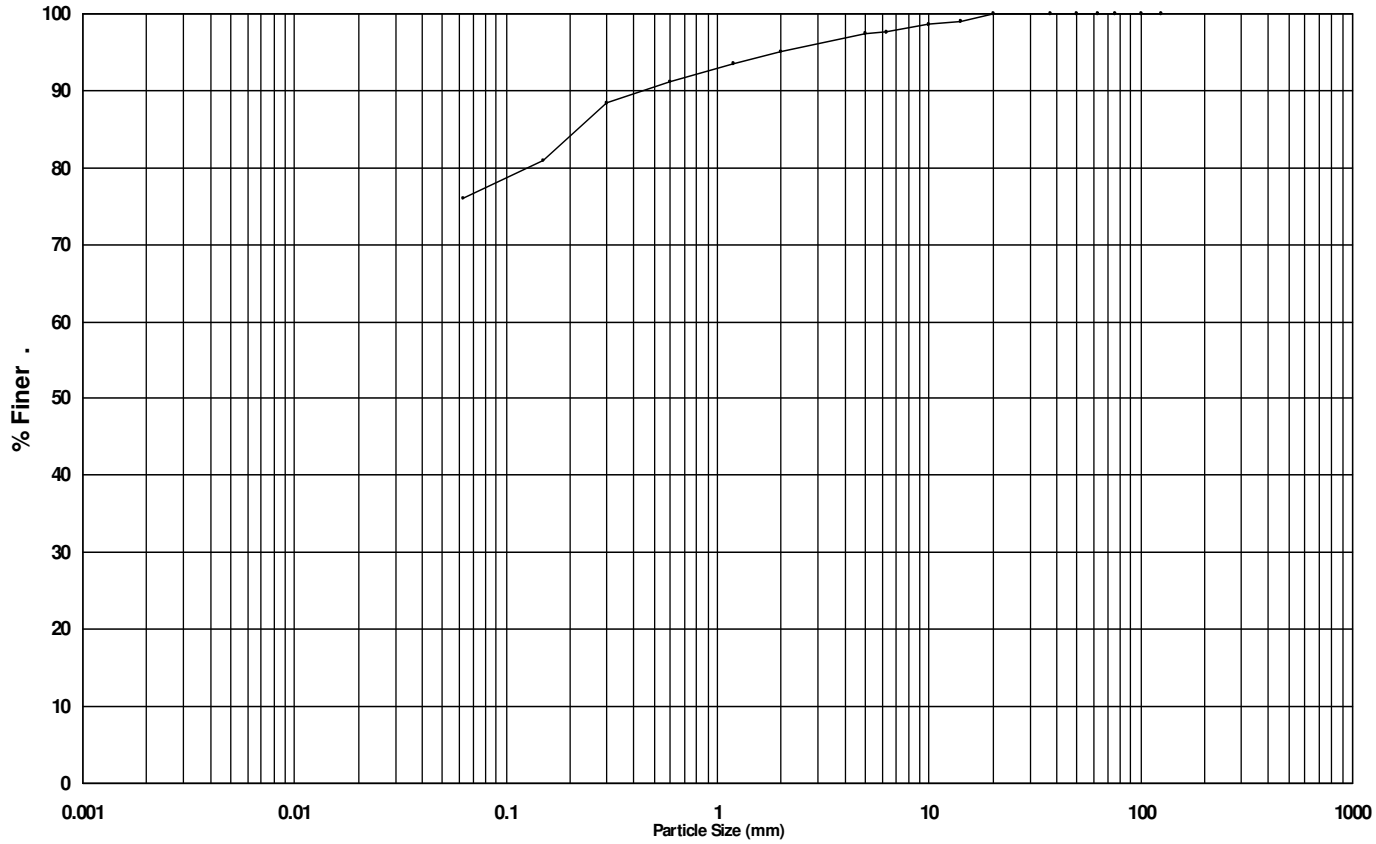
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPIF07
Sample Depth 0.10-0.30m
Sample Type B
Sample Ref E14248

Sample Description

Brown slightly sandy slightly gravelly CLAY.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	76
SAND	19
GRAVEL	5
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	99
10 mm	99
6.3 mm	98
5 mm	97
2 mm	95
1.18 mm	93
600 µm	91
300 µm	88
150 µm	81

Size	% Finer
63 µm	76

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

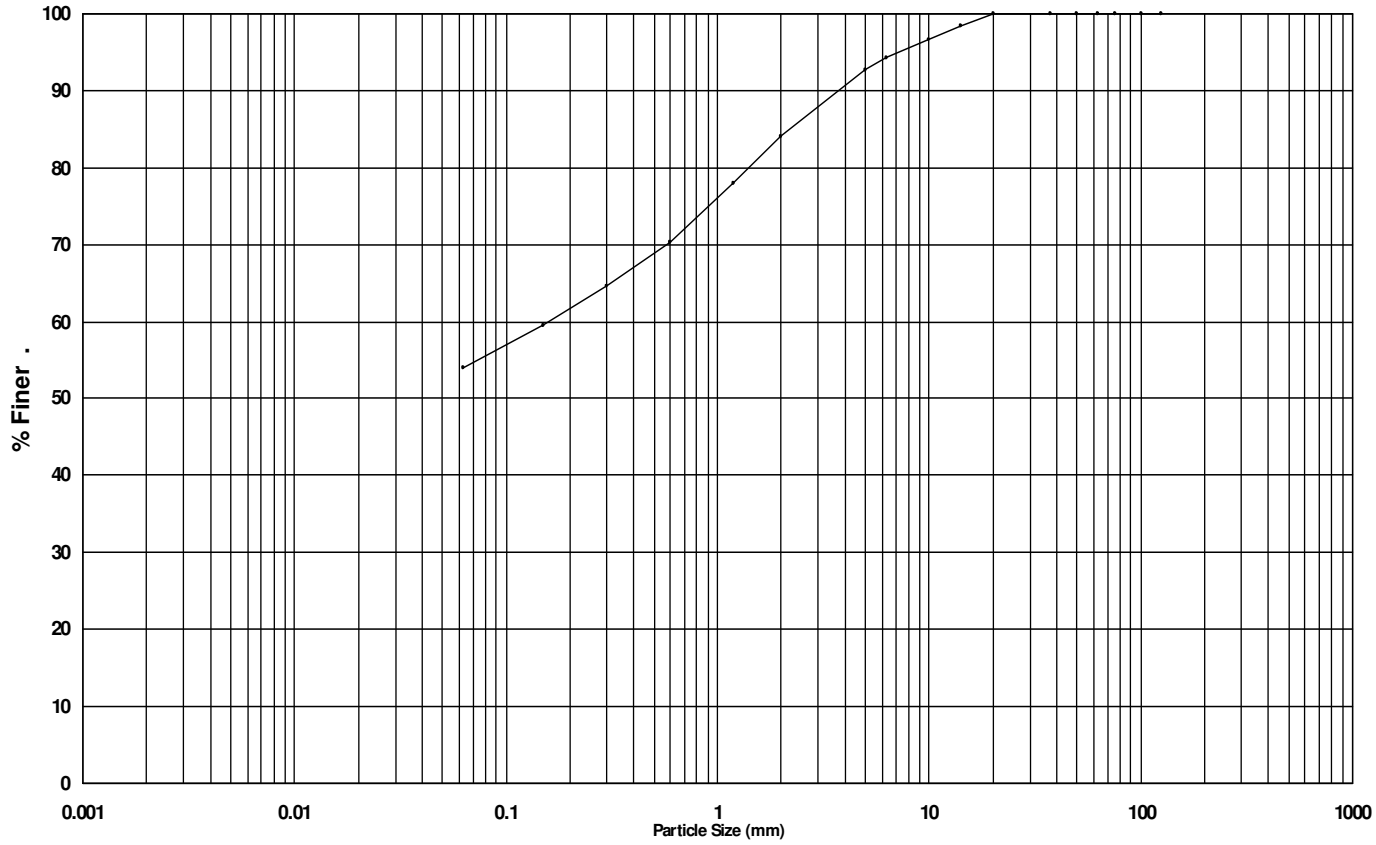
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPIF09
Sample Depth 0.10-0.20m
Sample Type B
Sample Ref E14250

Sample Description

Brown slightly sandy slightly gravelly CLAY.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	54
SAND	30
GRAVEL	16
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	98
10 mm	97
6.3 mm	94
5 mm	93
2 mm	84
1.18 mm	78
600 µm	70
300 µm	65
150 µm	60

Size	% Finer
63 µm	54

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

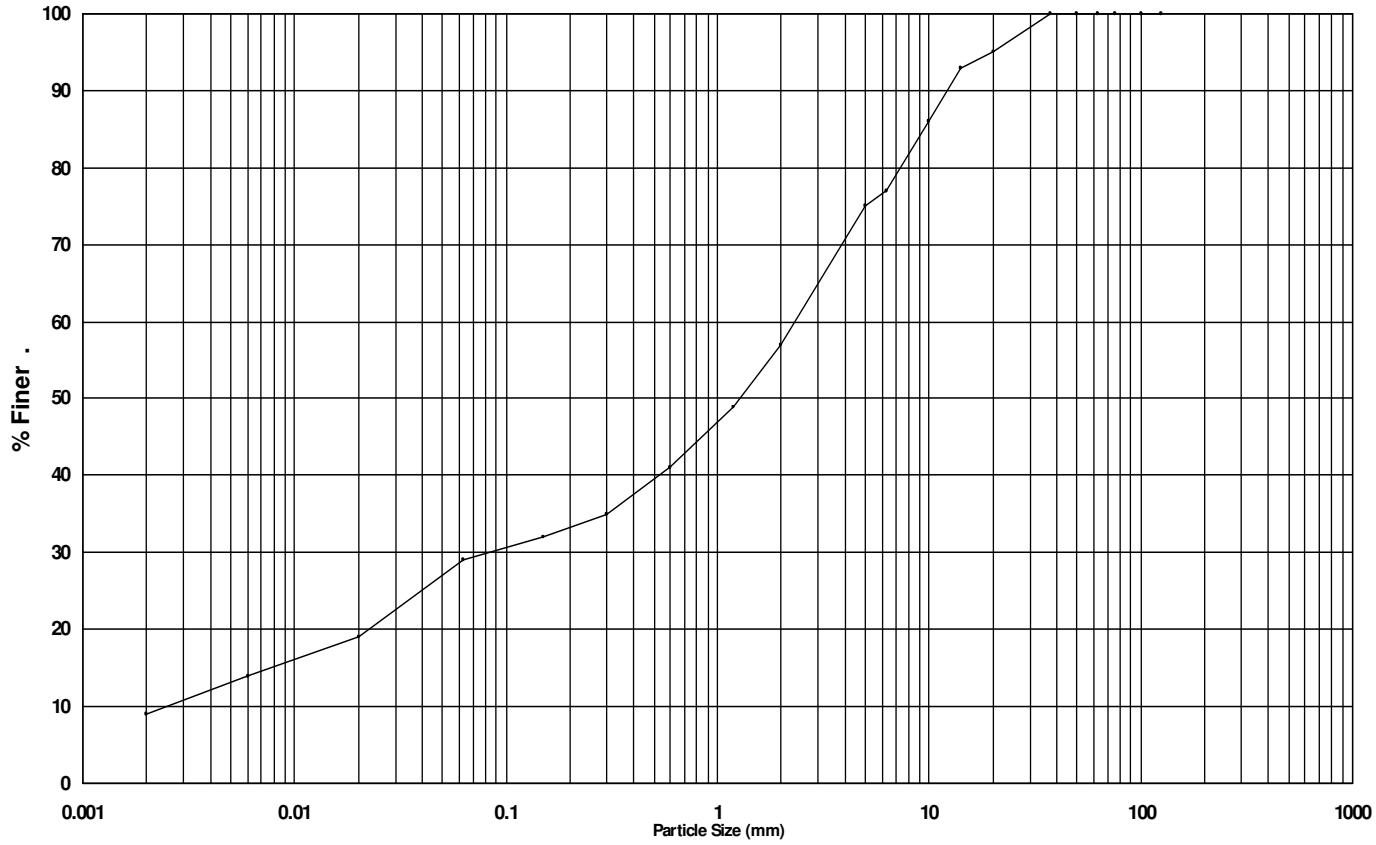
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL101
Sample Depth 0.30m
Sample Type B
Sample Ref E14184

Sample Description

Brown slightly sandy gravelly SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	20
SAND	28
GRAVEL	43
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	95
14 mm	93
10 mm	86
6.3 mm	77
5 mm	75
2 mm	57
1.18 mm	49
600 µm	41
300 µm	35
150 µm	32

Size	% Finer
63 µm	29
20 µm	19
6 µm	14
2 µm	9

Uniformity Coefficient
892.84

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.88
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

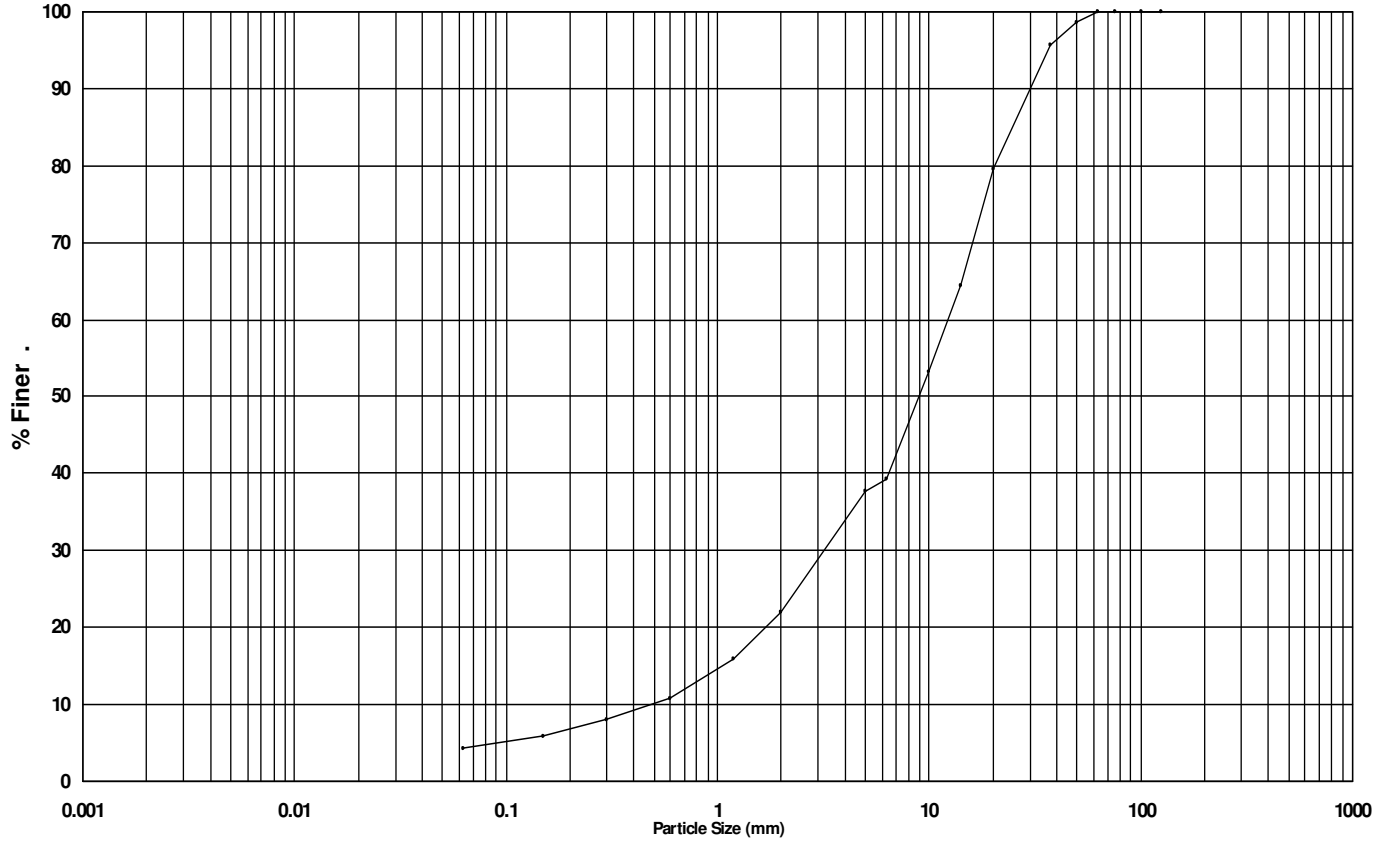
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL104
Sample Depth 0.60m
Sample Type B
Sample Ref E14195

Sample Description

Brown sandy slightly silty GRAVEL of slate.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	18
GRAVEL	78
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	99
37.5 mm	96
20 mm	80
14 mm	64
10 mm	53
6.3 mm	39
5 mm	38
2 mm	22
1.18 mm	16
600 µm	11
300 µm	8
150 µm	6

Size	% Finer
63 µm	4

Uniformity Coefficient
25.32
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

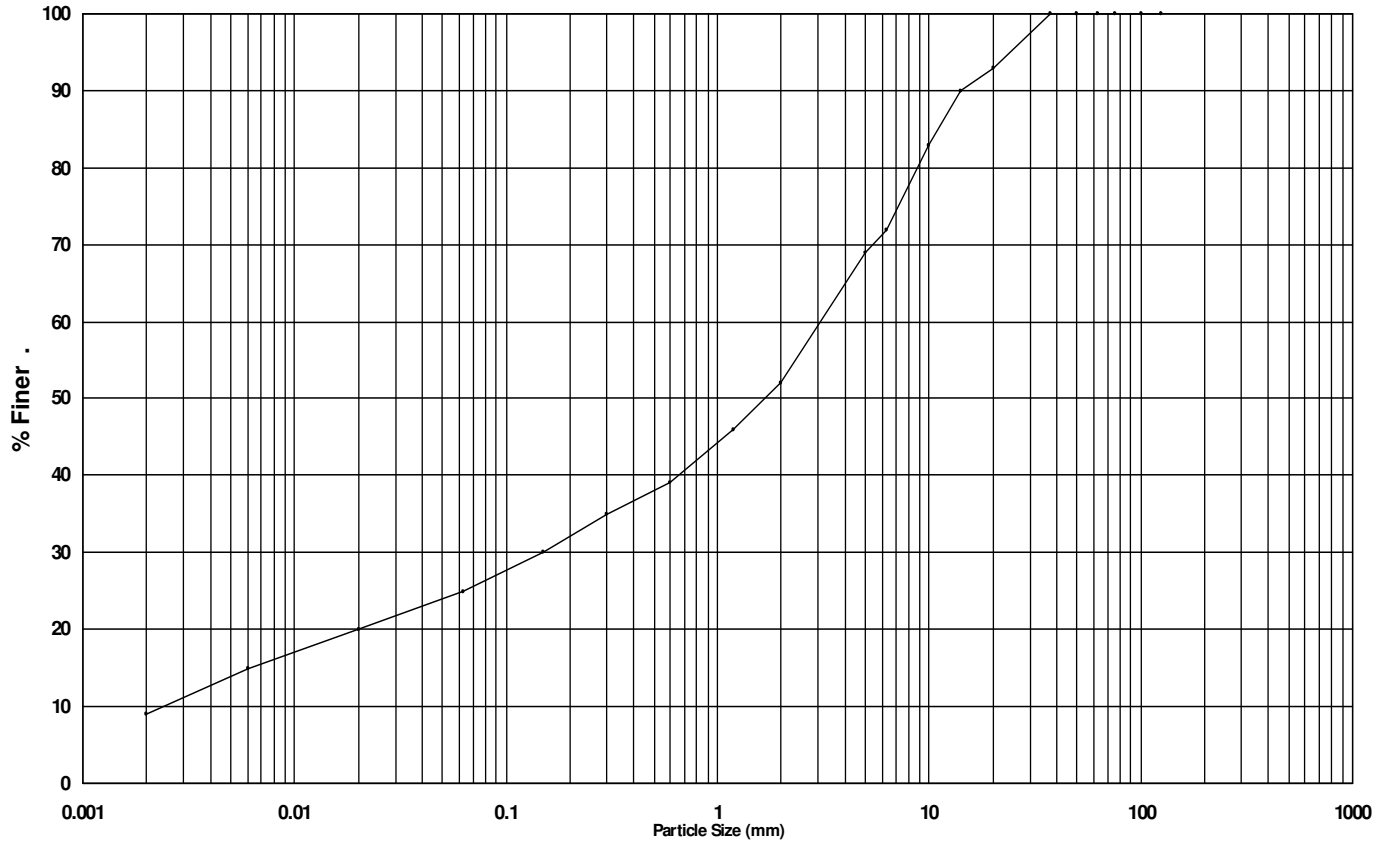
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL106
Sample Depth 1.00m
Sample Type B
Sample Ref E14201

Sample Description

Brown very sandy silty GRAVEL of slate.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	16
SAND	27
GRAVEL	48
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	93
14 mm	90
10 mm	83
6.3 mm	72
5 mm	69
2 mm	52
1.18 mm	46
600 µm	39
300 µm	35
150 µm	30

Size	% Finer
63 µm	25
20 µm	20
6 µm	15
2 µm	9

Uniformity Coefficient
1269.83

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.42
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

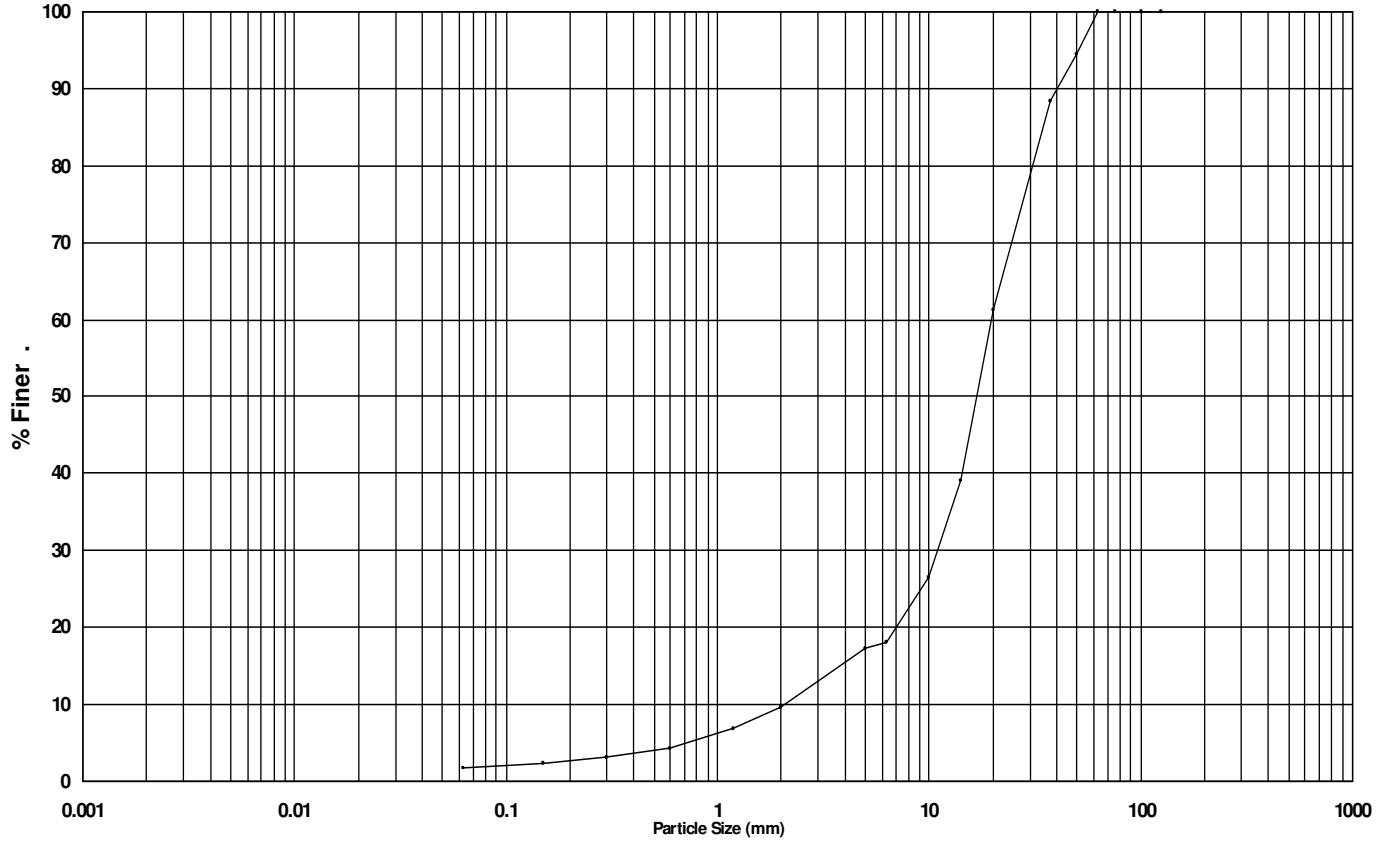
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL109
Sample Depth 2.50m
Sample Type B
Sample Ref E14209

Sample Description

Greyish brown sandy slightly silty GRAVEL of slate.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	8
GRAVEL	90
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	95
37.5 mm	88
20 mm	61
14 mm	39
10 mm	27
6.3 mm	18
5 mm	17
2 mm	10
1.18 mm	7
600 µm	4
300 µm	3
150 µm	2

Size	% Finer
63 µm	2

Uniformity Coefficient
9.45
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

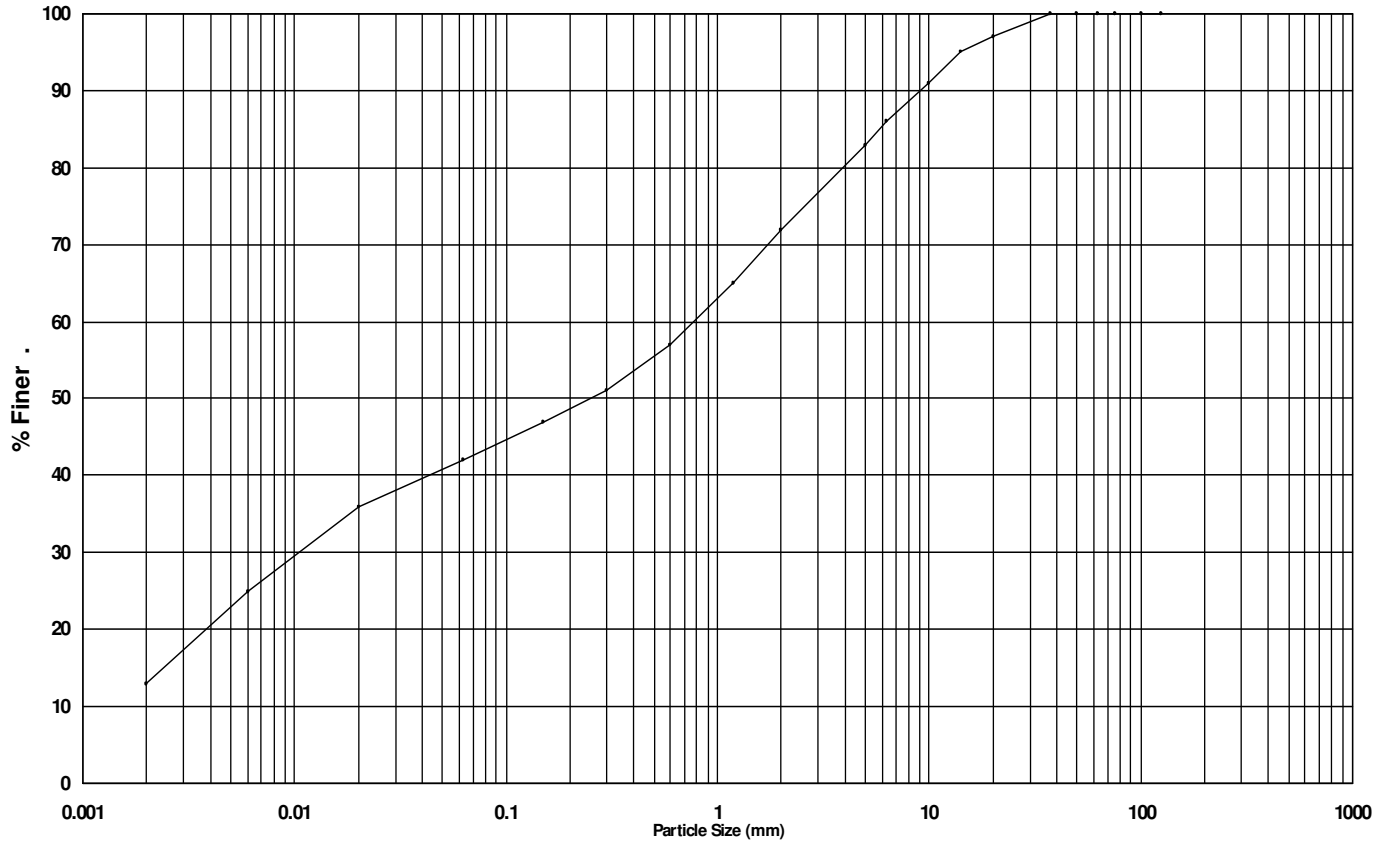
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL111
Sample Depth 1.00m
Sample Type B
Sample Ref E14213

Sample Description

Light grey and brown slightly sandy slightly gravelly SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	13
SILT	29
SAND	30
GRAVEL	28
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	97
14 mm	95
10 mm	91
6.3 mm	86
5 mm	83
2 mm	72
1.18 mm	65
600 µm	57
300 µm	51
150 µm	47

Size	% Finer
63 µm	42
20 µm	36
6 µm	25
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	-99.68
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

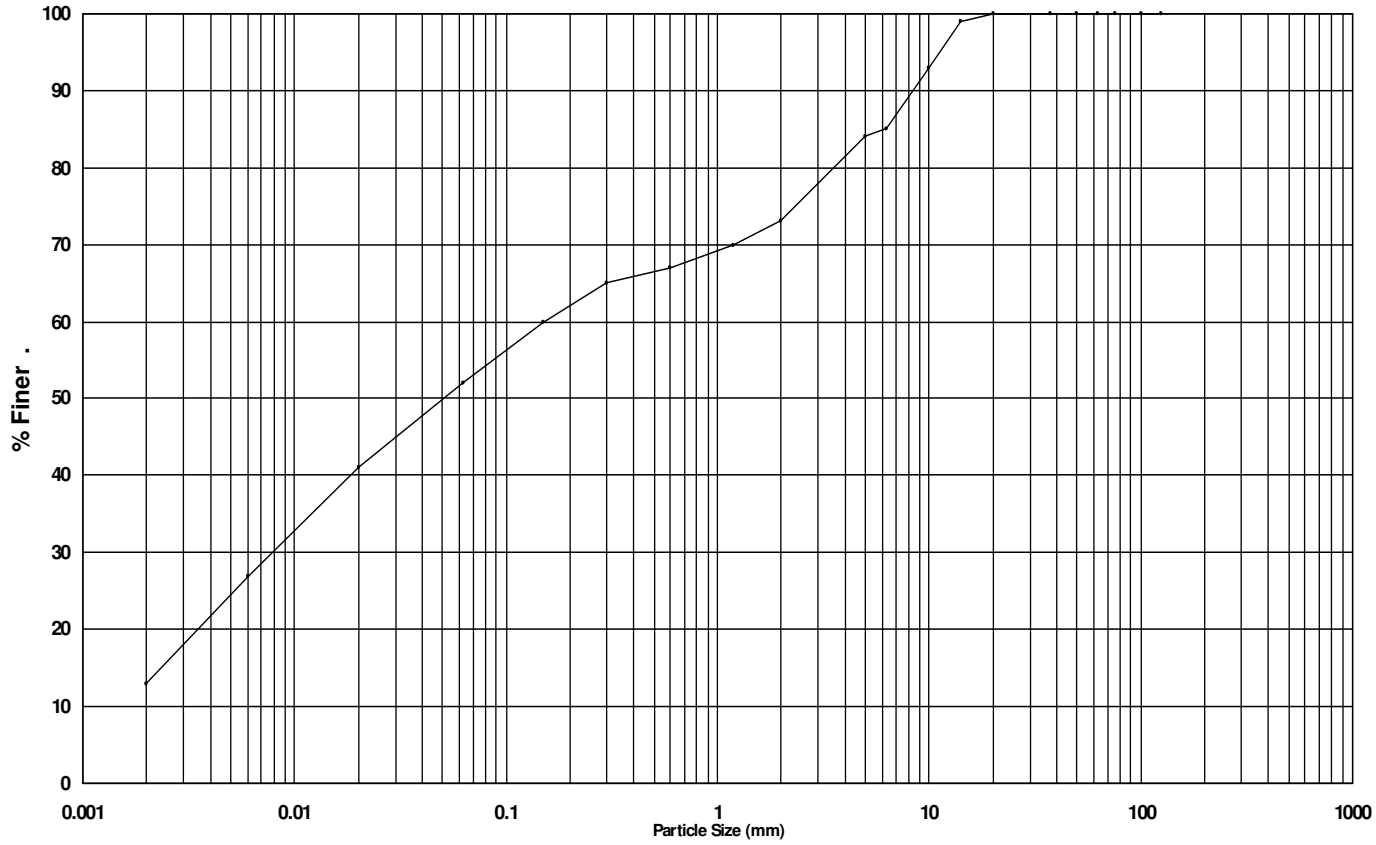
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL112
Sample Depth 1.20m
Sample Type B
Sample Ref E14215

Sample Description

Light brown slightly sandy slightly gravelly SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	13
SILT	39
SAND	21
GRAVEL	27
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	99
10 mm	93
6.3 mm	85
5 mm	84
2 mm	73
1.18 mm	70
600 µm	67
300 µm	65
150 µm	60

Size	% Finer
63 µm	52
20 µm	41
6 µm	27
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.66
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

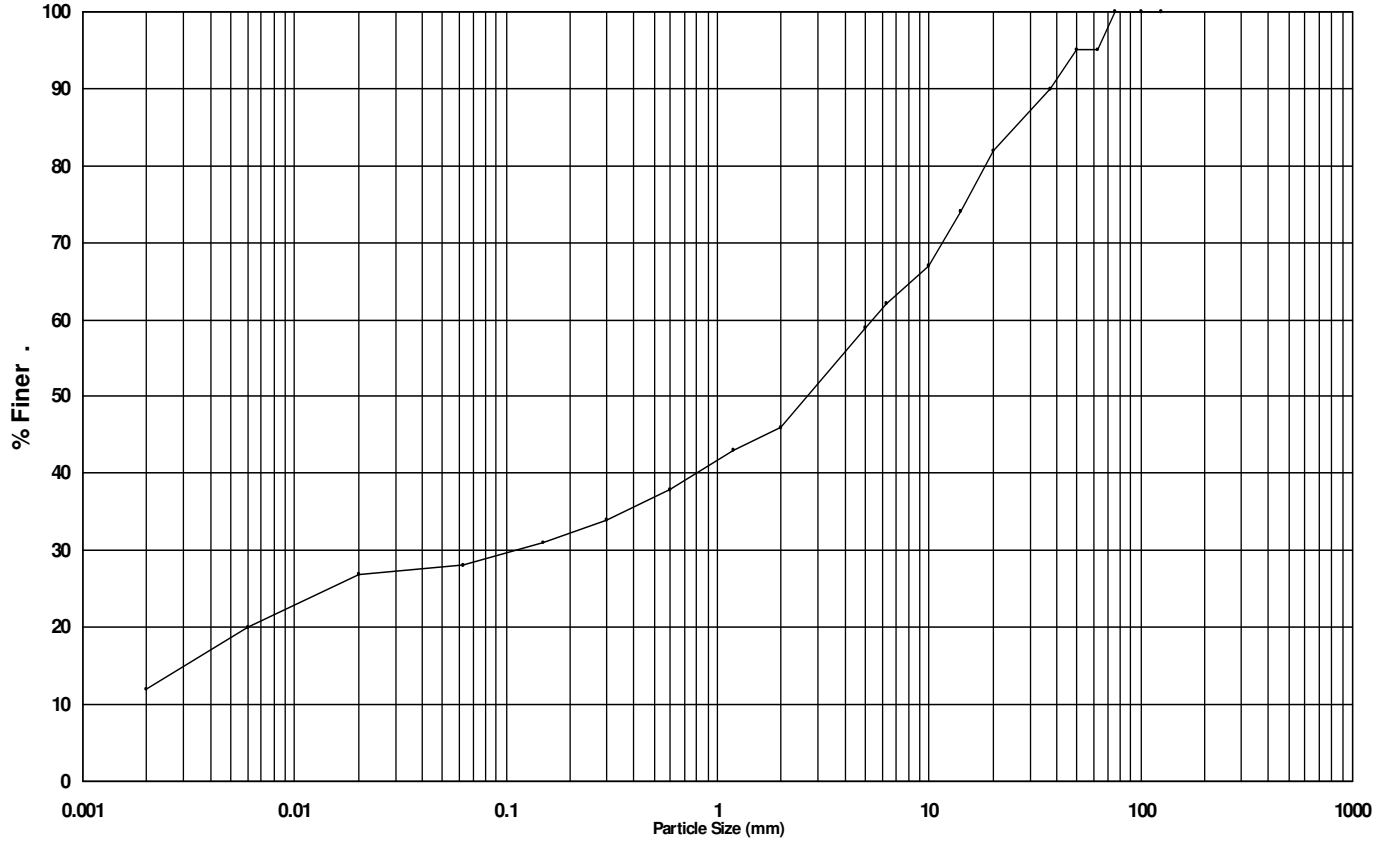
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL114
Sample Depth 0.80m
Sample Type B
Sample Ref E14219

Sample Description

Brown slightly sandy gravelly CLAY/SILT with a low cobble content.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	16
SAND	18
GRAVEL	49
COBBLES	5
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	95
50 mm	95
37.5 mm	90
20 mm	82
14 mm	74
10 mm	67
6.3 mm	62
5 mm	59
2 mm	46
1.18 mm	43
600 µm	38
300 µm	34
150 µm	31

Size	% Finer
63 µm	28
20 µm	27
6 µm	20
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.75
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

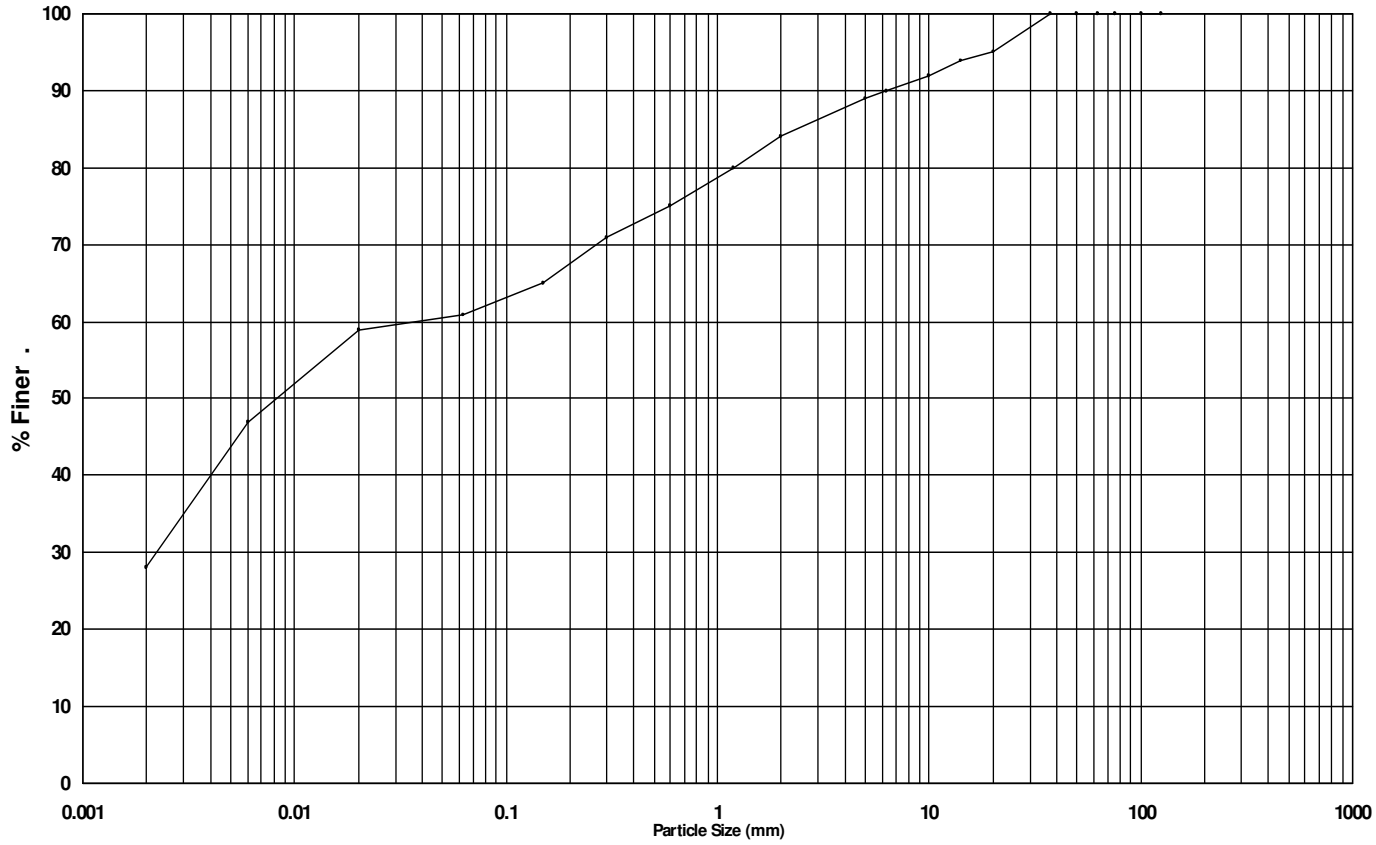
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL115
Sample Depth	0.60m
Sample Type	B
Sample Ref	E14220

Sample Description

Brown slightly sandy slightly gravelly SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	28
SILT	33
SAND	23
GRAVEL	16
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	95
14 mm	94
10 mm	92
6.3 mm	90
5 mm	89
2 mm	84
1.18 mm	80
600 µm	75
300 µm	71
150 µm	65

Size	% Finer
63 µm	61
20 µm	59
6 µm	47
2 µm	28

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

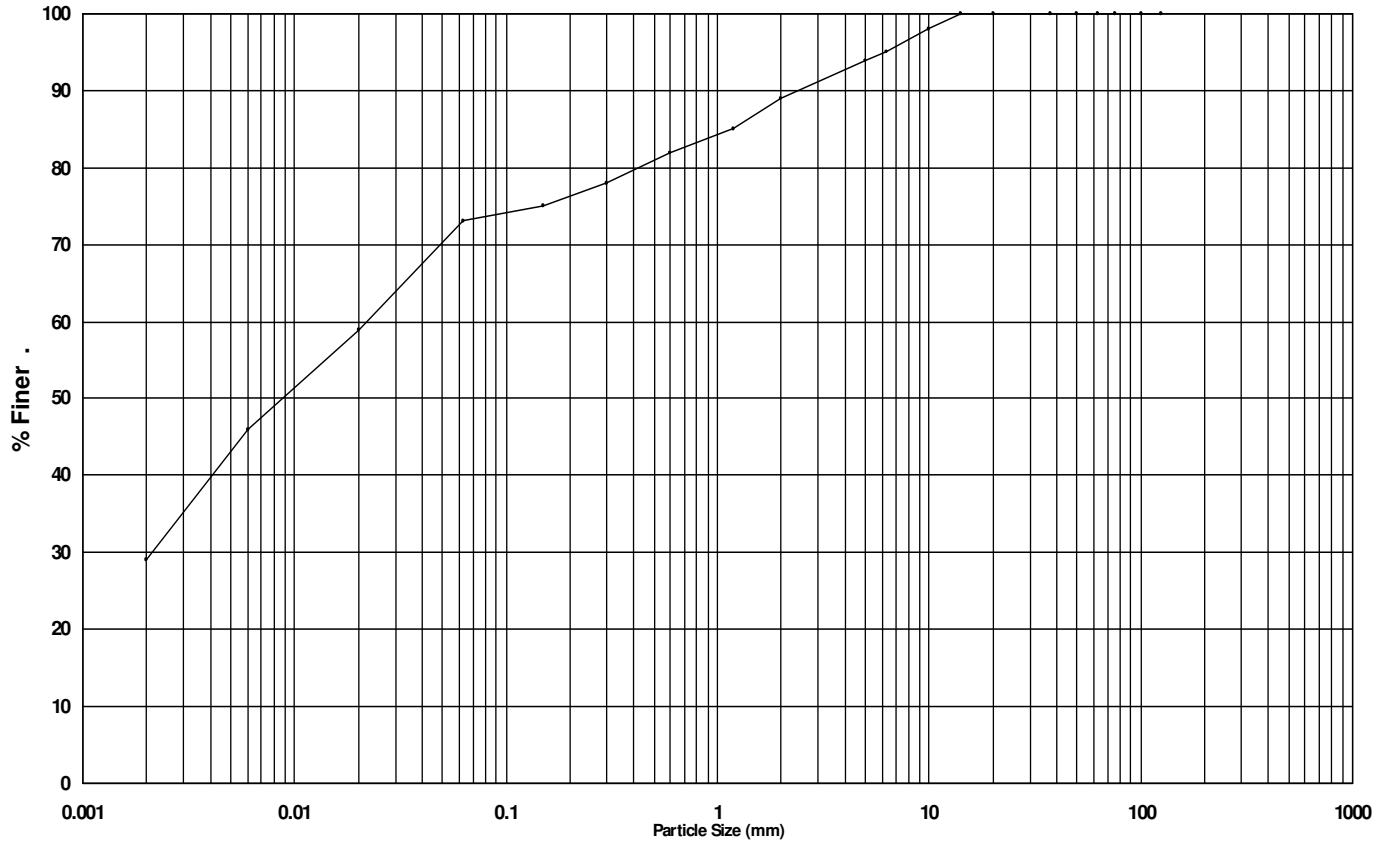
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL116
Sample Depth 0.70m
Sample Type B
Sample Ref E14222

Sample Description

Brown slightly sandy slightly gravelly CLAY/SILT.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	29
SILT	44
SAND	16
GRAVEL	11
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	100
14 mm	100
10 mm	98
6.3 mm	95
5 mm	94
2 mm	89
1.18 mm	85
600 µm	82
300 µm	78
150 µm	75

Size	% Finer
63 µm	73
20 µm	59
6 µm	46
2 µm	29

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.49
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

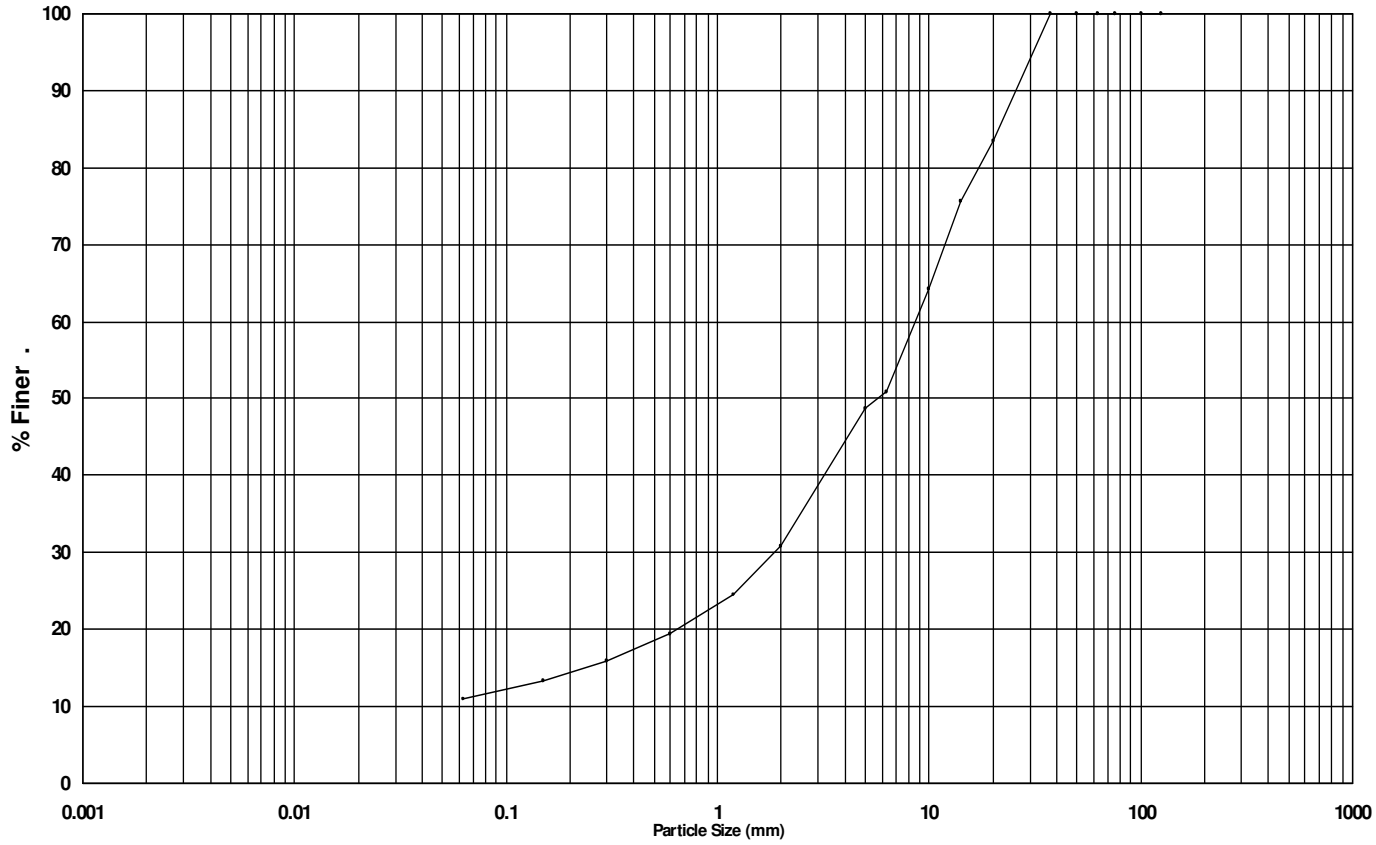
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL117
Sample Depth 0.80m
Sample Type B
Sample Ref E14223

Sample Description

Brown sandy silty GRAVEL.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	11
SAND	20
GRAVEL	69
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	84
14 mm	76
10 mm	64
6.3 mm	51
5 mm	49
2 mm	31
1.18 mm	25
600 µm	19
300 µm	16
150 µm	13

Size	% Finer
63 µm	11

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

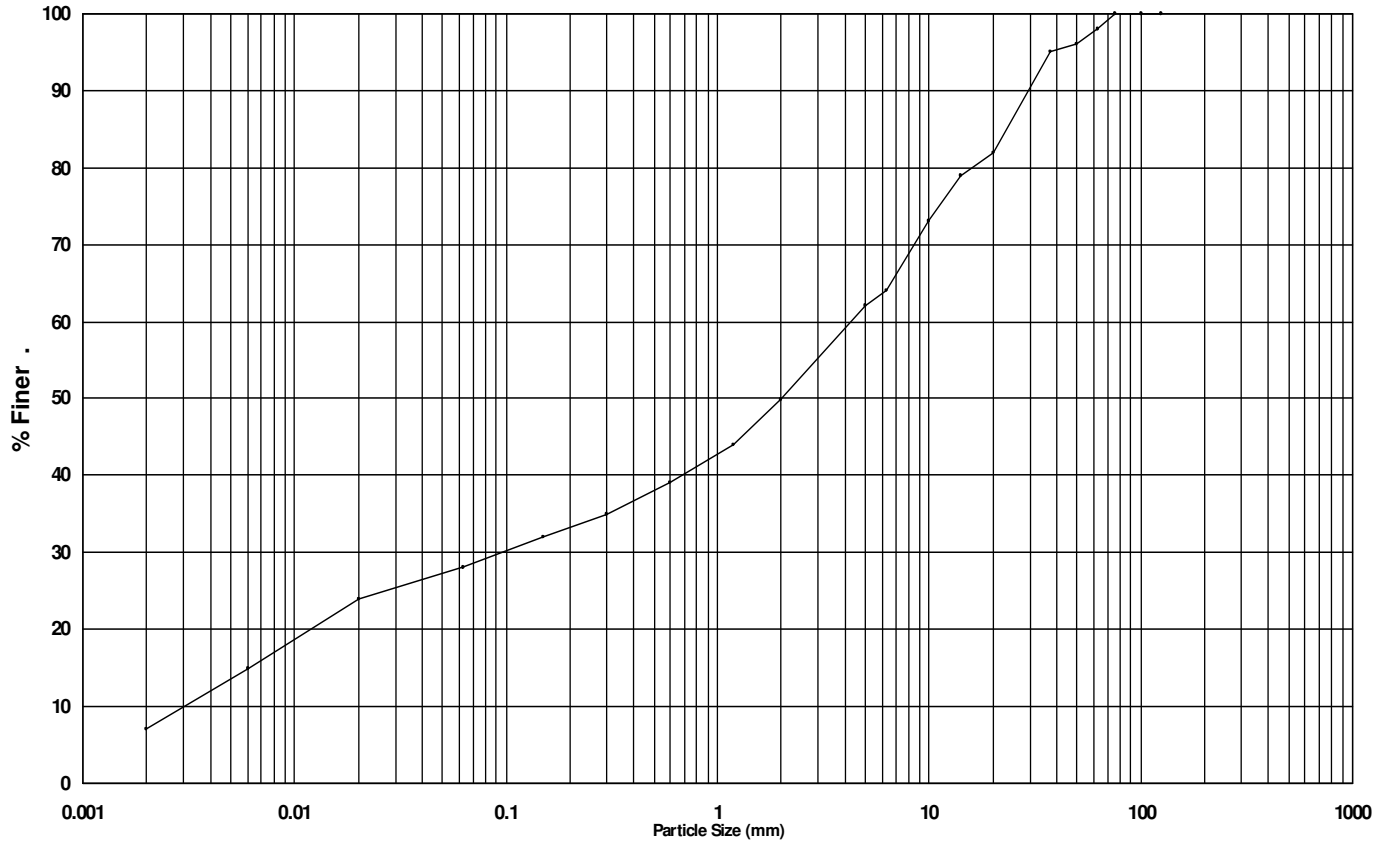
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole TPL119
Sample Depth 0.30m
Sample Type B
Sample Ref E14227

Sample Description

Brown very sandy very silty GRAVEL with a low cobble content.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	21
SAND	22
GRAVEL	48
COBBLES	2
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	98
50 mm	96
37.5 mm	95
20 mm	82
14 mm	79
10 mm	73
6.3 mm	64
5 mm	62
2 mm	50
1.18 mm	44
600 µm	39
300 µm	35
150 µm	32

Size	% Finer
63 µm	28
20 µm	24
6 µm	15
2 µm	7

Uniformity Coefficient
1356.60

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.62
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

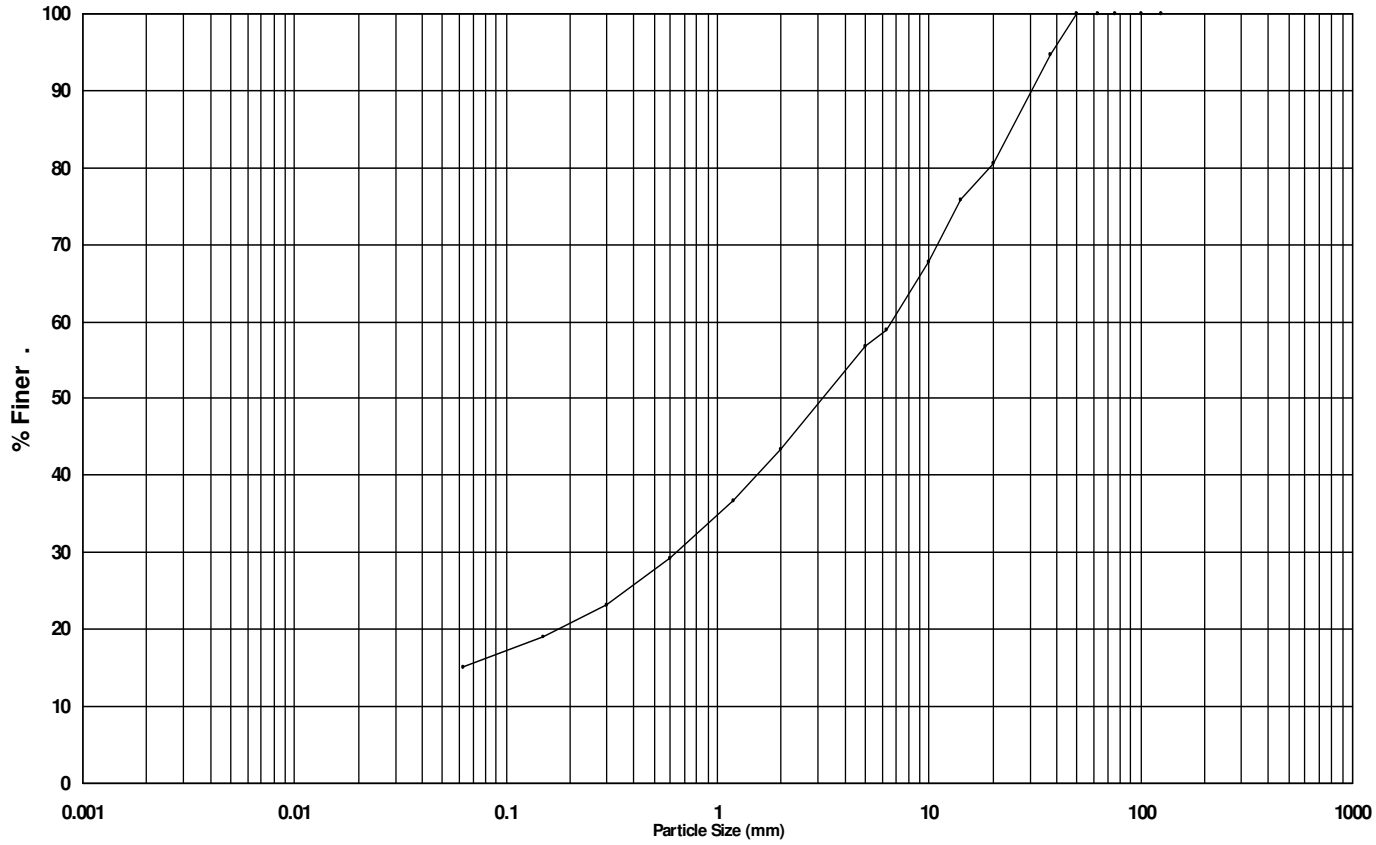
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL121
Sample Depth	1.00m
Sample Type	B
Sample Ref	E14231

Sample Description

MADE GROUND: Brown very sandy silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	15
SAND	28
GRAVEL	57
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	95
20 mm	81
14 mm	76
10 mm	68
6.3 mm	59
5 mm	57
2 mm	43
1.18 mm	37
600 µm	29
300 µm	23
150 µm	19

Size	% Finer
63 µm	15

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

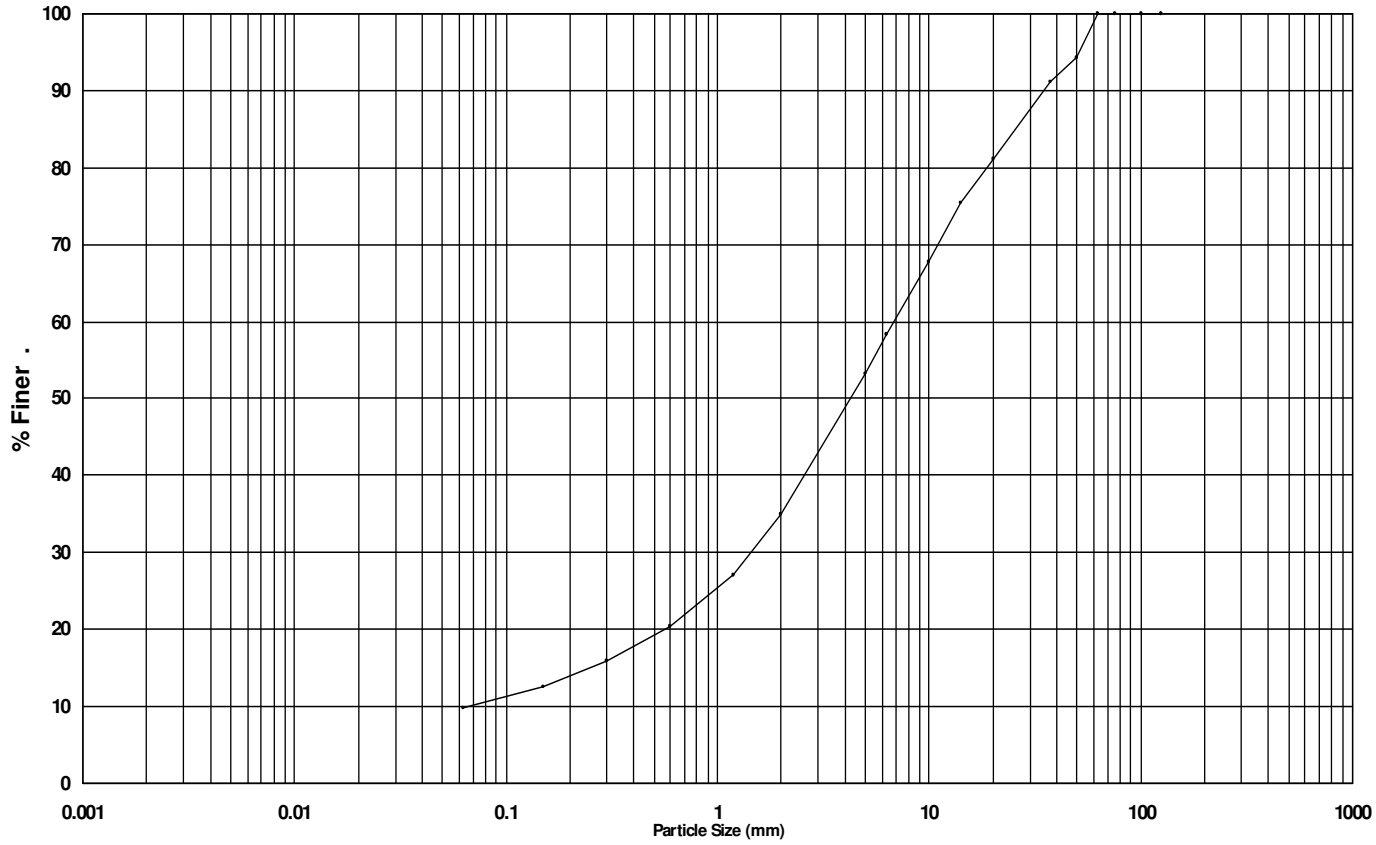
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL123
Sample Depth	1.00m
Sample Type	B
Sample Ref	E14233

Sample Description

MADE GROUND: Brown sandy silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	10
SAND	25
GRAVEL	65
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	94
37.5 mm	91
20 mm	81
14 mm	76
10 mm	68
6.3 mm	58
5 mm	53
2 mm	35
1.18 mm	27
600 µm	20
300 µm	16
150 µm	13

Size	% Finer
63 µm	10

Uniformity Coefficient
102.00

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

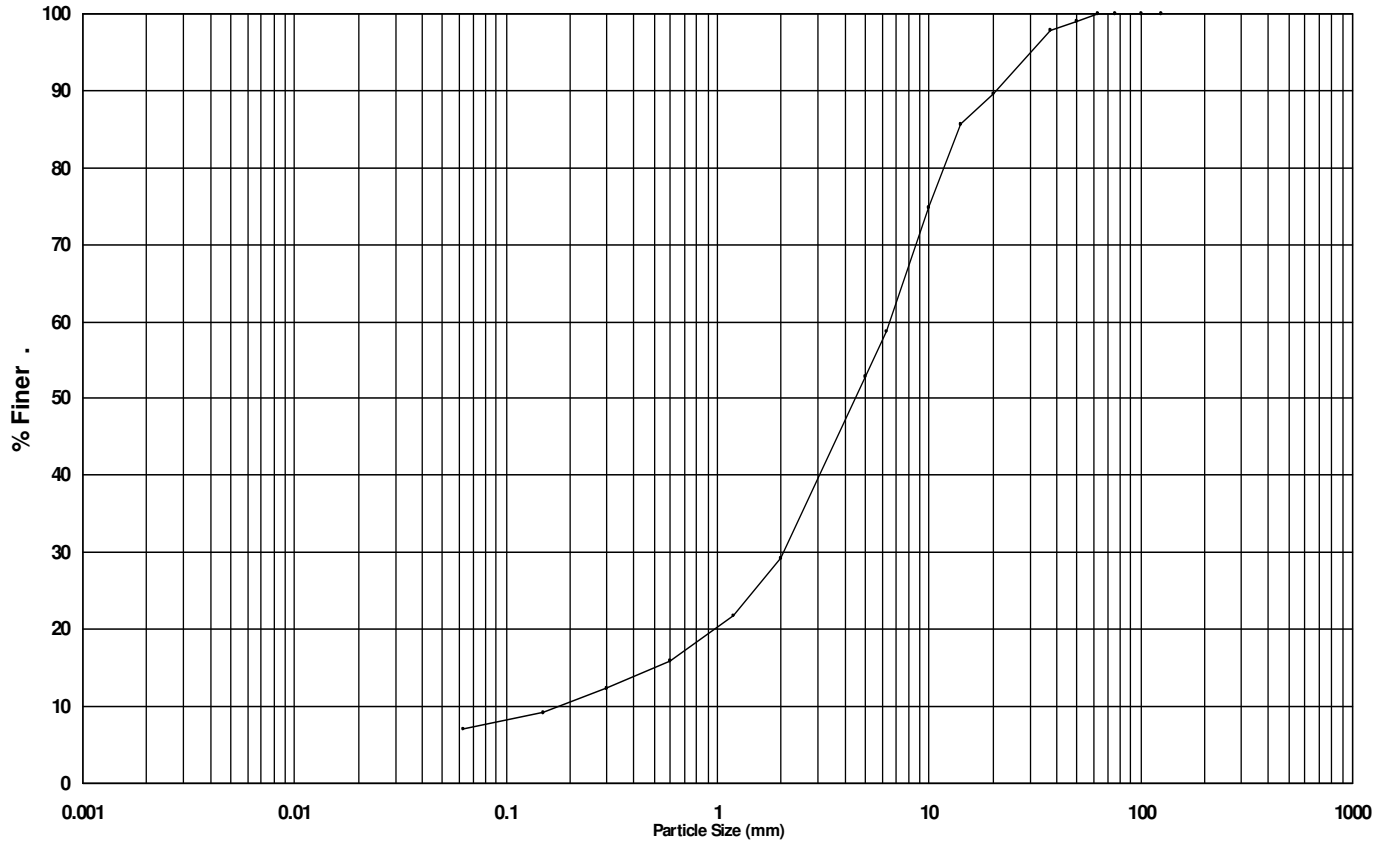
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL124
Sample Depth	0.50m
Sample Type	B
Sample Ref	E14235

Sample Description

MADE GROUND: Brown very sandy silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	7
SAND	22
GRAVEL	71
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	99
37.5 mm	98
20 mm	90
14 mm	86
10 mm	75
6.3 mm	59
5 mm	53
2 mm	29
1.18 mm	22
600 µm	16
300 µm	12
150 µm	9

Size	% Finer
63 µm	7

Uniformity Coefficient
36.97
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

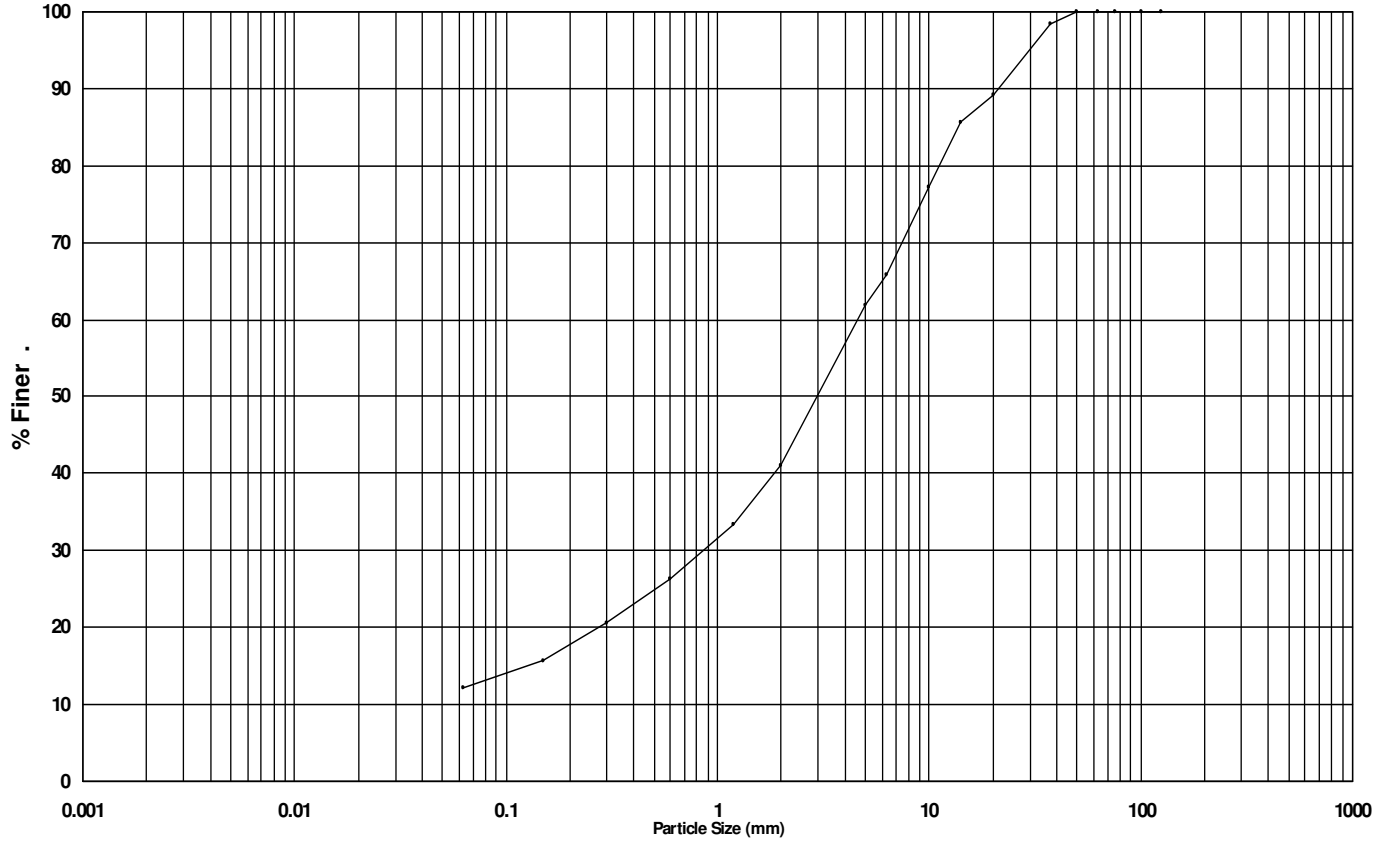
Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL125
Sample Depth	0.50m
Sample Type	B
Sample Ref	E14236

Sample Description

MADE GROUND: Brown very sandy silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	12
SAND	29
GRAVEL	59
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	89
14 mm	86
10 mm	77
6.3 mm	66
5 mm	62
2 mm	41
1.18 mm	33
600 µm	26
300 µm	21
150 µm	16

Size	% Finer
63 µm	12

Uniformity Coefficient
Not Available
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - MCV, Compaction, CBR

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					MCV		Compaction					CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m^3	γ_b Mg/m^3	γ_d (Max) Mg/m^3	Type	Top CBR %	Top w %	Bottom CBR %	Bottom w %
TPL101	0.80 (0.80)	B	E14186	Brown slightly gravelly SILT.			2.5kg	(10.0) 19.7* 4.7 6.1 8.4 18.0 13.2	2.81m	 *2.00 1.62 1.73 1.85 1.99 1.95	(1.75) *1.67 1.55 1.63 1.71 1.68 1.72					
TPL103	1.30 (1.30)	B	E14193	Brown sandy silty GRAVEL. (See Test Remarks Sheet for further information)			2.5kg	(11.8) 10.8* 3.0 6.3 12.7 15.6	2.81m	 *2.03 1.64 1.78 2.07 1.93	(1.85) *1.83 1.59 1.68 1.84 1.67					
TPL108	0.80 (0.80)	B	E14204	Brown sandy slightly silty GRAVEL.			2.5kg	(15.0) 19.3* 2.2 6.9 10.6 13.2 23.5	2.70a	 *2.02 1.63 1.80 1.88 1.96 2.03	(1.74) *1.70 1.59 1.68 1.70 1.73 1.64					
TPL111	0.50 (0.50)	B	E14212	Brown slightly sandy slightly gravelly SILT.			2.5kg	(16.0) 25.6* 3.4 6.7 12.1 28.7	2.71m	 *1.93 1.39 1.56 1.79 1.92	(1.62) *1.53 1.34 1.46 1.59 1.50					
TPL114	0.20 (0.20)	B	E14217	Brown slightly sandy slightly gravelly SILT.			2.5kg	(21.0) 46.6* 7.3 11.4 14.4 26.3	2.54m	 *1.58 1.20 1.30 1.39 1.56	(1.25) *1.08 1.12 1.17 1.21 1.23					
TPL115	0.60 (0.60)	B	E14220	Brown slightly sandy slightly gravelly SILT.			2.5kg	(16.0) 27.8* 5.5 12.8 16.6 22.1	2.65a	 *1.84 1.49 1.69 1.77 1.82	(1.53) *1.44 1.41 1.50 1.52 1.49					
TPL118	0.30 (0.30)	B	E14225	Brown sandy very silty GRAVEL.			2.5kg	(11.5) 14.3* 6.7 10.2 13.1 15.4	2.80m	 *2.12 1.90 2.09 2.13 2.06	(1.92) *1.86 1.78 1.90 1.89 1.78					
TPL119	0.30 (0.30)	B	E14227	Brown very sandy very silty GRAVEL with a low cobble content.			2.5kg	(13.0) 23.8* 4.3 6.9	2.65a	 *1.95 1.56 1.68	(1.70) *1.58 1.49 1.57					

Remarks AGS

Particle Density - a=assumed, m=measured
w% - * = at natural moisture content; x = aggregate moisture content
# = stabilised, see relevant test plot for details
NST = Not suitable for Test
For Standards followed see Laboratory Test Certficate

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LABORATORY RESULTS - MCV, Compaction, CBR

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample					MCV		Compaction					CBR				
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	MCV	w %	Type	w (Opt) %	ρ_d Mg/m^3	γ_b Mg/m^3	γ_d (Max) Mg/m^3	Type	Top		Bottom	
													CBR %	w %	CBR %	w %
								19.9		1.95	1.63					
								8.8		1.76	1.62					

Remarks AGS

Particle Density - a=assumed, m=measured
w% - * = at natural moisture content; x = aggregate moisture content
# = stabilised, see relevant test plot for details
NST = Not suitable for Test
For Standards followed see Laboratory Test Certficate

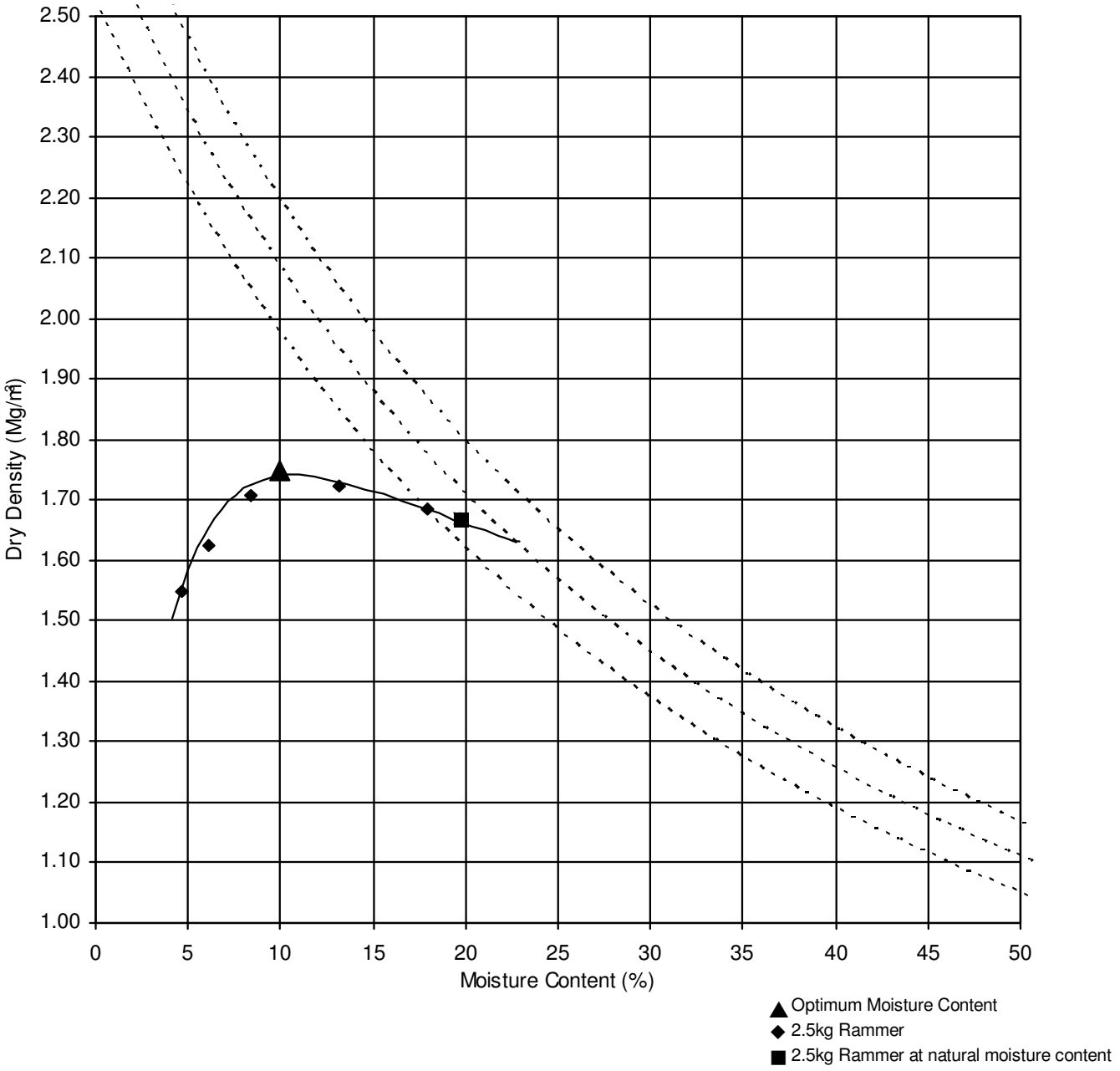
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LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL101
Sample Depth	0.80m
Sample Type	B
Sample Ref	E14186



Optimum Moisture Content	10.0	
Maximum Dry Density	1.75	Mg/m^3
Particle Density	2.81 (Meas)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	1 %
	20mm sieve	4 %
Description	Brown slightly gravelly SILT.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.3 and 3.4

GEOTECHNICS
geotechnical and geoenvironmental specialists

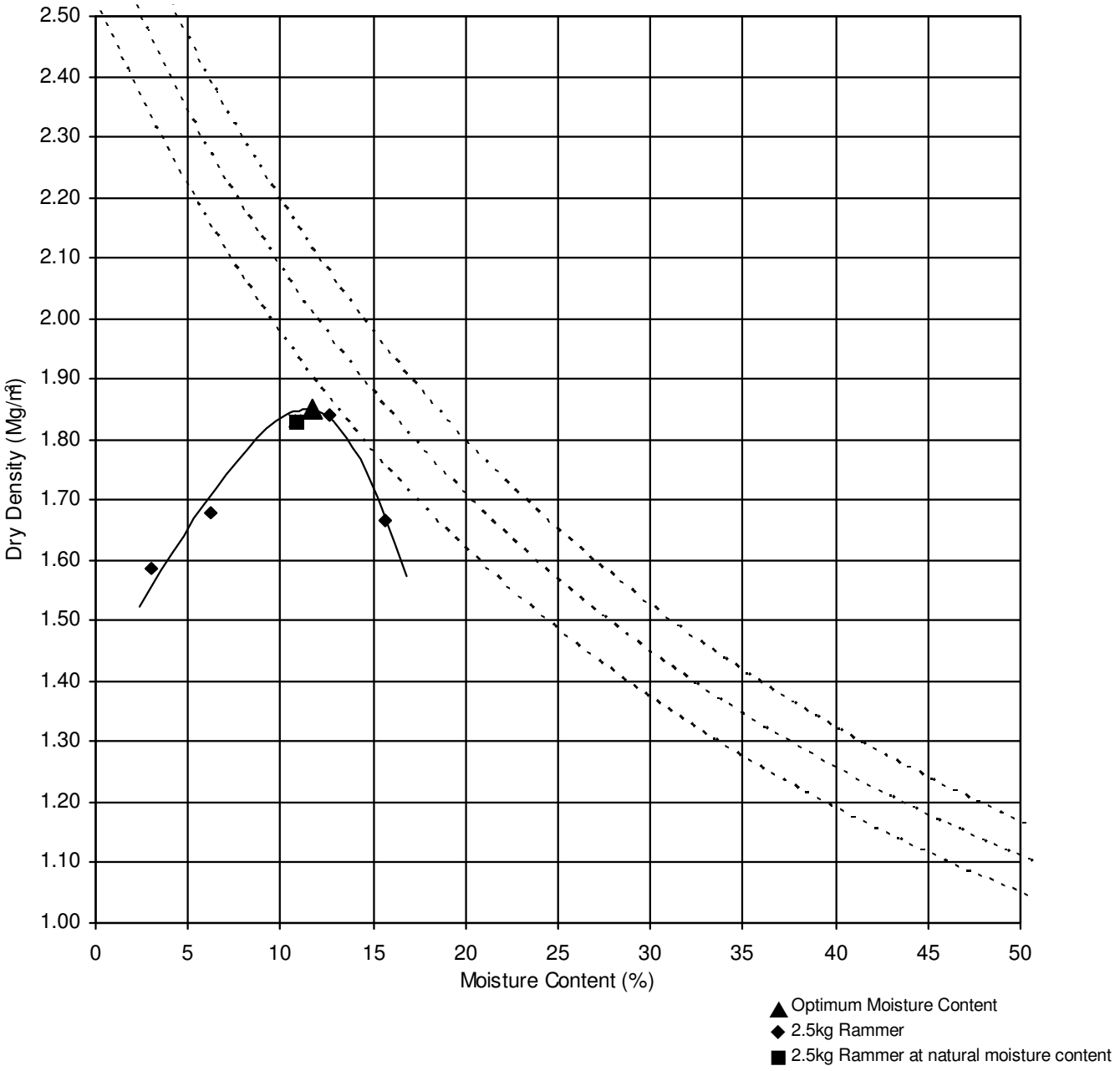
18/09/2020

LABORATORY RESULTS - Compaction

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL103
Sample Depth	1.30m
Sample Type	B
Sample Ref	E14193



Optimum Moisture Content	11.8	
Maximum Dry Density	1.85	Mg/m^3
Particle Density	2.81 (Meas)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	0 %
	20mm sieve	14 %
Description	Brown sandy silty GRAVEL.	

Remarks BS1377 Part 4 1990 : Clause 3.3 and 3.4
Sample broke down while compacting due to high presence of slate.

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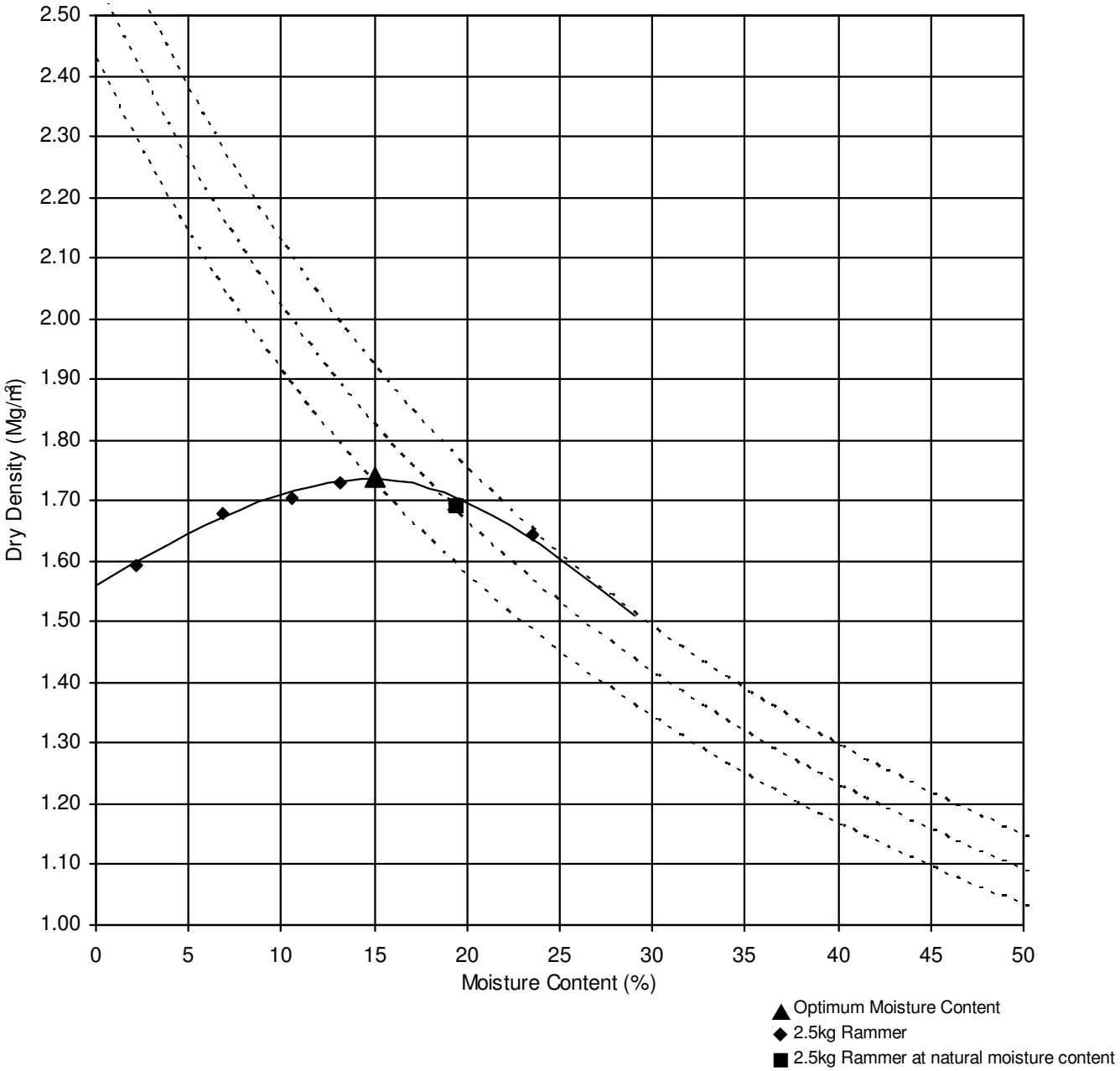
18/09/2020

LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL108
Sample Depth	0.80m
Sample Type	B
Sample Ref	E14204



Optimum Moisture Content	15.0	
Maximum Dry Density	1.74	Mg/m^3
Particle Density	2.70 (Ass'm)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	0 %
	20mm sieve	7 %
Description	Brown sandy slightly silty GRAVEL.	

Remarks BS1377 Part 4 1990 : Clause 3.3 and 3.4

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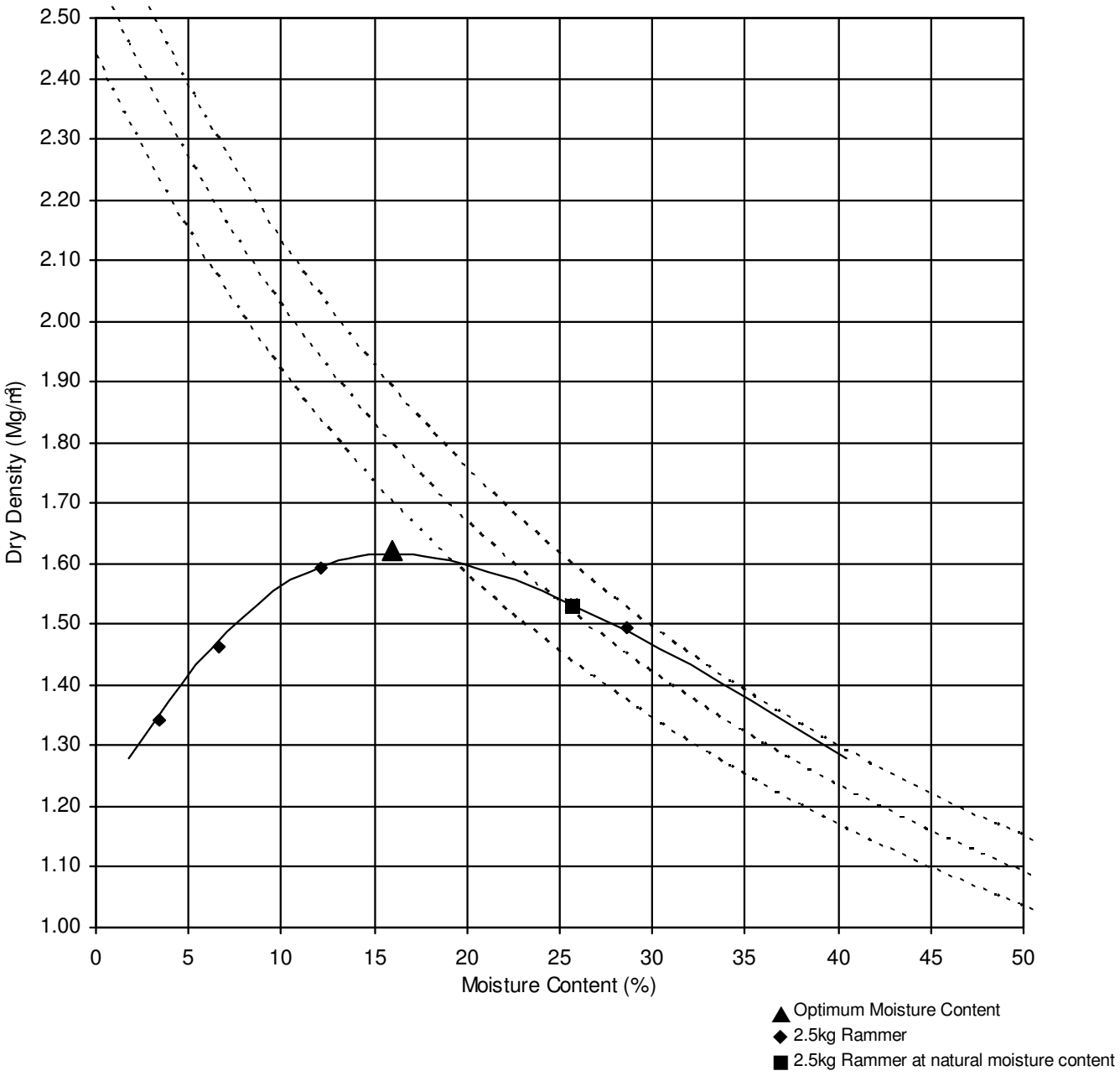
18/09/2020

LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL111
Sample Depth	0.50m
Sample Type	B
Sample Ref	E14212



Optimum Moisture Content	16.0	
Maximum Dry Density	1.62	Mg/m^3
Particle Density	2.71 (Meas)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	4 %
	20mm sieve	3 %
Description	Brown slightly sandy slightly gravelly SILT.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.3 and 3.4

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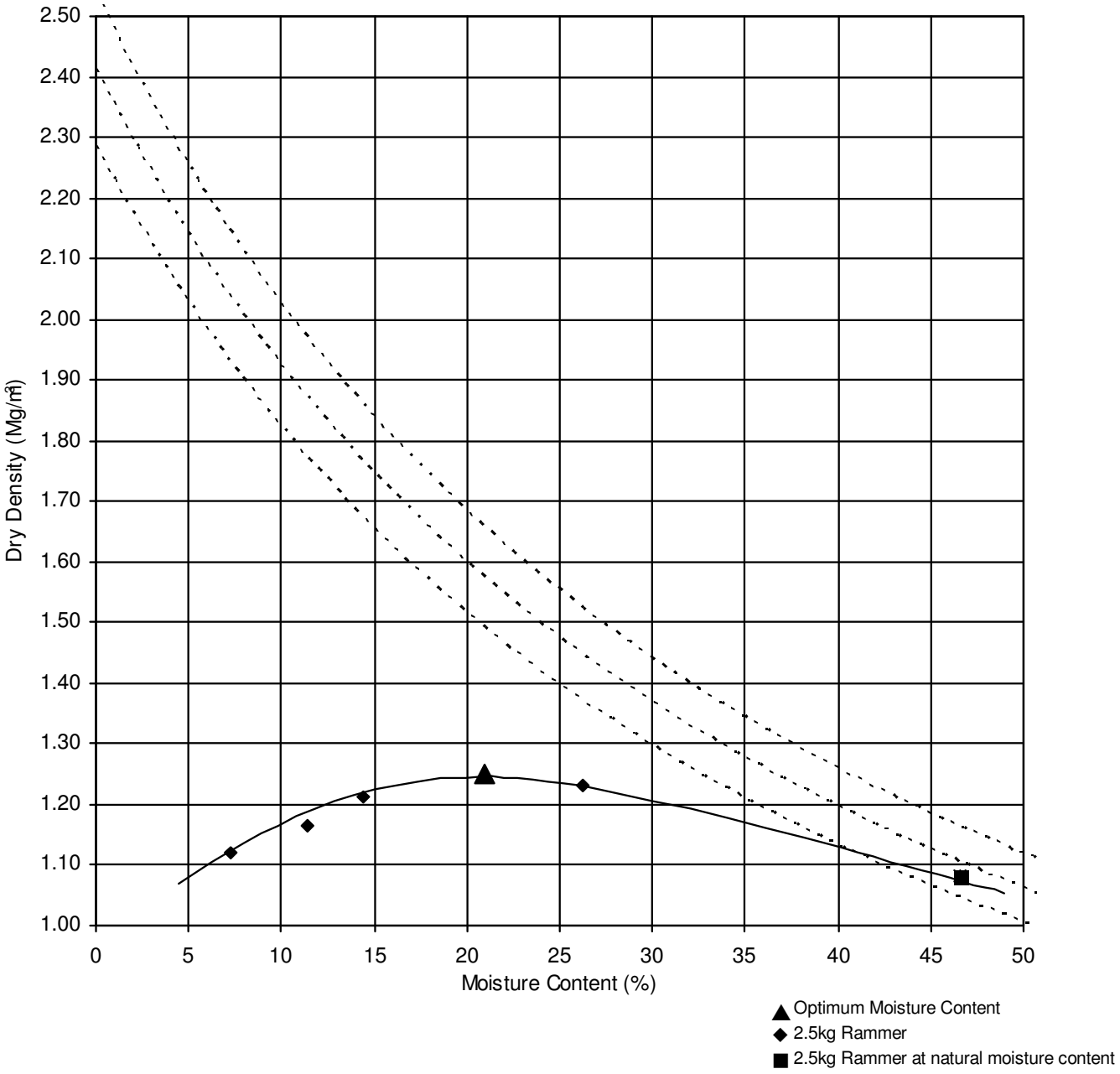
18/09/2020

LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL114
Sample Depth	0.20m
Sample Type	B
Sample Ref	E14217



Optimum Moisture Content	21.0	
Maximum Dry Density	1.25	Mg/m^3
Particle Density	2.54 (Meas)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	0 %
	20mm sieve	0 %
Description	Brown slightly sandy slightly gravelly SILT.	

Remarks BS1377 Part 4 1990 : Clause 3.3 and 3.4

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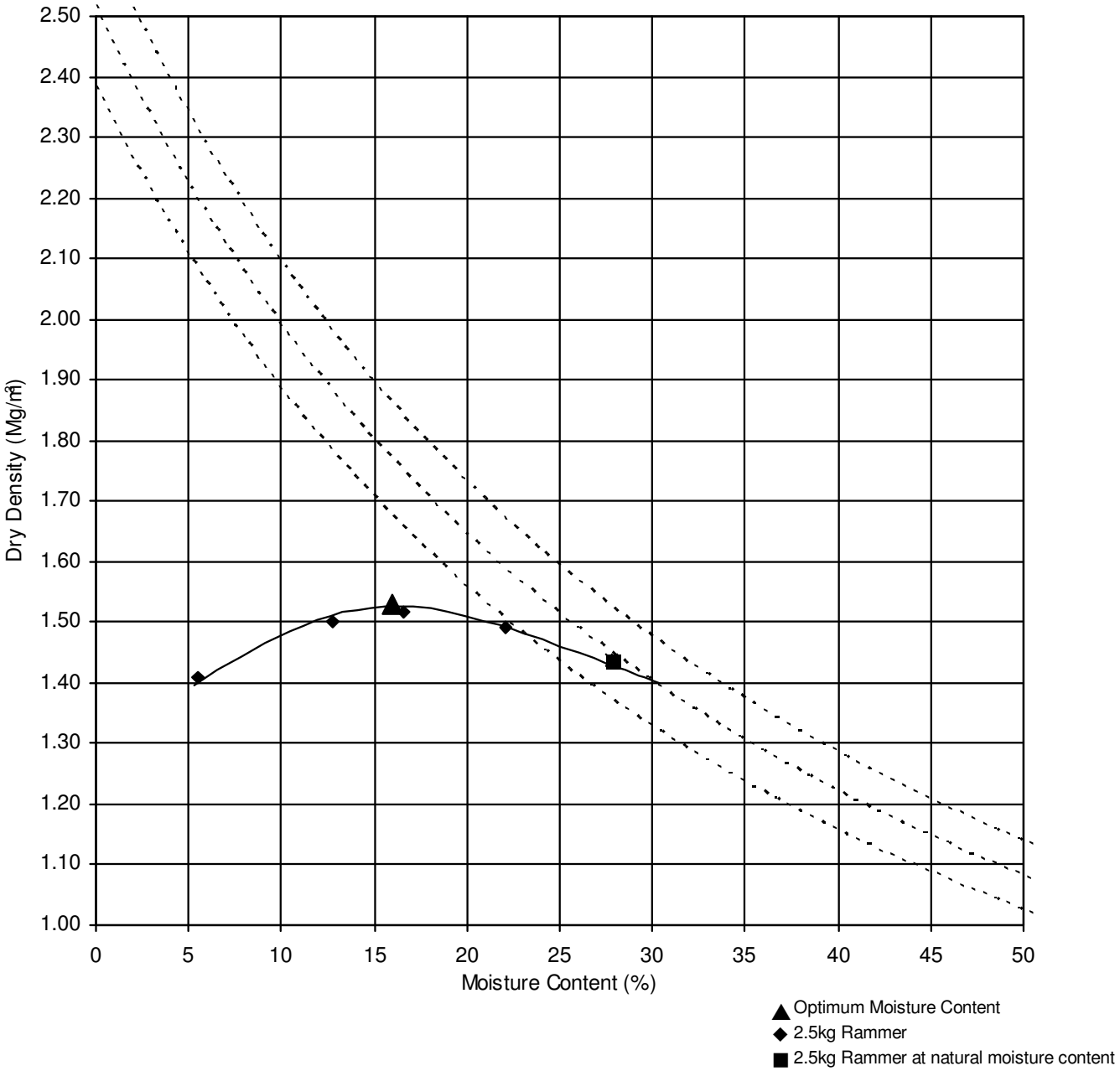
18/09/2020

LABORATORY RESULTS - Compaction

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL115
Sample Depth	0.60m
Sample Type	B
Sample Ref	E14220



Optimum Moisture Content	16.0	
Maximum Dry Density	1.53	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	1 %
	20mm sieve	1 %
Description	Brown slightly sandy slightly gravelly SILT.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.3 and 3.4

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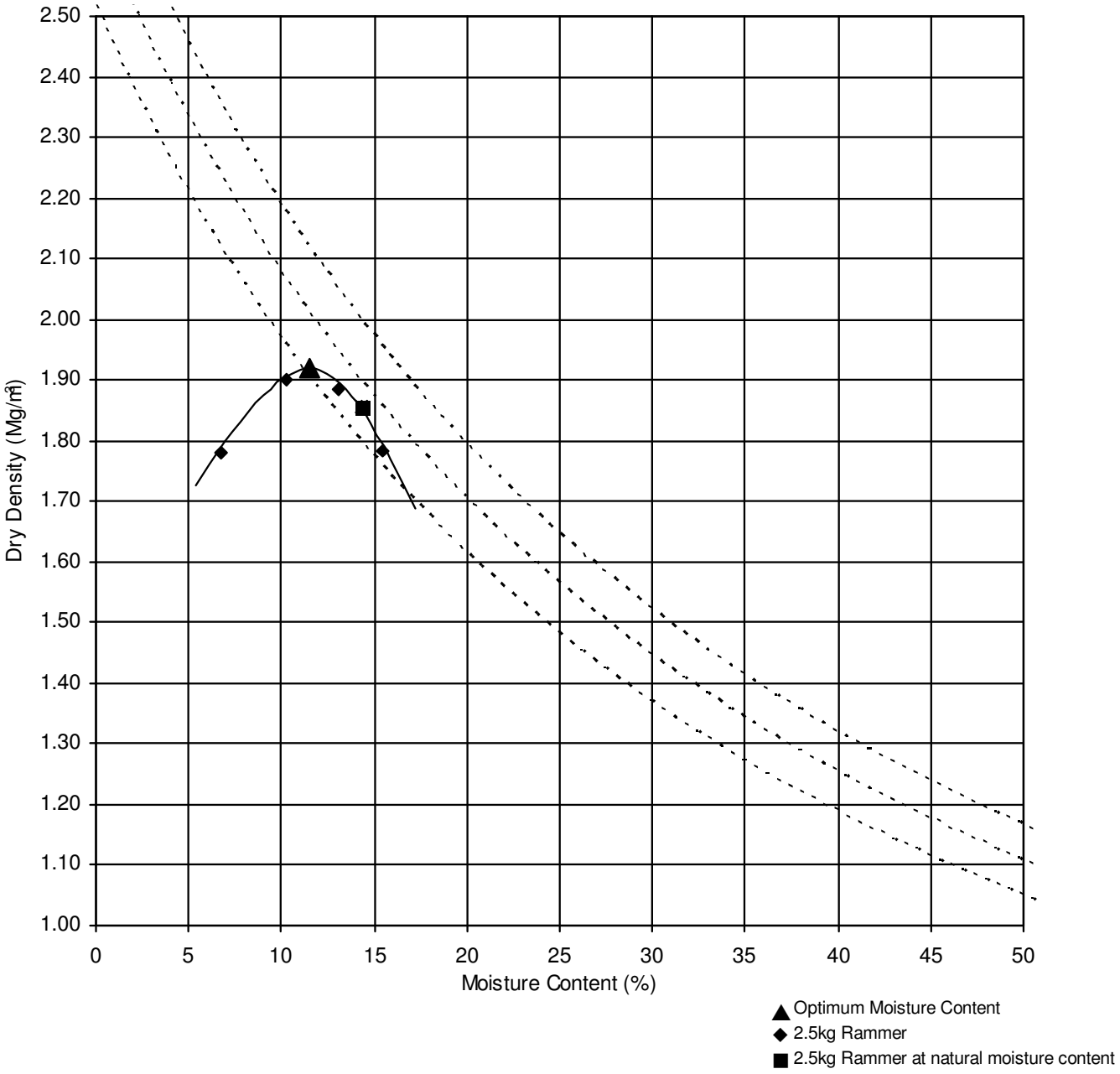
18/09/2020

LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL118
Sample Depth	0.30m
Sample Type	B
Sample Ref	E14225



Optimum Moisture Content	11.5	
Maximum Dry Density	1.92	Mg/m^3
Particle Density	2.80 (Meas)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	0 %
	20mm sieve	0 %
Description	Brown sandy very silty GRAVEL.	

Remarks AGS BS1377 Part 4 1990 : Clause 3.3 and 3.4

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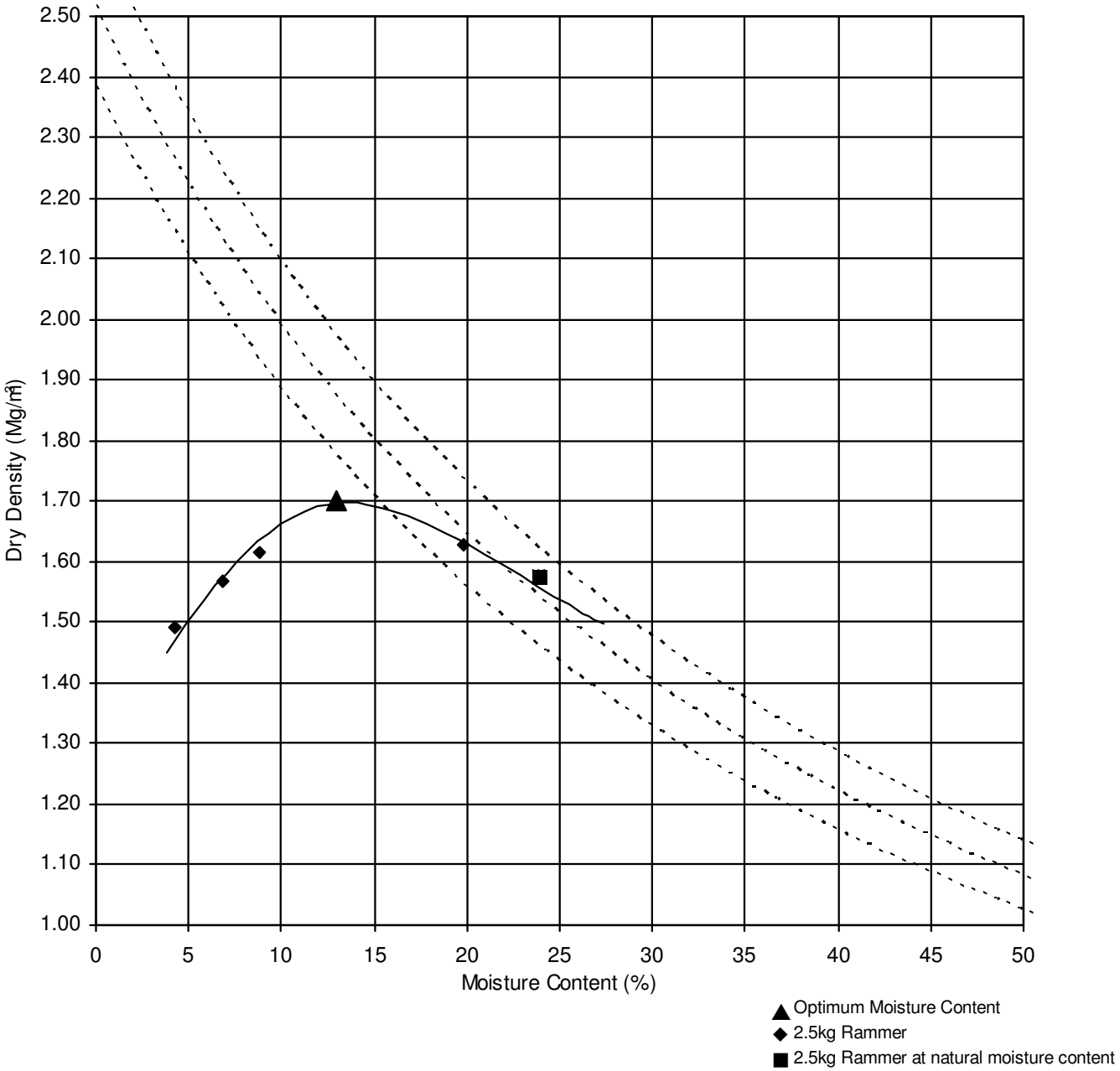
18/09/2020

LABORATORY RESULTS - *Compaction*

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

Hole	TPL119
Sample Depth	0.30m
Sample Type	B
Sample Ref	E14227



Optimum Moisture Content	13.0	
Maximum Dry Density	1.70	Mg/m^3
Particle Density	2.65 (Assumed)	Mg/m^3
Preparation	Single Sample 2.5kg Rammer	

Particles retained on	37.5mm sieve	0 %
	20mm sieve	4 %
Description	Brown very sandy very silty GRAVEL with a low cobble content.	

Remarks BS1377 Part 4 1990 : Clause 3.3 and 3.4

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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

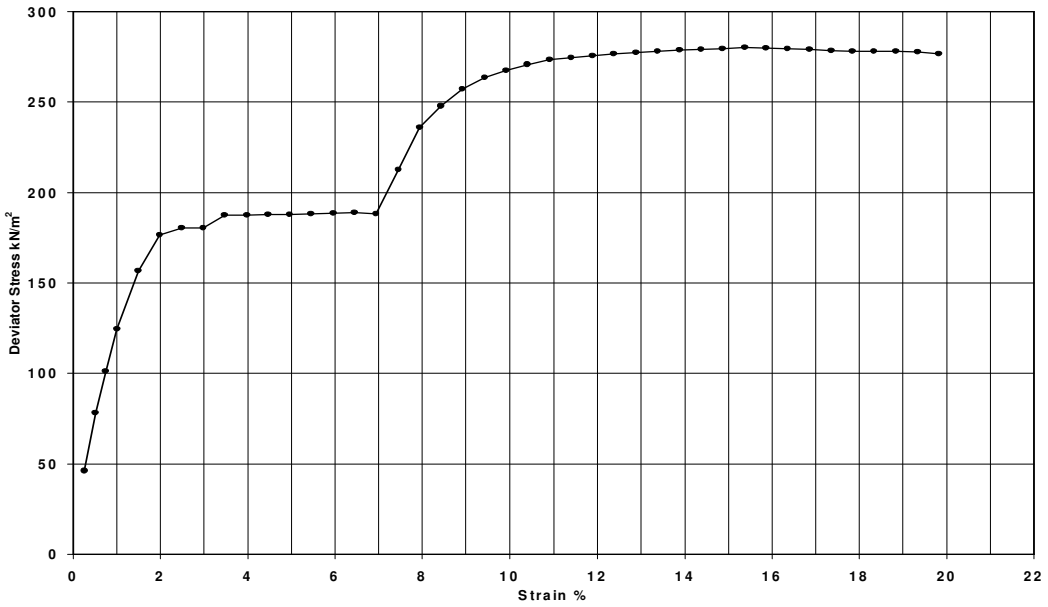
Hole TPIF04
Sample Depth 0.10-0.30m
Sample Type B
Sample Ref E14240

Sample Description

The following samples were combined to perform this test:

TOPSOIL: brown slightly sandy slightly gravelly clay with roots.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Test Type		Multi-stage		
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.04	100.04	100.04
Initial Length	(mm)	201.70	201.70	201.70
Initial Water Content	(%)	24.1	24.1	24.1
Initial Bulk Density	(Mg/m³)	1.76	1.76	1.76
Initial Dry Density	(Mg/m³)	1.42	1.42	1.42
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	25	50	100
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.27 / 0.15	0.27 / 0.41	0.27 / 0.82
Rate of Strain	(%/min)	1.29	1.29	1.29
Corrected Deviator Stress	(kPa)	180	189	280
Undrained Shear Strength	(kPa)	90	95	140
Strain at Failure	(%)	2.5	6.5	15.4
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	46.2	10.4	270.9
0.5	78.2	10.9	273.3
0.7	101.2	11.4	274.7
1.0	124.6	11.9	275.5
1.5	156.7	12.4	276.6
2.0	176.4	12.9	277.2
2.5	180.4	13.4	278.0
3.0	180.4	13.9	278.7
3.5	187.5	14.4	279.2
4.0	187.6	14.9	279.7
4.5	188.0	15.4	280.1
5.0	188.2	15.9	280.0
5.5	188.5	16.4	279.5
5.9	188.8	16.9	279.3
6.4	189.1	17.4	278.5
6.9	188.4	17.8	278.2
7.4	212.9	18.3	278.0
7.9	236.1	18.8	278.1
8.4	247.9	19.3	277.7
8.9	257.4	19.8	276.5
9.4	263.9		
9.9	267.7		

Remarks

18/09/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

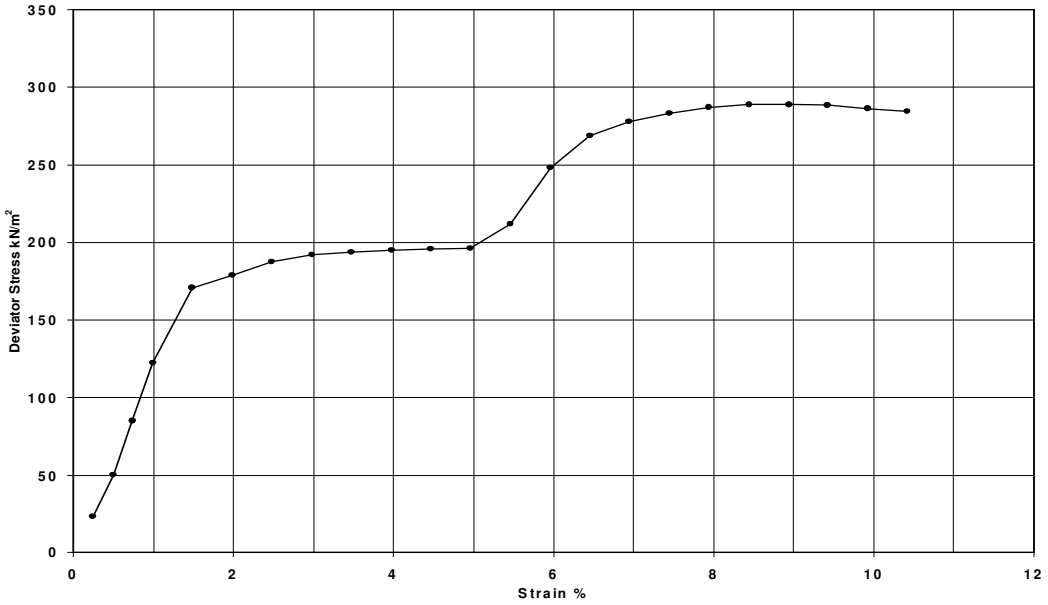
Hole TPIF04
Sample Depth 0.55-0.70m
Sample Type B
Sample Ref E14242

Sample Description

Brown sandy silty GRAVEL.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Test Type		Multi-stage		
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.18	100.18	100.18
Initial Length	(mm)	201.44	201.44	201.44
Initial Water Content	(%)	14.2	14.2	14.2
Initial Bulk Density	(Mg/m^3)	2.02	2.02	2.02
Initial Dry Density	(Mg/m^3)	1.77	1.77	1.77
Particle Density	(Mg/m^3)			
Cell Pressure	(kPa)	25	50	100
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.17	0.30 / 0.34	0.30 / 0.63
Rate of Strain	(%/min)	1.29	1.29	1.29
Corrected Deviator Stress	(kPa)	179	197	289
Undrained Shear Strength	(kPa)	89	98	145
Strain at Failure	(%)	2.0	5.0	8.9
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate		

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2
0.2	23.3	10.4	284.7
0.5	50.4		
0.7	85.1		
1.0	122.1		
1.5	170.6		
2.0	178.8		
2.5	187.8		
3.0	192.0		
3.5	193.7		
4.0	195.1		
4.5	195.9		
5.0	196.5		
5.5	211.7		
6.0	248.2		
6.5	268.9		
6.9	278.0		
7.4	283.4		
7.9	287.3		
8.4	288.7		
8.9	289.0		
9.4	288.3		
9.9	286.5		

Remarks AGS Tested as 102mm rather than 38mm due to the presence of shale and gravel.

18/09/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

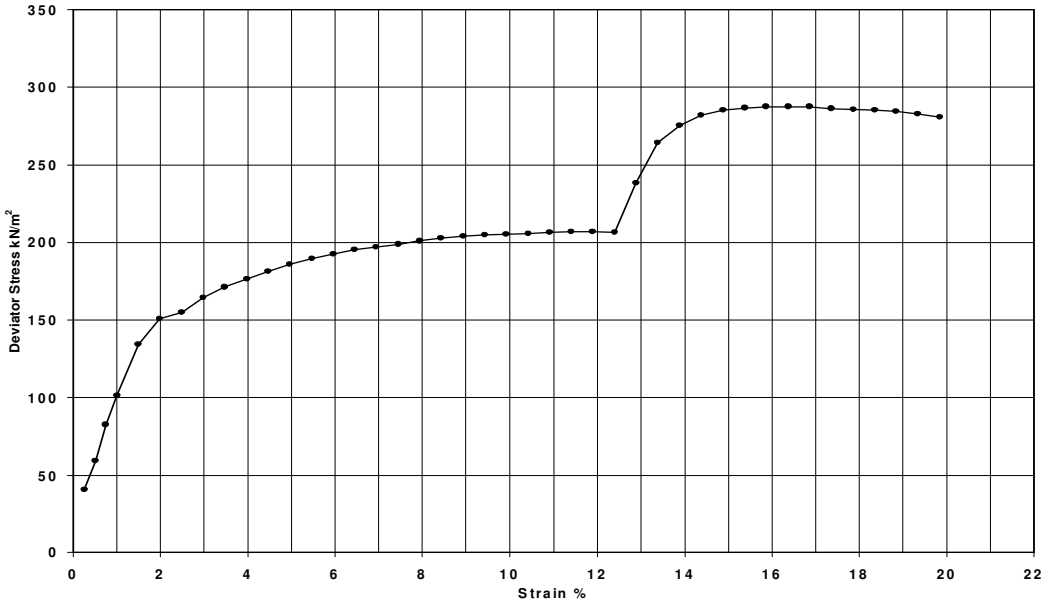
Hole TPIF05
Sample Depth 0.40-0.60m
Sample Type B
Sample Ref E14244

Sample Description

Brownish grey sandy silty GRAVEL.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Test Type		Multi-stage		
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	99.46	99.46	99.46
Initial Length	(mm)	201.62	201.62	201.62
Initial Water Content	(%)	16.8	16.8	16.8
Initial Bulk Density	(Mg/m^3)	1.99	1.99	1.99
Initial Dry Density	(Mg/m^3)	1.70	1.70	1.70
Particle Density	(Mg/m^3)			
Cell Pressure	(kPa)	25	50	100
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.17	0.30 / 0.75	0.30 / 0.97
Rate of Strain	(%/min)	1.29	1.29	1.29
Corrected Deviator Stress	(kPa)	155	207	288
Undrained Shear Strength	(kPa)	77	103	144
Strain at Failure	(%)	2.5	11.4	15.9
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure				

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2
0.2	40.7	10.4	205.7
0.5	59.0	10.9	206.2
0.7	82.6	11.4	206.7
1.0	101.3	11.9	206.6
1.5	134.5	12.4	206.2
2.0	150.7	12.9	238.1
2.5	154.7	13.4	264.3
3.0	164.7	13.9	275.5
3.5	171.3	14.4	282.1
4.0	176.4	14.9	285.6
4.5	181.4	15.4	287.0
5.0	185.7	15.9	287.8
5.5	189.7	16.4	287.6
6.0	192.7	16.9	287.6
6.4	195.3	17.4	286.4
6.9	197.2	17.9	285.8
7.4	199.0	18.4	285.4
7.9	200.8	18.8	284.7
8.4	202.5	19.3	283.2
8.9	203.9	19.8	280.7
9.4	204.9		
9.9	205.1		

Remarks AGS

18/09/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM

Project No: PE201646

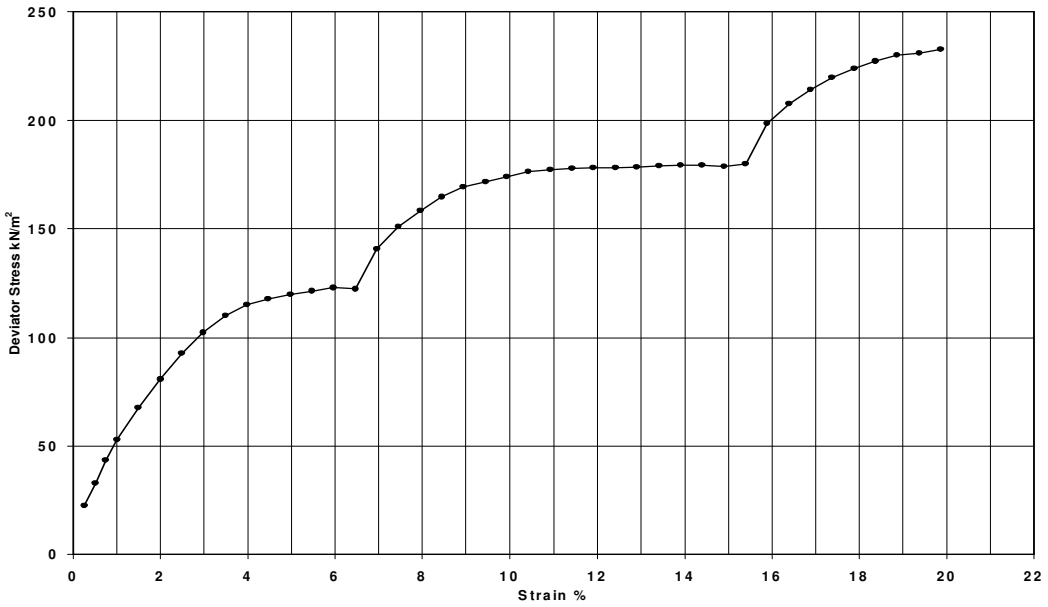
Hole TPIF06
Sample Depth 0.15-0.30m
Sample Type B
Sample Ref E14247

Sample Description

The following samples were combined to perform this test:

Brown slightly sandy slightly gravelly SILT.

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Test Type		Multi-stage		
Sample Condition		Remoulded		
Orientation of sample		Vertical		
Initial Diameter	(mm)	99.76	99.76	99.76
Initial Length	(mm)	201.35	201.35	201.35
Initial Water Content	(%)	37.5	37.5	37.5
Initial Bulk Density	(Mg/m³)	1.61	1.61	1.61
Initial Dry Density	(Mg/m³)	1.17	1.17	1.17
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	45	90	180
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.40	0.30 / 0.91	0.30 / 1.14
Rate of Strain	(%/min)	1.29	1.29	1.29
Corrected Deviator Stress	(kPa)	123	179	233
Undrained Shear Strength	(kPa)	61	90	116
Strain at Failure	(%)	6.0	14.4	19.9
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate		

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	22.5	10.4	176.4
0.5	32.8	10.9	177.4
0.7	43.2	11.4	178.1
1.0	52.8	11.9	178.1
1.5	67.6	12.4	178.4
2.0	80.7	12.9	178.6
2.5	92.7	13.4	179.1
3.0	102.4	13.9	179.5
3.5	110.1	14.4	179.5
4.0	115.0	14.9	178.8
4.5	117.8	15.4	180.0
5.0	120.0	15.9	198.4
5.5	121.3	16.4	207.4
6.0	122.9	16.9	214.0
6.5	122.3	17.4	219.8
7.0	140.9	17.9	223.9
7.4	150.9	18.4	227.3
7.9	158.5	18.9	230.0
8.4	164.7	19.4	230.8
8.9	169.1	19.9	232.7
9.4	171.7		
9.9	174.0		

Remarks

18/09/2020

GEOTECHNICS

LABORATORY REPORT

4043

Contract Number: PSL20/4418

Report Date: 07 September 2020

Client's Reference: PE201646

Client Name: Geotechnics
203 Torrington Avenue
Tile Hill
Coventry
CV4 9UT

For the attention of: Stephane Schiano

Contract Title: Challonsleigh Farm

Date Received: 26/8/2020
Date Commenced: 26/8/2020
Date Completed: 07/9/2020

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)	A Watkins (Director)	R Berriman (Quality Manager)
L Knight (Senior Technician)	S Eyre (Senior Technician)	S Royle (Laboratory Manager)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TPL101		B	2.10		Light brown weathered MUDSTONE.
TPL105		B	1.80		Brown weathered MUDSTONE.

UKAS TESTING 4043	PSL Professional Soils Laboratory	Challonsleigh Farm	Contract No: PSL20/4418 Client Ref: PE201646

PARTICLE SIZE DISTRIBUTION TEST

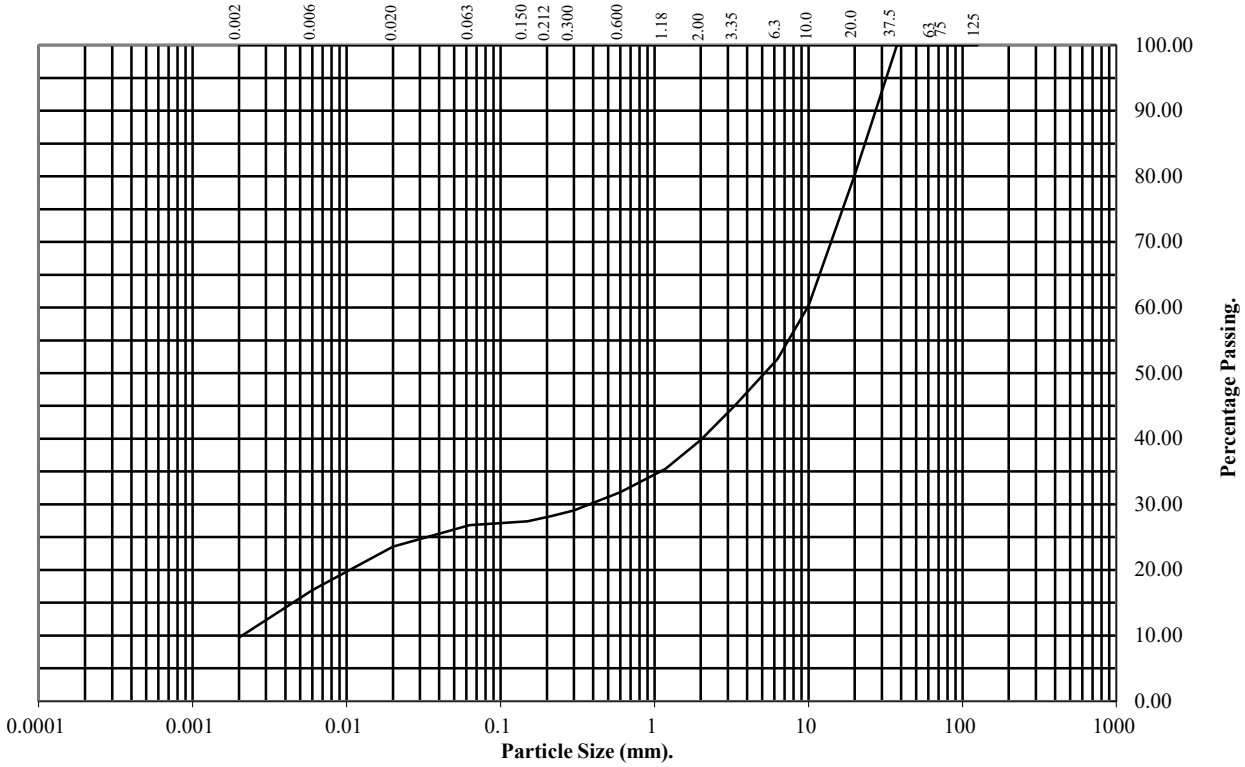
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TPL105 **Top Depth (m):** 1.80

Sample Number: **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	80
10	60
6.3	52
3.35	45
2	40
1.18	35
0.6	32
0.3	29
0.212	28
0.15	27
0.063	27

Particle Diameter	Percentage Passing
0.02	24
0.006	17
0.002	10

Soil Fraction	Total Percentage
Cobbles	0
Gravel	60
Sand	13
Silt	17
Clay	10

Remarks:

See Summary of Soil Descriptions

UKAS TESTING 4043

PSL Professional Soils Laboratory

Challonsleigh Farm

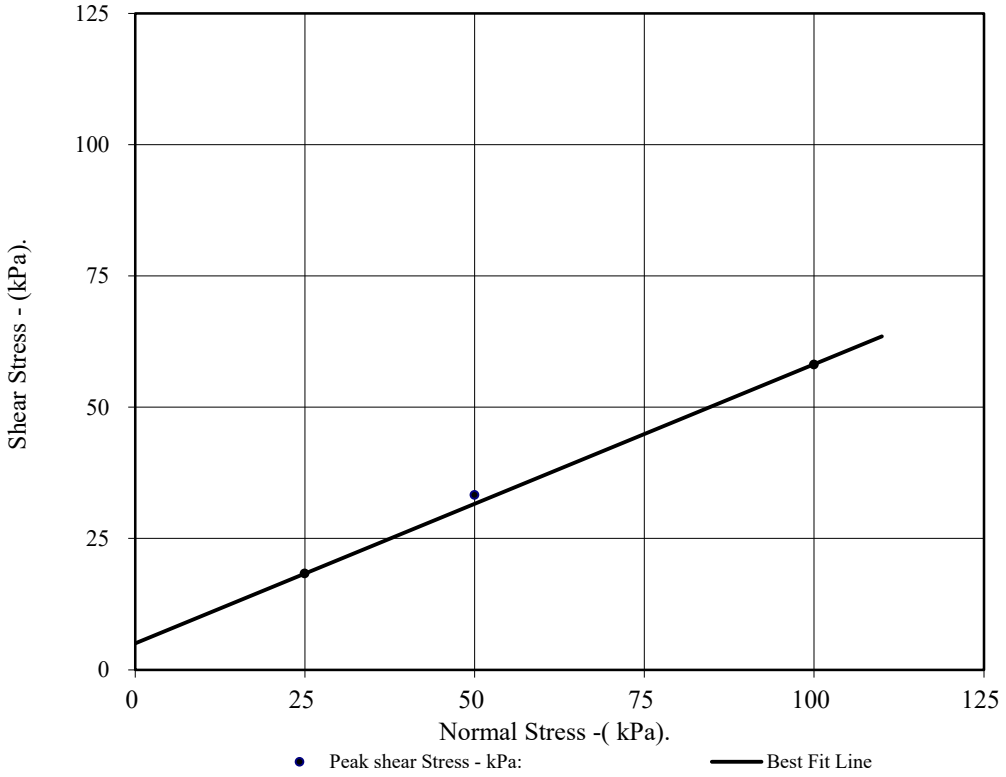
Contract No:
PSL20/4418
Client Ref:
PE201646

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**TPL101**		Top Depth:	**2.10**	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	26	26	26
Bulk Density - Mg/m3:	1.81	1.81	1.81
Dry Density - Mg/m3:	1.44	1.44	1.44
Voids Ratio:	0.840	0.840	0.840
Normal Pressure- kPa	25	50	100
Consolidation Stage			
Consolidated Height - mm:	19.77	19.32	18.70
Shearing Stage			
Rate of Strain - mm/min	0.042	0.042	0.042
Displacement at peak shear stress - mm	6.91	6.01	8.10
Peak shear Stress - kPa:	18	33	58
Final Consolidated Conditions			
Moisture Content - %:	34	33	32
Bulk Density - Mg/m3:	1.84	1.88	1.94
Dry Density - Mg/m3:	1.37	1.41	1.47
Peak			
Angle of Shearing Resistance:(~~θ~~)	**28**		
Effective Cohesion - kPa:	**5**		



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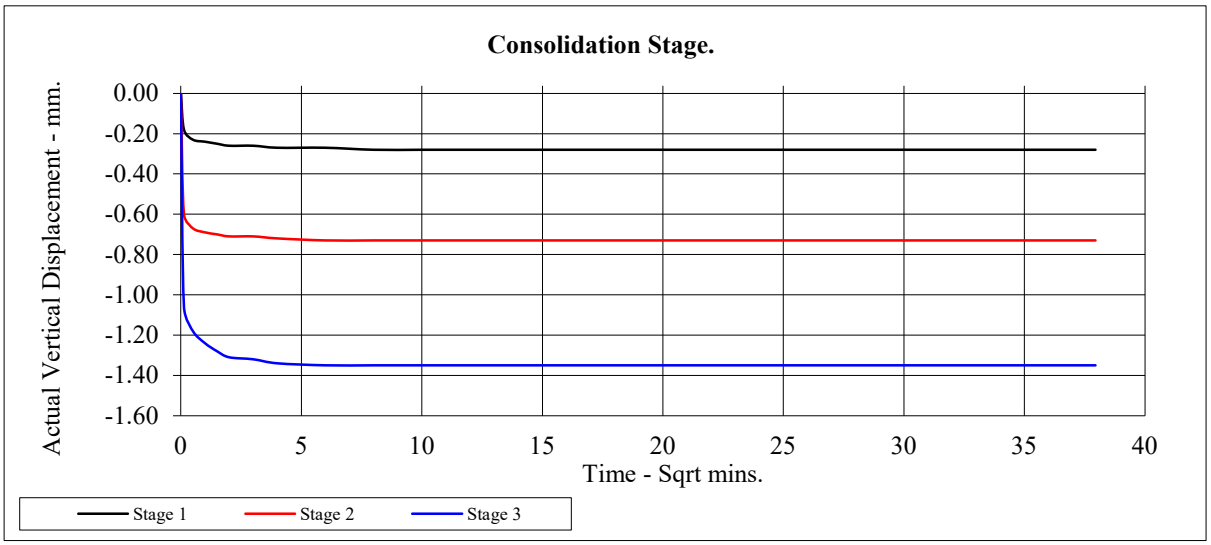
Challonsleigh Farm

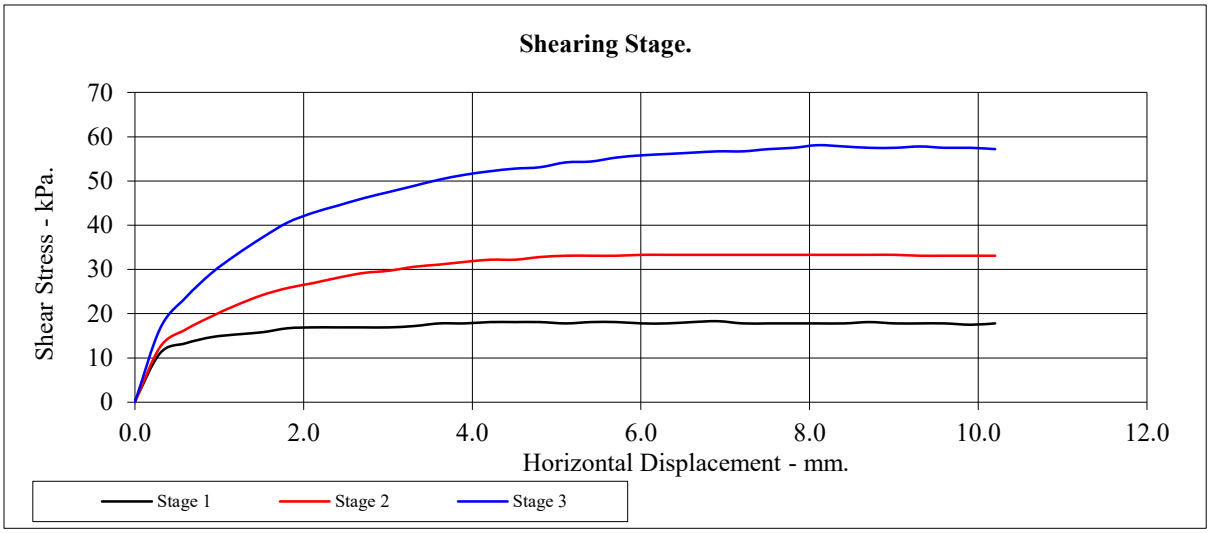
Contract No:
PSL20/4418
Client Ref:
PE201646

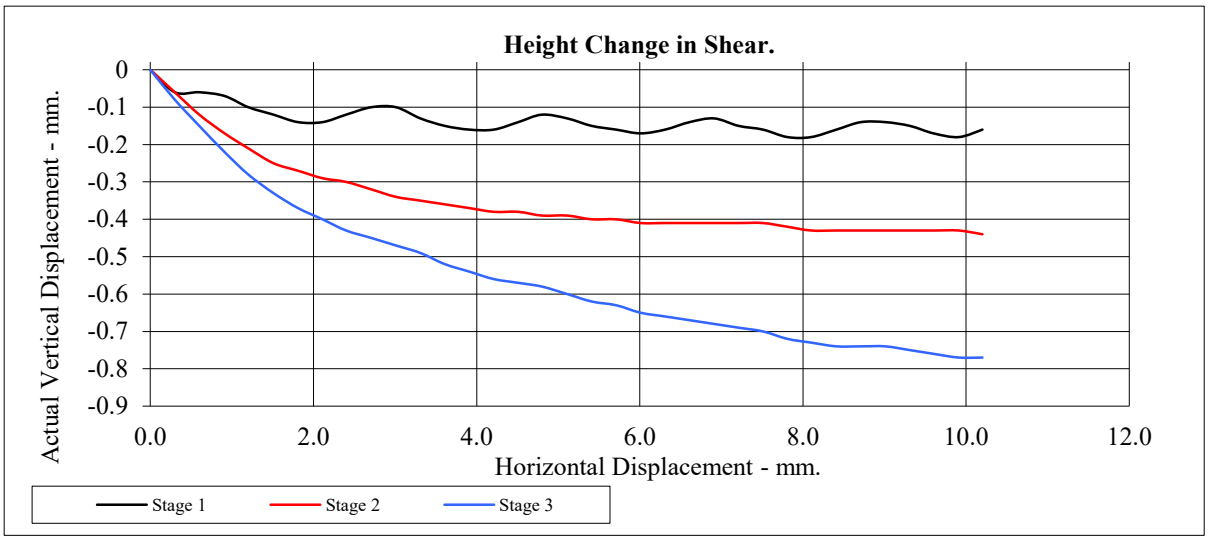
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**TPL101**	Top Depth:	**2.10**
Sample Number:		Base Depth:	







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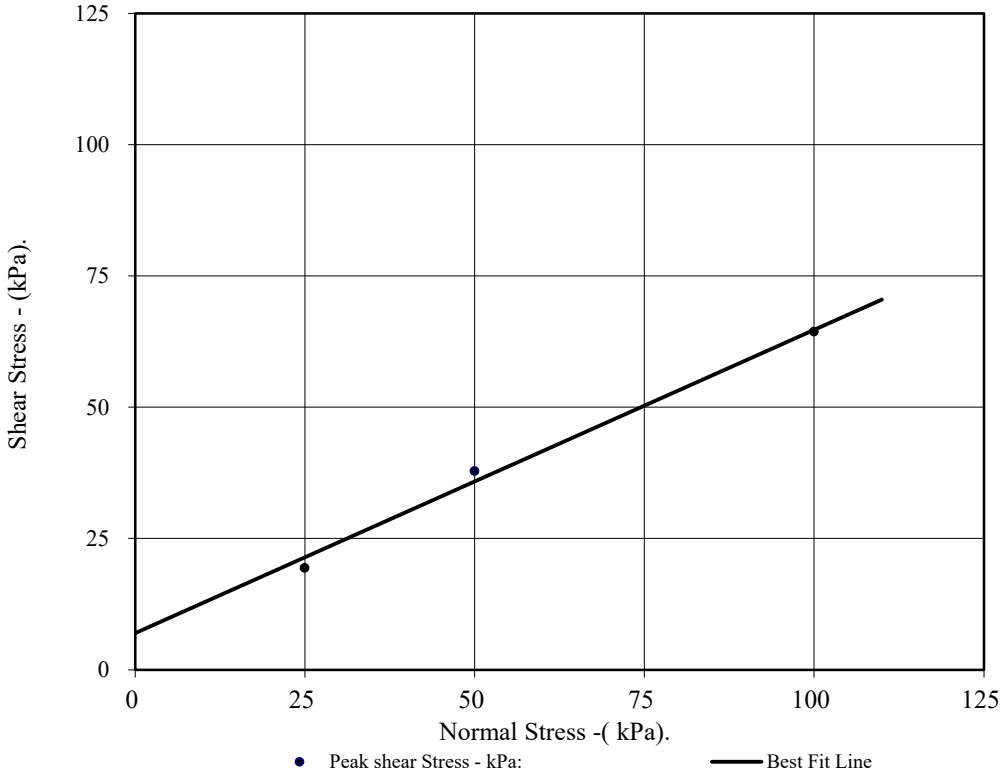
Contract No:
PSL20/4418
Client Ref:
PE201646

CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**TPL105**		Top Depth:	**1.80**	
Sample Number:			Base Depth:		
Sample Conditions:	Submerged		Sample Type	**B**	
Particle Density - Mg/m3:	2.65	Assumed	**Remarks:**		
Sample Preparation:	Material tested passing 2mm sieve Remoulded using 2.5kg effort.				
Sample Description:	**See summary of soil descriptions.**				

STAGE	**1**	**2**	**3**
Initial Conditions			
Height - mm:	20.05	20.05	20.05
Length - mm:	59.97	59.97	59.97
Moisture Content - %:	16	16	16
Bulk Density - Mg/m3:	1.76	1.76	1.76
Dry Density - Mg/m3:	1.52	1.52	1.52
Voids Ratio:	0.748	0.748	0.748
Normal Pressure- kPa	25	50	100
Consolidation Stage			
Consolidated Height - mm:	19.75	19.38	18.75
Shearing Stage			
Rate of Strain - mm/min	0.046	0.046	0.046
Displacement at peak shear stress - mm	6.01	9.60	8.10
Peak shear Stress - kPa:	19	38	64
Final Consolidated Conditions			
Moisture Content - %:	25	23	22
Bulk Density - Mg/m3:	1.79	1.82	1.88
Dry Density - Mg/m3:	1.43	1.48	1.54
Peak			
Angle of Shearing Resistance:(~~θ~~)	**30**		
Effective Cohesion - kPa:	**7**		



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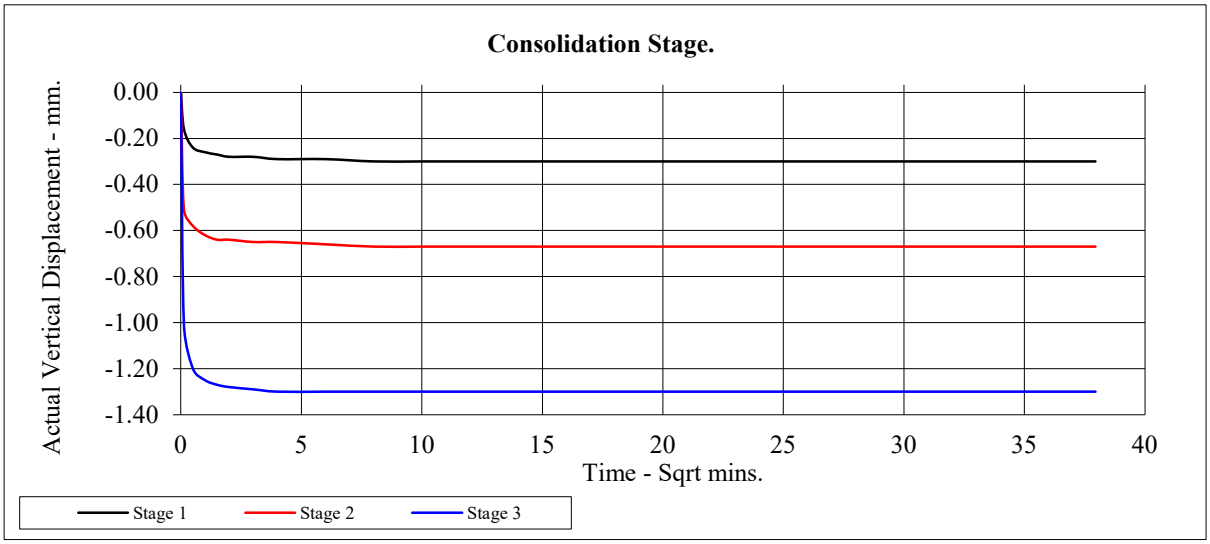
Challonsleigh Farm

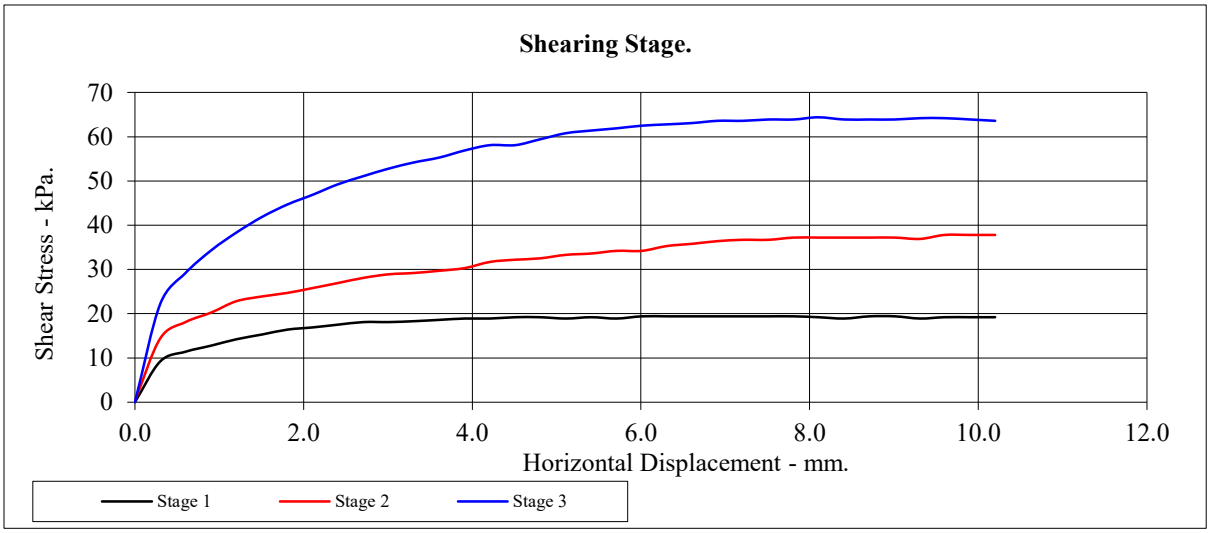
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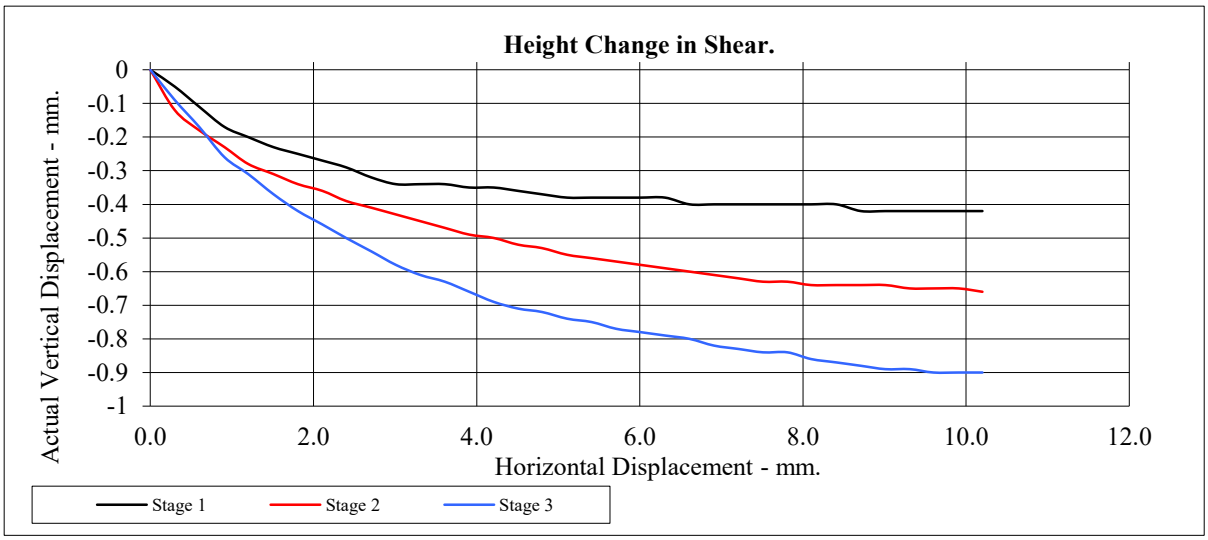
CONSOLIDATED DRAINED SHEARBOX TEST

BS1377:Part 7:1990 Clause 4

Hole Number:	**TPL105**	Top Depth:	**1.80**
Sample Number:		Base Depth:	







LABORATORY REPORT

4043

Contract Number: PSL20/4420

Report Date: 10 September 2020

Client's Reference: PE201646

Client Name: Geotechnics
203 Torrington Avenue
Tile Hill
Coventry
CV4 9UT

For the attention of: Stephane Schiano

Contract Title: Challonsleigh Farm

Date Received: 26/8/2020
Date Commenced: 26/8/2020
Date Completed: 10/9/2020

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
R Berriman (Quality Manager)

L Knight (Senior Technician)
S Eyre (Senior Technician)
S Royle (Laboratory Manager)

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Doncaster DN4 0AR
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e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TPL103		B	0.50	0.60	Brown very gravelly very sandy silty CLAY.
TPL105		B	0.60		Brown very gravelly very sandy silty CLAY.
TPL108		B	0.80		Brown very gravelly very sandy silty CLAY.
TPL109		B	0.90		Brown mottled grey very sandy very clayey silty GRAVEL of mudstone.

PARTICLE SIZE DISTRIBUTION TEST

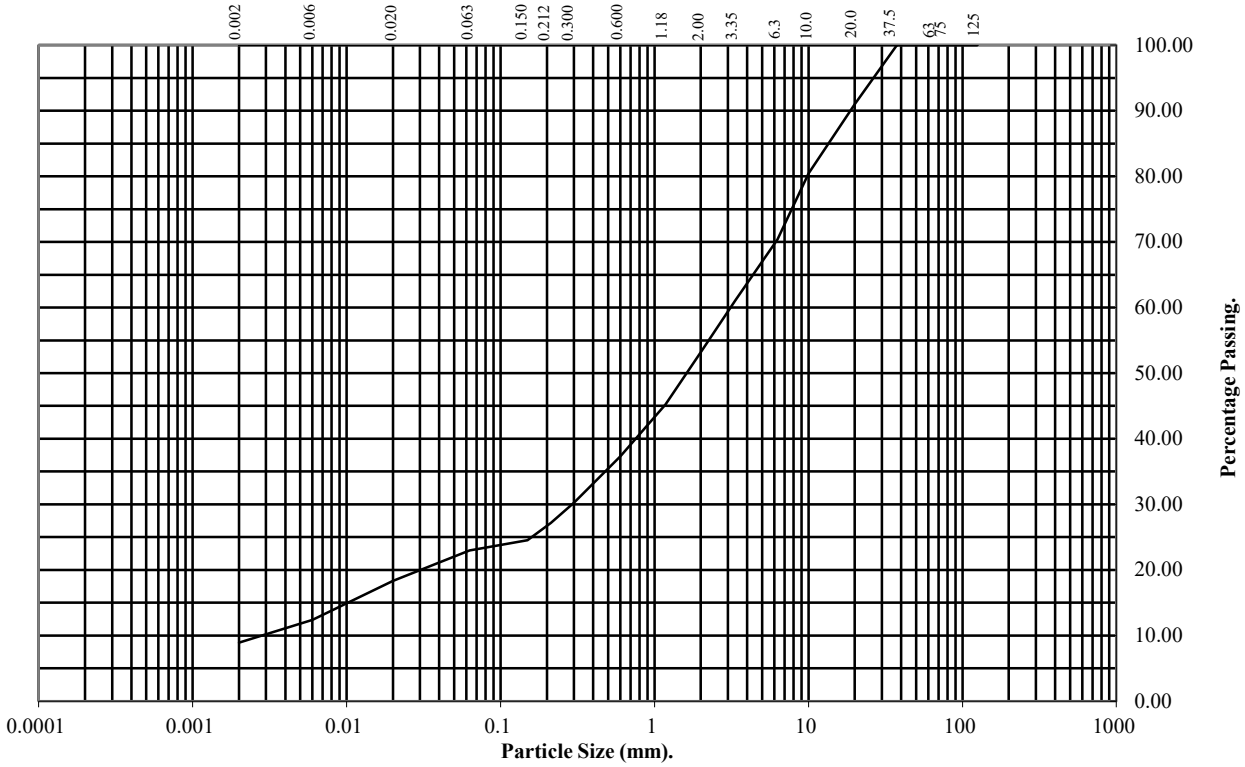
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TPL109 **Top Depth (m):** 0.90

Sample Number: **Base Depth(m):**

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	91
10	80
6.3	70
3.35	61
2	53
1.18	45
0.6	37
0.3	30
0.212	27
0.15	25
0.063	23

Particle Diameter	Percentage Passing
0.02	18
0.006	12
0.002	9

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	30
Silt	14
Clay	9

Remarks:
See Summary of Soil Descriptions

UKAS TESTING 4043	PSL Professional Soils Laboratory	**CHALLONSLEIGH FARM**	**Contract No:** PSL20/4420 **Client Ref:** PE201646

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number:	**TPL103**	**Top Depth (m) :**	**0.50**
Sample Number:		**Base Depth (m) :**	**0.60**
Sample Type:	**B**	**Lift Number:**	
Date		**Grid Reference:**	

Description of Specimen
See summary of soil descriptions.
Remarks
Remoulded using 2.5Kg effort at as received moisture content.

Initial Specimen Conditions		
Height	mm	101.41
Diameter	mm	101.58
Area	mm^2	8104.13
Volume	cm^3	821.84
Mass	g	1643
Dry Mass	g	1462
Bulk Density	Mg/m^3	2.00
Dry Density	Mg/m^3	1.78
Moisture Content	%	12
Voids Ratio	-	0.490
Specific Gravity	Mg/m^3	2.65
(assumed/measured)	-	assumed

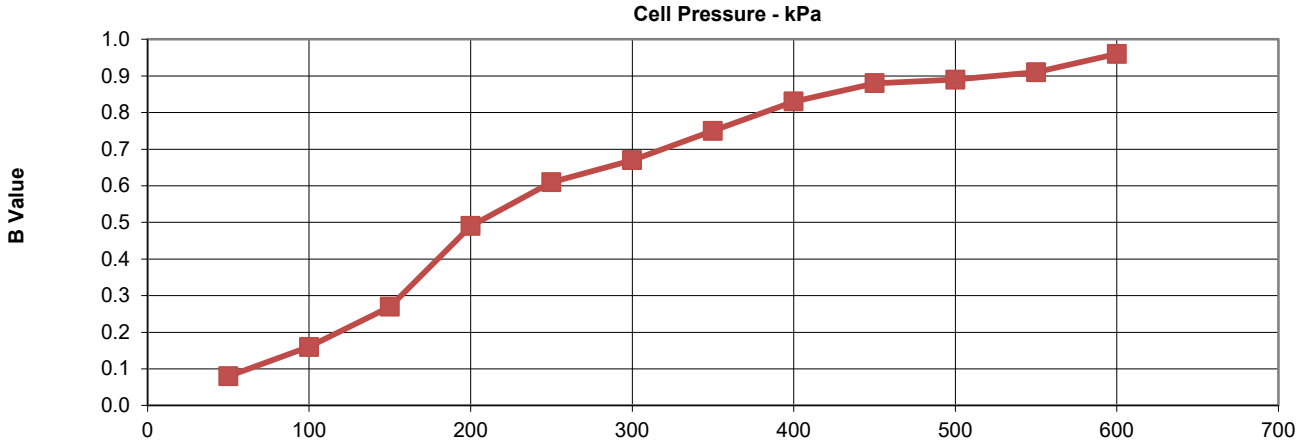
Final Specimen Conditions		
Moisture Content	%	21
Bulk Density	Mg/m^3	2.15
Dry Density	Mg/m^3	1.78

Test Setup		
Date Started		28/08/2020
Date Finished		02/09/2020
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

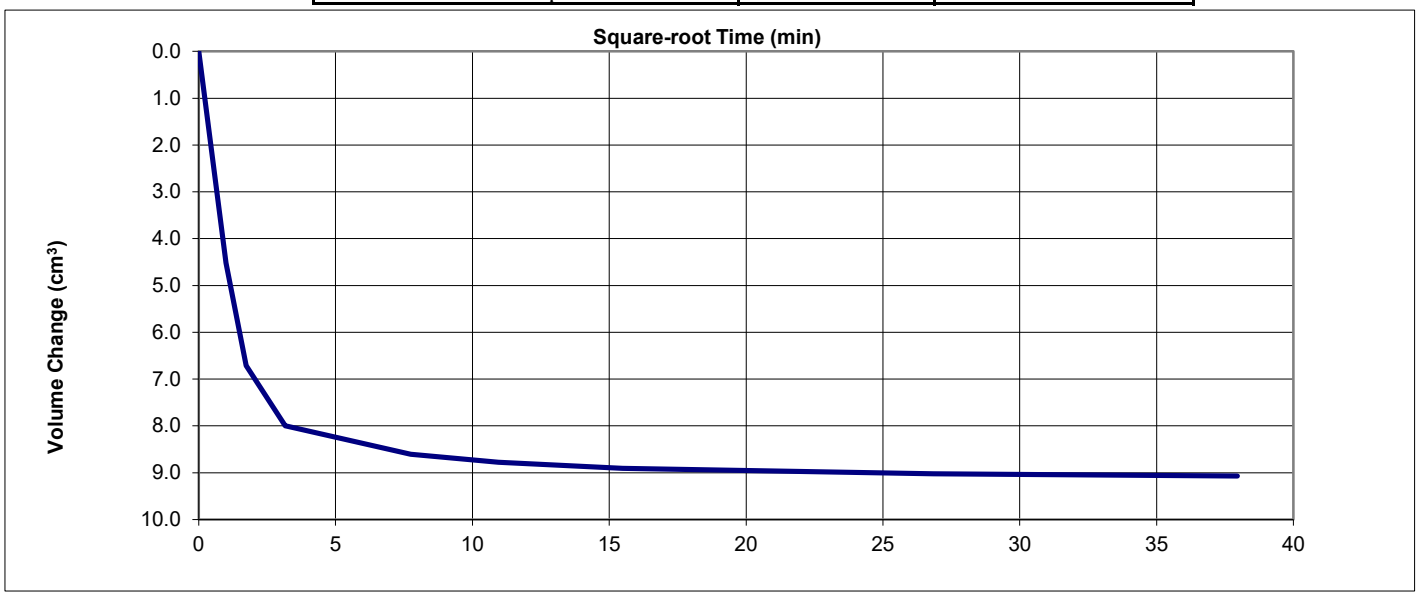
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL103
Sample Depth	m	0.50
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	600
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	50
Cell Pressure	kPa	650
Back Pressure	kPa	600
Final PWP	kPa	600
PWP dissipation	%	100



UKAS TESTING 4043

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Challonsleigh Farm

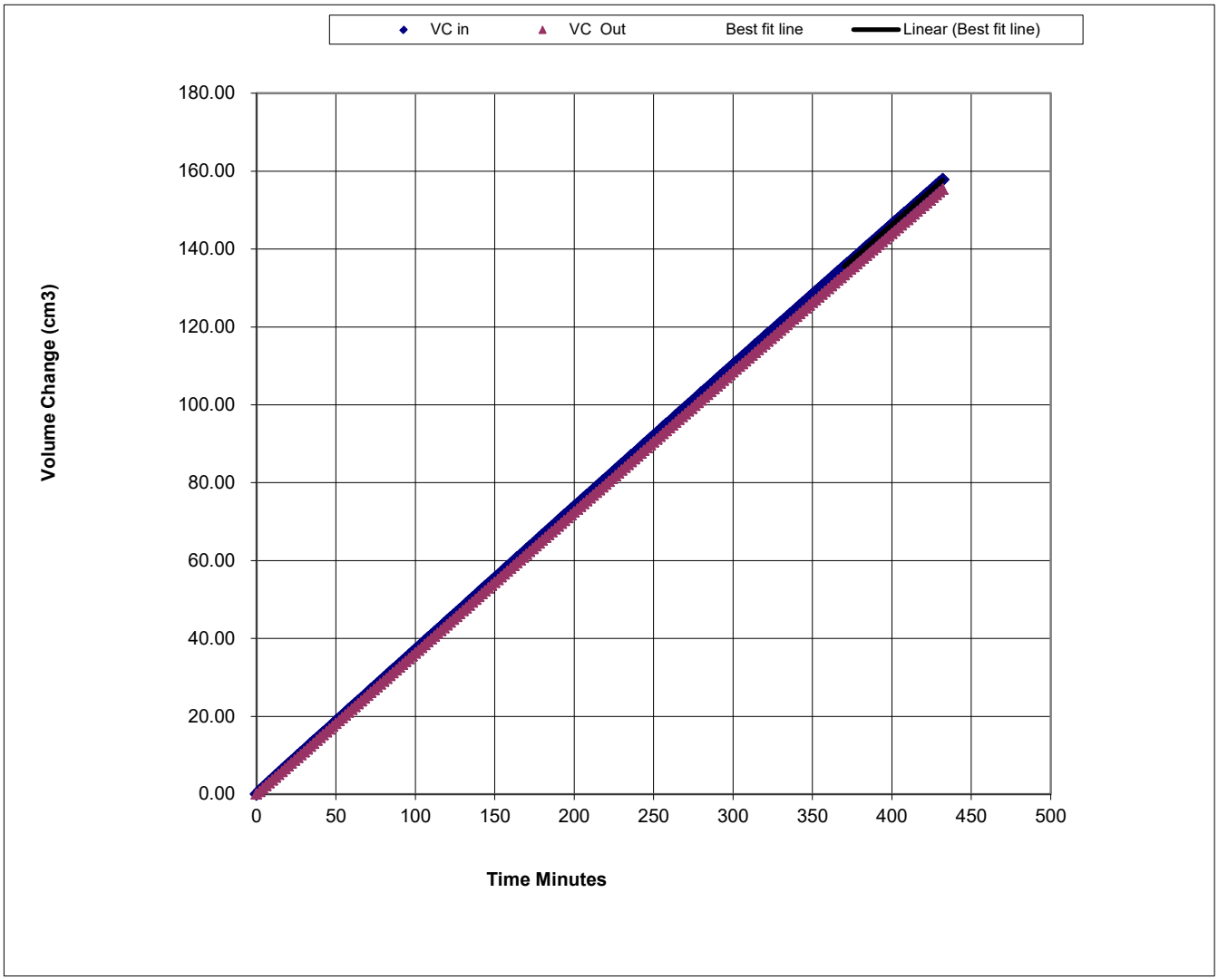
Contract No.
PSL20/4420
Client Ref
PE201646

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL103
Sample Depth	m	0.50
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	650
Mean Effective Stress	kPa	50
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.3589
Average Temperature	'C	20
Vertical Permeability Kv	m/s	3.7E-08

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: TPL105 **Top Depth (m) :** 0.60

Sample Number: **Base Depth (m) :**

Sample Type: B **Lift Number:**

Date **Grid Reference:**

Description of Specimen
See summary of soil descriptions.
Remarks
Remoulded using 2.5Kg effort at as received moisture content.

Initial Specimen Conditions		
Height	mm	101.59
Diameter	mm	101.52
Area	mm^2	8094.56
Volume	cm^3	822.33
Mass	g	1694
Dry Mass	g	1512
Bulk Density	Mg/m^3	2.06
Dry Density	Mg/m^3	1.84
Moisture Content	%	12
Voids Ratio	-	0.441
Specific Gravity	Mg/m^3	2.65
(assumed/measured)	-	assumed

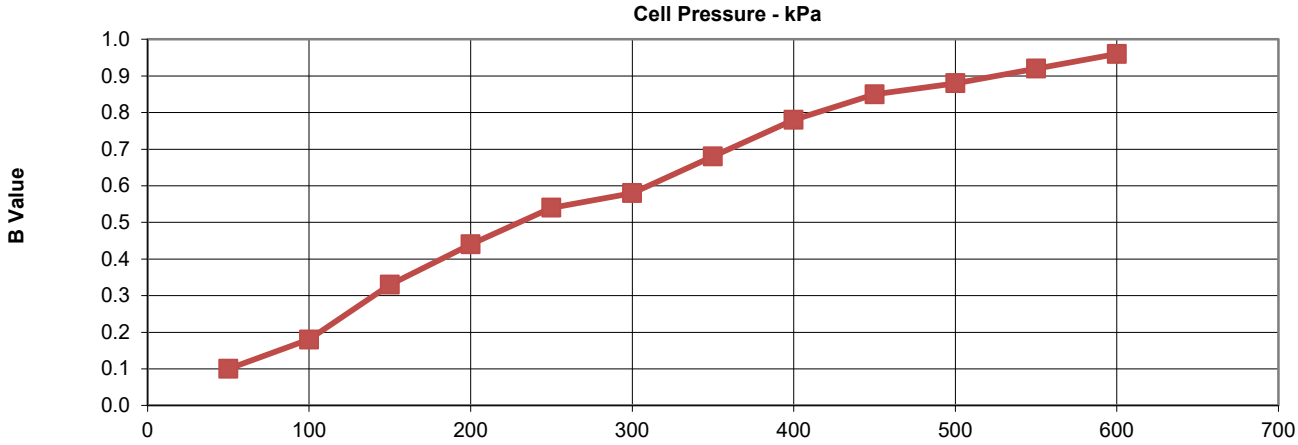
Final Specimen Conditions		
Moisture Content	%	18
Bulk Density	Mg/m^3	2.16
Dry Density	Mg/m^3	1.84

Test Setup		
Date Started		28/08/2020
Date Finished		02/09/2020
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

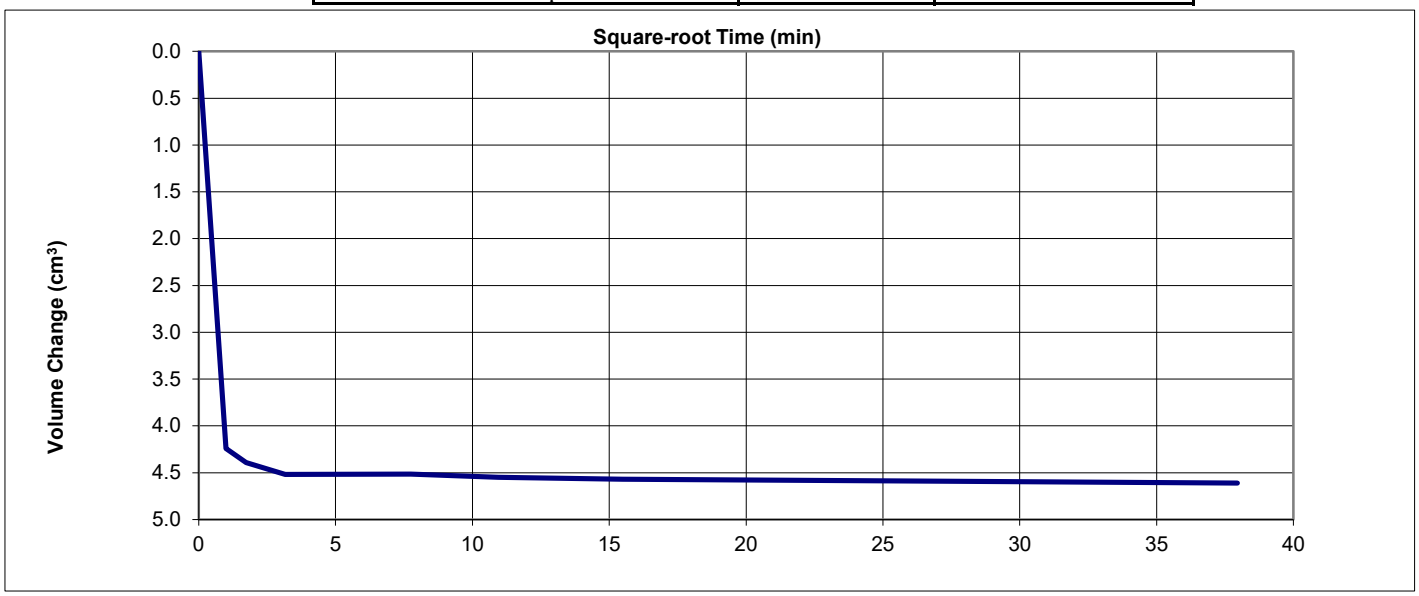
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL105
Sample Depth	m	0.60
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	600
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	50
Cell Pressure	kPa	650
Back Pressure	kPa	600
Final PWP	kPa	600
PWP dissipation	%	100



UKAS TESTING 4043

PSL Professional Soils Laboratory

Challonsleigh Farm

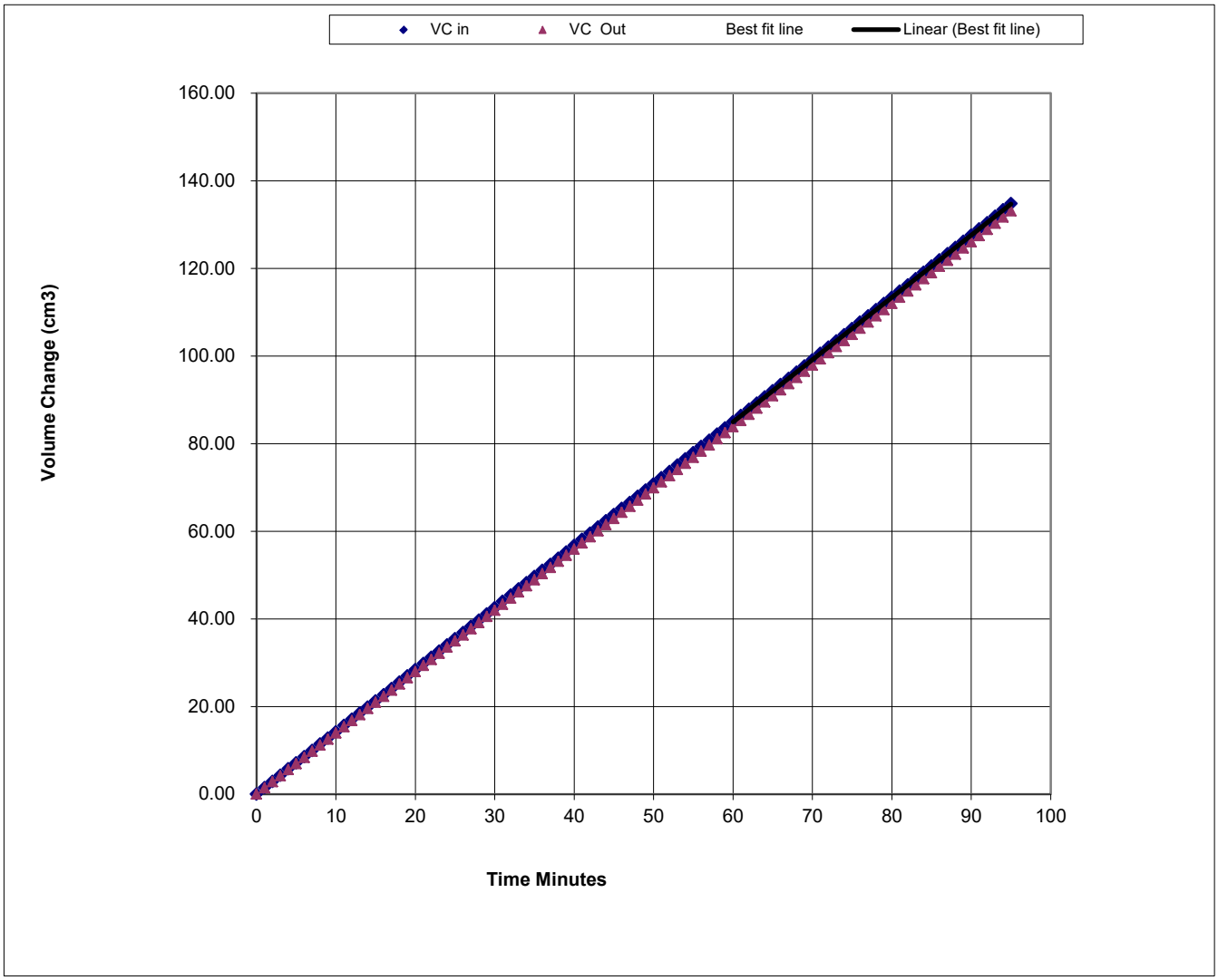
Contract No.
PSL20/4420
Client Ref
PE201646

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL105
Sample Depth	m	0.60
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	650
Mean Effective Stress	kPa	50
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	1.4231
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.5E-07

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: TPL108 **Top Depth (m) :** 0.80

Sample Number: **Base Depth (m) :**

Sample Type: B **Lift Number:**

Date **Grid Reference:**

Description of Specimen
See summary of soils descriptions.
Remarks
Remoulded using 2.5Kg effort at as received moisture content.

Initial Specimen Conditions		
Height	mm	102.21
Diameter	mm	101.47
Area	mm^2	8086.59
Volume	cm^3	826.53
Mass	g	1571
Dry Mass	g	1431
Bulk Density	Mg/m^3	1.90
Dry Density	Mg/m^3	1.73
Moisture Content	%	9.7
Voids Ratio	-	0.530
Specific Gravity	Mg/m^3	2.65
(assumed/measured)	-	assumed

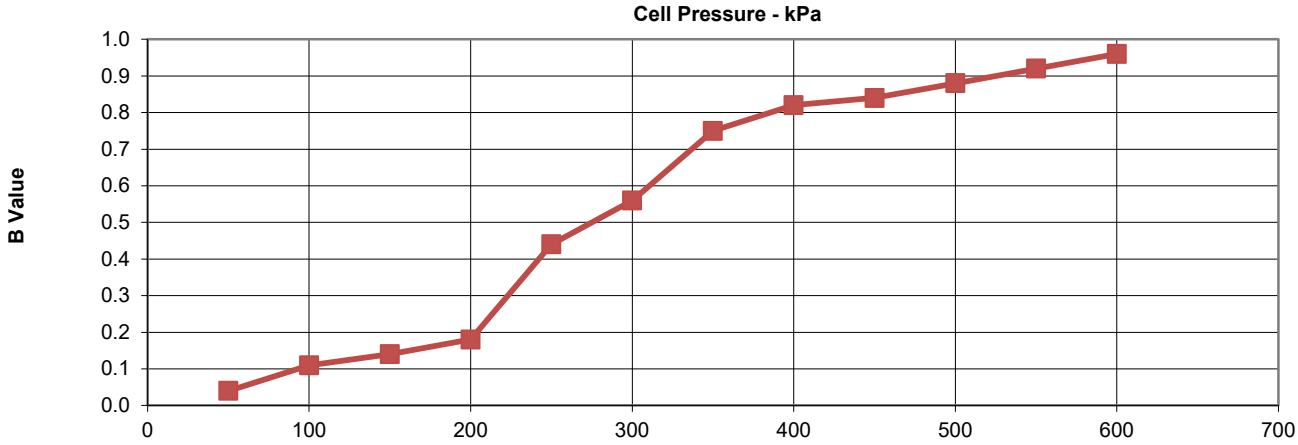
Final Specimen Conditions		
Moisture Content	%	23
Bulk Density	Mg/m^3	2.12
Dry Density	Mg/m^3	1.73

Test Setup		
Date Started		28/08/2020
Date Finished		02/09/2020
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

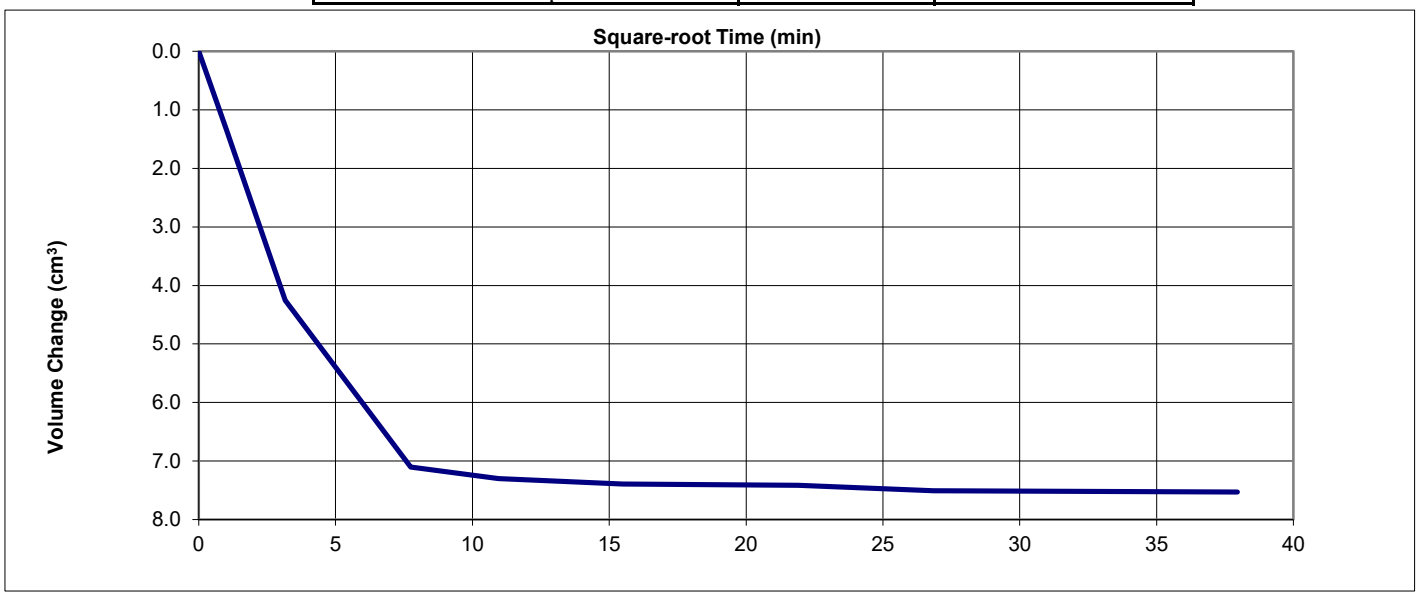
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL108
Sample Depth	m	0.80
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	600
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	50
Cell Pressure	kPa	650
Back Pressure	kPa	600
Final PWP	kPa	601
PWP dissipation	%	96



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Challonsleigh Farm

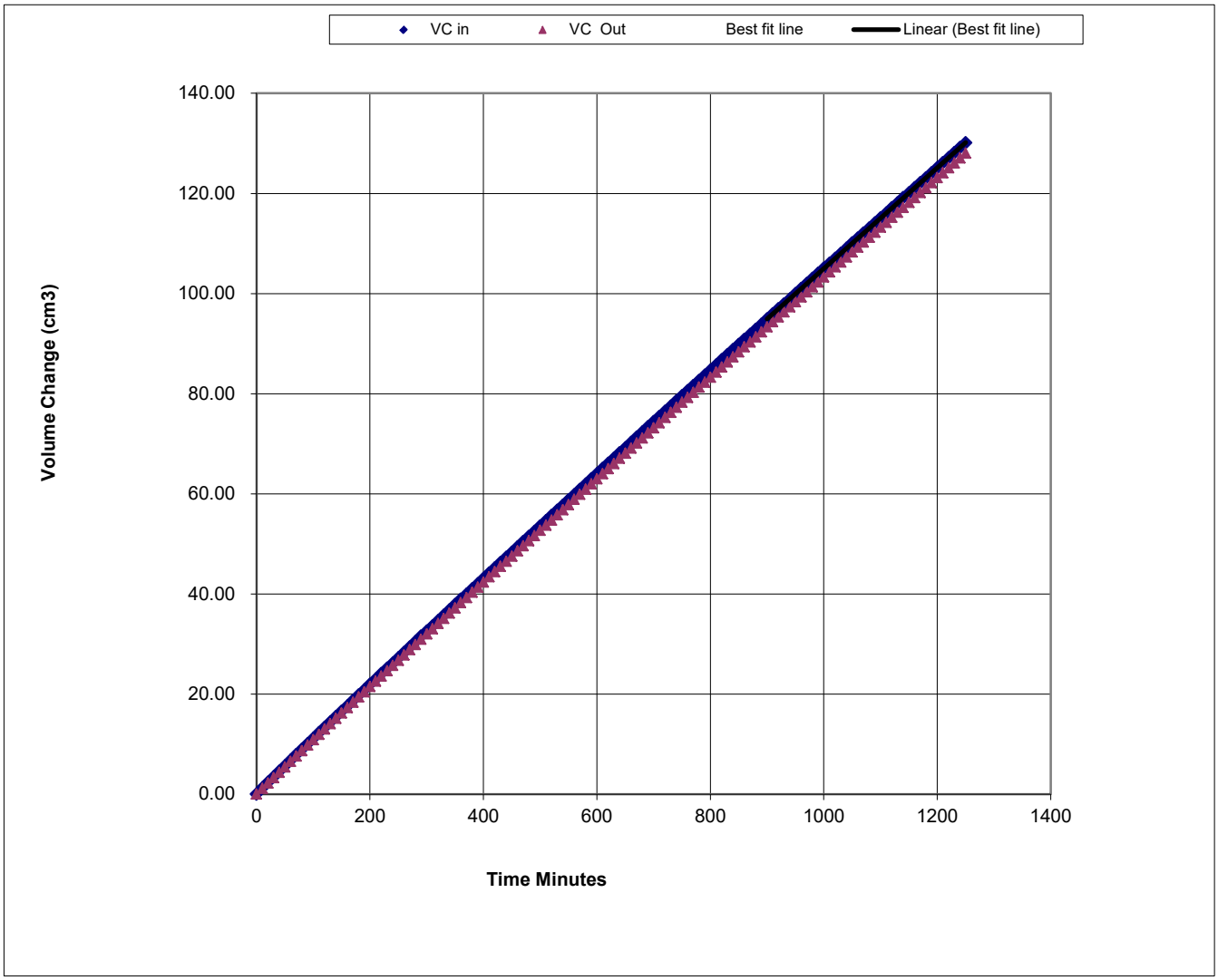
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Client Ref
PE201646

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL108
Sample Depth	m	0.80
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	650
Mean Effective Stress	kPa	50
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.1005
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.0E-08

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: TPL109 **Top Depth (m) :** 0.90

Sample Number: **Base Depth (m) :**

Sample Type: B **Lift Number:**

Date **Grid Reference:**

Description of Specimen
See summary of soils descriptions.
Remarks
Remoulded using 2.5Kg effort at as received moisture content.

Initial Specimen Conditions		
Height	mm	101.87
Diameter	mm	101.46
Area	mm^2	8084.99
Volume	cm^3	823.62
Mass	g	1776
Dry Mass	g	1565
Bulk Density	Mg/m^3	2.16
Dry Density	Mg/m^3	1.90
Moisture Content	%	13
Voids Ratio	-	0.394
Specific Gravity	Mg/m^3	2.65
(assumed/measured)	-	assumed

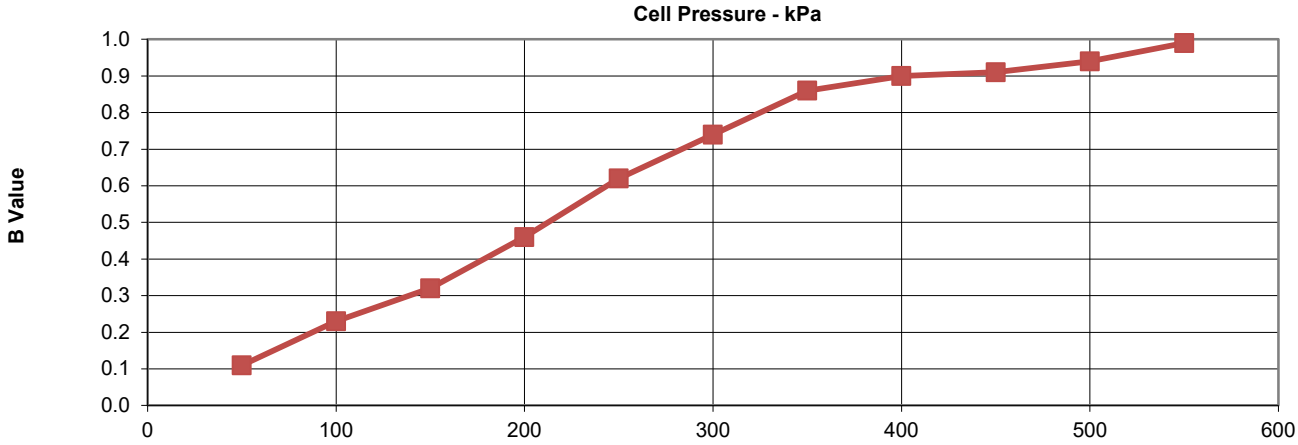
Final Specimen Conditions		
Moisture Content	%	17
Bulk Density	Mg/m^3	2.22
Dry Density	Mg/m^3	1.90

Test Setup		
Date Started		28/08/2020
Date Finished		02/09/2020
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

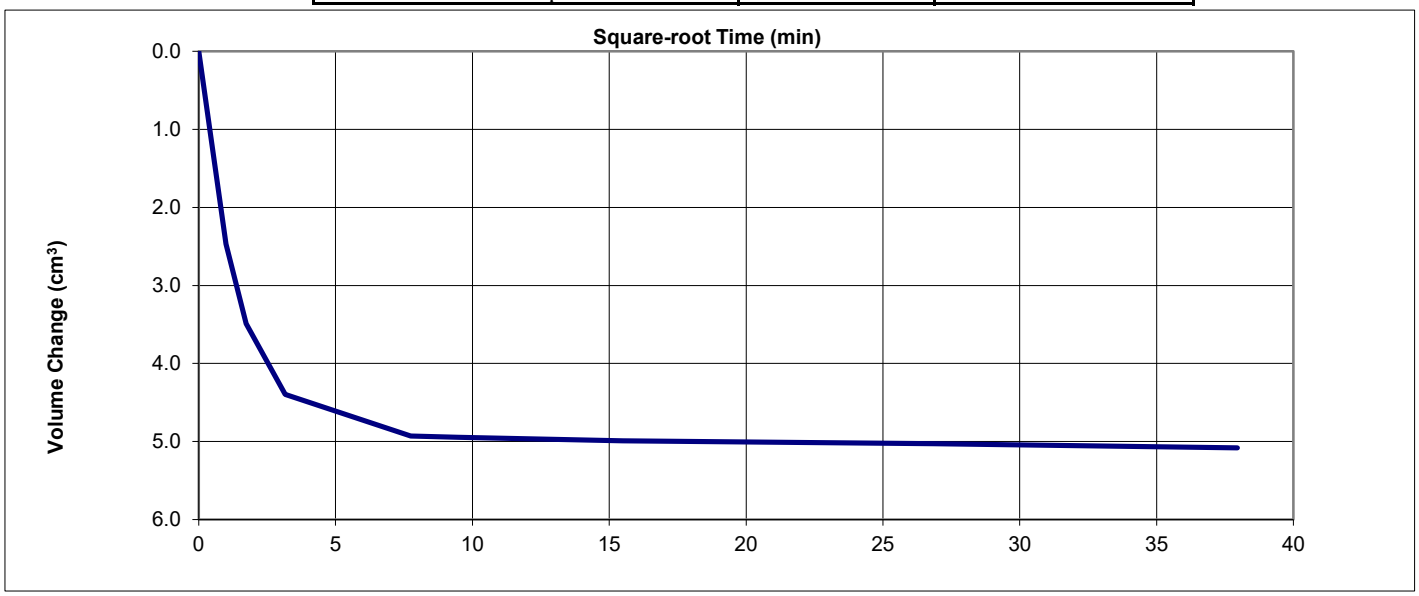
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		TPL109
Sample Depth	m	0.90
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	550
Final B Value	-	0.99



Consolidation		
Effective Pressure	kPa	50
Cell Pressure	kPa	600
Back Pressure	kPa	550
Final PWP	kPa	551
PWP dissipation	%	96



UKAS TESTING 4043

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Challonsleigh Farm

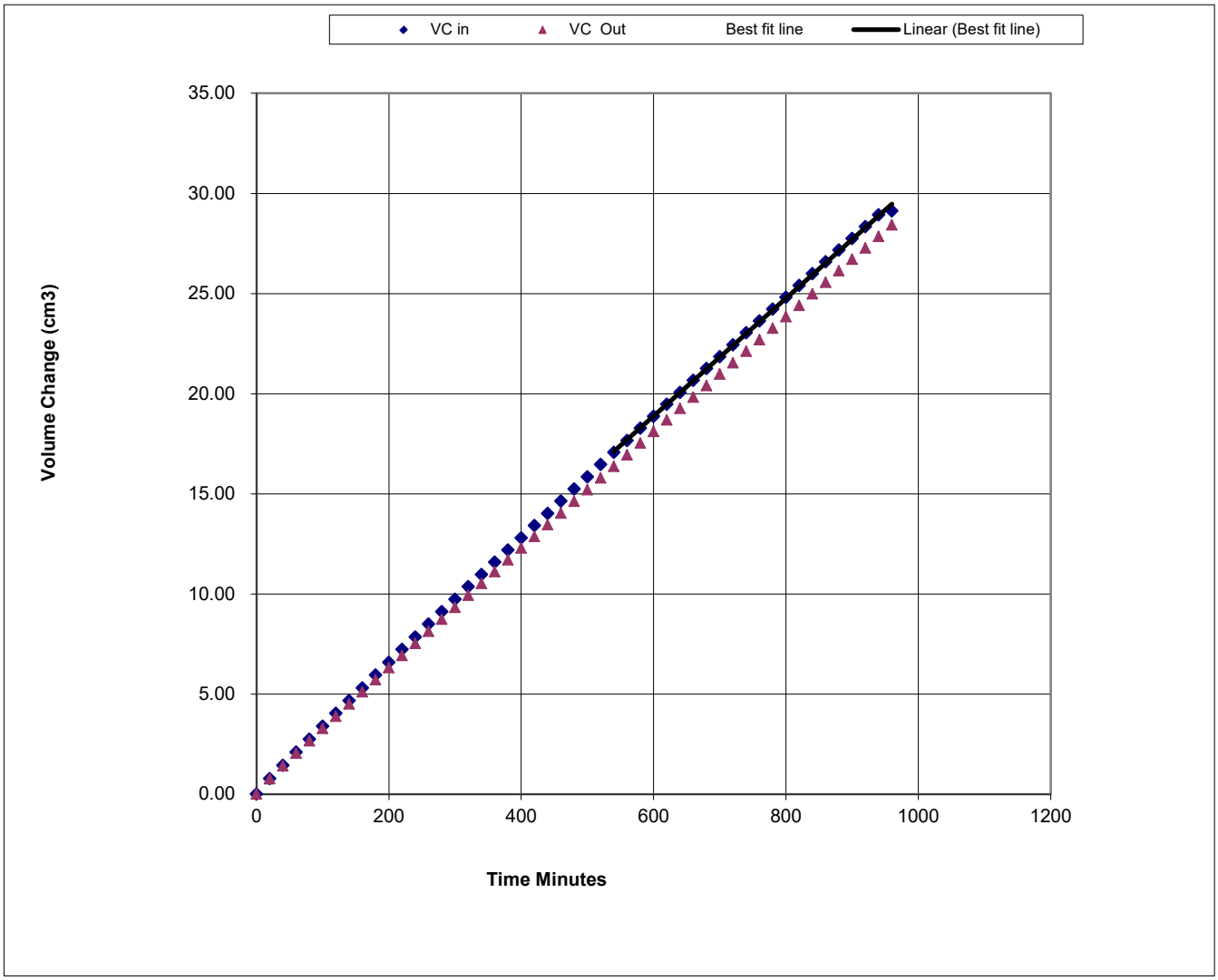
Contract No.
PSL20/4420
Client Ref
PE201646

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

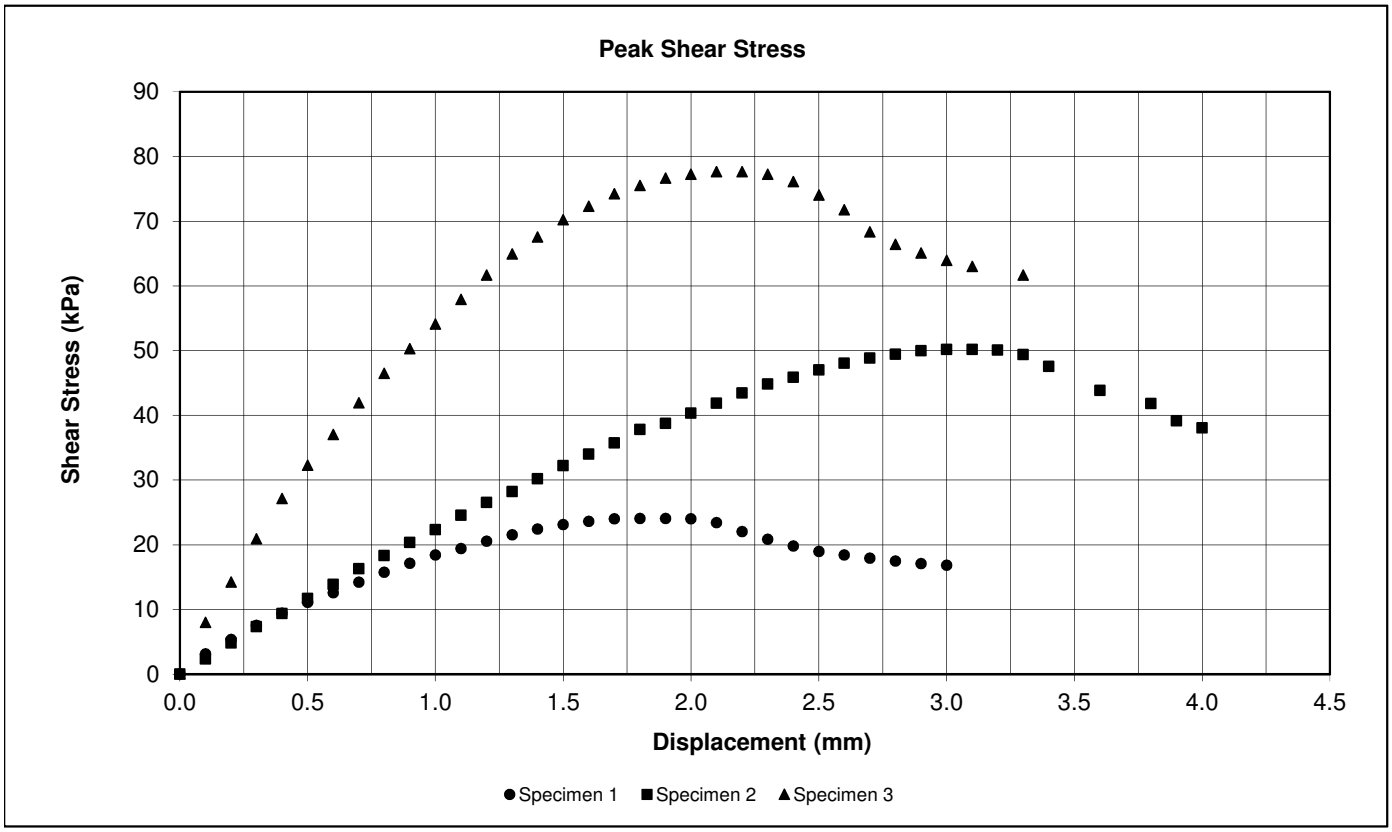
Specimen Details		
Hole Number		TPL109
Sample Depth	m	0.90
Sample No.		
Grid Reference		
Lift Number		

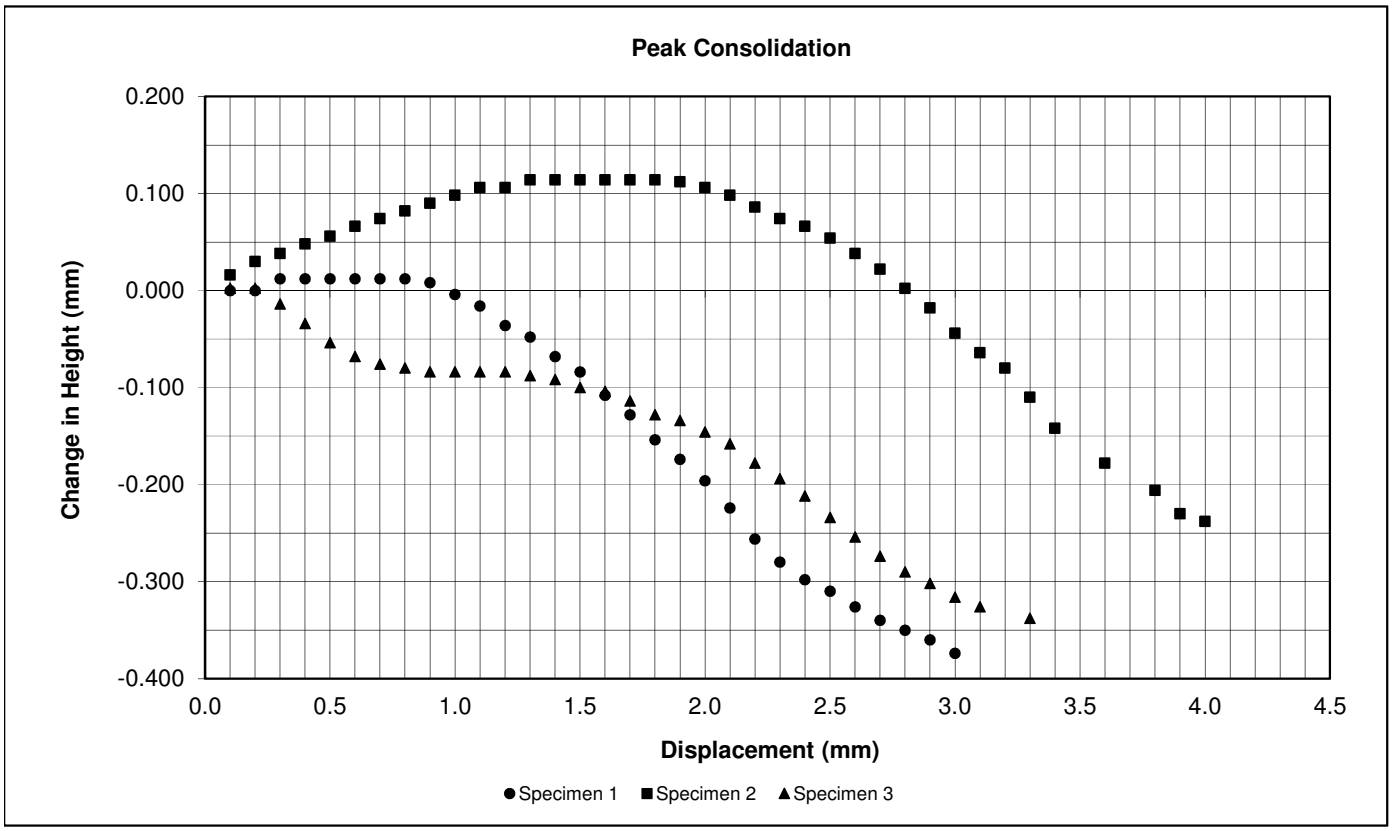
Permeability Stage



Permeability Stage		
Cell Pressure	kPa	600
Mean Effective Stress	kPa	50
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0287
Average Temperature	'C	20
Vertical Permeability Kv	m/s	2.9E-09

Project	GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM	Hole	TPL103
		Sample Depth	1.30
Client		Sample Type	B
Project No.	PE201646	Sample Ref	E14193





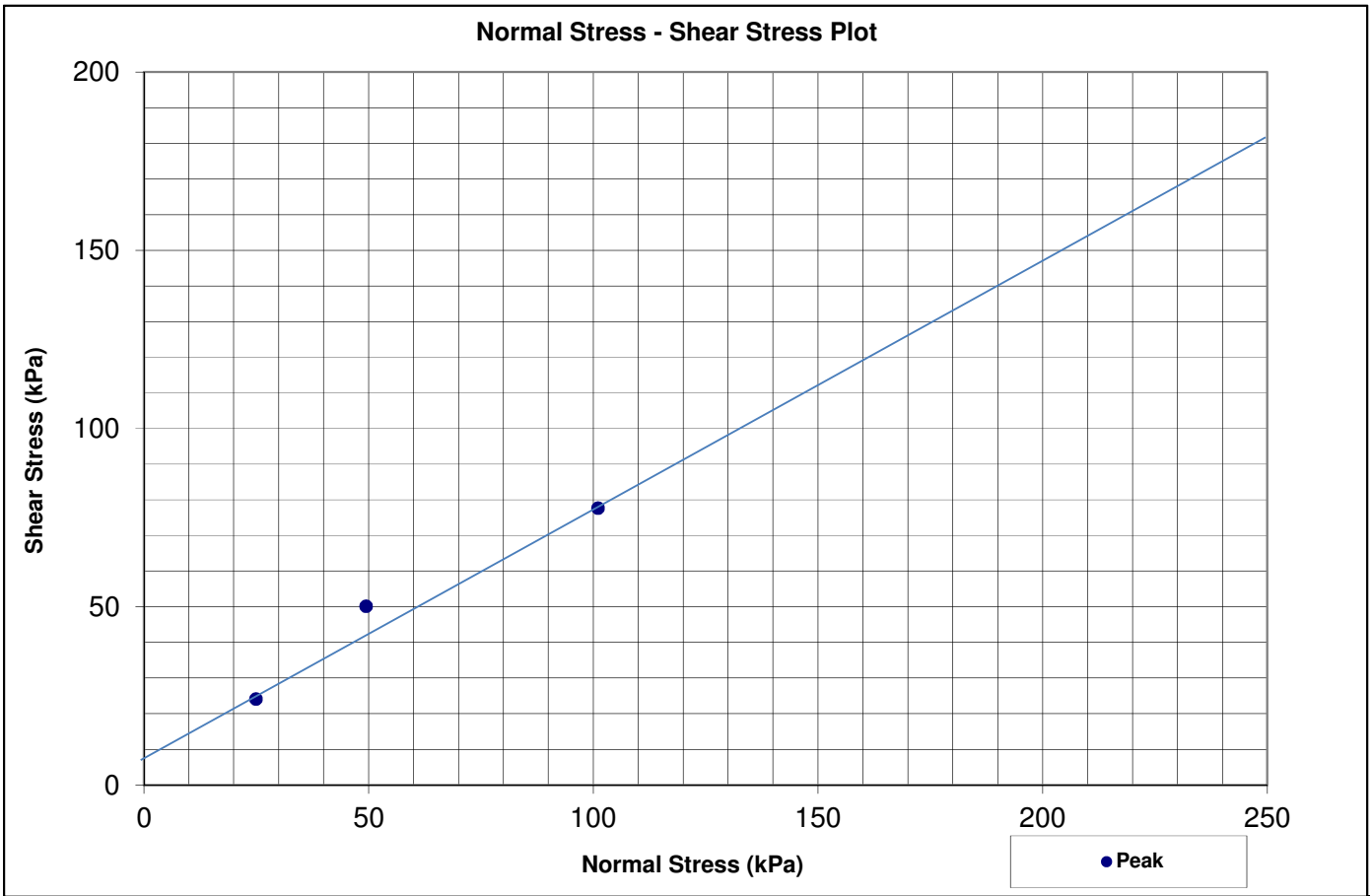
Remarks

LABORATORY TESTING - Shear Box

Sheet 1 *Form LAB002 Rev 0*

Project	GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM	Hole	TPL103
		Sample Depth	1.30
Client		Sample Type	B
Project No.	PE201646	Sample Ref	E14193

Test Type		Remoulded	Specimens Tested	Submerged at 20°C + / - 3°C
Test Method		BS EN ISO 17892-10:2018 Part 10		
Description		Grey brown very gravelly shalley slightly sandy stiff SILT/CLAY.		
Initial Dimensions				
Specimen No.		1	2	3
Width	(mm)	59.950	60.020	60.010
Height	(mm)	23.90	23.91	23.92
Initial Water Content	(%)	13.7	13.8	14.1
Initial Bulk Density	(Mg/m^3)	2.14	2.16	2.17
Initial Dry Density	(Mg/m^3)	1.88	1.90	1.90
Particle Density	(Mg/m^3)	2.65 (Assumed)		
Initial Voids Ratio		0.411	0.394	0.396
Initial Degree of Saturation	(%)	88.2	92.5	94.5
Mass of Gravel retained on Shear Plane	(g)	-	-	-
Shear Box Test				
Applied Normal Stress	(kPa)	25.0	49.5	101.1
Peak Shear Stress	(kPa)	24.1	50.2	77.6
Displacement to peak stress	(mm)	1.8	3.0	2.1
Residual Shear Stress	(kPa)	N/A	N/A	N/A
Displacement to residual stress	(mm)			
Peak Rate of Strain	(mm/min)	0.04262		
Residual Rate of Strain	(mm/min)	N/A		
Strain at Peak Shear Stress	(%)			



Peak Cohesion c' (kPa)	6		
Peak Angle of Friction ϕ (°)	35.0		

Remarks Determination of Shear Strength by Direct Shear in the Small Shear Box
Remoulded at natural water content using 2.5kg rammer effort

GEOTECHNICS

LABORATORY RESULTS - Test Remarks

Project GROUND INVESTIGATION FOR AN INERT LANDFILL AT CHALLONSLEIGH FARM **Project No:** PE201646

Sample				Laboratory Remark
Hole	Depth (Specimen Depth) m	Type	Sample Ref	
TPIF04	0.55-0.70 (0.55-0.70)	B	E14242	Quick Undrained Triaxial Test - Tested as 102mm rather than 38mm due to the presence of shale and gravel.
TPL102	0.50 (0.50)	D	E14190	Atterberg Limit Test - 1-point cone
TPL103	1.30 (1.30)	B	E14193	Compaction 2.5kg - Sample broke down while compacting due to high presence of slate.
TPL103	1.30 (1.30)	D	E14194	Atterberg Limit Test - 1-point cone
TPL122	1.00 (1.00)	D	E14232	Atterberg Limit Test - 1-point cone

Remarks

APPENDIX 14

Laboratory Test Results - Contamination

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-18822-1
Initial Date of Issue:	14-Aug-2020
Client	Geotechnics Ltd
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL
Contact(s):	Anne Simpson Hannah Dwane Michael Kerr
Project	PE201646 Challonsleigh

Quotation No.:	Q20-20478	**Date Received:**	22-Jul-2020
Order No.:	OE26168	**Date Instructed:**	04-Aug-2020
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	10-Aug-2020
Date Approved:	14-Aug-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Soil

Project: PE201646 Challonsleigh

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-18822	20-18822
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1035452	1035456
		Sample Location:			TPL108	TPL103
		Sample Type:			SOIL	SOIL
		Top Depth (m):			0.15	0.10
		Date Sampled:			20-Jul-2020	20-Jul-2020
		Asbestos Lab:			COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	20	13
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Roots and Stones	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand
pH	M	2010		4.0	5.7	6.1
Phosphate (Available)	N	2420	mg/l	2.0	11	17
Calcium	N	2400	mg/l	20	650	1400
Potassium (Extractable)	N	2400	mg/l	2.0	50	190
Magnesium (Extractable)	N	2400	mg/l	2.0	65	160
Sodium	N	2400	mg/l	2.0	34	39
Sulphate (Total)	M	2430	mg/kg	100	1500	1400
Arsenic	M	2450	mg/kg	1.0	28	30
Cadmium	M	2450	mg/kg	0.10	0.19	0.18
Chromium	M	2450	mg/kg	1.0	31	33
Copper	M	2450	mg/kg	0.50	42	30
Mercury	M	2450	mg/kg	0.10	0.13	0.11
Nickel	M	2450	mg/kg	0.50	44	43
Lead	M	2450	mg/kg	0.50	41	39
Selenium	M	2450	mg/kg	0.20	0.71	0.94
Zinc	M	2450	mg/kg	0.50	110	110
Total Organic Carbon	M	2625	%	0.20	3.4	5.0
Total TPH >C6-C40	M	2670	mg/kg	10	[B] < 10	[B] < 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	1.2	< 0.10
Anthracene	M	2700	mg/kg	0.10	0.36	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	1.1	0.70
Pyrene	M	2700	mg/kg	0.10	0.82	0.82
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10

Results - Soil

Project: PE201646 Challonsleigh

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-18822	20-18822
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1035452	1035456
			Sample Location:		TPL108	TPL103
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.15	0.10
			Date Sampled:		20-Jul-2020	20-Jul-2020
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	3.5	< 2.0

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1035452			TPL108	20-Jul-2020	B	Amber Glass 250ml
1035452			TPL108	20-Jul-2020	B	Amber Glass 60ml
1035452			TPL108	20-Jul-2020	B	Plastic Tub 1000g
1035456			TPL103	20-Jul-2020	B	Amber Glass 250ml
1035456			TPL103	20-Jul-2020	B	Amber Glass 60ml
1035456			TPL103	20-Jul-2020	B	Plastic Tub 1000g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-19059-1		
Initial Date of Issue:	14-Aug-2020		
Client	Geotechnics Ltd		
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL		
Contact(s):	Hannah Dwane Anne Simpson		
Project	PE201646 Challonsleigh Farm		
Quotation No.:	Q20-20478	**Date Received:**	23-Jul-2020
Order No.:	OE26168	**Date Instructed:**	04-Aug-2020
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	10-Aug-2020
Date Approved:	14-Aug-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-19059	20-19059	20-19059
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1036451	1036461	1036463
		Sample Location:			TPL106	TPL113	TPL112
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0.1	0.1
		Bottom Depth (m):			0.25	0.2	
		Date Sampled:			21-Jul-2020	21-Jul-2020	21-Jul-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	17	20	17
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones and Roots	Roots and Stones	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	7.1	6.9	6.5
Phosphate (Available)	N	2420	mg/l	2.0	4.0	11	7.0
Calcium	N	2400	mg/l	20	1000	2700	650
Potassium (Extractable)	N	2400	mg/l	2.0	65	220	60
Magnesium (Extractable)	N	2400	mg/l	2.0	80	230	75
Sodium	N	2400	mg/l	2.0	23	75	29
Sulphate (Total)	M	2430	mg/kg	100	180	1500	1100
Arsenic	M	2450	mg/kg	1.0	6.6	25	29
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.15	0.15
Chromium	M	2450	mg/kg	1.0	6.9	26	28
Copper	M	2450	mg/kg	0.50	5.6	27	32
Mercury	M	2450	mg/kg	0.10	< 0.10	0.11	0.12
Nickel	M	2450	mg/kg	0.50	11	34	39
Lead	M	2450	mg/kg	0.50	6.5	36	39
Selenium	M	2450	mg/kg	0.20	0.33	0.94	0.74
Zinc	M	2450	mg/kg	0.50	23	100	100
LOI	M	2610	%	0.10	6.3	8.5	7.6
Total Organic Carbon	M	2625	%	0.20	1.6	2.5	2.2
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-19059	20-19059	20-19059
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1036451	1036461	1036463
		Sample Location:			TPL106	TPL113	TPL112
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.1	0.1	0.1
		Bottom Depth (m):			0.25	0.2	
		Date Sampled:			21-Jul-2020	21-Jul-2020	21-Jul-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

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I/S	Insufficient Sample
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None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

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A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-19185-1		
Initial Date of Issue:	14-Aug-2020		
Client	Geotechnics Ltd		
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL		
Contact(s):	Hannah Dwane Anne Simpson		
Project	PE201646 Challinleigh Farm		
Quotation No.:	Q20-20478	**Date Received:**	24-Jul-2020
Order No.:	OE26168	**Date Instructed:**	04-Aug-2020
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	10-Aug-2020
Date Approved:	14-Aug-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: PE201646 Challinleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-19185	20-19185	20-19185
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1037133	1037135	1037137
			Sample Location:		TPL17	TPL18	TPL19
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.15	0.10	0.30
			Date Sampled:		22-Jul-2020	22-Jul-2020	22-Jul-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	17	20	20
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	9.0	7.0	7.7
Phosphate (Available)	N	2420	mg/l	2.0	5.0	12	4.6
Calcium	N	2400	mg/l	20	1200	2300	2300
Potassium (Extractable)	N	2400	mg/l	2.0	95	270	65
Magnesium (Extractable)	N	2400	mg/l	2.0	70	150	60
Sodium	N	2400	mg/l	2.0	22	50	27
Sulphate (Total)	M	2430	mg/kg	100	460	180	410
Arsenic	M	2450	mg/kg	1.0	24	6.9	27
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	22	6.1	18
Copper	M	2450	mg/kg	0.50	29	11	48
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	36	9.4	46
Lead	M	2450	mg/kg	0.50	25	8.3	120
Selenium	M	2450	mg/kg	0.20	0.83	0.25	0.88
Zinc	M	2450	mg/kg	0.50	88	22	110
LOI	M	2610	%	0.10	4.6	7.1	4.0
Total Organic Carbon	M	2625	%	0.20	0.96	1.5	0.76
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.31
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.13
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.93
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.94
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: PE201646 Challinleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19185	20-19185	20-19185
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1037133	1037135	1037137
			Sample Location:		TPL17	TPL18	TPL19
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.15	0.10	0.30
			Date Sampled:		22-Jul-2020	22-Jul-2020	22-Jul-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	2.3

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	20-19185-3		
Initial Date of Issue:	14-Aug-2020	**Date of Re-Issue:**	15-Sep-2020
Client	Geotechnics Ltd		
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL		
Contact(s):	Hannah Dwane Anne Simpson		
Project	PE201646 Challinleigh Farm		
Quotation No.:	Q20-20478	**Date Received:**	24-Jul-2020
Order No.:	OE26168	**Date Instructed:**	04-Aug-2020
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	10-Aug-2020
Date Approved:	14-Aug-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: PE201646 Challinleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-19185	20-19185	20-19185
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1037133	1037135	1037137
		Sample Location:			TPL117	TPL118	TPL119
		Sample Type:			SOIL	SOIL	SOIL
		Top Depth (m):			0.15	0.10	0.30
		Date Sampled:			22-Jul-2020	22-Jul-2020	22-Jul-2020
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-
Moisture	N	2030	%	0.020	17	20	20
Soil Colour	N	2040		N/A	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones and Roots
Soil Texture	N	2040		N/A	Sand	Sand	Sand
pH	M	2010		4.0	9.0	7.0	7.7
Phosphate (Available)	N	2420	mg/l	2.0	5.0	12	4.6
Calcium	N	2400	mg/l	20	1200	2300	2300
Potassium (Extractable)	N	2400	mg/l	2.0	95	270	65
Magnesium (Extractable)	N	2400	mg/l	2.0	70	150	60
Sodium	N	2400	mg/l	2.0	22	50	27
Sulphate (Total)	M	2430	mg/kg	100	460	180	410
Arsenic	M	2450	mg/kg	1.0	24	6.9	27
Cadmium	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium	M	2450	mg/kg	1.0	22	6.1	18
Copper	M	2450	mg/kg	0.50	29	11	48
Mercury	M	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	36	9.4	46
Lead	M	2450	mg/kg	0.50	25	8.3	120
Selenium	M	2450	mg/kg	0.20	0.83	0.25	0.88
Zinc	M	2450	mg/kg	0.50	88	22	110
LOI	M	2610	%	0.10	4.6	7.1	4.0
Total Organic Carbon	M	2625	%	0.20	0.96	1.5	0.76
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.31
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.13
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.93
Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	0.94
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: PE201646 Challinleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19185	20-19185	20-19185
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1037133	1037135	1037137
			Sample Location:		TPL117	TPL118	TPL119
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.15	0.10	0.30
			Date Sampled:		22-Jul-2020	22-Jul-2020	22-Jul-2020
			Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	< 2.0	2.3

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

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I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	20-19446-2		
Initial Date of Issue:	10-Aug-2020	**Date of Re-Issue:**	21-Aug-2020
Client	Geotechnics Ltd		
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL		
Contact(s):	Hannah Dwane		
Project	PE201646 Challonsleigh Farm		
Quotation No.:	Q20-20478	**Date Received:**	27-Jul-2020
Order No.:	OE26168	**Date Instructed:**	04-Aug-2020
No. of Samples:	10		
Turnaround (Wkdays):	11	**Results Due:**	18-Aug-2020
Date Approved:	21-Aug-2020		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1038377	1038378	1038379	1038380	1038381	1038382	1038383	1038384	1038385
			Sample Location:		BHL01	BHL01	TPL123	TPL123	TPL124	TPL124	TPL125	TPL125	TPW101
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.10	1.00	2.00	0.50	1.00	0.50	1.50	0.20
			Bottom Depth (m):		0.50	0.25							
			Date Sampled:		23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	17	7.5	6.3	7.0	6.4	9.6	9.5	7.3	5.0
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones	Stones
Soil Texture	N	2040		N/A	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
pH	M	2010		4.0	8.2	9.2	8.9	9.8	9.0	9.2	9.2	9.1	10.0
Phosphate (Available)	N	2420	mg/l	2.0		46							
Calcium	N	2400	mg/l	20		3500							
Potassium (Extractable)	N	2400	mg/l	2.0		130							
Magnesium (Extractable)	N	2400	mg/l	2.0		130							
Sodium	N	2400	mg/l	2.0		120							
Sulphate (Total)	M	2430	mg/kg	100	640	1400	410	780	590	650	610	570	2000
Arsenic	M	2450	mg/kg	1.0	33	44	30	50	41	25	33	46	43
Cadmium	M	2450	mg/kg	0.10	< 0.10	0.23	0.17	0.35	0.19	0.12	0.19	0.40	0.21
Chromium	M	2450	mg/kg	1.0	32	25	24	19	22	14	22	22	29
Copper	M	2450	mg/kg	0.50	23	29	33	46	86	18	32	42	43
Mercury	M	2450	mg/kg	0.10	< 0.10	0.18	0.13	0.28	0.16	< 0.10	0.17	0.24	0.25
Nickel	M	2450	mg/kg	0.50	41	34	35	40	38	22	36	37	36
Lead	M	2450	mg/kg	0.50	23	33	27	41	40	29	97	90	61
Selenium	M	2450	mg/kg	0.20	0.51	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	85	73	72	100	78	42	84	150	85
LOI	M	2610	%	0.10		3.6							
Total Organic Carbon	M	2625	%	0.20	1.3	2.0	1.3	1.7	1.1	1.1	1.4	1.1	3.0
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	1600	950	2100	2700	74	230	2900	1700
Naphthalene	M	2700	mg/kg	0.10	< 0.10	0.19	1.1	0.23	< 0.10	0.11	1.0	< 0.10	0.14
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	0.70	0.36	0.34	0.20	0.35	0.50	< 0.10	0.57
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	0.88	1.5	0.44	0.33	0.53	0.99	< 0.10	0.43
Fluorene	M	2700	mg/kg	0.10	< 0.10	1.3	1.6	0.62	0.55	0.91	0.98	< 0.10	0.50
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	8.9	10	4.4	2.8	3.3	9.4	1.4	4.5
Anthracene	M	2700	mg/kg	0.10	< 0.10	3.1	3.0	1.5	0.92	1.2	2.7	0.48	1.8
Fluoranthene	M	2700	mg/kg	0.10	0.22	16	14	7.2	6.0	7.4	14	4.0	12
Pyrene	M	2700	mg/kg	0.10	0.27	15	13	7.1	5.8	7.1	13	3.9	12
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	6.3	5.7	3.3	2.8	3.5	6.6	2.1	6.0
Chrysene	M	2700	mg/kg	0.10	< 0.10	7.4	6.5	4.6	3.5	4.5	7.2	2.7	5.8
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	8.0	7.3	4.8	4.1	5.3	8.3	3.3	9.6

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446	20-19446
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1038377	1038378	1038379	1038380	1038381	1038382	1038383	1038384	1038385
			Sample Location:		BHL01	BHL01	TPL123	TPL123	TPL124	TPL124	TPL125	TPL125	TPW101
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.40	0.10	1.00	2.00	0.50	1.00	0.50	1.50	0.20
			Bottom Depth (m):		0.50	0.25							
			Date Sampled:		23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020	23-Jul-2020
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	3.9	3.3	2.5	1.8	2.3	3.3	1.5	3.5
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	7.1	6.2	3.8	3.1	4.2	7.2	3.0	7.9
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	4.7	4.2	2.7	2.1	2.9	4.7	2.3	6.1
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	1.5	1.4	1.5	0.83	1.1	1.5	1.2	1.6
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	7.5	4.7	3.6	3.6	4.2	5.3	2.6	7.2
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	93	84	49	38	49	87	29	80

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19446
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1038386
			Sample Location:		TPW101
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Bottom Depth (m):		
			Date Sampled:		23-Jul-2020
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-
Moisture	N	2030	%	0.020	13
Soil Colour	N	2040		N/A	brown
Other Material	N	2040		N/A	stones
Soil Texture	N	2040		N/A	sand
pH	M	2010		4.0	8.3
Phosphate (Available)	N	2420	mg/l	2.0	
Calcium	N	2400	mg/l	20	
Potassium (Extractable)	N	2400	mg/l	2.0	
Magnesium (Extractable)	N	2400	mg/l	2.0	
Sodium	N	2400	mg/l	2.0	
Sulphate (Total)	M	2430	mg/kg	100	1600
Arsenic	M	2450	mg/kg	1.0	54
Cadmium	M	2450	mg/kg	0.10	0.15
Chromium	M	2450	mg/kg	1.0	34
Copper	M	2450	mg/kg	0.50	35
Mercury	M	2450	mg/kg	0.10	0.12
Nickel	M	2450	mg/kg	0.50	44
Lead	M	2450	mg/kg	0.50	49
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	M	2450	mg/kg	0.50	97
LOI	M	2610	%	0.10	
Total Organic Carbon	M	2625	%	0.20	2.0
Total TPH >C6-C40	M	2670	mg/kg	10	86
Naphthalene	M	2700	mg/kg	0.10	0.10
Acenaphthylene	M	2700	mg/kg	0.10	0.14
Acenaphthene	M	2700	mg/kg	0.10	0.11
Fluorene	M	2700	mg/kg	0.10	0.14
Phenanthrene	M	2700	mg/kg	0.10	0.86
Anthracene	M	2700	mg/kg	0.10	0.44
Fluoranthene	M	2700	mg/kg	0.10	2.0
Pyrene	M	2700	mg/kg	0.10	2.2
Benzo[a]anthracene	M	2700	mg/kg	0.10	1.2
Chrysene	M	2700	mg/kg	0.10	1.3
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	2.1

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-19446
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1038386
			Sample Location:		TPW101
			Sample Type:		SOIL
			Top Depth (m):		1.30
			Bottom Depth (m):		
			Date Sampled:		23-Jul-2020
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.91
Benzo[a]pyrene	M	2700	mg/kg	0.10	2.0
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	1.9
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.17
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	2.0
Total Of 16 PAH's	M	2700	mg/kg	2.0	18

Results - Single Stage WAC

Project: PE201646 Challonsleigh Farm

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-19446						
Chemtest Sample ID:	1038380						
Sample Ref:							
Sample ID:							
Sample Location:	TPL123						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:	23-Jul-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	1.7	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	2100	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	49	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0017	< 0.050	0.5	2	25
Barium	1450	U	0.0039	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0019	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0031	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	6.5	65	1000	20000	50000
Total Dissolved Solids	1020	N	110	1100	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.1	61	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: PE201646 Challonsleigh Farm

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-19446						
Chemtest Sample ID:	1038382						
Sample Ref:							
Sample ID:							
Sample Location:	TPL124						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:	23-Jul-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	1.1	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	74	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	49	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0019	< 0.050	0.5	2	25
Barium	1450	U	0.0050	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0015	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0017	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	3.8	38	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.9	59	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: PE201646 Challonsleigh Farm

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-19446						
Chemtest Sample ID:	1038384						
Sample Ref:							
Sample ID:							
Sample Location:	TPL125						
Top Depth(m):	1.50						
Bottom Depth(m):							
Sampling Date:	23-Jul-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	1.1	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	2900	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	29	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0023	< 0.050	0.5	2	25
Barium	1450	U	0.0040	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0014	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0019	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.11	1.1	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.2	62	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-20116-1
Initial Date of Issue:	13-Aug-2020
Client	Geotechnics Ltd
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL
Contact(s):	Hannah Dwane
Project	PE201646 Challonsleigh Farm
Quotation No.:	Q20-20478
Order No.:	OE26168
No. of Samples:	2
Turnaround (Wkdays):	5
Date Approved:	13-Aug-2020
Approved By:	
Details:	Glynn Harvey, Technical Manager

Date Received:	03-Aug-2020
Date Instructed:	04-Aug-2020
Results Due:	10-Aug-2020

Results - Soil

Project: PE201646 Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-20116	20-20116
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1041877	1041880
			Sample Location:		BHL08	BHL08
			Sample Type:		SOIL	SOIL
			Top Depth (m):		3.50	5.50
			Date Sampled:		29-Jul-2020	29-Jul-2020
			Asbestos Lab:		COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-
Moisture	N	2030	%	0.020	21	16
Soil Colour	N	2040		N/A	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones
Soil Texture	N	2040		N/A	Clay	Sand
pH	M	2010		4.0	7.9	8.8
Sulphate (Total)	M	2430	mg/kg	100	980	390
Arsenic	M	2450	mg/kg	1.0	48	39
Cadmium	M	2450	mg/kg	0.10	0.39	0.25
Chromium	M	2450	mg/kg	1.0	49	31
Copper	M	2450	mg/kg	0.50	43	40
Mercury	M	2450	mg/kg	0.10	0.37	0.13
Nickel	M	2450	mg/kg	0.50	53	46
Lead	M	2450	mg/kg	0.50	99	79
Selenium	M	2450	mg/kg	0.20	0.52	0.27
Zinc	M	2450	mg/kg	0.50	150	110
Total Organic Carbon	M	2625	%	0.20	2.6	7.5
Total TPH >C6-C40	M	2670	mg/kg	10	59	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.68	0.30
Anthracene	M	2700	mg/kg	0.10	0.30	0.14
Fluoranthene	M	2700	mg/kg	0.10	1.4	0.90
Pyrene	M	2700	mg/kg	0.10	1.5	0.94
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.98	< 0.10
Chrysene	M	2700	mg/kg	0.10	1.5	< 0.10
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's	M	2700	mg/kg	2.0	6.3	2.3

Results - Single Stage WAC

Project: PE201646 Challonsleigh Farm

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-20116						
Chemtest Sample ID:	1041877						
Sample Ref:							
Sample ID:							
Sample Location:	BHL08						
Top Depth(m):	3.50						
Bottom Depth(m):							
Sampling Date:	29-Jul-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	2.6	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	59	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	6.3	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0024	< 0.050	0.5	2	25
Barium	1450	U	0.012	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0035	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0020	< 0.050	0.5	10	30
Nickel	1450	U	0.0011	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	0.0089	0.089	0.06	0.7	5
Selenium	1450	U	0.0017	0.017	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	3.0	30	800	15000	25000
Fluoride	1220	U	0.25	2.5	10	150	500
Sulphate	1220	U	15	150	1000	20000	50000
Total Dissolved Solids	1020	N	190	1900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	11	110	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	21

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: PE201646 Challonsleigh Farm

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-20116						
Chemtest Sample ID:	1041880						
Sample Ref:							
Sample ID:							
Sample Location:	BHL08						
Top Depth(m):	5.50						
Bottom Depth(m):							
Sampling Date:	29-Jul-2020						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	7.5	3	5	6
Loss on Ignition					--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	2.3	100	--	--
pH					--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0015	< 0.050	0.5	2	25
Barium	1450	U	0.0090	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0025	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0017	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	0.0062	0.062	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	8.1	81	1000	20000	50000
Total Dissolved Solids	1020	N	160	1600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.4	84	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-20395-1
Initial Date of Issue:	14-Aug-2020
Client	Geotechnics Ltd
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL
Contact(s):	Hannah Dwane Michael Kerr Anne Simpson
Project	PE201646 Gi at Challonsleigh Farm

Quotation No.:	Q20-20478	**Date Received:**	05-Aug-2020
Order No.:	OE26168	**Date Instructed:**	05-Aug-2020
No. of Samples:	10		
Turnaround (Wkdays):	5	**Results Due:**	11-Aug-2020
Date Approved:	14-Aug-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Project: PE201646 Gi at Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1043240	1043241	1043242	1043243	1043244	1043245	1043246	1043247	1043248
		Sample Location:			BHL01	BHL06	BHL04	BHL08	BHL02	BHL05	BHL03	RH1	RH2
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
pH	U	1010		N/A	7.6	7.6	7.4	7.1	7.5	7.6	7.5	7.8	7.8
Electrical Conductivity	U	1020	µS/cm	1.0	630	560	520	1000	630	540	530	150	140
Total Dissolved Solids	N	1020	mg/l	1.0	410	360	340	650	410	350	340	98	91
Alkalinity (Total)	U	1220	mg/l	10	180	240	160	400	380	220	210	31	33
Chloride	U	1220	mg/l	1.0	120	28	53	59	24	32	52	15	16
Fluoride	U	1220	mg/l	0.050	0.14	0.14	0.37	0.19	0.13	0.18	0.17	0.12	0.12
Ammonia (Free)	U	1220	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.49	0.22	0.075	0.44	0.086	0.062	< 0.050	< 0.050	< 0.050
Nitrate	U	1220	mg/l	0.50	10	10	13	4.0	7.6	8.1	5.4	21	5.7
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Sulphate	U	1220	mg/l	1.0	20	32	19	140	26	31	24	14	14
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	62	88	58	190	110	77	70	7.8	8.3
Potassium	U	1415	mg/l	0.50	2.2	1.8	1.8	10	6.6	4.7	0.95	2.4	2.4
Magnesium	U	1415	mg/l	0.50	7.0	9.8	8.1	18	9.5	9.6	7.4	2.5	2.5
Sodium	U	1415	mg/l	0.50	90	18	36	42	11	20	30	11	11
Total Hardness as CaCO3	U	1270	mg/l	15	180	260	180	540	310	230	210	30	31
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	27	27
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	4.5	4.5
Boron (Dissolved)	U	1450	µg/l	20	27	33	22	59	37	37	27	22	20
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	8.8	4.8	3.8	4.7	6.4	3.4	3.4	2.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	13	< 1.0	< 1.0	3.0	1.2	1.1
Iron (Dissolved)	N	1450	µg/l	20	160	230	150	460	310	220	200	65	63
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	< 1.0	30	34	1000	17	180	75	5.3	3.8
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.0	1.9	44	1.8	1.7	4.4	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	4.2	1.0	1.1	1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.9	1.7	3.2	8.6	2.1	11	3.7	39	2.8
Aluminium (Total)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	27	27
Arsenic (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	4.6	4.5
Boron (Total)	N	1450	µg/l	20	27	33	22	59	37	37	27	22	20
Cadmium (Total)	N	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Total)	N	1450	µg/l	1.0	10	5.1	3.8	4.7	6.4	3.1	4.2	2.0	< 1.0
Copper (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	14	< 1.0	< 1.0	3.1	1.2	1.1
Iron (Total)	N	1450	µg/l	20	170	240	150	490	310	220	200	69	64
Mercury (Total)	N	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Total)	N	1450	µg/l	1.0	< 1.0	30	34	1000	17	170	75	5.3	3.8
Nickel (Total)	N	1450	µg/l	1.0	< 1.0	1.0	1.9	44	1.9	1.8	4.4	< 1.0	< 1.0
Lead (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: PE201646 Gi at Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395	20-20395
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1043240	1043241	1043242	1043243	1043244	1043245	1043246	1043247	1043248
		Sample Location:			BHL01	BHL06	BHL04	BHL08	BHL02	BHL05	BHL03	RH1	RH2
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020	03-Aug-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Selenium (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	4.2	1.0	1.3	1.1	< 1.0	< 1.0
Zinc (Total)	N	1450	µg/l	1.0	1.9	1.7	3.3	9.3	2.2	11	3.7	39	2.8
Dissolved Organic Carbon	U	1610	mg/l	2.0	2.7	2.5	2.4	2.6	2.6	2.8	2.7	4.6	3.6
Total Organic Carbon	U	1610	mg/l	2.0	3.6	2.5	2.6	5.5	2.8	2.9	2.8	4.1	4.1
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Results - Water

Project: PE201646 Gi at Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-20395
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1043249
			Sample Location:		RH3
			Sample Type:		WATER
			Date Sampled:		03-Aug-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	7.7
Electrical Conductivity	U	1020	µS/cm	1.0	140
Total Dissolved Solids	N	1020	mg/l	1.0	91
Alkalinity (Total)	U	1220	mg/l	10	47
Chloride	U	1220	mg/l	1.0	16
Fluoride	U	1220	mg/l	0.050	0.11
Ammonia (Free)	U	1220	mg/l	0.050	< 0.050
Ammoniacal Nitrogen	U	1220	mg/l	0.050	< 0.050
Nitrate	U	1220	mg/l	0.50	4.8
Phosphate	U	1220	mg/l	0.200	< 0.20
Sulphate	U	1220	mg/l	1.0	15
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Calcium	U	1415	mg/l	5.0	9.1
Potassium	U	1415	mg/l	0.50	2.5
Magnesium	U	1415	mg/l	0.50	2.6
Sodium	U	1415	mg/l	0.50	11
Total Hardness as CaCO3	U	1270	mg/l	15	33
Aluminium (Dissolved)	N	1450	µg/l	10	27
Arsenic (Dissolved)	U	1450	µg/l	1.0	4.6
Boron (Dissolved)	U	1450	µg/l	20	21
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	1.3
Iron (Dissolved)	N	1450	µg/l	20	64
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	3.5
Nickel (Dissolved)	U	1450	µg/l	1.0	1.3
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	6.4
Aluminium (Total)	N	1450	µg/l	10	27
Arsenic (Total)	N	1450	µg/l	1.0	4.6
Boron (Total)	N	1450	µg/l	20	21
Cadmium (Total)	N	1450	µg/l	0.080	< 0.080
Chromium (Total)	N	1450	µg/l	1.0	< 1.0
Copper (Total)	N	1450	µg/l	1.0	1.3
Iron (Total)	N	1450	µg/l	20	64
Mercury (Total)	N	1450	µg/l	0.50	< 0.50
Manganese (Total)	N	1450	µg/l	1.0	3.5
Nickel (Total)	N	1450	µg/l	1.0	1.3
Lead (Total)	N	1450	µg/l	1.0	< 1.0

Results - Water

Project: PE201646 Gi at Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-20395
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1043249
			Sample Location:		RH3
			Sample Type:		WATER
			Date Sampled:		03-Aug-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Selenium (Total)	N	1450	µg/l	1.0	< 1.0
Zinc (Total)	N	1450	µg/l	1.0	6.4
Dissolved Organic Carbon	U	1610	mg/l	2.0	3.8
Total Organic Carbon	U	1610	mg/l	2.0	4.2
Total TPH >C6-C40	U	1670	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-26420-1
Initial Date of Issue:	07-Oct-2020
Client	Geotechnics Ltd
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL
Contact(s):	Anne Simpson Hannah Dwane Matthew Yates
Project	PE201646 GI at Challonsleigh Farm

Quotation No.:	Q20-20478	**Date Received:**	01-Oct-2020
Order No.:		**Date Instructed:**	01-Oct-2020
No. of Samples:	2		
Turnaround (Wkdays):	5	**Results Due:**	07-Oct-2020
Date Approved:	07-Oct-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Project: PE201646 GI at Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-26420	20-26420
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1073280	1073281
		Sample Location:			BHL02	BHL08
		Sample Type:			WATER	WATER
		Date Sampled:			30-Sep-2020	30-Sep-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
pH	U	1010		N/A	7.9	7.1
Electrical Conductivity	U	1020	µS/cm	1.0	810	1100
Total Dissolved Solids	N	1020	mg/l	1.0	530	720
Alkalinity (Total)	U	1220	mg/l	10	360	450
Chloride	U	1220	mg/l	1.0	25	55
Fluoride	U	1220	mg/l	0.050	0.13	0.14
Ammonia (Free)	U	1220	mg/l	0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	mg/l	0.050	0.093	0.38
Nitrate	U	1220	mg/l	0.50	9.7	0.86
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20
Sulphate	U	1220	mg/l	1.0	32	130
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	160	230
Potassium	U	1415	mg/l	0.50	9.6	19
Magnesium	U	1415	mg/l	0.50	14	24
Sodium	U	1415	mg/l	0.50	17	54
Total Hardness as CaCO3	U	1270	mg/l	15	450	660
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	380	560
Cadmium (Dissolved)	U	1450	µg/l	0.080	0.63	0.15
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	1.1
Iron (Dissolved)	N	1450	µg/l	20	210	350
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	2.5	990
Nickel (Dissolved)	U	1450	µg/l	1.0	1.3	20
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.6
Zinc (Dissolved)	U	1450	µg/l	1.0	4.9	4.3
Aluminium (Total)	N	1450	µg/l	10	< 10	< 10
Arsenic (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0
Boron (Total)	N	1450	µg/l	20	500	710
Cadmium (Total)	N	1450	µg/l	0.080	0.82	0.22
Chromium (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0
Copper (Total)	N	1450	µg/l	1.0	< 1.0	1.4
Iron (Total)	N	1450	µg/l	20	260	460
Mercury (Total)	N	1450	µg/l	0.50	< 0.50	< 0.50
Manganese (Total)	N	1450	µg/l	1.0	3.3	1200
Nickel (Total)	N	1450	µg/l	1.0	1.5	25
Lead (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0

Results - Water

Project: PE201646 GI at Challonsleigh Farm

Client: Geotechnics Ltd			**Chemtest Job No.:**		20-26420	20-26420
Quotation No.: Q20-20478			**Chemtest Sample ID.:**		1073280	1073281
			Sample Location:		BHL02	BHL08
			Sample Type:		WATER	WATER
			Date Sampled:		30-Sep-2020	30-Sep-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Selenium (Total)	N	1450	µg/l	1.0	< 1.0	4.3
Zinc (Total)	N	1450	µg/l	1.0	6.1	6.3
Dissolved Organic Carbon	U	1610	mg/l	2.0	< 2.0	4.0
Total Organic Carbon	U	1610	mg/l	2.0	< 2.0	4.2
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

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U	UKAS accredited
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<	"less than"
>	"greater than"

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All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

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Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-26454-1
Initial Date of Issue:	07-Oct-2020
Client	Geotechnics Ltd
Client Address:	Unit 5 Orchard Court Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL
Contact(s):	Anne Simpson Hannah Dwane Matthew Yates
Project	PE201646 GI at Challonsleigh Farm

Quotation No.:	Q20-20478	**Date Received:**	01-Oct-2020
Order No.:		**Date Instructed:**	01-Oct-2020
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	07-Oct-2020
Date Approved:	07-Oct-2020		

Approved By:



Details: Glynn Harvey, Technical Manager

Results - Water

Project: PE201646 GI at Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-26454	20-26454	20-26454	20-26454	20-26454	20-26454	20-26454	20-26454
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1073426	1073427	1073428	1073429	1073430	1073431	1073432	1073433
		Sample Location:			BHL01	BHL06	BHL04	BHL05	BHL03	RH1	RH2	RH3
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
pH	U	1010		N/A	7.7	7.7	7.4	7.4	7.4	7.8	7.8	7.8
Electrical Conductivity	U	1020	µS/cm	1.0	630	560	490	450	480	150	130	140
Total Dissolved Solids	N	1020	mg/l	1.0	410	360	320	290	310	98	85	91
Alkalinity (Total)	U	1220	mg/l	10	200	190	170	200	330	40	41	44
Chloride	U	1220	mg/l	1.0	96	47	52	29	25	15	16	16
Fluoride	U	1220	mg/l	0.050	0.15	0.11	0.15	0.11	0.11	0.11	0.11	0.11
Ammonia (Free)	U	1220	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen	U	1220	mg/l	0.050	< 0.050	< 0.050	0.086	0.051	< 0.050	< 0.050	< 0.050	0.13
Nitrate	U	1220	mg/l	0.50	4.4	5.7	15	11	11	6.3	6.7	6.9
Phosphate	U	1220	mg/l	0.200	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.25	0.30
Sulphate	U	1220	mg/l	1.0	20	19	19	17	35	12	12	13
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	64	90	55	63	55	11	7.0	8.4
Potassium	U	1415	mg/l	0.50	11	2.8	3.1	2.2	3.9	3.5	1.9	3.2
Magnesium	U	1415	mg/l	0.50	5.3	8.4	6.5	6.5	8.7	2.9	1.9	2.9
Sodium	U	1415	mg/l	0.50	52	11	30	18	41	21	2.7	17
Total Hardness as CaCO3	U	1270	mg/l	15	180	260	160	180	170	39	25	33
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.5	3.3	2.9
Boron (Dissolved)	U	1450	µg/l	20	570	670	490	700	530	390	570	600
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.5	1.5	1.2	1.4	1.3	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	1.5	< 1.0	< 1.0	< 1.0	1.2	1.0
Iron (Dissolved)	N	1450	µg/l	20	130	180	98	130	130	32	43	40
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.3	8.1	37	7.2	1.3	1.9	< 1.0
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.4	3.0	8.6	2.9	4.3	1.5	3.5	4.3
Aluminium (Total)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Arsenic (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.6	3.9	3.8
Boron (Total)	N	1450	µg/l	20	690	790	630	820	630	540	680	790
Cadmium (Total)	N	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Total)	N	1450	µg/l	1.0	3.0	2.0	2.1	1.6	1.7	< 1.0	< 1.0	< 1.0
Copper (Total)	N	1450	µg/l	1.0	1.0	< 1.0	1.9	< 1.0	< 1.0	1.1	1.5	1.4
Iron (Total)	N	1450	µg/l	20	150	220	150	150	140	47	54	56
Mercury (Total)	N	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Total)	N	1450	µg/l	1.0	< 1.0	2.7	10	43	7.8	1.4	2.4	1.0
Nickel (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Lead (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Water

Project: PE201646 GI at Challonsleigh Farm

Client: Geotechnics Ltd		**Chemtest Job No.:**			20-26454	20-26454	20-26454	20-26454	20-26454	20-26454	20-26454	20-26454
Quotation No.: Q20-20478		**Chemtest Sample ID.:**			1073426	1073427	1073428	1073429	1073430	1073431	1073432	1073433
		Sample Location:			BHL01	BHL06	BHL04	BHL05	BHL03	RH1	RH2	RH3
		Sample Type:			WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:			29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020	29-Sep-2020
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Selenium (Total)	N	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Total)	N	1450	µg/l	1.0	3.2	3.8	12	3.5	5.1	2.3	5.1	5.9
Dissolved Organic Carbon	U	1610	mg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.9	2.6	2.7
Total Organic Carbon	U	1610	mg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	17	3.1	3.2	3.0
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

APPENDIX 15

Investigation Techniques and General Notes

INVESTIGATION TECHNIQUES

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

GENERAL NOTES

1. *The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.*

2. *Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.*

3. *The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.*

4. *The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.*

5. *The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.*

6. *Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.*

7. *The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.*

8. *The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.*

9. *Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.*

10. *Any unavoidable variations from specified procedures are identified in the report.*

11. *Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated*

12. *All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.*

13. *Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.*

14. *The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.*

15. *Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.*

16. *The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.*

17. *Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.*

18. *Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.*

19. *Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.*

20. *Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.*

21. *The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.*

GEOTECHNICS

BUILD ON CONFIDENCE

Supplementary Investigation for Inert Landfill at Challonsleigh Farm, Devon

Challonsleigh Farm, | Lee Mill, | Devon.

Project No:	PE241937
Client:	Dorton Group Ltd
Engineer:	AtkinsRéalis
Date:	January 2025

Factual Report



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1.0 INTRODUCTION

A geotechnical and geoenvironmental investigation was undertaken by Geotechnics Limited at the site of a proposed inert landfill at Challonsleigh Farm, near Lee Mill, Devon. The investigation was carried out to the instructions of the Engineer, AtkinsRéalis on behalf of the Client, Dorton Group Ltd. This report describes the work undertaken and presents the data obtained.

2.0 OBJECTIVE AND SCOPE OF THE INVESTIGATION

The objective of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by exploratory hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The Brief for the project is included in Appendix 1. The investigation comprised a single rotary borehole, a trial pit and in situ and laboratory testing and reporting. A Factual Report was also commissioned.

3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2 to 9 of this report. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 10 to aid an understanding of the procedures followed and the context in which the report should be read.

In addition, the report is presented in electronic format in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format) are presented separately as a digital file.

4.0 THE SITE

4.1 Location

The site is located approximately 5.6km west from Ivybridge town centre, approximately 330m south of the A38, nearest postcode PL7 5AX. The approximate Ordnance Survey National Grid Reference for the site is SX597552 and an extract from the relevant 1:50,000 Scale O.S. Map (Sheet No. 202) is included as Appendix 2.

4.2 Description

The site comprises a roughly rectangular plot of land that is laid to scrub with a mixture of mature and immature trees and bushes surrounding an overgrown area largely covered with brambles. The area to be investigated had been cleared prior to the site work and was mostly laid to bare earth. The site covers an approximate area of 700m2 and slopes gently down towards the north.

The surrounding area is mainly comprised of agricultural farmland, however the southern boundary features an existing recycling site and has been partially landfilled, with a further recycling and haulage site approximately 250m east of the site. The River Yealm runs in a roughly north south orientation along the eastern border of the site. A steep slope is located at the northern border of the site and slopes steeply down to the north. The field, laying approximately 2m below the area under investigation, is generally flat and level and sits above the River Yealm.

Photographs of the site taken during the fieldwork are presented in Appendix 5 and 7.

4.3 Site Geology

The British Geological Survey Website, https://geologyviewer.bgs.ac.uk/, accessed on the 8th of November 2024 shows the site to be underlain by bedrock geology comprising Middle Devonian Slates which the BGS describes as cleaved mudstones, generally light to dark grey in colour.

The East of the site is underlain by superficial deposits comprising alluvium which the BGS describes as normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.

4.4 Hydrogeology

The British Geological Survey website, https://mapapps2.bgs.ac.uk/geoindex/home.html accessed on the 10th December 2024, shows the site to be underlain by Middle Devonian Rocks (undifferentiated) which are categorised as a low productivity aquifer with small local yields from secondary fractures.

5.0 PROCEDURE

5.1 Commissioning

The work was awarded following submission of a tender for work designed by the Engineer for ground investigation of the site in accordance with the Engineer's requirements (see Appendix 1).

5.2 General

The procedures followed in this site investigation are based on BS 5930: 2015+A1:2020 – Code of Practice for Site Investigations and BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites. The soils and rocks encountered have been described in accordance with BS5930:2015+A1:2020, BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018. The Rotary Borehole and Trial Pit Records are included in Appendices 4 and 6 and their approximate positions are shown on the Exploratory Hole Location Plan in Appendix 3.

The Exploratory Hole locations were specified by the Engineer. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a GNSS / GPS survey. The depths quoted on the exploratory hole records are in metres below ground level.

At each exploratory hole location, with the exception, of the trial pit, an inspection pit was excavated using hand tools to a depth of 1.20m below ground level to check for the presence of underground services. Prior to and on completion of the excavation, the locations were scanned using a cable avoidance tool (CAT).

5.3 Rotary Borehole

One (1. No.) 147mm diameter borehole (numbered BHL9) was sunk utilising open-hole drilling techniques to a depth of 8.05m below ground level. The work was carried out on the 1st November 2024.

The drilling equipment on this particular contract utilised compressed air as the flushing medium. The bedrock strata descriptions are the Drilling Foreman's estimate based on sediment and chipping returns in the flushing medium. The rate of penetration is also used as an indicator of the type of material being drilled, particularly where there is loss of flush returns. Definitive classification in terms of geology or degree of disturbance is not usually possible from these sources. Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata.

Groundwater observations are included on the Borehole Records where appropriate and any rise in water level was recorded over 20 minutes whilst the drilling operations were suspended.

On completion, a 50mm diameter standpipe was installed in Borehole BHL9 (see Section 5.5).

5.4 Trial Pit

One (1. No.) Trial Pit (numbered TPL131) was excavated to a depth of 2.50m below ground level using a 21T 360° excavator on the 1st November 2024. This work was supervised on site by a geotechnical / geo-environmental engineer.

The profiles of strata or other features were recorded as excavation proceeded and measurements taken from ground level. Representative samples were taken, where appropriate, for laboratory examination and analysis and in addition, Environmental samples (ES) were recovered at the depths indicated on the Trial Pit Record. Samples were taken directly from excavated materials deposited at the surface. Groundwater observations and trench stability notes are included on the Trial Pit Record. Photographs of the pits are presented in Appendix 7.

5.5 In Situ Permeability Tests

An in situ Rising Head Permeability test was undertaken in Borehole BHL09 during a pause in the drilling operations in accordance with BS EN ISO 22282-2:2012 at the following depth range:-

Exploratory Hole	Test Section (m below ground level)
BHL09	3.00 to 8.05

The test location was specified by the Client. The permeability for the test has been estimated from the groundwater levels recorded during drilling using the Hvorslev method as outlined in Annex B of the test standard and the results are presented in Appendix 8. The datum for the Rising Head Permeability test was ground level and the test section was between the standing water line (SWL) and the bottom of the borehole.

5.6 Instrumentation and Monitoring

Long-term monitoring of the groundwater levels was made possible by the installation of standpipes as follows:

Exploratory Hole	Standpipe Slotted Pipe & Filter Zone (m)
BHL09	2.00m to 8.00m

During the fieldwork groundwater samples were obtained following a purging of water in the standpipe. Subsequent monitoring of the standpipes is to be undertaken by others..

6.0 LABORATORY TESTING

6.1 Geotechnical

Geotechnical laboratory testing was not required on this project.

6.2 Land and Water Quality

Selected samples of soil and groundwater from BHL09 and TPL131 and surface water from sampling locations RL1, RL3 and RL4 from the nearby River Yealm were tested at the laboratories of Eurofins Chemtest for a number of determinands in order to check on potential site contamination and the River Yealm water quality. The determinands were specified by the Engineer and are detailed on the results sheets in Appendix 9 together with the test results as well as the test method, accreditation and detection limit.

Signed for and on behalf of Geotechnics Limited.

Prepared by:

Emily Stewart
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Reviewed by:

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Principal Engineer

APPENDIX 1

The Brief

Supplementary Ground Investigation 2024 for an Inert Landfill at Challonsleigh Farm, near Lee Mill, Devon

Conditions of Contract

The Employer shall be the Dorton Group SW Ltd., and the conditions of contract shall be the Infrastructure Conditions of Contract, the Ground Investigation Version, 1 August 2011 (and subsequent amendments, if any), subject to the following amendments.

Cl. 21.1	In lines 2 and 3, delete “in the joint names of the Contractor and the Employer” and insert “in the name of the Contractor”.
Cl. 23(1)	In lines 2 and 3, delete “in the joint names of the Contractor and the Employer” and insert “in the name of the Contractor”.
Cl. 23(2)	Delete clause.

Specification

The specification shall be the UK Specification for Ground Investigation, 2nd Edition, published by ICE Publishing, 2012, with information, amendments and additions as described in the Schedules.

Schedules

Schedule 1: Information		
S1.1	Name of Contract	Supplementary Ground Investigation 2024 for an Inert Landfill at Challonsleigh Fam, near Lee Mill, Devon, PL21.
S1.2	Investigation Supervisor	AtkinsRéalis Ltd.
S1.3	Description of site	The proposed inert landfill site is mainly agricultural farmland but has also been partially landfilled on its south side boundary where there is an existing recycling site and proposed waste transfer site.
S1.4	Main works proposed and purpose of this contract	To excavate an additional trial pit and drill an additional borehole for baseline ground condition characterisation data and groundwater monitoring, carry out groundwater level monitoring and sampling, and surface water sampling of the River Yealm, to provide additional information for an inert landfill environmental permit application.
S1.5	Scope of investigation	Excavation of a trial pit, rotary borehole drilling into bedrock with monitoring well installation, geotechnical and environmental and groundwater sampling and laboratory testing, and surface water sampling of the River Yealm.
S1.6	Geology and ground conditions	The Geology of Britain viewer indicates the 1:50,000 scale bedrock geology to be Middle Devonian Slates – Slate. The Middle Devonian Slates regional dip steeply to the south. In the east of the site there are superficial deposits comprising Alluvium and Head which are likely to be heterogeneous clay, silt sand and gravel.

Schedule 1: Information		
S1.7	Schedule of drawing(s) and documents	Drawing 5149237-ATK-GEN-ZZ-PL-C-0051 Ground Investigation 2024 Exploratory Hole Location Plan for sampling and monitoring.
S1.8	General requirements (Specification Section 3) Particular restrictions / relaxations	None envisaged but contractor to check with Employer / Investigation Supervisor prior to commencement on site.
S1.8.1	Quality management system (Clause 3.3)	Not applied.
S1.8.2	Professional Attendance (Clause 3.5.2)	As per Clause 3.5.2.
S1.8.3	Provision of ground practitioners and other personnel (Clauses 3.6.1 and 3.6.2)	None envisaged.
S1.8.4	Hazardous ground, land affected by contamination and invasive weeds (Clauses 3.7.1 and 3.22)	Hazardous substances are not expected within the ground; therefore the site is designated “GREEN” in accordance with the Guidelines for the safe investigation by drilling of landfills and contaminated land, 1993, published by Thomas Telford.
S1.8.5	Additional information on services not shown on Contract Drawings (Clause 3.7.2)	Underground utility service information is unlikely to be available. Exploratory hole locations should be moved to avoid suspected services or evidence of possible services.
S1.8.6	Known/suspected mine workings mineral extractions, etc. (Clause 3.7.3)	None known.
S1.8.7	Protected species (Clause 3.7.4)	None known.
S1.8.8	Archaeological remains (Clause 3.7.5)	None known.
S1.8.9	Security of the site (Clause 3.11)	As per Clause 3.11.
S1.8.10	Traffic management measures (Clause 3.12)	None envisaged.
S1.8.11	Restricted working hours (Clause 3.13)	None envisaged.

Schedule 1: Information		
S1.8.12	Trainee site operatives (Clause 3.14.1)	Permitted subject to prior approval by the Investigation Supervisor.
S1.8.13	Contamination avoidance and/or aquifer protection measures required (Clauses 3.15.2 and 3.15.3)	Not envisaged.
S1.8.14	Maximum period for boring, pitting or trenching through hard material, hard stratum or obstruction (Clauses 2.8, 4.3 and 6.4)	One hour, as per Clauses 4.3 and 6.4.
S1.8.15	Reinstatement requirements (Clause 3.16)	Reinstatement of surfaces to be as per existing ground surfaces.
S1.8.16	Hygiene facilities required (Clauses 2.20 and 3.16.1)	No additional requirements.
S1.8.17	Unavoidable damage to be reinstated by Contractor (Clause 3.16.1)	No additional requirements.
S1.8.18	Accuracy of exploratory hole locations (Clauses 3.19 and 3.20)	To be surveyed to National Grid co-ordinates and elevation.
S1.8.19	Photography requirements (Clause 3.25)	Of inspection pit, trial pits and rotary core (if collected).
S1.9	**Percussion boring (Specification Section 4) Particular restrictions / relaxation**	
		Not required.
S1.10	**Particular Rotary drilling (Specification Section 5) Particular restrictions / relaxations**	
S1.10.2	Particular rotary drilling techniques (Clause 5.2)	Rotary open hole drilling required, rotary core drilling not envisaged. Minimum hole diameter to be as necessary to achieve the borehole target depth. Depth to bedrock to be recorded.
S1.10.12	Backfilling (Clause 5.7)	Backfill with clean gravel below the water table, then cement bentonite grout above the water table.

Schedule 1: Information		
S1.10.13	Core photographic requirements (Clause 5.8)	If coring is carried out, photographs of cores in a fresh condition will be required.
S1.11	**Pitting and trenching (Specification Section 6) Particular restrictions / relaxations**	
S1.11.1	Indirect detection of buried services and inspection pits (Clauses 3.8.3 and 6.1)	Each exploratory hole location is to be CAT scanned. An inspection pit is to be dug to ensure the avoidance of underground services.
S1.12	**Sampling and monitoring during intrusive investigation (Specification Section 7) Particular restrictions / relaxations**	
S1.12.11	Frequency of sampling (Clause 7.9.4)	In addition to Clause 7.9.4 a minimum of two environmental sample per trial pit are to be collected and also wherever an environmental land quality concern is suspected, e.g. stained soils or Made Ground i.e. non engineered fill, environmental samples are to be collected of that ground for testing for potential contaminants.
S1.13	**Probing and cone penetration testing (Specification Section 8) Particular restrictions / relaxations**	
S13.1	Type(s) and reporting of dynamic probing (Clauses 8.1.1 and 8.1.2)	Not required
S1.14	**Geophysical testing (Specification Section 9) Particular restrictions / relaxations**	
		Not required.
S1.15	**In situ testing (Specification Section 10) Particular restrictions / relaxations**	
S1.15.1	Tests in accordance with British Standards (Clause 10.3)	Standard penetration tests required in borehole. Variable head permeability tests (rising and/or falling head) required at the borehole post monitoring well installation.
S1.16	**Instrumentation (Specification Section 11) Particular restrictions / relaxations**	
S1.16.1	Protective covers for installations (Clause 11.2)	A raised cover will need to be installed.
S1.16.3	Standpipe and standpipe piezometer installations (Clauses 11.4.1 and 11.4.2)	Standpipe (minimum 50mm diameter) to be installed to enable monitoring of ground gas, groundwater elevation, and to enable groundwater sampling. Standpipe to be developed post installation by pumping or air flushing.

Schedule 1: Information		
S1.17	**Installation monitoring and sampling (Specification Section 12) Particular restrictions / relaxations**	
S1.17.1	Groundwater level readings in installations (Clause 12.2)	Groundwater level to be taken on completion of the standpipe installation and at least once again prior to completion of the fieldwork.
S1.17.2	Groundwater sampling from installations (Clause 12.3.1)	Required from the standpipe installation.
S1.17.3	Purging/micro-purging (Clause 12.3.2	Required after the standpipe installation and prior to groundwater sampling.
S1.17.4	Ground gas monitoring (Clause 12.4)	Ground gas monitoring at the installation to be carried out at least once prior to completion of the fieldwork.
S1.17.7	Sampling and testing of surface water bodies (Clause 12.9)	To be carried out at the locations RL4, RL1 and RL3 identified on the Exploratory Hole Location Plan to sample the River Yealm, at upstream and downstream locations, and include measurement of field parameters pH, EC/TSS, DO, temperature and turbidity.
S1.18	**Daily records (Specification Section 13) Particular restrictions / relaxations**	
		No additional requirements.
S1.19	**Geotechnical laboratory testing (Specification Section 14) Particular restrictions / relaxations**	
S1.19.1	Preparation of test schedule (Clause 14.1.1)	Contractor to prepare a list of samples for scheduling of tests by the Investigation Supervisor.
S1.19.2	Tests Required (Clause 14.1.2)	May include but not restricted to: natural moisture content, Atterberg Limits, particle size distribution, sulphate (2:1 water / soil extract), moisture content / dry density compaction, shear box (remoulded), shear strength (remould) and hydraulic conductivity (remoulded).
S1.19.2	Rock testing requirements (Clause 14.5)	May include but not restricted to: natural moisture content, dry density, point load index, unconfined compressive strength with Young's modulus.
S1.19.6	Chemical testing for aggressive ground / groundwater for concrete (Clause 14.6)	Suite A Greenfield site (pyrite absent).
S1.20	**Geo-environmental laboratory testing (Specification Section 15) Particular restrictions / relaxations**	
S1.20.1	Preparation of test schedule (Clause 15.1)	Contractor to prepare a list of environmental samples for scheduling of tests by the Investigation Supervisor.

Schedule 1: Information		
S1.20.3	Chemical testing for contamination (Clause 15.3)	Suite E – Soil samples, to comprise the following determinands: As, Cd, Cr (total), Cu, Pb, Hg, Ni, Se, Zn, pH, sulphate, total organic carbon, total petroleum hydrocarbons, speciated polyaromatic hydrocarbons, asbestos (screen). Suite F – Water samples, to comprise the following determinands: As, B, Cd, Cr (total), Cu, Pb, Hg, Ni, Se, Zn, pH, sulphate, total organic carbon. Total and dissolved values required for metals.
S1.20.5	Waste Acceptance Criteria testing (Clause 15.5)	Anticipated Suite H – Inert waste landfill, may be required.
S1.20.7	Special laboratory testing	For water quality Suite F1 – Water samples, to comprise the following determinands: total petroleum hydrocarbons, speciated polyaromatic hydrocarbons. For water quality Suite F2 – Water samples, to comprise the following determinands: phenol, cyanide (total). For water quality Suite F3 – Water samples, to comprise the following determinands: Al, Ca, Mg, Mn, Na, K, chloride, nitrate, fluoride, phosphorus, ammonia/ammoniacal nitrogen, dissolved organic carbon, alkalinity, total dissolved solids, conductivity. Total and dissolved values required for metals.
S1.21	**Reporting (Specification Section 16) Particular restrictions / relaxations**	
S1.21.3	Variations to final digital data supply requirements (Clause 16.5.1)	The format of the digital data files shall comply with the Association of Geotechnical and Geoenvironmental Specialists (AGS) publication ‘Electronic transfer of geotechnical and geoenvironmental data' Edition 4.0, known as AGS4. No additional groups, fields or codes shall be accepted without the prior agreement of the Investigation Supervisor, and then only in exceptional circumstances. The Contractor shall be responsible for assigning GEOL_GEOL and GEOL_GEO2 codes, in collaboration with the Investigation Supervisor. AGS Format data shall be issued as a single file.
S1.21.4	Digital Data – Preliminary data (Clause 16.5.3)	Preliminary digital data not required.
S1.21.5	Type(s) of report required (Clause 16.6)	The Contractor is to prepare a Factual Report as per BS EN 1997-1:2004 Eurocode 7: Geotechnical design – Part 1 General rules Section 3.4. Contractor is not required to carry out evaluation of the geotechnical information or prepare a Geotechnical Design Report.

Schedule 1: Information		
S1.21.8	Contents of Ground Investigation Report (Clause 16.8)	As per Clause 16.8.1 and BS EN 1997-1:2004 Eurocode 7: Geotechnical design – Part 1 General rules Sections 3.4.2.
S1.21.10	Submission of electronic information – Timing (Clause 16.10.1)	Complete set of electronic information to be supplied with draft and approved final copies of the report.
S1.21.11	Submission of electronic information – Media (Clause 16.10.2)	Via email, CD or DVD ROM.
S1.21.12	Approval of report (Clause 16.11)	One digital copy of a draft Factual Report required within three weeks of completion of the borehole, groundwater and surface water sampling (excludes subsequent visits), the aim being for the draft report to include the groundwater and surface water chemical data. One digital copy of the final Factual Report required within two weeks of receipt of the Investigation Supervisor's comments.

Schedule 2: Exploratory Holes					
Hole ID.	**Type**	**Scheduled Depth**	**NGR**	**Anticipated Ground Surface**	**Remarks**
As per each exploratory hole location.	Hand dug inspection pit.	0-1.2m	At each exploratory borehole location, see Exploratory Hole Location Plan.	As indicated below.	To check for underground services.
TPL131	Trial Pit	4.5m	See Exploratory Hole Location Plan.	Grass and scrub.	To determine ground conditions and enable soil sampling for geotechnical testing.
BHL9	Rotary drilled borehole + standpipe, raised cover. SPTs in soils above bedrock.	8m aiming to be at least 3m below water table.	See Exploratory Hole Location Plan.	Grass and scrub.	To determine ground conditions, carry out permeability test, and install ground gas and groundwater monitoring standpipe.
RL4, RL1, RL3	Surface water sampling location on River Yealm.	N/A	See Exploratory Hole Location Plan.	Footpath or natural adjacent the River Yealm.	Surface water sampling.

Schedule 3: Engineer's Facilities		
S3.1, S3.2, S3.3, S3.4, S3.5, S3.6	Accommodation, Furnishings, Services, Equipment, Transport, Personal Protective Equipment for Investigation Supervisor	Not required.
Schedule 4: Specification Amendments		
None.		
Schedule 5: Specification Additions		
None.		

Bill of Quantities

Included as separate spreadsheet.

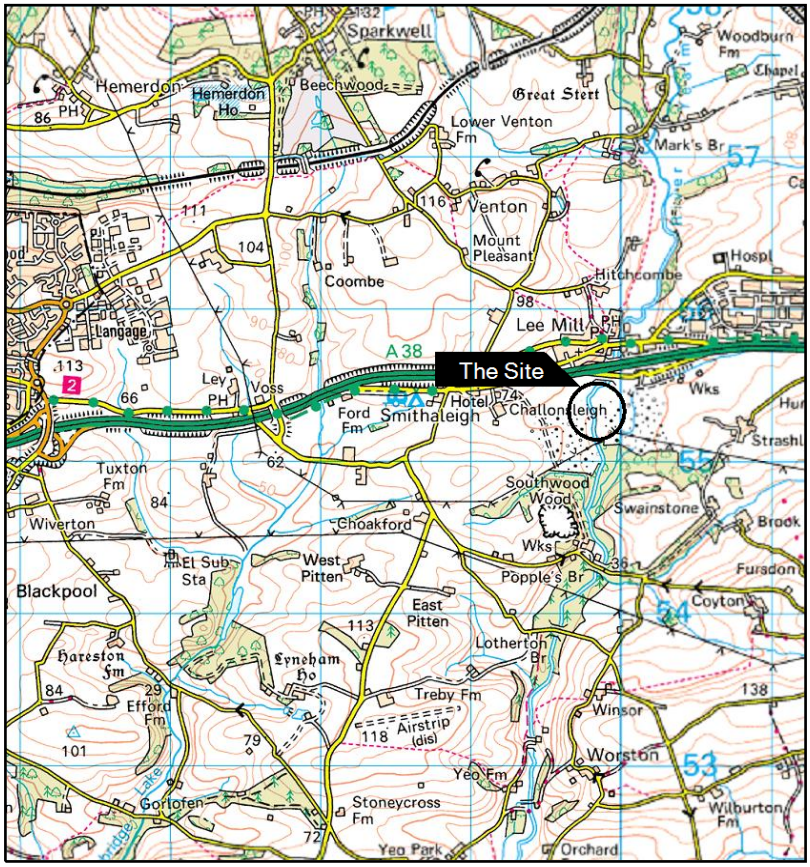
APPENDIX 2

Site Location Plan

APPENDIX 2

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BUILD ON CONFIDENCE

Site Location Plan



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APPENDIX 3

Borehole Location Plan



N

Legend

- Locations By Type - RC
- Locations By Type - SLSW
- Locations By Type - TP

GEOTECHNICS

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Engineer:
AtkinsRealis

Client:
AtkinsRealis

Project:
Supplimentary Investigation for Inert Landfill at Challonsleigh Farm, Devon

Drawing Title:
Exploratory Hole Location Plan

Scale:	Date:
1:2550 at A3	**21/01/2025**
Project No.: **PE241937**	**Exploratory Hole Location Plan**

APPENDIX 4

Open Hole Borehole Record

BOREHOLE RECORD - *Rotary Cored*

Project	Supplimentary Investigation for Inert Landfill at Challonsleigh Farm, Devon	**Engineer**	AtkinsRealis	**Project No.**	PE241937
Client	AtkinsRealis	**National Grid Coordinates**	259766.6 E 55252.2 N	**Borehole**	BHL09
				Ground Level	47.14 m OD

Scale 1:50

Sampling/Testing		Drilling					Strata				
Sample / SPT Depth	SPT N / Type	Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	TCR/ SCR (%)	RQD (%)	FI	General	Detail	Depth	Legend	Level (m OD)
0.10	ES						TOPSOIL - Brown slightly gravelly slightly sandy CLAY. Sand is medium to coarse. Gravel is fine to medium, angular and tabular Mudstone. Frequent roots and rootlets.				
0.40	ES								0.40		46.74
0.40 - 0.90	B						Grey slightly clayey, fine to coarse, angular to tabular GRAVEL of mudstone.				
1.10	ES										
1.20 - 1.65	S50						Grey & brown / grey moderately weak strong mudstone slate (Drillers description).	From 1.2m rotary open hole technique. Grey dust returns.	1.20		45.94
4.00 - 4.44	S88/ 293mm										
								End of Borehole	8.05		39.09

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
		Inspection Pit	ADS	8.00	3.00	4.63	01/11/24	08:00	8.05	3.00	7.55	5		Moderate inflow.
		Rotary Core	ADS								6.34	10		
											5.56	15		
											4.63	20		

Remarks

CAT & Genny surface scan before excavation. Inspection pit hand excavated to 1.2m below ground level. No services encountered. Borehole continued using rotary open hole techniques to target depth of 8.00m BGL. Borehole installed with 50mm gas & groundwater monitoring pipe. Install details as follows: 8.00m to 3.00m slotted pipe with geosock in gravel surround. 3.00m to GL plain pipe in bentonite seal. Finished at surface with a raised cover and a gas tap.

Logged by ES

Figure Sheet 1 of 1

21/01/2025

Symbols and abbrevations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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FIELDWORK RESULTS - *SPT Results Summary*

Project Supplimentary Investigation for Inert Landfill at Challonsleigh Farm, Devon **Engineer** AtkinsRealis **Project No.** PE241937

Client AtkinsRealis

Borehole	Depth (m bgl)	Level (m OD)	SPT Type	SWP (mm)	Seating Drive		Test Drive				SPT *N* -value	Uncorrected SPT *N*
					0 - 75 (mm)	75 - 150 (mm)	0 - 75 (mm)	75 - 150 (mm)	150 - 225 (mm)	225 - 300 (mm)		10 20 30 40 50
BHL09	1.20		S		4	9	11	12	13	14	50	
BHL09	4.00		S		13	24	38	50/68			88/293	

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Associated Drilling Services
Hara
Dainton
Newton Abbot
Devon
TQ12 5TZ

SPT Hammer Ref:	ADS R3
Test Date:	16/03/2024
Report Date:	21/03/2024
File Name:	ADS R3.spt
Test Operator:	LJS

Instrumented Rod Data

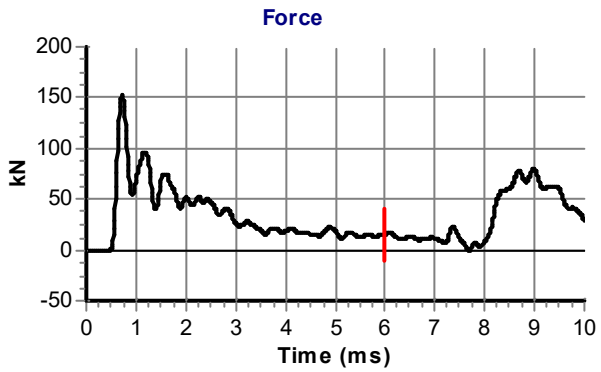
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.6
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

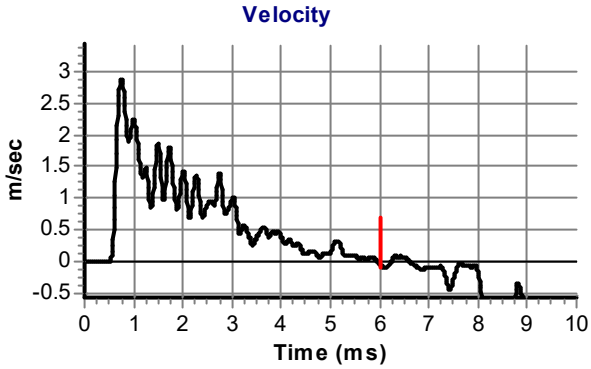
SPT Hammer Information

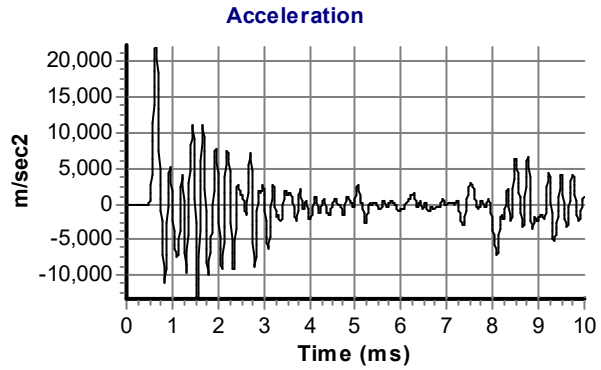
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	15.0

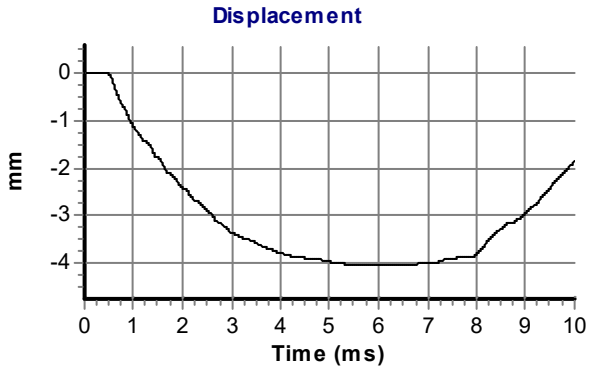
Comments / Location

ADS R3









Calculations

Area of Rod A (mm2):	983
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	276

Energy Ratio E_r (%): 58

The recommended calibration interval is 12 months



Signed: Luke Sansom

Title: Director

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DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

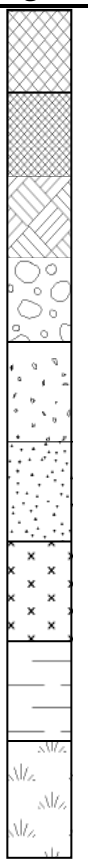
Water Strike

Depth Water Rose To

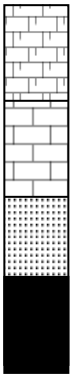
Instrumentation



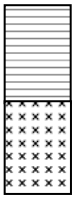
Strata / Legend



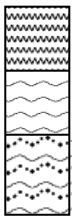
Note: Composite soil types shown by combined symbols



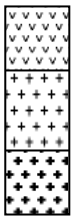
Strata, Continued



Metamorphic Rock



Igneous Rock



Backfill Materials



Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

APPENDIX 5

Rotary Open Hole Location Photographs

BHL9 Inspection Pit down hole



BHL9 Inspection pit spoil



BHL9 Inspection Pit



APPENDIX 6

Trial Pit Record

TRIAL PIT RECORD - Trial Pit

Project	Supplimentary Investigation for Inert Landfill at Challonsleigh Farm, Devon	**Engineer**	AtkinsRealis	**Project No.**	PE241937
				Location ID	TPL131
Client	AtkinsRealis	**National Grid Coordinates**	259760.4 E 55258.8 N	**Ground Level**	46.54 m OD

Scale 1:50

Samples and Tests				Strata			
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.30	B			TOPSOIL: Cleared vegetation over brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to tabular Mudstone. Sand is medium.			
0.30	D				0.40		46.14
0.30	ES			Extremely weak, grey and grey brown thinly laminated SLATE. Recovered as fine to coarse angular to tabular GRAVEL of slate.			
0.60 - 0.80	B						
0.80	ES		w: 8 %		0.90		45.64
1.30 - 1.50	B			Extremely weak becoming weak, grey and grey brown thinly laminated SLATE. Recovered as coarse angular tabular gravel and cobbles. Increasing cobble content with depth, Rare boulder sized material below 2.00m, up to 250mm across.			
2.30 - 2.50	B						
				End of Excavation	2.50		44.04

Excavation

Plant	Hitachi 21T 360° excavator	**Width (B)**	2.20
Date	01/11/2024	**Length (C)**	4.60
Shoring	None	**Date Backfilled**	01/11/2024
Stability	Unstable pit wall see remarks.		

Groundwater

Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
				Groundwater not encountered during excavation.

Remarks Surface scanned with CAT and Genny before excavation. Excavated using a 21T 360° excavator. Unstable pit wall to southern face with 1.0m wide over break from GL to 2.0m and frequent spalling. Trial pit terminated at 2.50m depth due to sidewall collapse on instruction of Investigation Supervisor. Groundwater not encountered during excavation. Trial pit back filled with arisings.

Logged by NW

Figure Sheet 1 of 1

21/01/2025

Symbols and abbrevations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

GEOTECHNICS

APPENDIX 7

Trial Pit Photographs

TPL131 Full Excavation before collapse



TPL131 Part excavated



TPL131 Pit



TPL131 Post Excavation



TPL131 Pre-Excavation



TPL131 South Sidewall Structure



TPL131 South Sidewall



TPL131 Spoil



APPENDIX 8

In Situ Permeability Test Result

INSITU TESTING - *Permeability (Borehole)*

Project	Challonsleigh Farm SI	Borehole	BHL09
		Project No	PE241937
		Test No	1
Client	AtkinsRealis	Date	01/11/2024

Water Permeability Test in a Borehole using Open Systems in accordance with BS EN ISO 22282-2:2012

Borehole Details

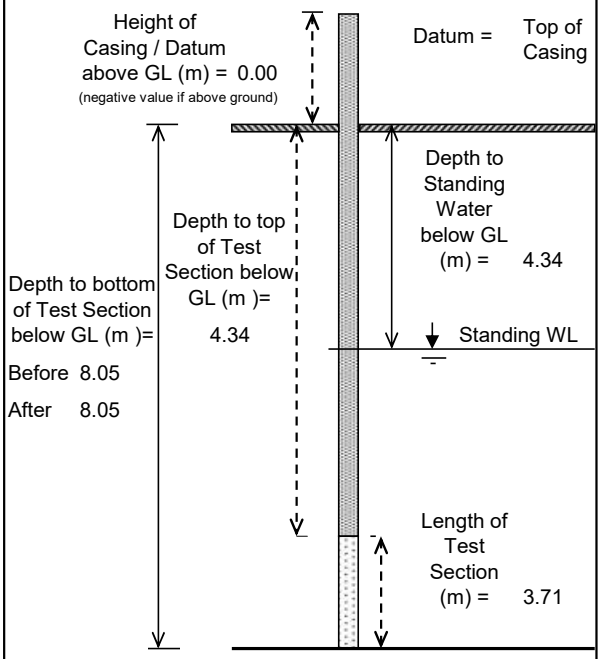
Inclination	Vertical
Method of Drilling	Rotary Open Hole
Co-ordinates (m)	E 259766.6
	N 55252.2
Level (m OD)	47.14

Test Details

Test Type	Variable Head - Rising
Hydrogeological Conditions	Test Section Saturated
Type of Filter	None
Isolation Device	None
Test Section Dia. (m)	0.15
Measuring Tube Dia. (m)	0.15

Test Measurements

Elapsed Time (minutes)	Depth of Water below Top of Casing (m)	Elapsed Time (Continued) (minutes)	Depth of Water below Top of Casing (continued) (m)
0.0	7.55		
5.0	6.34		
10.0	5.56		
15.0	4.85		
20.0	4.63		
25.0	4.48		
30.0	4.43		
35.0	4.41		
40.0	4.36		
45.0	4.35		
50.0	4.34		
55.0	4.34		
60.0	4.34		



Depth to Standing Water Level below Datun	4.34	m
Depth to Induced Water Level below Datum	7.55	m
Differential head at start of Test (H_o)	-3.21	m
Differential Head at end of Test (H_f)		m
Time Elapsed at end of test (t_f)	60.0	mins

Weather during Test	Dry
Test Carried Out By	ADS Drilling
Test Checked By	ES
Description of Test Section	Refer to borehole record

INSITU TESTING - *Permeability (Borehole)*

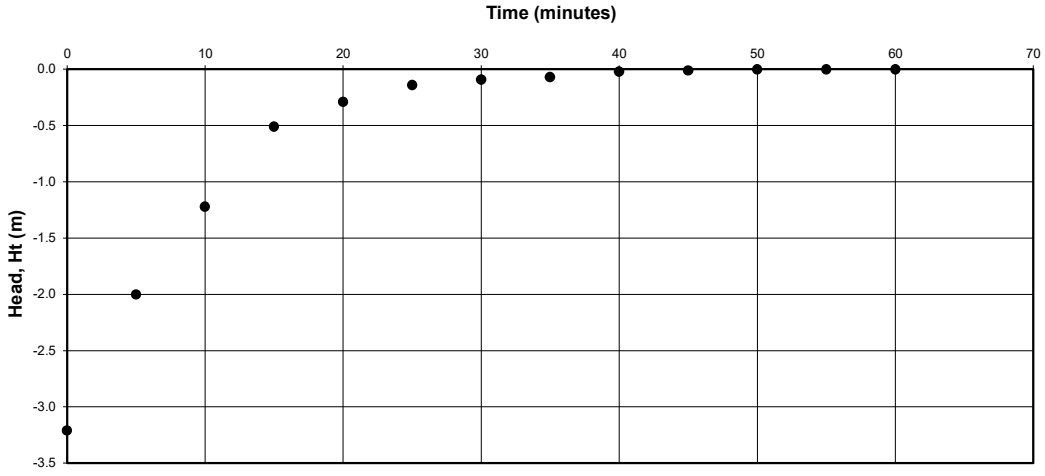
Project Challonsleigh Farm SI

Client AtkinsRealis

Borehole BHL09
Project No PE241937
Test No 1
Date 01/11/2024

Test Results

Time (mins)	Measured Depth (m)	Relative Depth (m bgl)	Ht (m)	ΔH (m)	Time (mins)	Measured Depth (m)	Relative Depth (m bgl)	Ht (m)	ΔH (m)
0.0	7.55	7.55	-3.21	0.00					
5.0	6.34	6.34	-2.00	0.62					
10.0	5.56	5.56	-1.22	0.38					
15.0	4.85	4.85	-0.51	0.16					
20.0	4.63	4.63	-0.29	0.09					
25.0	4.48	4.48	-0.14	0.04					
30.0	4.43	4.43	-0.09	0.03					
35.0	4.41	4.41	-0.07	0.02					
40.0	4.36	4.36	-0.02	0.01					
45.0	4.35	4.35	-0.01	0.00					
50.0	4.34	4.34	0.00						
55.0	4.34	4.34	0.00						
60.0	4.34	4.34	0.00						



Remarks and Additional Information

Depth to Standing Water taken as the water level in the borehole at the end of the test.
Length of Test Section set to length of borehole below the Standing Water Level.

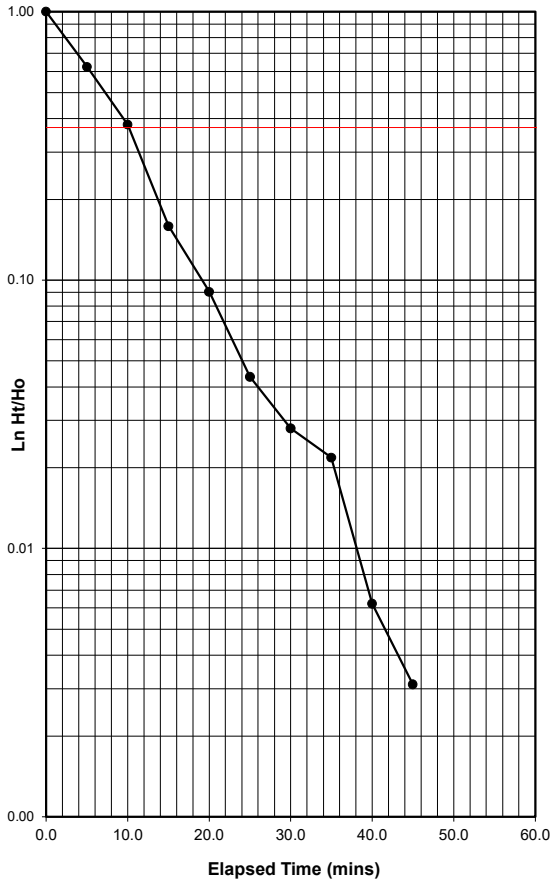
GEOTECHNICS

INSITU TESTING - *Permeability (Borehole)*

Project	Challonsleigh Farm SI	Borehole	BHL09
		Project No	PE241937
		Test No	1.000
Client	AtkinsRealis	Date	01/11/2024

Calculation of Permeability using Hvorslev Method (Ref BS5930:1999 + A2:2010)

Time (mins)	Ht (m)	Ht/Ho	Time (mins)	Ht (m)	Ht/Ho	Time (mins)	Ht (m)	Ht/Ho
0.0	-3.21	1.00						
5.0	-2.00	0.62						
10.0	-1.22	0.38						
15.0	-0.51	0.16						
20.0	-0.29	0.09						
25.0	-0.14	0.04						
30.0	-0.09	0.03						
35.0	-0.07	0.02						
40.0	-0.02	0.01						
45.0	-0.01	0.00						
50.0	0.00	#N/A						
55.0	0.00	#N/A						
60.0	0.00	#N/A						



Type of Test	Variable Head - Rising	
Depth to Standing Water Level	4.34	m
Depth to Induced Water Level	7.55	m
Differential head at start ($H_{o)}$	-3.21	m
Diameter of Test Section	0.15	m
Diameter of Measuring Tub	0.15	m
Test Length (L)	3.71	m
Area of Test Section (As)	1.70E-02	m^2
Area of Measuring Tube (Af	1.70E-02	m^2

Time at ratio H/Ho=.37 :	10.00	mins

VARIABLE HEAD TEST	**(TIME LAG APPROACH)**	
Shape factor (F)	5.944	
Time Lag (T)	10.00	mins
Permeability (k) = A/FT	**4.76E-06**	**m/sec**

Remarks and Additional Information

APPENDIX 9

Chemical Laboratory Testing Results

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Amended Report

Report No.:	24-35932-2		
Initial Date of Issue:	18-Nov-2024	**Date of Re-Issue:**	16-Dec-2024
Re-Issue Details:	This report has been revised and directly supersedes 24-35932-1 in its entirety		
Client	Geotechnics Ltd		
Client Address:	Unit 5 Orchard Court, Heron Road Sowton Industrial Estate Exeter Devon EX2 7LL		
Contact(s):	Anne Simpson Nick Wood Scott Hunter		
Project	PE241937 Challonsleigh Farm Supplementary GI		
Quotation No.:	Q24-35834	**Date Received:**	05-Nov-2024
Order No.:		**Date Instructed:**	07-Nov-2024
No. of Samples:	6		
Turnaround (Wkdays):	28	**Results Due:**	16-Dec-2024
Date Approved:	16-Dec-2024		
Approved By:			
Details:	David Smith, Technical Director		

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: PE241937 Challonsleigh Farm Supplementary GI

Client: Geotechnics Ltd				**Chemtest Job No.:**		24-35932	24-35932
Quotation No.: Q24-35834				**Chemtest Sample ID.:**		1890339	1890342
				Sample Location:		BHL09	TPL131
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.40	0.80
				Date Sampled:		01-Nov-2024	01-Nov-2024
				Asbestos Lab:		DURHAM	DURHAM
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type		U	2192		N/A	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	7.9	8.2
Soil Colour		N	2040		N/A	Brown	Brown
Other Material		N	2040		N/A	Stones	Stones
Soil Texture		N	2040		N/A	Sand	slate
pH at 20C		U	2010		4.0	8.9	8.6
Sulphate (2:1 Water Soluble) as SO4		U	2120	g/l	0.010	< 0.010	< 0.010
Arsenic		U	2455	mg/kg	0.5	36	19
Cadmium		U	2455	mg/kg	0.10	0.15	< 0.10
Chromium		U	2455	mg/kg	0.5	35	35
Copper		U	2455	mg/kg	0.50	55	35
Mercury		U	2455	mg/kg	0.05	< 0.05	< 0.05
Nickel		U	2455	mg/kg	0.50	65	61
Lead		U	2455	mg/kg	0.50	35	32
Selenium		U	2455	mg/kg	0.25	1.0	0.69
Zinc		U	2455	mg/kg	0.50	140	110
Total Organic Carbon		U	2625	%	0.20	0.23	0.20
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	< 10	< 10
Naphthalene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		U	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0	< 2.0

Results - Water

Project: PE241937 Challonsleigh Farm Supplementary GI

Client: Geotechnics Ltd			**Chemtest Job No.:**			24-35932	24-35932	24-35932	24-35932
Quotation No.: Q24-35834			**Chemtest Sample ID.:**			1890334	1890335	1890336	1890337
					Sample Location:	RL1	RL3	RL4	BHL09
					Sample Type:	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Ground Water
					Date Sampled:	01-Nov-2024	01-Nov-2024	01-Nov-2024	01-Nov-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**				
pH at 20C		U	1010		4.0	8.8	8.6	8.5	7.9
Electrical Conductivity at 25C		U	1020	µS/cm	1.0	140	130	120	670
Total Dissolved Solids		N	1020	mg/l	1.0	94	87	76	430
Alkalinity (Total)		U	1220	mg/l	10	48	51	52	400
Chloride		U	1220	mg/l	1.0	16	16	14	32
Fluoride		U	1220	mg/l	0.050	0.11	0.10	0.10	0.13
Ammonia (Free)		N	1220	mg/l	0.050	0.059	< 0.050	< 0.050	< 0.050
Ammoniacal Nitrogen		U	1220	mg/l	0.050	0.24	0.23	0.23	0.20
Nitrate as NO3		U	1220	mg/l	0.50	6.3	6.2	5.6	12
Phosphorus (Dissolved)		N	1220	mg/l	0.020	< 0.020	0.021	< 0.020	< 0.020
Sulphate		U	1220	mg/l	1.0	10	12	9.9	43
Cyanide (Total)		U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium (Dissolved)		U	1455	mg/l	2.00	9.6	12	8.8	120
Potassium (Dissolved)		U	1455	mg/l	0.50	1.8	1.8	1.7	2.3
Magnesium (Dissolved)		U	1455	mg/l	0.20	2.7	2.9	2.7	8.4
Sodium (Dissolved)		U	1455	mg/l	1.50	9.0	9.2	8.5	17
Aluminium (Dissolved)		N	1455	µg/l	5.0	27	29	29	< 5.0
Arsenic (Dissolved)		U	1455	µg/l	0.20	4.7	4.9	4.8	< 0.20
Boron (Dissolved)		U	1455	µg/l	10.0	16	17	15	33
Cadmium (Dissolved)		U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)		U	1455	µg/l	0.50	0.93	0.66	0.80	1.2
Copper (Dissolved)		U	1455	µg/l	0.50	1.9	1.4	1.5	< 0.50
Mercury (Dissolved)		U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)		U	1455	µg/l	0.50	5.1	3.9	6.1	4.5
Nickel (Dissolved)		U	1455	µg/l	0.50	1.7	1.1	1.1	1.5
Lead (Dissolved)		U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Antimony (Dissolved)		U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)		U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Zinc (Dissolved)		U	1455	µg/l	2.5	13	6.3	7.3	5.8
Arsenic (Total)		N	1455	µg/l	0.20	5.9	6.2	5.7	10
Boron (Total)		N	1455	µg/l	10.0	17	22	17	37
Cadmium (Total)		N	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11	0.19
Chromium (Total)		N	1455	µg/l	0.50	1.0	0.55	1.0	13
Copper (Total)		N	1455	µg/l	0.50	4.2	2.8	2.6	20
Mercury (Total)		N	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (Total)		N	1455	µg/l	0.50	1.7	1.2	1.4	29
Lead (Total)		N	1455	µg/l	0.50	0.91	0.60	0.59	44
Antimony (Total)		N	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	0.63
Selenium (Total)		N	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50	3.3

Results - Water

Project: PE241937 Challonsleigh Farm Supplementary GI

Client: Geotechnics Ltd			**Chemtest Job No.:**			24-35932	24-35932	24-35932	24-35932
Quotation No.: Q24-35834			**Chemtest Sample ID.:**			1890334	1890335	1890336	1890337
					Sample Location:	RL1	RL3	RL4	BHL09
					Sample Type:	WATER	WATER	WATER	WATER
					Sample Sub Type:	Surface Water	Surface Water	Surface Water	Ground Water
					Date Sampled:	01-Nov-2024	01-Nov-2024	01-Nov-2024	01-Nov-2024
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**				
Zinc (Total)		N	1455	µg/l	2.5	15	11	18	65
Chromium (Trivalent)		N	1490	µg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Chromium (Hexavalent)		U	1490	µg/l	20	[B] < 20	[B] < 20	[B] < 20	[B] < 20
Dissolved Organic Carbon		U	1610	mg/l	2.0	2.1	< 2.0	< 2.0	< 2.0
Total Organic Carbon		U	1610	mg/l	2.0	2.0	< 2.0	< 2.0	< 2.0
Total TPH >C6-C40	EH_1D_Total	U	1670	µg/l	10	< 10	< 10	< 10	< 10
Benzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene		U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		U	1800	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		U	1800	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols		U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1890334			RL1	01-Nov-2024	B	Coloured Winchester 1000ml
1890334			RL1	01-Nov-2024	B	EPA Vial 40ml
1890334			RL1	01-Nov-2024	B	Plastic Bottle 1000ml
1890335			RL3	01-Nov-2024	B	Coloured Winchester 1000ml
1890335			RL3	01-Nov-2024	B	EPA Vial 40ml
1890335			RL3	01-Nov-2024	B	Plastic Bottle 1000ml
1890336			RL4	01-Nov-2024	B	Coloured Winchester 1000ml
1890336			RL4	01-Nov-2024	B	EPA Vial 40ml
1890336			RL4	01-Nov-2024	B	Plastic Bottle 1000ml
1890337			BHL09	01-Nov-2024	B	Coloured Winchester 1000ml
1890337			BHL09	01-Nov-2024	B	EPA Vial 40ml
1890337			BHL09	01-Nov-2024	B	Plastic Bottle 1000ml

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
1010	pH Value of Waters	pH at 20°C	pH Meter	RE PW TE TS PL DW GW
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity at 25°C and Total Dissolved Solids (TDS) in Waters	Conductivity Meter	TE TS PL LE SW GW
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.	RE PW PL LE DW GW
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.	GW
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).	RE PW PL SW DW GW
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.	PL GW
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation	PL SW GW
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection	
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.	PL GW
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection	PL GW
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.	PL GW
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.
Any comments or interpretations are outside the scope of UKAS accreditation.
The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.
Uncertainty of measurement for the determinands tested are available upon request .
None of the results in this report have been recovery corrected.
All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at ≤ 30°C prior to analysis.
All Asbestos testing is performed at the indicated laboratory .
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.
All water samples will be retained for 14 days from the date of receipt.
Charges may apply to extended sample storage.

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable

Report Information

PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX 10

Investigation Techniques and General Notes

INVESTIGATION TECHNIQUES

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

GENERAL NOTES

1. *The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.*

2. *Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.*

3. *The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.*

4. *The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.*

5. *The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.*

6. *Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.*

7. *The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.*

8. *The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.*

9. *Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.*

10. *Any unavoidable variations from specified procedures are identified in the report.*

11. *Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated*

12. *All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.*

13. *Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.*

14. *The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.*

15. *Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.*

16. *The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.*

17. *Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.*

18. *Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.*

19. *Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.*

20. *Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.*

21. *The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.*

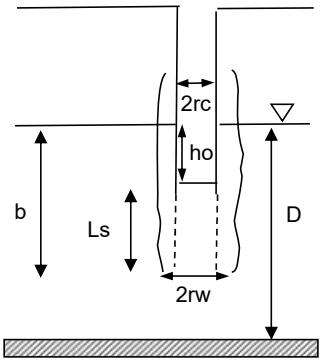
Appendix C. Permeability testing

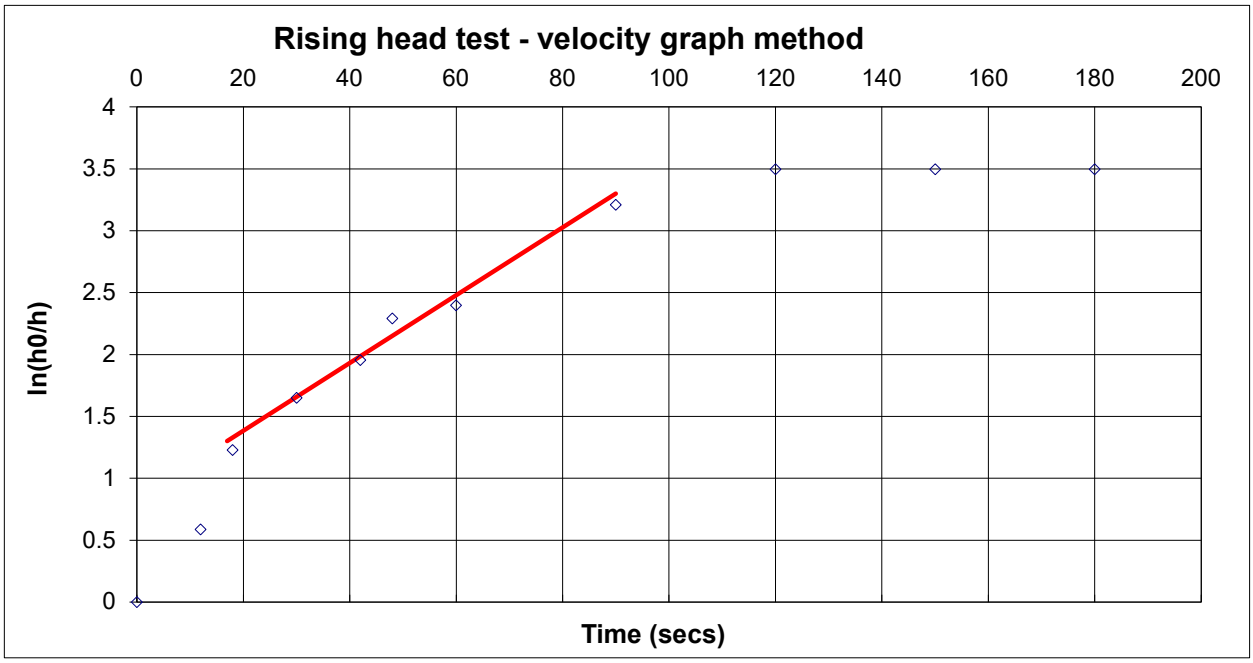
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL01 Test 1	Date	29/09/2020
Static water level (mbgl)	5.94	Water column height b (m)	7.06
Depth of well	13	Ls / 2rc	180
Length of screen Ls (m)	9.00	Shape factor F, for Le/2rc>10	7.86
Drilled diameter 2rw (m)	0.14	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.990

Velocity graph method - red straight line on velocity graph

t1 =	17	ln(h0/h) fo	1.3
t2 =	90	ln(h0/h) fo	3.3
Slope, α	0.027	Velocity graph method k = α S / F	
k =	6.84E-06 m/sec	0.5913	m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL01 Test 1
Source:	Diver measurement	Date:	29/09/2020
h0 =	5.94	-0.990	

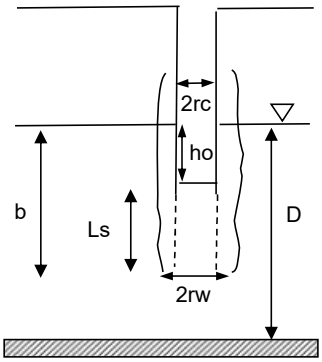
t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	6.93	-0.990	0.000	1.000
12	6.49	-0.550	0.588	0.556
18	6.23	-0.290	1.228	0.293
30	6.13	-0.190	1.651	0.192
42	6.08	-0.140	1.956	0.141
48	6.04	-0.100	2.293	0.101
60	6.03	-0.090	2.398	0.091
90	5.98	-0.040	3.209	0.040
120	5.97	-0.030	3.497	0.030
150	5.97	-0.030	3.497	0.030
180	5.97	-0.030	3.497	0.030

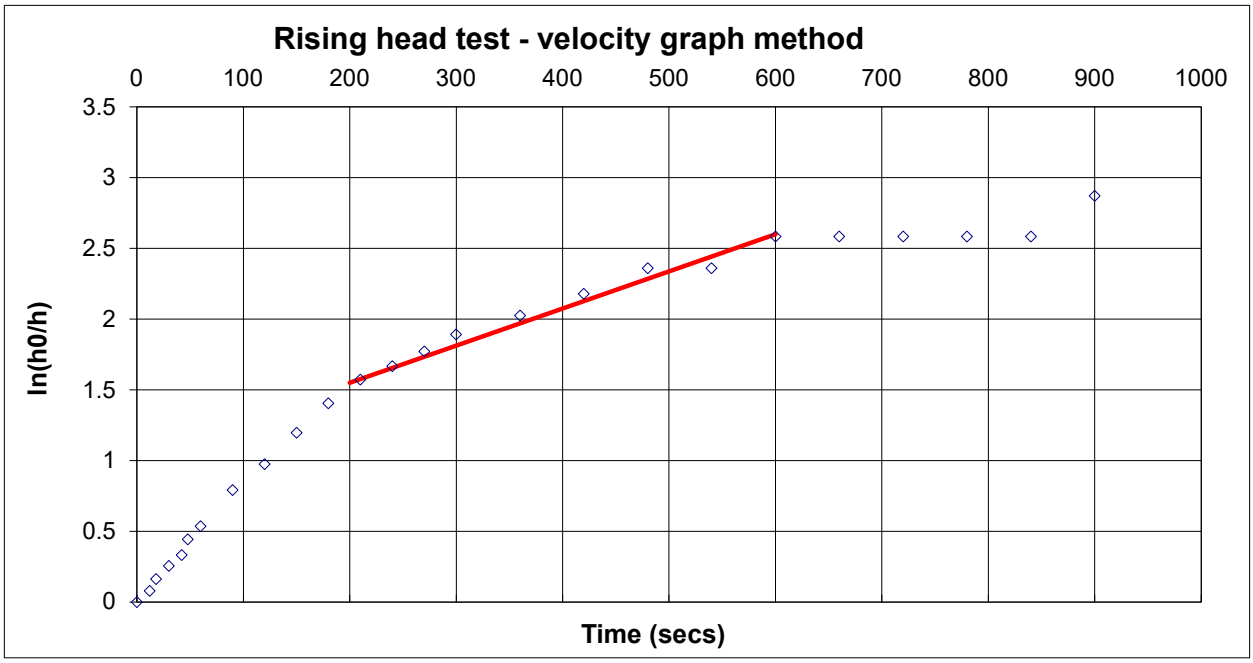
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill			
Location & Test No.	BHL02 Test 1	Date	30/09/2020	
Static water level (mbgl)	4.56	Water column height b (m)		7.44
Depth of well	12	Ls / 2rc		200
Length of screen Ls (m)	10.00	Shape factor F, for Le/2rc>10		8.21
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2		0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)		-0.530

Velocity graph method - red straight line on velocity graph

t1 =	200	ln(h0/h) fo	1.55
t2 =	600	ln(h0/h) fo	2.6
Slope, α	0.003	Velocity graph method k = α S / F	
k =	6.28E-07 m/sec		0.0543 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL02 Test 1
Source:	Diver measurement	Date:	30/09/2020
h0 =	4.56	-0.530	

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	5.09	-0.530	0.000	1.000
12	5.05	-0.490	0.078	0.925
18	5.01	-0.450	0.164	0.849
30	4.97	-0.410	0.257	0.774
42	4.94	-0.380	0.333	0.717
48	4.9	-0.340	0.444	0.642
60	4.87	-0.310	0.536	0.585
90	4.8	-0.240	0.792	0.453
120	4.76	-0.200	0.975	0.377
150	4.72	-0.160	1.198	0.302
180	4.69	-0.130	1.405	0.245
210	4.67	-0.110	1.572	0.208
240	4.66	-0.100	1.668	0.189
270	4.65	-0.090	1.773	0.170
300	4.64	-0.080	1.891	0.151
360	4.63	-0.070	2.024	0.132
420	4.62	-0.060	2.179	0.113
480	4.61	-0.050	2.361	0.094
540	4.61	-0.050	2.361	0.094
600	4.6	-0.040	2.584	0.075

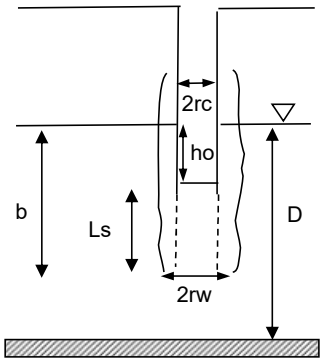
660	4.6	-0.040	2.584	0.075
720	4.6	-0.040	2.584	0.075
780	4.6	-0.040	2.584	0.075
840	4.6	-0.040	2.584	0.075
900	4.59	-0.030	2.872	0.057

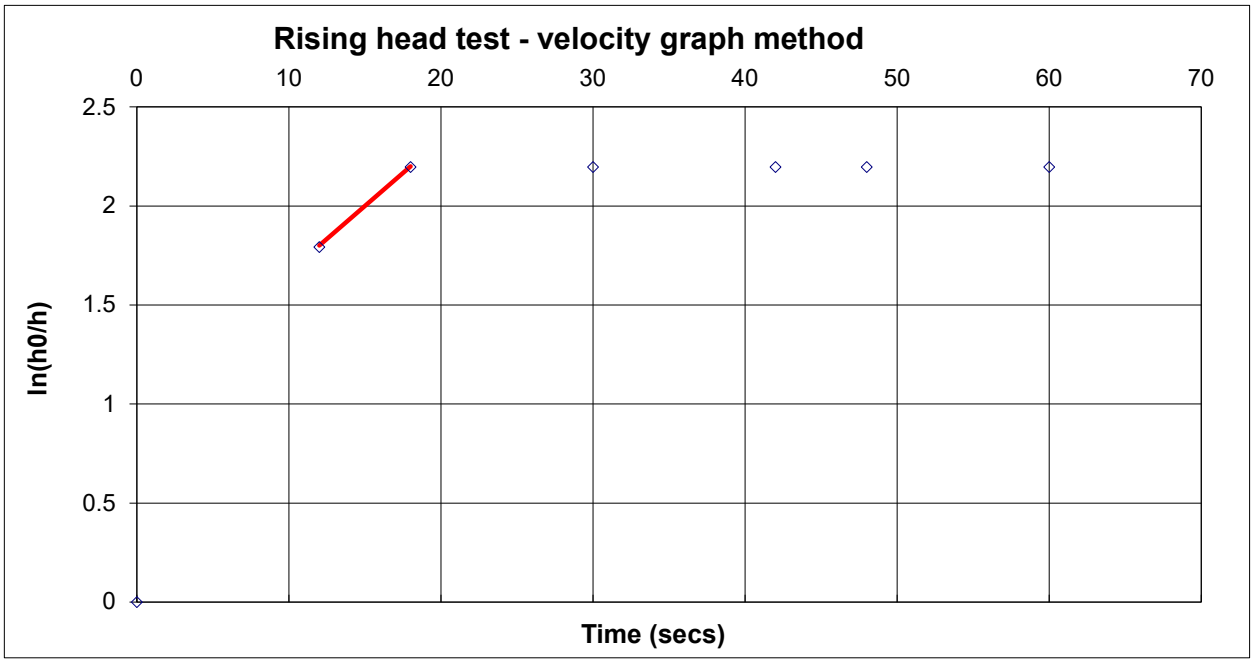
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL03 Test 1	Date	29/09/2020
Static water level (mbgl)	2.94	Water column height b (m)	3.56
Depth of well	6.5	Ls / 2rc	90
Length of screen Ls (m)	4.50	Shape factor F, for Le/2rc>10	4.51
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.180

Velocity graph method - red straight line on velocity graph

t1 =	12	ln(h0/h) fo	1.8
t2 =	18	ln(h0/h) fo	2.2
Slope, α	0.067	Velocity graph method k = α S / F	
k =	2.90E-05 m/sec	2.5072 m/d	





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL03 Test 1
Source:	Diver measurement	Date:	29/09/2020
h0 =	2.94	-0.180	

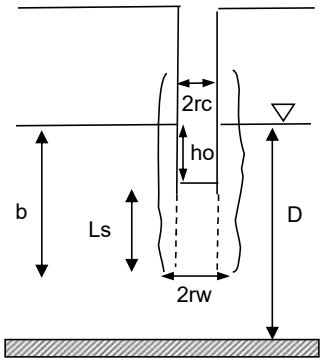
t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	3.12	-0.180	0.000	1.000
12	2.97	-0.030	1.792	0.167
18	2.96	-0.020	2.197	0.111
30	2.96	-0.020	2.197	0.111
42	2.96	-0.020	2.197	0.111
48	2.96	-0.020	2.197	0.111
60	2.96	-0.020	2.197	0.111

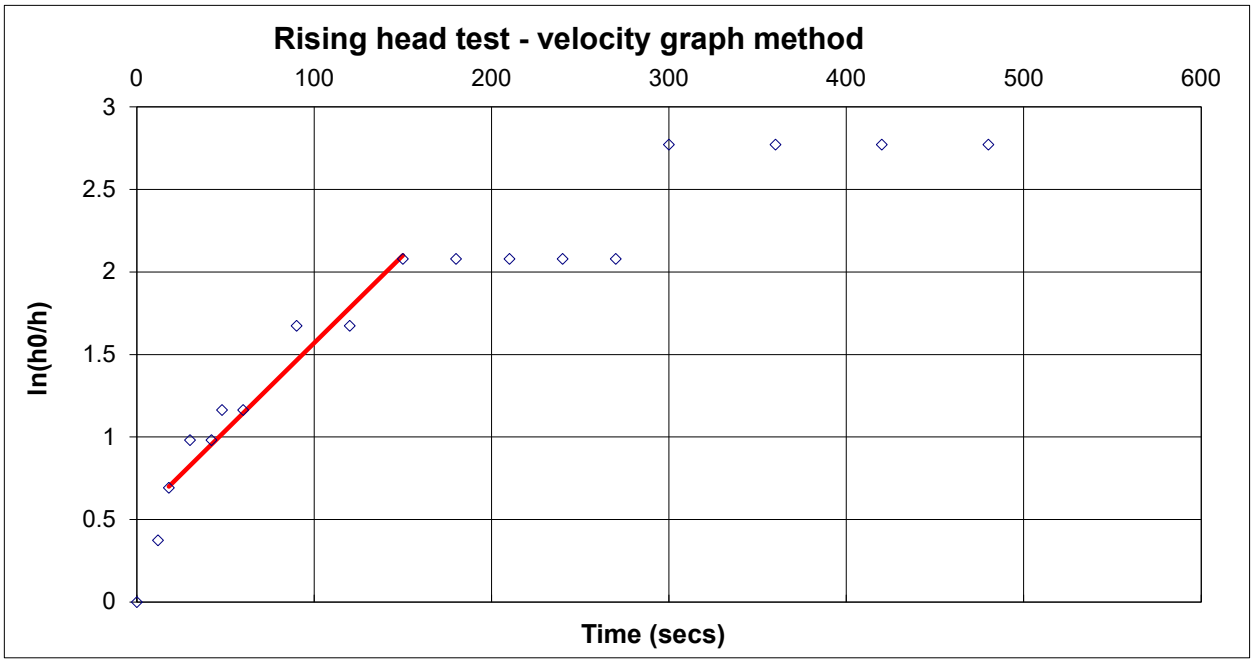
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL04 Test 1	Date	29/09/2020
Static water level (mbgl)	4.56	Water column height b (m)	3.74
Depth of well	8.3	Ls / 2rc	120
Length of screen Ls (m)	6.00	Shape factor F, for Le/2rc>10	4.69
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.160

Velocity graph method - red straight line on velocity graph

t1 =	18	ln(h0/h) fo	0.7
t2 =	150	ln(h0/h) fo	2.1
Slope, α	0.011	Velocity graph method k = α S / F	
k =	4.44E-06 m/sec		0.3834 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL04 Test 1
Source:	Diver measurement	Date:	29/09/2020
h0 =	3.89	-0.160	

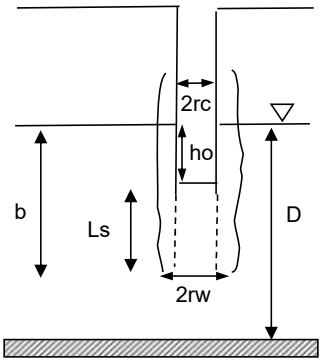
t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	4.05	-0.160	0.000	1.000
12	4	-0.110	0.375	0.688
18	3.97	-0.080	0.693	0.500
30	3.95	-0.060	0.981	0.375
42	3.95	-0.060	0.981	0.375
48	3.94	-0.050	1.163	0.313
60	3.94	-0.050	1.163	0.313
90	3.92	-0.030	1.674	0.187
120	3.92	-0.030	1.674	0.187
150	3.91	-0.020	2.079	0.125
180	3.91	-0.020	2.079	0.125
210	3.91	-0.020	2.079	0.125
240	3.91	-0.020	2.079	0.125
270	3.91	-0.020	2.079	0.125
300	3.9	-0.010	2.773	0.062
360	3.9	-0.010	2.773	0.062
420	3.9	-0.010	2.773	0.062
480	3.9	-0.010	2.773	0.062

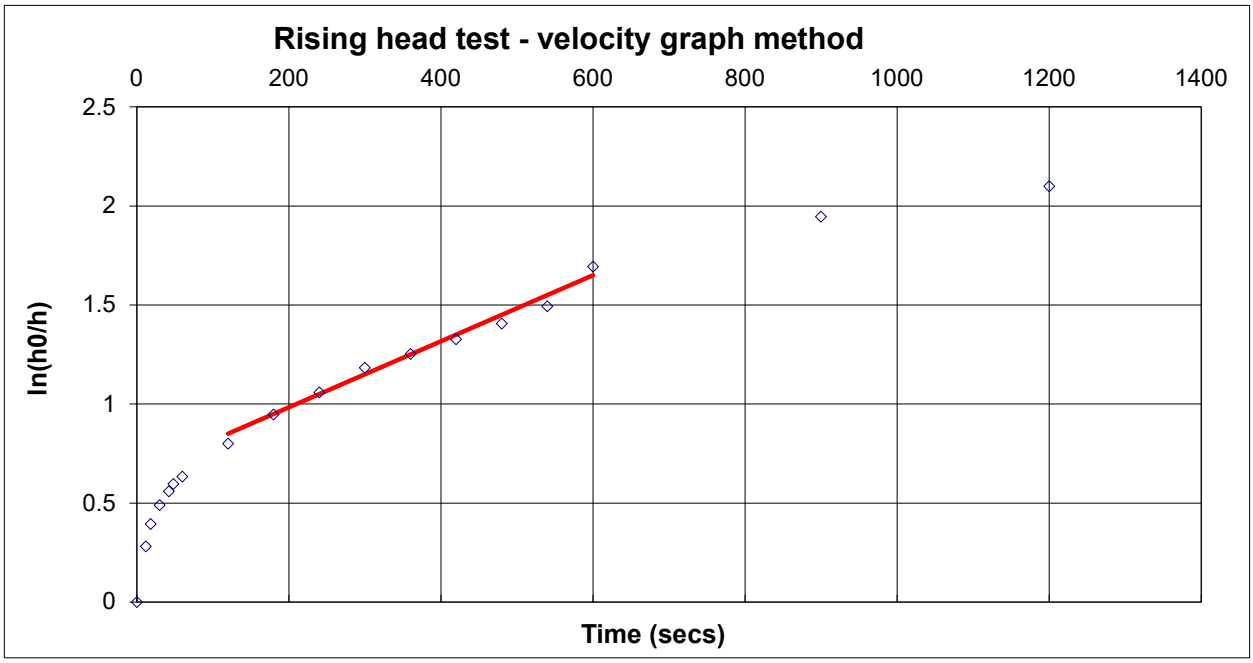
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL05 Test 1	Date	29/09/2020
Static water level (mbgl)	2.80	Water column height b (m)	4.70
Depth of well	7.5	Ls / 2rc	90
Length of screen Ls (m)	4.50	Shape factor F, for Le/2rc>10	5.44
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.490

Velocity graph method - red straight line on velocity graph

t1 =	120	ln(h0/h) fo	0.85
t2 =	600	ln(h0/h) fo	1.65
Slope, α	0.002	Velocity graph method k = α S / F	
k =	6.01E-07 m/sec		0.0519 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL05 Test 1
Source:	Diver measurement	Date:	29/09/2020
h0 =	2.8	-0.490	

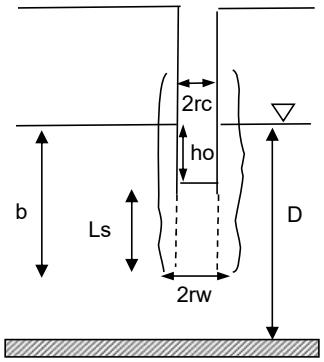
t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	3.29	-0.490	0.000	1.000
12	3.17	-0.370	0.281	0.755
18	3.13	-0.330	0.395	0.673
30	3.1	-0.300	0.491	0.612
42	3.08	-0.280	0.560	0.571
48	3.07	-0.270	0.596	0.551
60	3.06	-0.260	0.634	0.531
120	3.02	-0.220	0.801	0.449
180	2.99	-0.190	0.947	0.388
240	2.97	-0.170	1.059	0.347
300	2.95	-0.150	1.184	0.306
360	2.94	-0.140	1.253	0.286
420	2.93	-0.130	1.327	0.265
480	2.92	-0.120	1.407	0.245
540	2.91	-0.110	1.494	0.224
600	2.89	-0.090	1.695	0.184
900	2.87	-0.070	1.946	0.143
1200	2.86	-0.060	2.100	0.122

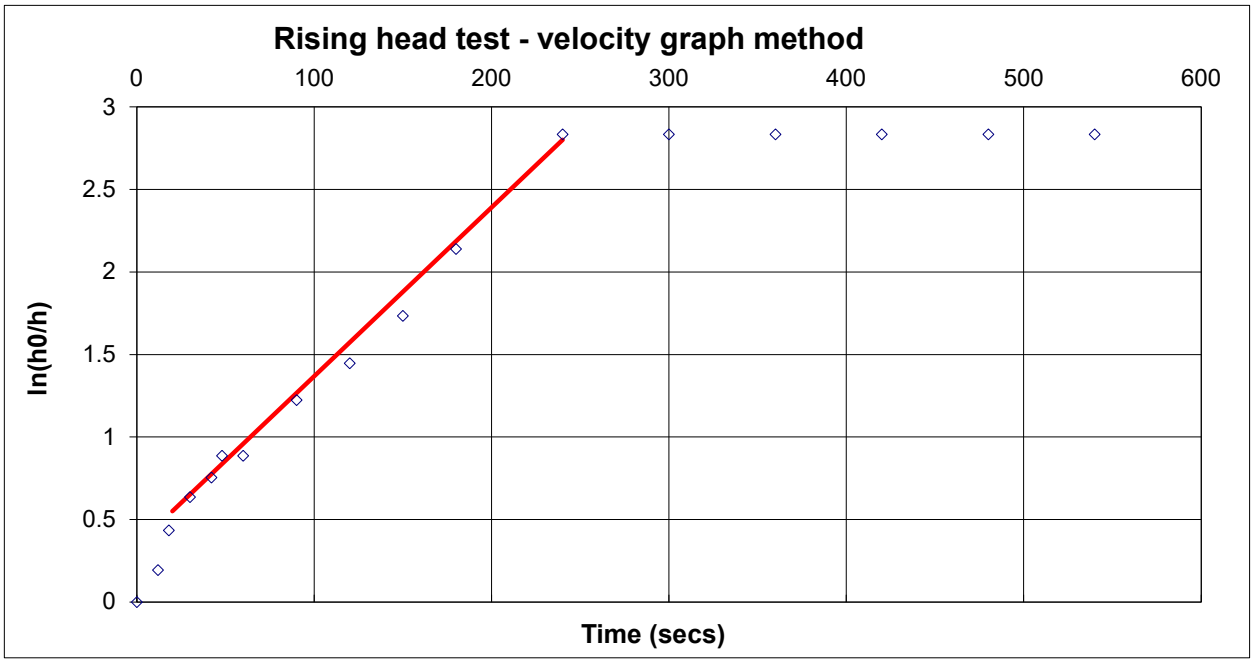
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL08 Test 1	Date	30/09/2020
Static water level (mbgl)	9.80	Water column height b (m)	1.90
Depth of well	11.7	Ls / 2rc	90
Length of screen Ls (m)	4.50	Shape factor F, for Le/2rc>10	2.76
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.170

Velocity graph method - red straight line on velocity graph

t1 =	20	ln(h0/h) fo	0.55
t2 =	240	ln(h0/h) fo	2.8
Slope, α	0.010	Velocity graph method k = α S / F	
k =	7.28E-06 m/sec		0.6294 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL08 Test 1
Source:	Diver measurement	Date:	30/09/2020
h0 =	9.8	-0.170	

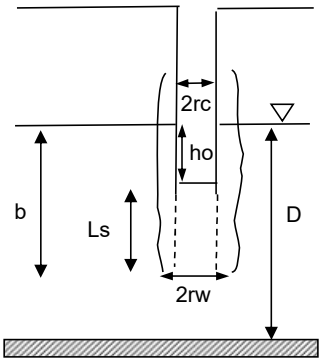
t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	9.97	-0.170	0.000	1.000
12	9.94	-0.140	0.194	0.824
18	9.91	-0.110	0.435	0.647
30	9.89	-0.090	0.636	0.529
42	9.88	-0.080	0.754	0.471
48	9.87	-0.070	0.887	0.412
60	9.87	-0.070	0.887	0.412
90	9.85	-0.050	1.224	0.294
120	9.84	-0.040	1.447	0.235
150	9.83	-0.030	1.735	0.176
180	9.82	-0.020	2.140	0.118
240	9.81	-0.010	2.833	0.059
300	9.81	-0.010	2.833	0.059
360	9.81	-0.010	2.833	0.059
420	9.81	-0.010	2.833	0.059
480	9.81	-0.010	2.833	0.059
540	9.81	-0.010	2.833	0.059
600	9.8	0.000	#DIV/0!	0.000

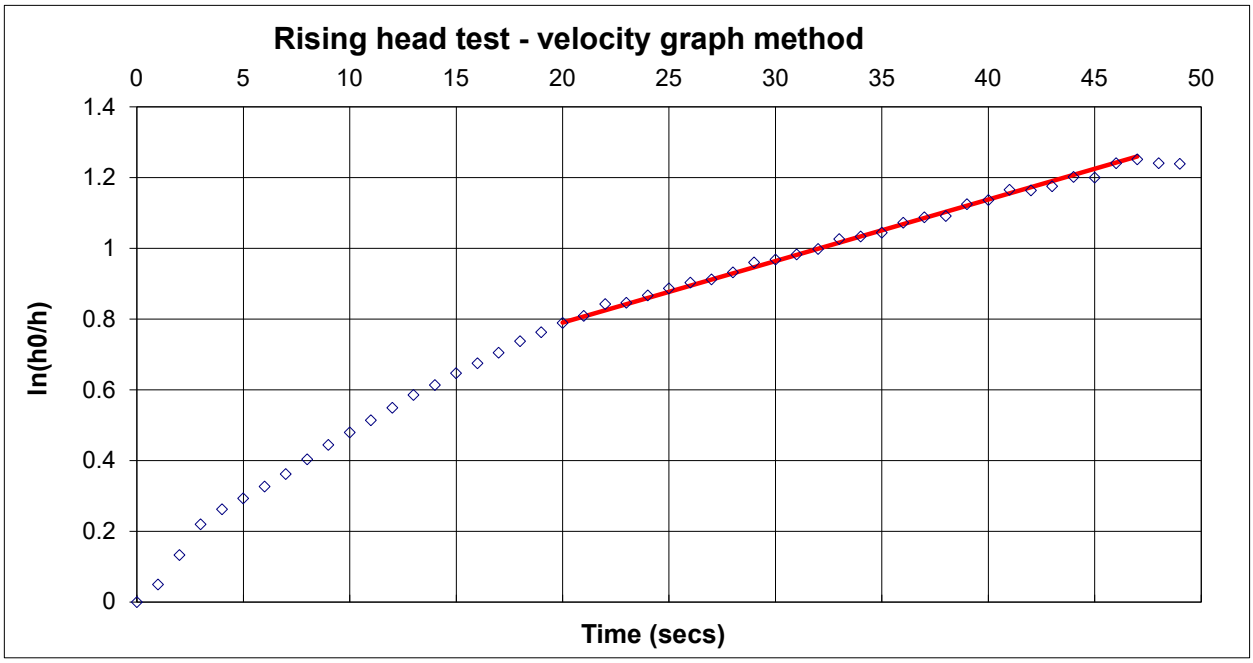
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL01 Test 1	Date	26/02/2021
Static water level (mbgl)	5.14	Water column height b (m)	7.86
Depth of well	13	Ls / 2rc	180
Length of screen Ls (m)	9.00	Shape factor F, for Le/2rc>10	8.59
Drilled diameter 2rw (m)	0.14	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.749

Velocity graph method - red straight line on velocity graph

t1 =	20	ln(h0/h) fo	0.79
t2 =	47	ln(h0/h) fo	1.26
Slope, α	0.017	Velocity graph method k = α S / F	
k =	3.98E-06 m/sec		0.3438 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL01 Test 1
Source:	Diver measurement	Date:	26/02/2021
h0 =	6.4	-0.749	

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	5.651078398	-0.749	0.000	1.000
1	5.687346038	-0.713	0.050	0.952
2	5.744226605	-0.656	0.133	0.876
3	5.799248487	-0.601	0.220	0.802
4	5.824008877	-0.576	0.263	0.769
5	5.841441213	-0.559	0.293	0.746
6	5.859790815	-0.540	0.327	0.721
7	5.878630849	-0.521	0.362	0.696
8	5.899727212	-0.500	0.403	0.668
9	5.919911332	-0.480	0.445	0.641
10	5.936333155	-0.464	0.479	0.619
11	5.95201452	-0.448	0.514	0.598
12	5.967519083	-0.432	0.549	0.577
13	5.983200475	-0.417	0.586	0.557
14	5.994619154	-0.405	0.614	0.541
15	6.007960728	-0.392	0.647	0.523
16	6.018889214	-0.381	0.676	0.509
17	6.029969245	-0.370	0.705	0.494
18	6.041814971	-0.358	0.738	0.478
19	6.050982206	-0.349	0.764	0.466

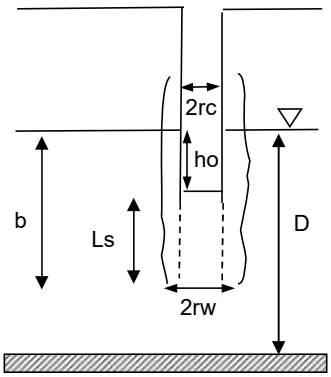
20	6.05974271	-0.340	0.789	0.454
21	6.066580267	-0.333	0.809	0.445
22	6.07767045	-0.322	0.843	0.430
23	6.078671068	-0.321	0.846	0.429
24	6.085420114	-0.315	0.867	0.420
25	6.091423817	-0.309	0.887	0.412
26	6.096432038	-0.304	0.903	0.405
27	6.099183737	-0.301	0.912	0.402
28	6.105109206	-0.295	0.932	0.394
29	6.113460593	-0.287	0.961	0.383
30	6.115693934	-0.284	0.969	0.380
31	6.119784949	-0.280	0.983	0.374
32	6.123954195	-0.276	0.998	0.369
33	6.131703823	-0.268	1.027	0.358
34	6.133705059	-0.266	1.034	0.356
35	6.136456758	-0.264	1.044	0.352
36	6.143711239	-0.256	1.072	0.342
37	6.147797096	-0.252	1.088	0.337
38	6.148719511	-0.251	1.092	0.336
39	6.156974617	-0.243	1.125	0.325
40	6.159721127	-0.240	1.137	0.321
41	6.166642068	-0.233	1.166	0.312
42	6.166141759	-0.234	1.164	0.312
43	6.168898658	-0.231	1.176	0.309
44	6.174897167	-0.225	1.202	0.301
45	6.174396858	-0.226	1.200	0.301
46	6.18356919	-0.216	1.241	0.289
47	6.185909179	-0.214	1.252	0.286
48	6.18356919	-0.216	1.241	0.289
49	6.183068881	-0.217	1.239	0.290
50				

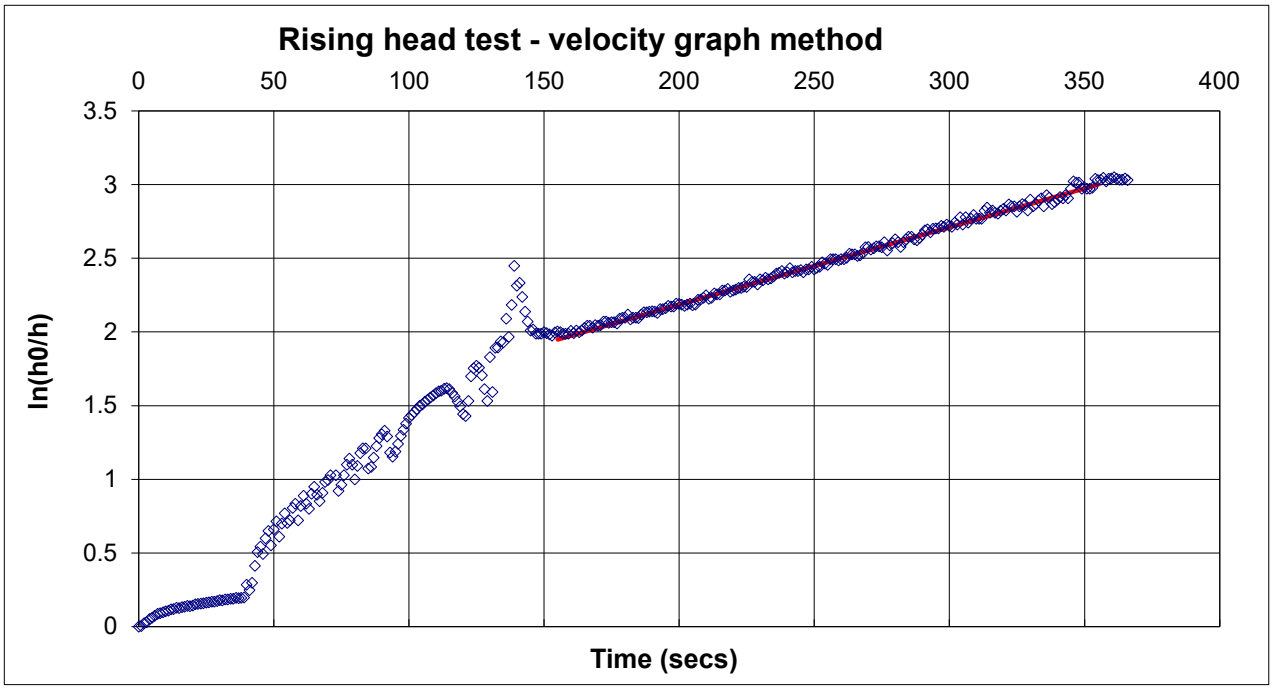
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill			
Location & Test No.	BHL02 Test 1	Date	26/02/2021	
Static water level (mbgl)	1.07	Water column height b (m)		10.93
Depth of well	12	Ls / 2rc		200
Length of screen Ls (m)	10.00	Shape factor F, for Le/2rc>10		10.49
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2		0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)		-1.071

Velocity graph method - red straight line on velocity graph

t1 =	155	ln(h0/h) for t1	1.95
t2 =	355	ln(h0/h) for t2	3
Slope, α	0.005	Velocity graph method k = α S / F	
k =	9.83E-07 m/sec	0.0849 m/d	





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL02 Test 1
Source:	Diver measurement	Date:	26/02/2021
h0 =	9.34	-1.071	

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	8.268763637	-1.071	0.000	1.000
1	8.275177225	-1.065	0.006	0.994
2	8.295358271	-1.045	0.025	0.975
3	8.302111141	-1.038	0.032	0.969
4	8.325031708	-1.015	0.054	0.947
5	8.332796696	-1.007	0.062	0.940
6	8.345302019	-0.995	0.074	0.929
7	8.35954635	-0.980	0.089	0.915
8	8.362297517	-0.978	0.091	0.913
9	8.37037548	-0.970	0.100	0.905
10	8.375886615	-0.964	0.105	0.900
11	8.379554838	-0.960	0.109	0.897
12	8.387391496	-0.953	0.117	0.889
13	8.389642451	-0.950	0.120	0.887
14	8.397887122	-0.942	0.128	0.879
15	8.397151526	-0.943	0.128	0.880
16	8.403576822	-0.936	0.135	0.874
17	8.405315766	-0.935	0.136	0.873

18	8.409817676	-0.930	0.141	0.868
19	8.409067358	-0.931	0.140	0.869
20	8.413485899	-0.927	0.145	0.865
21	8.42174531	-0.918	0.154	0.857
22	8.4226476	-0.917	0.155	0.856
23	8.425413535	-0.915	0.158	0.854
24	8.425907836	-0.914	0.159	0.853
25	8.431416086	-0.909	0.165	0.848
26	8.43192222	-0.908	0.165	0.848
27	8.43650158	-0.903	0.170	0.843
28	8.436495661	-0.904	0.170	0.843
29	8.441503706	-0.898	0.176	0.839
30	8.445651423	-0.894	0.180	0.835
31	8.444254875	-0.896	0.179	0.836
32	8.450251496	-0.890	0.186	0.831
33	8.449751284	-0.890	0.185	0.831
34	8.45391083	-0.886	0.190	0.827
35	8.453425439	-0.887	0.189	0.828
36	8.459844833	-0.880	0.196	0.822
37	8.458510933	-0.881	0.195	0.823
38	8.460345046	-0.880	0.197	0.821
39	8.461997585	-0.878	0.199	0.820
40	8.535361965	-0.805	0.286	0.751
41	8.503848629	-0.836	0.248	0.781
42	8.54562529	-0.794	0.299	0.742
43	8.631319238	-0.709	0.413	0.662
44	8.695522213	-0.644	0.508	0.602
45	8.718871568	-0.621	0.545	0.580
46	8.686691227	-0.653	0.495	0.610
47	8.752886021	-0.587	0.601	0.548
48	8.780814556	-0.559	0.650	0.522
49	8.724290537	-0.616	0.554	0.575
50	8.786817106	-0.553	0.661	0.516
51	8.816981139	-0.523	0.717	0.488
52	8.759222047	-0.581	0.612	0.542
53	8.807826034	-0.532	0.700	0.497
54	8.844075939	-0.496	0.770	0.463
55	8.811077415	-0.529	0.706	0.494
56	8.819747766	-0.520	0.722	0.486
57	8.862426352	-0.478	0.808	0.446
58	8.874931657	-0.465	0.834	0.434
59	8.819747766	-0.520	0.722	0.486
60	8.868351753	-0.472	0.820	0.440
61	8.899525424	-0.440	0.889	0.411
62	8.875688204	-0.464	0.836	0.433
63	8.859165658	-0.481	0.801	0.449
64	8.905518606	-0.434	0.902	0.406
65	8.926126303	-0.414	0.951	0.386
66	8.903193647	-0.437	0.897	0.408
67	8.883018421	-0.457	0.852	0.427
68	8.908695981	-0.431	0.910	0.403
69	8.939131829	-0.401	0.983	0.374
70	8.944640449	-0.395	0.997	0.369
71	8.957306219	-0.383	1.029	0.357
72	8.972485634			
73	8.956873672	-0.383	1.028	0.358
74	8.914198315	-0.426	0.923	0.397
75	8.931628641	-0.408	0.964	0.381
76	8.957306219	-0.383	1.029	0.357
77	8.983461969	-0.357	1.100	0.333

78	8.998156911	-0.342	1.142	0.319
79	8.983484009	-0.357	1.100	0.333
80	8.946295265	-0.394	1.001	0.368
81	8.980393063	-0.360	1.092	0.336
82	9.010495487	-0.330	1.179	0.308
83	9.020743515	-0.319	1.211	0.298
84	9.020749844	-0.319	1.211	0.298
85	8.973979971	-0.366	1.074	0.342
86	8.977975371	-0.362	1.085	0.338
87	9.000392088	-0.340	1.149	0.317
88	9.026091784	-0.314	1.227	0.293
89	9.04259881	-0.297	1.281	0.278
90	9.050102003	-0.290	1.307	0.271
91	9.056848517	-0.283	1.331	0.264
92	9.045827982	-0.294	1.292	0.275
93	9.011495912	-0.329	1.182	0.307
94	9.002742192	-0.337	1.156	0.315
95	9.013740544	-0.326	1.189	0.305
96	9.030238051	-0.310	1.241	0.289
97	9.046745037	-0.293	1.296	0.274
98	9.05868263	-0.281	1.337	0.263
99	9.07011052	-0.270	1.379	0.252
100	9.080691982	-0.259	1.419	0.242
101	9.085694108	-0.254	1.438	0.237
102	9.090362758	-0.250	1.457	0.233
103	9.095871484	-0.244	1.479	0.228
104	9.101207089	-0.239	1.501	0.223
105	9.103028422	-0.237	1.509	0.221
106	9.107786829	-0.232	1.529	0.217
107	9.110954842	-0.229	1.543	0.214
108	9.114212624	-0.226	1.557	0.211
109	9.116950995	-0.223	1.569	0.208
110	9.120436504	-0.220	1.585	0.205
111	9.123210049	-0.217	1.598	0.202
112	9.124293843	-0.216	1.603	0.201
113	9.127038608	-0.213	1.615	0.199
114	9.127788926	-0.212	1.619	0.198
115	9.126455027	-0.214	1.613	0.199
116	9.121042462	-0.219	1.588	0.204
117	9.115540124	-0.224	1.563	0.210
118	9.107786829	-0.232	1.529	0.217
119	9.099950166	-0.240	1.496	0.224
120	9.087111377	-0.253	1.444	0.236
121	9.08393699	-0.256	1.431	0.239
122	9.108697494	-0.231	1.533	0.216
123	9.144462666	-0.196	1.701	0.183
124	9.154550279	-0.185	1.754	0.173
125	9.158058191	-0.182	1.773	0.170
126	9.155313451	-0.185	1.758	0.172
127	9.14570358	-0.194	1.707	0.181
128	9.126551209	-0.213	1.613	0.199
129	9.108530756	-0.231	1.532	0.216
130	9.168152249	-0.172	1.830	0.160
131	9.122459731	-0.218	1.594	0.203
132	9.17880092	-0.161	1.894	0.150
133	9.179144046	-0.161	1.896	0.150
134	9.185563436	-0.154	1.937	0.144
135	9.184659275	-0.155	1.931	0.145
136	9.20773951	-0.132	2.092	0.123
137	9.190148714	-0.150	1.967	0.140

138	9.219500966	-0.120	2.185	0.112
139	9.247512869	-0.092	2.449	0.086
140	9.234157679	-0.106	2.315	0.099
141	9.236168237	-0.104	2.334	0.097
142	9.225913887	-0.114	2.240	0.106
143	9.213992163	-0.126	2.140	0.118
144	9.204978664	-0.135	2.071	0.126
145	9.196657926	-0.143	2.011	0.134
146	9.19748516	-0.143	2.017	0.133
147	9.193489913	-0.147	1.989	0.137
148	9.193473796	-0.147	1.989	0.137
149	9.193483462	-0.147	1.989	0.137
150	9.19490073	-0.145	1.999	0.135
151	9.193974007	-0.146	1.993	0.136
152	9.192899881	-0.147	1.985	0.137
153	9.191649351	-0.148	1.977	0.138
154	9.194891062	-0.145	1.999	0.135
155	9.195651048	-0.144	2.004	0.135
156	9.19490073	-0.145	1.999	0.135
157	9.193489913	-0.147	1.989	0.137
158	9.193483462	-0.147	1.989	0.137
159	9.193489913	-0.147	1.989	0.137
160	9.196234629	-0.144	2.008	0.134
161	9.193983674	-0.146	1.993	0.136
162	9.196734842	-0.143	2.012	0.134
163	9.194907182	-0.145	1.999	0.135
164	9.196747754	-0.143	2.012	0.134
165	9.198992251	-0.141	2.028	0.132
166	9.201159839	-0.139	2.043	0.130
167	9.201153383	-0.139	2.043	0.130
168	9.19940264	-0.141	2.031	0.131
169	9.201736964	-0.138	2.047	0.129
170	9.201227077	-0.139	2.044	0.130
171	9.20174342	-0.138	2.047	0.129
172	9.204988343	-0.135	2.071	0.126
173	9.204988343	-0.135	2.071	0.126
174	9.204000841	-0.136	2.064	0.127
175	9.20449459	-0.136	2.068	0.126
176	9.20449459	-0.136	2.068	0.126
177	9.203167153	-0.137	2.058	0.128
178	9.20773951	-0.132	2.092	0.123
179	9.208489828	-0.132	2.097	0.123
180	9.208502757	-0.131	2.098	0.123
181	9.211253928	-0.129	2.119	0.120
182	9.207252225	-0.133	2.088	0.124
183	9.208669495	-0.131	2.099	0.123
184	9.208663027	-0.131	2.099	0.123
185	9.208162815	-0.132	2.095	0.123
186	9.211398047	-0.129	2.120	0.120
187	9.213232157	-0.127	2.134	0.118
188	9.213254779	-0.127	2.134	0.118
189	9.213992163	-0.126	2.140	0.118
190	9.2141589	-0.126	2.142	0.117
191	9.213998628	-0.126	2.140	0.118
192	9.212748097	-0.127	2.130	0.119
193	9.215999478	-0.124	2.156	0.116
194	9.215983321	-0.124	2.156	0.116
195	9.216910067	-0.123	2.164	0.115
196	9.21872803	-0.121	2.179	0.113
197	9.218234274	-0.122	2.174	0.114

198	9.218167066	-0.122	2.174	0.114
199	9.220418023	-0.120	2.193	0.112
200	9.220401858	-0.120	2.192	0.112
201	9.219667704	-0.120	2.186	0.112
202	9.218750647	-0.121	2.179	0.113
203	9.219661234	-0.120	2.186	0.112
204	9.220411553	-0.120	2.193	0.112
205	9.219167491	-0.121	2.182	0.113
206	9.219661234	-0.120	2.186	0.112
207	9.223669404	-0.116	2.220	0.109
208	9.223746301	-0.116	2.221	0.109
209	9.225163569	-0.115	2.233	0.107
210	9.22699768	-0.113	2.249	0.105
211	9.224252985	-0.116	2.225	0.108
212	9.225163569	-0.115	2.233	0.107
213	9.22867153	-0.111	2.264	0.104
214	9.227914736	-0.112	2.257	0.105
215	9.227921211	-0.112	2.257	0.105
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217	9.230665903	-0.109	2.282	0.102
218	9.23200628	-0.108	2.294	0.101
219	9.229671955	-0.110	2.273	0.103
220	9.230665903	-0.109	2.282	0.102
221	9.231422699	-0.109	2.289	0.101
222	9.232500014	-0.107	2.299	0.100
223	9.232500014	-0.107	2.299	0.100
224	9.233423549	-0.107	2.308	0.099
225	9.23341707	-0.107	2.308	0.099
226	9.238742952	-0.101	2.359	0.095
227	9.236925037	-0.103	2.341	0.096
228	9.236918555	-0.103	2.341	0.096
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232	9.239743376	-0.100	2.369	0.094
233	9.238765638	-0.101	2.359	0.095
234	9.239342731	-0.101	2.365	0.094
235	9.240753516	-0.099	2.379	0.093
236	9.242600603	-0.097	2.398	0.091
237	9.24300447	-0.097	2.402	0.091
238	9.244245281	-0.096	2.415	0.089
239	9.242594112	-0.097	2.398	0.091
240	9.243511169	-0.096	2.407	0.090
241	9.246246128	-0.094	2.436	0.088
242	9.243511169	-0.096	2.407	0.090
243	9.244245281	-0.096	2.415	0.089
244	9.24426798	-0.096	2.415	0.089
245	9.244828861	-0.095	2.421	0.089
246	9.243504683	-0.096	2.407	0.090
247	9.245338794	-0.095	2.426	0.088
248	9.245345282	-0.095	2.426	0.088
249	9.247006168	-0.093	2.444	0.087
250	9.245351774	-0.095	2.426	0.088
251	9.246262338	-0.094	2.436	0.088
252	9.246996445	-0.093	2.444	0.087
253	9.249763826	-0.090	2.474	0.084
254	9.249020002	-0.091	2.466	0.085
255	9.248096451	-0.092	2.456	0.086
256	9.251758184	-0.088	2.496	0.082
257	9.251758184	-0.088	2.496	0.082

258	9.251764676	-0.088	2.497	0.082
259	9.250841128	-0.089	2.486	0.083
260	9.251748456	-0.088	2.496	0.082
261	9.251597938	-0.088	2.495	0.083
262	9.252508502	-0.087	2.505	0.082
263	9.25484932	-0.085	2.532	0.079
264	9.254509351	-0.085	2.528	0.080
265	9.254515845	-0.085	2.528	0.080
266	9.253605287	-0.086	2.518	0.081
267	9.254015632	-0.086	2.522	0.080
268	9.255259669	-0.085	2.537	0.079
269	9.258594417	-0.081	2.577	0.076
270	9.258607416	-0.081	2.577	0.076
271	9.257267014	-0.083	2.561	0.077
272	9.258010837	-0.082	2.570	0.077
273	9.259101127	-0.081	2.583	0.076
274	9.259107629	-0.081	2.583	0.076
275	9.258594417	-0.081	2.577	0.076
276	9.261329361	-0.079	2.611	0.073
277	9.256760306	-0.083	2.555	0.078
278	9.259517971	-0.080	2.589	0.075
279	9.260762004	-0.079	2.604	0.074
280	9.262775857	-0.077	2.630	0.072
281	9.261345585	-0.079	2.612	0.073
282	9.258600914	-0.081	2.577	0.076
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284	9.262753113	-0.077	2.630	0.072
285	9.264103252	-0.076	2.647	0.071
286	9.264080524	-0.076	2.647	0.071
287	9.262762853	-0.077	2.630	0.072
288	9.26226914	-0.078	2.623	0.073
289	9.263519671	-0.076	2.640	0.071
290	9.265353784	-0.075	2.664	0.070
291	9.267354634	-0.073	2.691	0.068
292	9.267777986	-0.072	2.697	0.067
293	9.266360716	-0.074	2.677	0.069
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309	9.274517839	-0.065	2.795	0.061
310	9.272834222	-0.067	2.769	0.063
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314	9.277775729	-0.062	2.846	0.058
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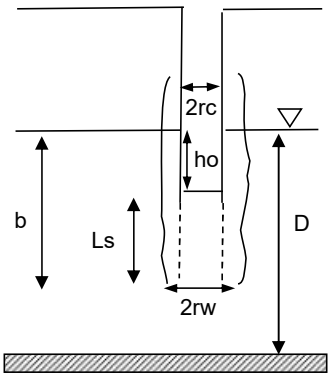
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327	9.279269855	-0.061	2.870	0.057
328	9.27878267	-0.061	2.862	0.057
329	9.276531712	-0.063	2.826	0.059
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334	9.281511051	-0.058	2.908	0.055
335	9.278275941	-0.062	2.854	0.058
336	9.282771341	-0.057	2.930	0.053
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338	9.279260098	-0.061	2.870	0.057
339	9.280033202	-0.060	2.883	0.056
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341	9.282021022	-0.058	2.916	0.054
342	9.281527323	-0.058	2.908	0.055
343	9.282861223	-0.057	2.931	0.053
344	9.281527323	-0.058	2.908	0.055
345	9.285195548	-0.055	2.973	0.051
346	9.2879402	-0.052	3.024	0.049
347	9.287446505	-0.053	3.015	0.049
348	9.287453027	-0.053	3.015	0.049
349	9.285202069	-0.055	2.973	0.051
350	9.285689245	-0.054	2.982	0.051
351	9.285195548	-0.055	2.973	0.051
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353	9.285612392	-0.054	2.980	0.051
354	9.288863774	-0.051	3.042	0.048
355	9.288357044	-0.052	3.032	0.048
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357	9.289197249	-0.051	3.049	0.047
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364	9.288440412	-0.052	3.034	0.048
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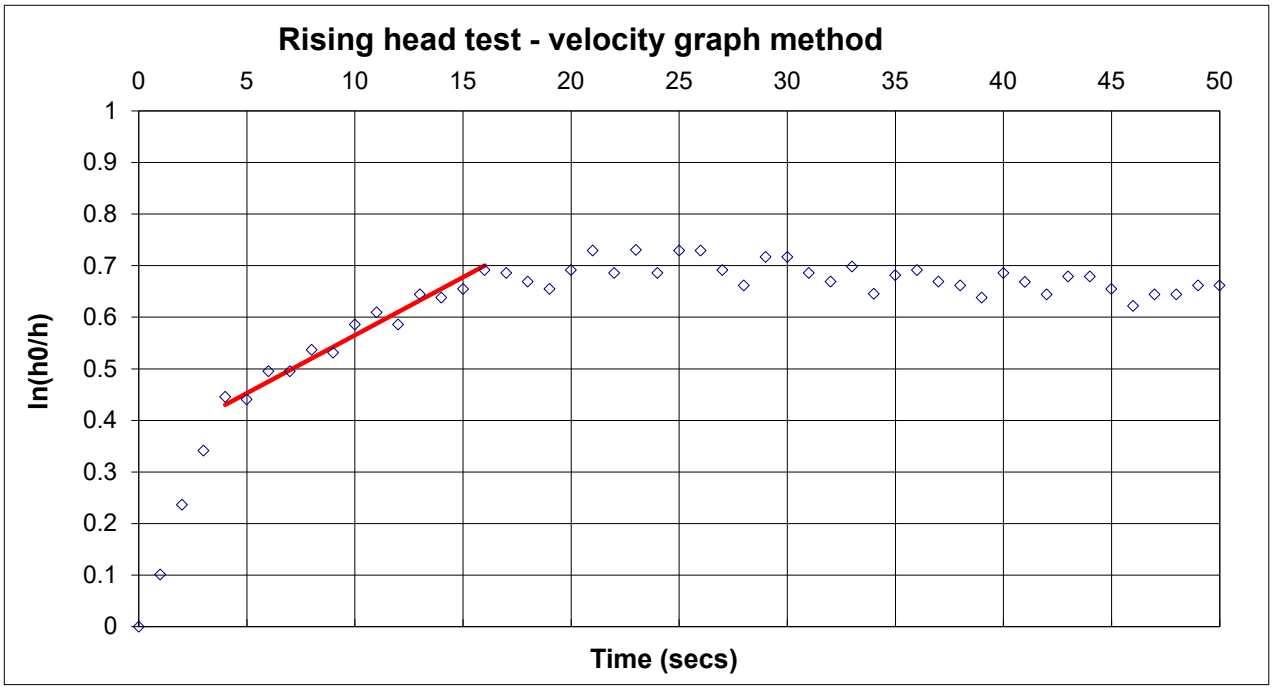
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill		
Location & Test No.	BHL03 Test 1	Date	26/02/2021
Static water level (mbgl)	1.91	Water column height b (m)	4.59
Depth of well	6.50	Ls / 2rc	90
Length of screen Ls (m)	4.50	Shape factor F, for Le/2rc>10	5.44
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2	0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)	-0.148

Velocity graph method - red straight line on velocity graph

t1 =	4	ln(h0/h) fo	0.43
t2 =	16	ln(h0/h) fo	0.7
Slope, α	0.023	Velocity graph method k = α S / F	
k =	8.11E-06 m/sec	0.7010	m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL03 Test 1
Source:	Diver measurement	Date:	26/02/2021
h0 =	4.086	-0.148	

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	3.938445448	-0.148	0.000	1.000
1	3.952704748	-0.133	0.102	0.903
2	3.969542826	-0.116	0.237	0.789
3	3.981134275	-0.105	0.342	0.711
4	3.99154988	-0.094	0.446	0.640
5	3.99105543	-0.095	0.441	0.643
6	3.996138171	-0.090	0.496	0.609
7	3.996135281	-0.090	0.496	0.609
8	3.999803602	-0.086	0.538	0.584
9	3.999306269	-0.087	0.532	0.588
10	4.003891673	-0.082	0.586	0.556
11	4.005809206	-0.080	0.610	0.543
12	4.003888777	-0.082	0.586	0.556
13	4.00856335	-0.077	0.645	0.525
14	4.008060223	-0.078	0.638	0.528
15	4.009394158	-0.077	0.656	0.519
16	4.012142499	-0.074	0.692	0.501
17	4.011728546	-0.074	0.686	0.503

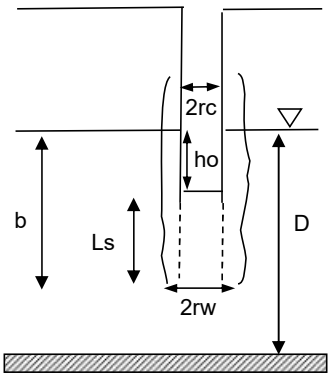
18	4.010470734	-0.076	0.670	0.512
19	4.00939706	-0.077	0.656	0.519
20	4.012148305	-0.074	0.692	0.501
21	4.014896643	-0.071	0.730	0.482
22	4.011725645	-0.074	0.686	0.503
23	4.01497276	-0.071	0.731	0.481
24	4.01173145	-0.074	0.687	0.503
25	4.014899549	-0.071	0.730	0.482
26	4.01489374	-0.071	0.730	0.482
27	4.012145401	-0.074	0.692	0.501
28	4.009891484	-0.076	0.662	0.516
29	4.01397666	-0.072	0.717	0.488
30	4.01397666	-0.072	0.717	0.488
31	4.011728546	-0.074	0.686	0.503
32	4.010475081	-0.076	0.670	0.512
33	4.012642725	-0.073	0.699	0.497
34	4.008636576	-0.077	0.646	0.524
35	4.011387814	-0.075	0.682	0.506
36	4.012135255	-0.074	0.692	0.501
37	4.010477981	-0.076	0.670	0.512
38	4.009887139	-0.076	0.662	0.516
39	4.008060223	-0.078	0.638	0.528
40	4.01173145	-0.074	0.687	0.503
41	4.01039461	-0.076	0.669	0.512
42	4.008567706	-0.077	0.645	0.525
43	4.01122832	-0.075	0.680	0.507
44	4.011231223	-0.075	0.680	0.507
45	4.009394158	-0.077	0.656	0.519
46	4.006809658	-0.079	0.622	0.537
47	4.00856335	-0.077	0.645	0.525
48	4.00856335	-0.077	0.645	0.525
49	4.009894384	-0.076	0.662	0.516
50	4.009897287	-0.076	0.662	0.516

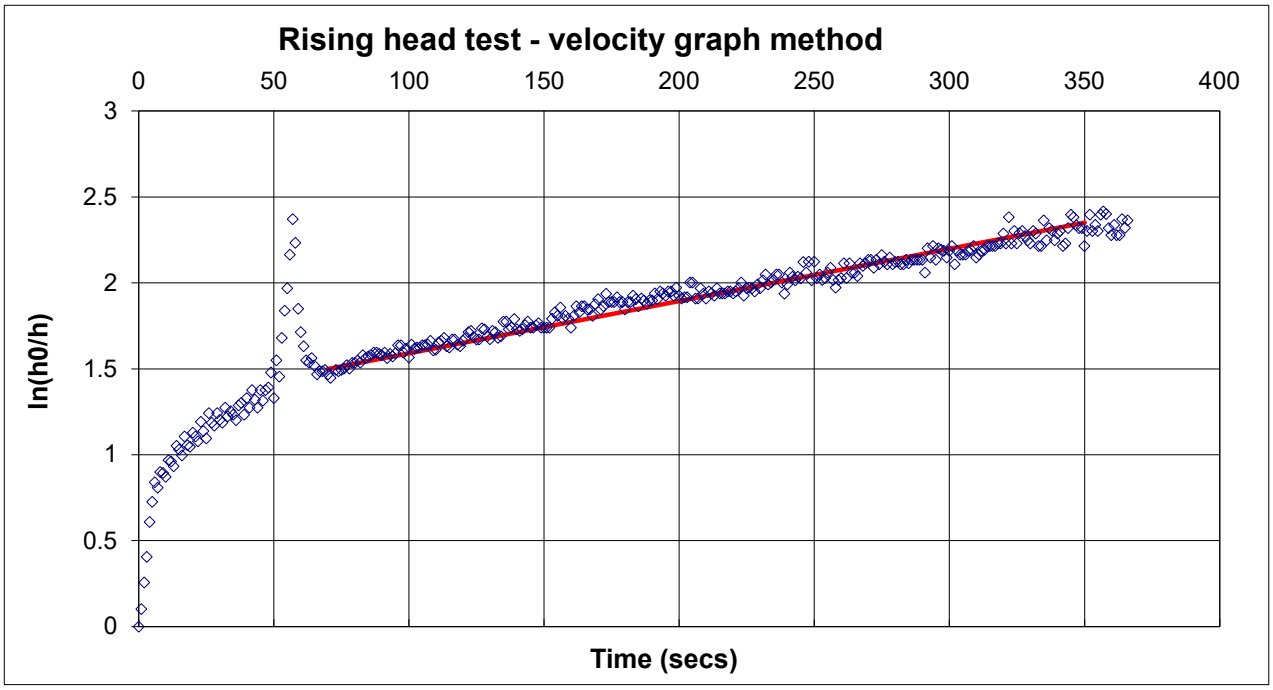
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill			
Location & Test No.	BHL04 Test 1	Date	26/02/2021	
Static water level (mbgl)	0.76	Water column height b (m)		7.54
Depth of well	8.3	Ls / 2rc		120
Length of screen Ls (m)	6.00	Shape factor F, for Le/2rc>10		6.88
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2		0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)		-0.301

Velocity graph method - red straight line on velocity graph

t1 =	70	ln(h0/h) for t1	1.5
t2 =	350	ln(h0/h) for t2	2.35
Slope, α	0.003	Velocity graph method k = α S / F	
k =	8.67E-07 m/sec	0.0749 m/d	





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill		Location:	BHL04 Test 1
Source:	Diver measurement		Date:	26/02/2021
h0 =	6.97	-0.301		

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	6.669	-0.301	0.000	1.000
1	6.698	-0.272	0.104	0.901
2	6.737	-0.233	0.258	0.772
3	6.769	-0.201	0.408	0.665
4	6.806	-0.164	0.609	0.544
5	6.824	-0.146	0.728	0.483
6	6.840	-0.130	0.841	0.431
7	6.836	-0.134	0.810	0.445
8	6.847	-0.123	0.900	0.407
9	6.847	-0.123	0.896	0.408
10	6.844	-0.126	0.873	0.418
11	6.856	-0.114	0.969	0.380
12	6.855	-0.115	0.961	0.382
13	6.851	-0.119	0.933	0.393
14	6.865	-0.105	1.053	0.349
15	6.862	-0.108	1.031	0.357
16	6.859	-0.111	0.997	0.369
17	6.870	-0.100	1.107	0.331

18	6.865	-0.105	1.057	0.348
19	6.864	-0.106	1.048	0.351
20	6.873	-0.097	1.129	0.323
21	6.870	-0.100	1.107	0.331
22	6.868	-0.102	1.079	0.340
23	6.879	-0.091	1.193	0.303
24	6.874	-0.096	1.139	0.320
25	6.869	-0.101	1.097	0.334
26	6.883	-0.087	1.243	0.289
27	6.878	-0.092	1.187	0.305
28	6.877	-0.093	1.171	0.310
29	6.883	-0.087	1.243	0.289
30	6.880	-0.090	1.203	0.300
31	6.878	-0.092	1.187	0.305
32	6.886	-0.084	1.275	0.279
33	6.881	-0.089	1.224	0.294
34	6.884	-0.086	1.255	0.285
35	6.882	-0.088	1.234	0.291
36	6.879	-0.091	1.203	0.300
37	6.887	-0.083	1.288	0.276
38	6.888	-0.082	1.303	0.272
39	6.882	-0.088	1.234	0.291
40	6.890	-0.080	1.331	0.264
41	6.886	-0.084	1.275	0.279
42	6.894	-0.076	1.378	0.252
43	6.890	-0.080	1.321	0.267
44	6.886	-0.084	1.275	0.279
45	6.894	-0.076	1.378	0.252
46	6.889	-0.081	1.315	0.268
47	6.894	-0.076	1.378	0.252
48	6.895	-0.075	1.392	0.249
49	6.901	-0.069	1.479	0.228
50	6.890	-0.080	1.331	0.264
51	6.906	-0.064	1.551	0.212
52	6.900	-0.070	1.455	0.233
53	6.914	-0.056	1.680	0.186
54	6.922	-0.048	1.840	0.159
55	6.928	-0.042	1.969	0.140
56	6.935	-0.035	2.166	0.115
57	6.942	-0.028	2.371	0.093
58	6.938	-0.032	2.233	0.107
59	6.923	-0.047	1.850	0.157
60	6.916	-0.054	1.714	0.180
61	6.911	-0.059	1.633	0.195
62	6.906	-0.064	1.551	0.212
63	6.905	-0.065	1.537	0.215
64	6.907	-0.063	1.563	0.210
65	6.904	-0.066	1.520	0.219
66	6.901	-0.069	1.468	0.230
67	6.902	-0.068	1.488	0.226
68	6.902	-0.068	1.488	0.226
69	6.902	-0.068	1.495	0.224
70	6.901	-0.069	1.469	0.230
71	6.899	-0.071	1.448	0.235
72	6.899			
73	6.902	-0.068	1.495	0.224
74	6.902	-0.068	1.488	0.226
75	6.902	-0.068	1.495	0.224
76	6.903	-0.067	1.501	0.223
77	6.904	-0.066	1.523	0.218

78	6.903	-0.067	1.501	0.223
79	6.905	-0.065	1.536	0.215
80	6.905	-0.065	1.536	0.215
81	6.906	-0.064	1.549	0.213
82	6.905	-0.065	1.537	0.215
83	6.908	-0.062	1.580	0.206
84	6.907	-0.063	1.563	0.210
85	6.907	-0.063	1.572	0.208
86	6.908	-0.062	1.580	0.206
87	6.909	-0.061	1.595	0.203
88	6.909	-0.061	1.595	0.203
89	6.908	-0.062	1.587	0.205
90	6.908	-0.062	1.580	0.206
91	6.909	-0.061	1.595	0.203
92	6.907	-0.063	1.564	0.209
93	6.908	-0.062	1.587	0.205
94	6.907	-0.063	1.572	0.208
95	6.909	-0.061	1.592	0.203
96	6.911	-0.059	1.638	0.194
97	6.911	-0.059	1.638	0.194
98	6.909	-0.061	1.595	0.203
99	6.910	-0.060	1.617	0.198
100	6.907	-0.063	1.567	0.209
101	6.912	-0.058	1.641	0.194
102	6.910	-0.060	1.617	0.198
103	6.911	-0.059	1.626	0.197
104	6.911	-0.059	1.626	0.197
105	6.911	-0.059	1.638	0.194
106	6.911	-0.059	1.638	0.194
107	6.912	-0.058	1.641	0.194
108	6.913	-0.057	1.664	0.189
109	6.910	-0.060	1.609	0.200
110	6.910	-0.060	1.612	0.200
111	6.912	-0.058	1.655	0.191
112	6.913	-0.057	1.664	0.189
113	6.914	-0.056	1.681	0.186
114	6.911	-0.059	1.633	0.195
115	6.911	-0.059	1.624	0.197
116	6.913	-0.057	1.672	0.188
117	6.913	-0.057	1.672	0.188
118	6.912	-0.058	1.643	0.193
119	6.911	-0.059	1.633	0.195
120	6.913	-0.057	1.664	0.189
121	6.914	-0.056	1.680	0.186
122	6.916	-0.054	1.714	0.180
123	6.916	-0.054	1.723	0.179
124	6.914	-0.056	1.686	0.185
125	6.913	-0.057	1.672	0.188
126	6.913	-0.057	1.672	0.188
127	6.917	-0.053	1.737	0.176
128	6.917	-0.053	1.731	0.177
129	6.914	-0.056	1.689	0.185
130	6.913	-0.057	1.673	0.188
131	6.916	-0.054	1.721	0.179
132	6.916	-0.054	1.714	0.180
133	6.914	-0.056	1.680	0.186
134	6.914	-0.056	1.689	0.185
135	6.919	-0.051	1.775	0.169
136	6.919	-0.051	1.775	0.169
137	6.917	-0.053	1.731	0.177

138	6.917	-0.053	1.740	0.176
139	6.920	-0.050	1.790	0.167
140	6.917	-0.053	1.731	0.177
141	6.916	-0.054	1.721	0.179
142	6.917	-0.053	1.731	0.177
143	6.918	-0.052	1.755	0.173
144	6.919	-0.051	1.775	0.169
145	6.917	-0.053	1.740	0.176
146	6.917	-0.053	1.740	0.176
147	6.918	-0.052	1.754	0.173
148	6.918	-0.052	1.766	0.171
149	6.917	-0.053	1.740	0.176
150	6.917	-0.053	1.740	0.176
151	6.917	-0.053	1.740	0.176
152	6.917	-0.053	1.740	0.176
153	6.920	-0.050	1.793	0.166
154	6.922	-0.048	1.831	0.160
155	6.921	-0.049	1.809	0.164
156	6.923	-0.047	1.857	0.156
157	6.920	-0.050	1.793	0.166
158	6.921	-0.049	1.809	0.164
159	6.920	-0.050	1.794	0.166
160	6.917	-0.053	1.740	0.176
161	6.921	-0.049	1.809	0.164
162	6.923	-0.047	1.866	0.155
163	6.922	-0.048	1.831	0.160
164	6.923	-0.047	1.866	0.155
165	6.923	-0.047	1.866	0.155
166	6.922	-0.048	1.846	0.158
167	6.922	-0.048	1.847	0.158
168	6.921	-0.049	1.809	0.164
169	6.924	-0.046	1.877	0.153
170	6.925	-0.045	1.906	0.149
171	6.922	-0.048	1.846	0.158
172	6.923	-0.047	1.866	0.155
173	6.927	-0.043	1.938	0.144
174	6.924	-0.046	1.889	0.151
175	6.924	-0.046	1.889	0.151
176	6.924	-0.046	1.889	0.151
177	6.926	-0.044	1.917	0.147
178	6.924	-0.046	1.889	0.151
179	6.924	-0.046	1.889	0.151
180	6.922	-0.048	1.846	0.158
181	6.924	-0.046	1.889	0.151
182	6.924	-0.046	1.889	0.151
183	6.926	-0.044	1.927	0.146
184	6.925	-0.045	1.906	0.149
185	6.923	-0.047	1.866	0.155
186	6.925	-0.045	1.910	0.148
187	6.925	-0.045	1.899	0.150
188	6.924	-0.046	1.878	0.153
189	6.925	-0.045	1.899	0.150
190	6.925	-0.045	1.899	0.150
191	6.927	-0.043	1.940	0.144
192	6.925	-0.045	1.906	0.149
193	6.927	-0.043	1.952	0.142
194	6.927	-0.043	1.940	0.144
195	6.926	-0.044	1.927	0.146
196	6.927	-0.043	1.952	0.142
197	6.927	-0.043	1.951	0.142

198	6.926	-0.044	1.927	0.146
199	6.928	-0.042	1.974	0.139
200	6.926	-0.044	1.927	0.146
201	6.925	-0.045	1.910	0.148
202	6.926	-0.044	1.917	0.147
203	6.926	-0.044	1.917	0.147
204	6.929	-0.041	2.004	0.135
205	6.929	-0.041	2.004	0.135
206	6.925	-0.045	1.910	0.148
207	6.925	-0.045	1.910	0.148
208	6.928	-0.042	1.969	0.140
209	6.927	-0.043	1.938	0.144
210	6.925	-0.045	1.910	0.148
211	6.927	-0.043	1.952	0.142
212	6.927	-0.043	1.940	0.144
213	6.926	-0.044	1.927	0.146
214	6.928	-0.042	1.969	0.140
215	6.927	-0.043	1.940	0.144
216	6.927	-0.043	1.940	0.144
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218	6.927	-0.043	1.952	0.142
219	6.927	-0.043	1.952	0.142
220	6.927	-0.043	1.940	0.144
221	6.927	-0.043	1.952	0.142
222	6.928	-0.042	1.969	0.140
223	6.929	-0.041	2.004	0.135
224	6.926	-0.044	1.927	0.146
225	6.928	-0.042	1.969	0.140
226	6.928	-0.042	1.973	0.139
227	6.928	-0.042	1.969	0.140
228	6.927	-0.043	1.952	0.142
229	6.929	-0.041	1.991	0.137
230	6.928	-0.042	1.969	0.140
231	6.930	-0.040	2.016	0.133
232	6.931	-0.039	2.050	0.129
233	6.929	-0.041	1.991	0.137
234	6.929	-0.041	2.004	0.135
235	6.930	-0.040	2.018	0.133
236	6.931	-0.039	2.050	0.129
237	6.931	-0.039	2.050	0.129
238	6.929	-0.041	2.004	0.135
239	6.927	-0.043	1.938	0.144
240	6.929	-0.041	1.991	0.137
241	6.932	-0.038	2.061	0.127
242	6.931	-0.039	2.037	0.130
243	6.930	-0.040	2.016	0.133
244	6.931	-0.039	2.037	0.130
245	6.930	-0.040	2.027	0.132
246	6.934	-0.036	2.123	0.120
247	6.932	-0.038	2.061	0.127
248	6.934	-0.036	2.124	0.120
249	6.930	-0.040	2.016	0.133
250	6.934	-0.036	2.124	0.120
251	6.930	-0.040	2.028	0.132
252	6.931	-0.039	2.050	0.129
253	6.930	-0.040	2.018	0.133
254	6.930	-0.040	2.028	0.132
255	6.932	-0.038	2.061	0.127
256	6.933	-0.037	2.089	0.124
257	6.930	-0.040	2.018	0.133

258	6.928	-0.042	1.973	0.139
259	6.930	-0.040	2.018	0.133
260	6.930	-0.040	2.028	0.132
261	6.934	-0.036	2.114	0.121
262	6.930	-0.040	2.028	0.132
263	6.934	-0.036	2.114	0.121
264	6.932	-0.038	2.061	0.127
265	6.932	-0.038	2.060	0.127
266	6.931	-0.039	2.041	0.130
267	6.934	-0.036	2.114	0.121
268	6.933	-0.037	2.100	0.122
269	6.934	-0.036	2.114	0.121
270	6.934	-0.036	2.135	0.118
271	6.934	-0.036	2.135	0.118
272	6.933	-0.037	2.089	0.124
273	6.934	-0.036	2.135	0.118
274	6.933	-0.037	2.110	0.121
275	6.935	-0.035	2.164	0.115
276	6.934	-0.036	2.123	0.120
277	6.933	-0.037	2.110	0.121
278	6.935	-0.035	2.149	0.117
279	6.933	-0.037	2.109	0.121
280	6.934	-0.036	2.123	0.120
281	6.934	-0.036	2.123	0.120
282	6.933	-0.037	2.109	0.121
283	6.933	-0.037	2.109	0.121
284	6.934	-0.036	2.135	0.118
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286	6.934	-0.036	2.135	0.118
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289	6.934	-0.036	2.135	0.118
290	6.934	-0.036	2.135	0.118
291	6.932	-0.038	2.061	0.127
292	6.937	-0.033	2.202	0.111
293	6.935	-0.035	2.149	0.117
294	6.937	-0.033	2.215	0.109
295	6.934	-0.036	2.135	0.118
296	6.937	-0.033	2.203	0.110
297	6.936	-0.034	2.193	0.112
298	6.936	-0.034	2.188	0.112
299	6.935	-0.035	2.149	0.117
300	6.936	-0.034	2.188	0.112
301	6.937	-0.033	2.215	0.109
302	6.933	-0.037	2.109	0.121
303	6.936	-0.034	2.188	0.112
304	6.935	-0.035	2.166	0.115
305	6.935	-0.035	2.166	0.115
306	6.935	-0.035	2.166	0.115
307	6.936	-0.034	2.188	0.112
308	6.936	-0.034	2.193	0.112
309	6.937	-0.033	2.215	0.109
310	6.935	-0.035	2.149	0.117
311	6.935	-0.035	2.166	0.115
312	6.936	-0.034	2.188	0.112
313	6.936	-0.034	2.193	0.112
314	6.937	-0.033	2.215	0.109
315	6.937	-0.033	2.215	0.109
316	6.937	-0.033	2.215	0.109
317	6.937	-0.033	2.215	0.109

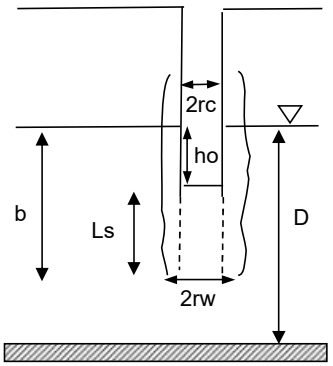
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321	6.938	-0.032	2.231	0.107
322	6.942	-0.028	2.383	0.092
323	6.938	-0.032	2.231	0.107
324	6.940	-0.030	2.303	0.100
325	6.938	-0.032	2.231	0.107
326	6.939	-0.031	2.289	0.101
327	6.940	-0.030	2.302	0.100
328	6.939	-0.031	2.273	0.103
329	6.938	-0.032	2.249	0.106
330	6.938	-0.032	2.231	0.107
331	6.940	-0.030	2.303	0.100
332	6.939	-0.031	2.289	0.101
333	6.937	-0.033	2.215	0.109
334	6.937	-0.033	2.215	0.109
335	6.942	-0.028	2.365	0.094
336	6.938	-0.032	2.249	0.106
337	6.940	-0.030	2.320	0.098
338	6.940	-0.030	2.306	0.100
339	6.938	-0.032	2.249	0.106
340	6.939	-0.031	2.289	0.101
341	6.940	-0.030	2.303	0.100
342	6.937	-0.033	2.215	0.109
343	6.938	-0.032	2.231	0.107
344	6.940	-0.030	2.320	0.098
345	6.943	-0.027	2.398	0.091
346	6.942	-0.028	2.383	0.092
347	6.941	-0.029	2.336	0.097
348	6.940	-0.030	2.320	0.098
349	6.940	-0.030	2.319	0.098
350	6.937	-0.033	2.215	0.109
351	6.940	-0.030	2.303	0.100
352	6.943	-0.027	2.399	0.091
353	6.940	-0.030	2.303	0.100
354	6.941	-0.029	2.339	0.096
355	6.940	-0.030	2.303	0.100
356	6.943	-0.027	2.399	0.091
357	6.943	-0.027	2.417	0.089
358	6.943	-0.027	2.402	0.091
359	6.940	-0.030	2.319	0.098
360	6.939	-0.031	2.278	0.102
361	6.941	-0.029	2.339	0.096
362	6.939	-0.031	2.278	0.102
363	6.939	-0.031	2.278	0.102
364	6.942	-0.028	2.371	0.093
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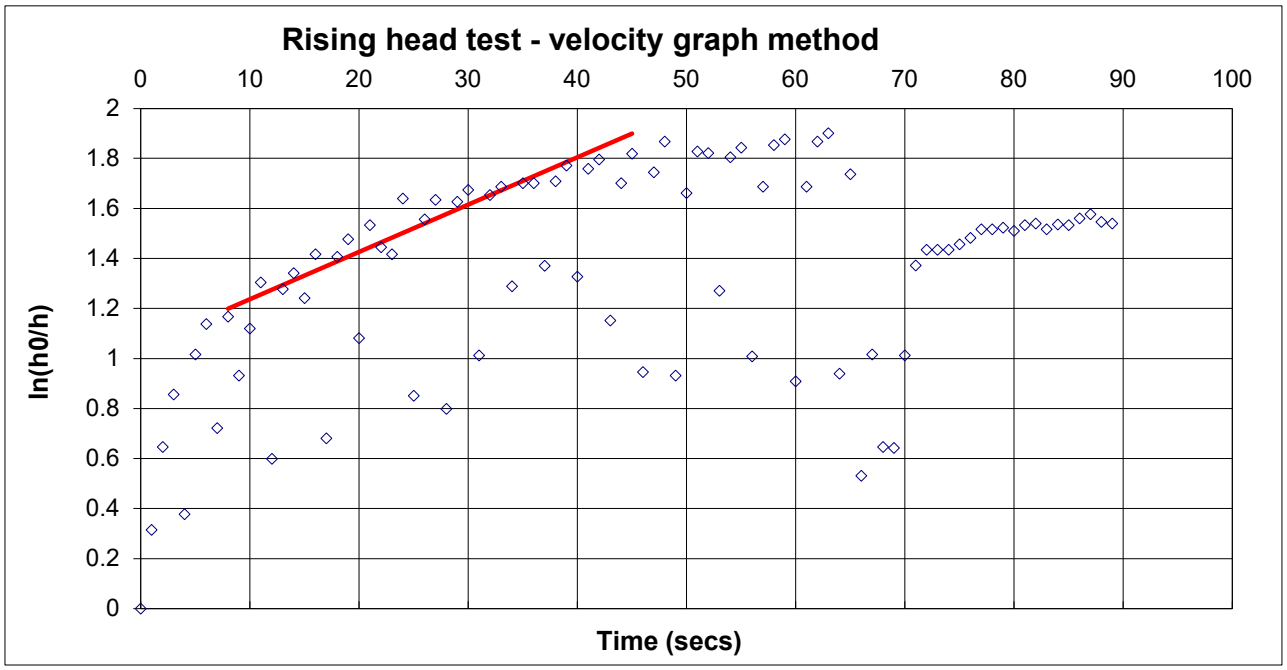
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill			
Location & Test No.	BHL05 Test 1	Date	26/02/2021	
Static water level (mbgl)	1.17	Water column height b (m)		6.33
Depth of well	7.50	Ls / 2rc		90
Length of screen Ls (m)	4.50	Shape factor F, for Le/2rc>10		5.44
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2		0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)		-0.360

Velocity graph method - red straight line on velocity graph

t1 =	8	ln(h0/h) for	1.2
t2 =	45	ln(h0/h) for	1.9
Slope, α	0.019	Velocity graph method k = α S / F	
k =	6.82E-06 m/sec		0.5895 m/d





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill	Location:	BHL05 Test 1
Source:	Diver measurement	Date:	26/02/2021
h0 =	5.67	-0.360	

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	5.309872787	-0.360	0.000	1.000
1	5.407080463	-0.263	0.315	0.730
2	5.481285409	-0.189	0.646	0.524
3	5.517127253	-0.153	0.857	0.424
4	5.423171228	-0.247	0.378	0.685
5	5.539645737	-0.130	1.016	0.362
6	5.554652679	-0.115	1.139	0.320
7	5.495117104	-0.175	0.722	0.486
8	5.557987555	-0.112	1.168	0.311
9	5.52813637	-0.142	0.932	0.394
10	5.552480946	-0.118	1.120	0.326
11	5.572323443	-0.098	1.305	0.271
12	5.472193867	-0.198	0.599	0.549
13	5.569576248	-0.100	1.277	0.279
14	5.575829141	-0.094	1.341	0.261
15	5.565914	-0.104	1.241	0.289
16	5.582744923	-0.087	1.418	0.242
17	5.487871789	-0.182	0.682	0.506
18	5.581831917	-0.088	1.407	0.245

19	5.587834694	-0.082	1.478	0.228
20	5.547899555	-0.122	1.082	0.339
21	5.592253404	-0.078	1.533	0.216
22	5.585089558	-0.085	1.445	0.236
23	5.582755142	-0.087	1.418	0.242
24	5.600090363	-0.070	1.639	0.194
25	5.516301606	-0.154	0.851	0.427
26	5.594079402	-0.076	1.557	0.211
27	5.599756875	-0.070	1.634	0.195
28	5.508047788	-0.162	0.799	0.450
29	5.599256644	-0.071	1.627	0.196
30	5.602504048	-0.067	1.674	0.187
31	5.539224824	-0.131	1.013	0.363
32	5.601090826	-0.069	1.654	0.191
33	5.603341867	-0.067	1.687	0.185
34	5.570818677	-0.099	1.290	0.275
35	5.604258958	-0.066	1.701	0.183
36	5.604258958	-0.066	1.701	0.183
37	5.578580413	-0.091	1.371	0.254
38	5.604755088	-0.065	1.708	0.181
39	5.608767203	-0.061	1.772	0.170
40	5.57449519	-0.096	1.327	0.265
41	5.608006589	-0.062	1.759	0.172
42	5.610257629	-0.060	1.796	0.166
43	5.556153373	-0.114	1.152	0.316
44	5.604254857	-0.066	1.701	0.183
45	5.611595685	-0.058	1.819	0.162
46	5.530141341	-0.140	0.946	0.388
47	5.607085399	-0.063	1.745	0.175
48	5.614346957	-0.056	1.867	0.155
49	5.528140415	-0.142	0.932	0.394
50	5.601591057	-0.068	1.661	0.190
51	5.612095916	-0.058	1.828	0.161
52	5.611768594	-0.058	1.822	0.162
53	5.568992645	-0.101	1.271	0.280
54	5.610761966	-0.059	1.805	0.164
55	5.613013007	-0.057	1.844	0.158
56	5.538728646	-0.131	1.009	0.365
57	5.603341867	-0.067	1.687	0.185
58	5.61359661	-0.056	1.854	0.157
59	5.614847189	-0.055	1.876	0.153
60	5.52496824	-0.145	0.910	0.403
61	5.603341867	-0.067	1.687	0.185
62	5.614342849	-0.056	1.867	0.155
63	5.616181139	-0.054	1.901	0.149
64	5.52922425	-0.141	0.939	0.391
65	5.606589268	-0.063	1.737	0.176
66	5.458433523	-0.212	0.532	0.587
67	5.539645737	-0.130	1.016	0.362
68	5.481374803	-0.189	0.647	0.524
69	5.480618434	-0.189	0.643	0.526
70	5.539145506	-0.131	1.012	0.363
71	5.578747157	-0.091	1.373	0.253
72	5.584249702	-0.086	1.435	0.238
73	5.584245616	-0.086	1.435	0.238
74	5.584249702	-0.086	1.435	0.238
75	5.586083884	-0.084	1.457	0.233
76	5.588251553	-0.082	1.483	0.227
77	5.591002826	-0.079	1.517	0.219
78	5.591002826	-0.079	1.517	0.219
79	5.591509201	-0.078	1.523	0.218
80	5.590502595	-0.079	1.511	0.221

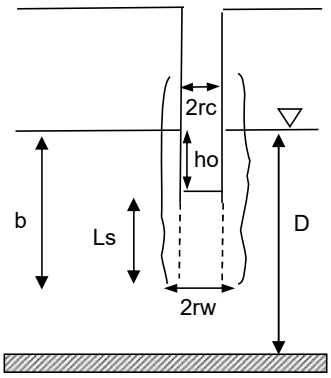
81	5.592336776	-0.078	1.534	0.216
82	5.592837008	-0.077	1.541	0.214
83	5.591002826	-0.079	1.517	0.219
84	5.59250352	-0.077	1.536	0.215
85	5.592336776	-0.078	1.534	0.216
86	5.594337702	-0.076	1.560	0.210
87	5.59558828	-0.074	1.577	0.207
88	5.593253867	-0.077	1.546	0.213
89	5.592837008	-0.077	1.541	0.214

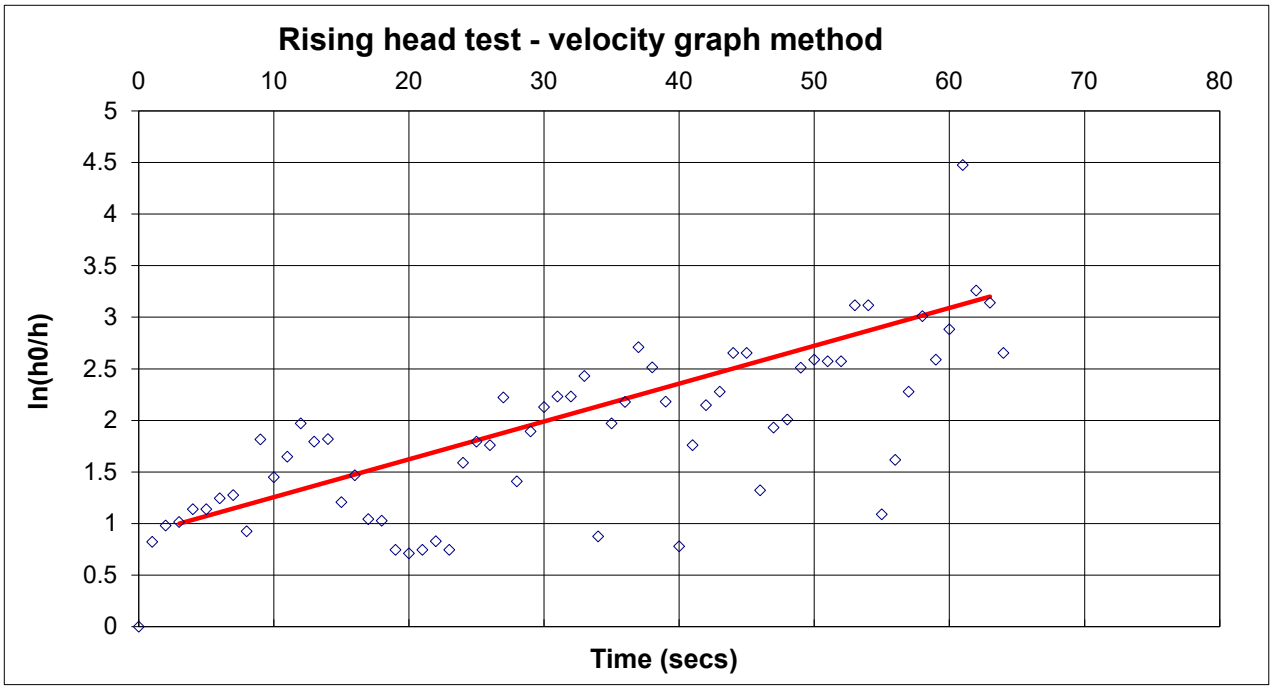
Variable head test - analysis (method BS EN ISO 22282-2)

Site	Challonsleigh Farm Inert Landfill			
Location & Test No.	BHL06 Test 1	Date	26/02/2021	
Static water level (mbgl)	0.78	Water column height b (m)		6.72
Depth of well	7.50	Ls / 2rc		100
Length of screen Ls (m)	5.00	Shape factor F, for Le/2rc>10		5.93
Drilled diameter 2rw (m)	0.12	Internal area of casing, S, m2		0.0020
Casing diameter 2rc (m)	0.05	Initial displacement, h0 (m)		-0.086

Velocity graph method - red straight line on velocity graph

t1 =	3	ln(h0/h) for t1	1
t2 =	63	ln(h0/h) for t2	3.2
Slope, α	0.037	Velocity graph method k = α S / F	
k =	1.21E-05 m/sec	1.0491 m/d	





Variable head test - data

Site:	Challonsleigh Farm Inert Landfill		Location:	BHL06 Test 1
Source:	Diver measurement		Date:	26/02/2021
h0 =	5.74	-0.086		

t (secs)	Water column above diver (m)	h (m)	Ln(h0/h)	h/ho
0	5.653736462	-0.086	0.000	1.000
1	5.702170362	-0.038	0.824	0.439
2	5.707676852	-0.032	0.982	0.375
3	5.708756587	-0.031	1.016	0.362
4	5.712424864	-0.028	1.140	0.320
5	5.712424864	-0.028	1.140	0.320
6	5.715169959	-0.025	1.245	0.288
7	5.715934565	-0.024	1.277	0.279
8	5.705838639	-0.034	0.926	0.396
9	5.72600804	-0.014	1.819	0.162
10	5.719761419	-0.020	1.450	0.235
11	5.723429696	-0.017	1.650	0.192
12	5.728008916	-0.012	1.973	0.139
13	5.725688861	-0.014	1.796	0.166
14	5.726018251	-0.014	1.820	0.162
15	5.714259003	-0.026	1.209	0.298
16	5.720178268	-0.020	1.471	0.230
17	5.709673656	-0.030	1.045	0.352

18	5.709173436	-0.031	1.029	0.357
19	5.699089742	-0.041	0.746	0.474
20	5.697672452	-0.042	0.712	0.491
21	5.699085674	-0.041	0.746	0.474
22	5.702424542	-0.038	0.831	0.436
23	5.699089742	-0.041	0.746	0.474
24	5.722433341	-0.018	1.591	0.204
25	5.725680684	-0.014	1.796	0.166
26	5.725180465	-0.015	1.761	0.172
27	5.730682881	-0.009	2.226	0.108
28	5.718927719	-0.021	1.409	0.244
29	5.727018691	-0.013	1.894	0.150
30	5.729765811	-0.010	2.132	0.119
31	5.730766251	-0.009	2.235	0.107
32	5.730760121	-0.009	2.234	0.107
33	5.732427518	-0.008	2.433	0.088
34	5.70408787	-0.036	0.876	0.416
35	5.728015043	-0.012	1.974	0.139
36	5.730266031	-0.010	2.182	0.113
37	5.734267788	-0.006	2.711	0.066
38	5.733021331	-0.007	2.515	0.081
39	5.730270121	-0.010	2.182	0.113
40	5.700419593	-0.040	0.779	0.459
41	5.725184551	-0.015	1.762	0.172
42	5.729932551	-0.010	2.148	0.117
43	5.7311831	-0.009	2.281	0.102
44	5.733938401	-0.006	2.655	0.070
45	5.733934308	-0.006	2.655	0.070
46	5.717010211	-0.023	1.322	0.267
47	5.727514823	-0.012	1.933	0.145
48	5.728440073	-0.012	2.010	0.134
49	5.733011107	-0.007	2.513	0.081
50	5.733521551	-0.006	2.589	0.075
51	5.733427956	-0.007	2.575	0.076
52	5.733438181	-0.007	2.576	0.076
53	5.736185297	-0.004	3.119	0.044
54	5.736185297	-0.004	3.119	0.044
55	5.711011651	-0.029	1.091	0.336
56	5.722923355	-0.017	1.620	0.198
57	5.7311831	-0.009	2.281	0.102
58	5.735762312	-0.004	3.013	0.049
59	5.733521551	-0.006	2.589	0.075
60	5.735184858	-0.005	2.886	0.056
61	5.739019875	-0.001	4.477	0.011
62	5.736689611	-0.003	3.260	0.038
63	5.736272761	-0.004	3.142	0.043
64	5.733934308	-0.006	2.655	0.070

Appendix D. Groundwater level dataset

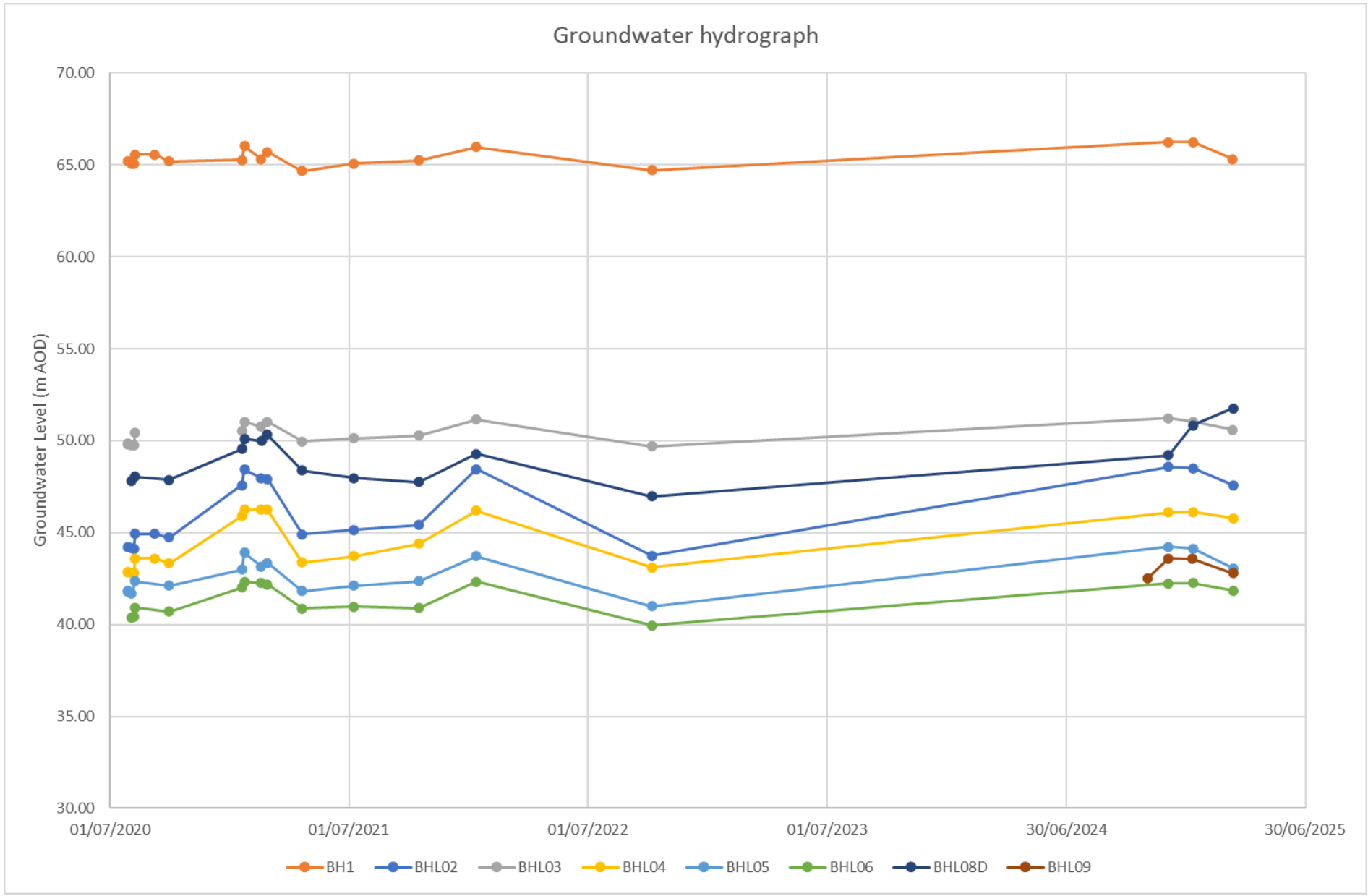
D.1 Groundwater level dataset

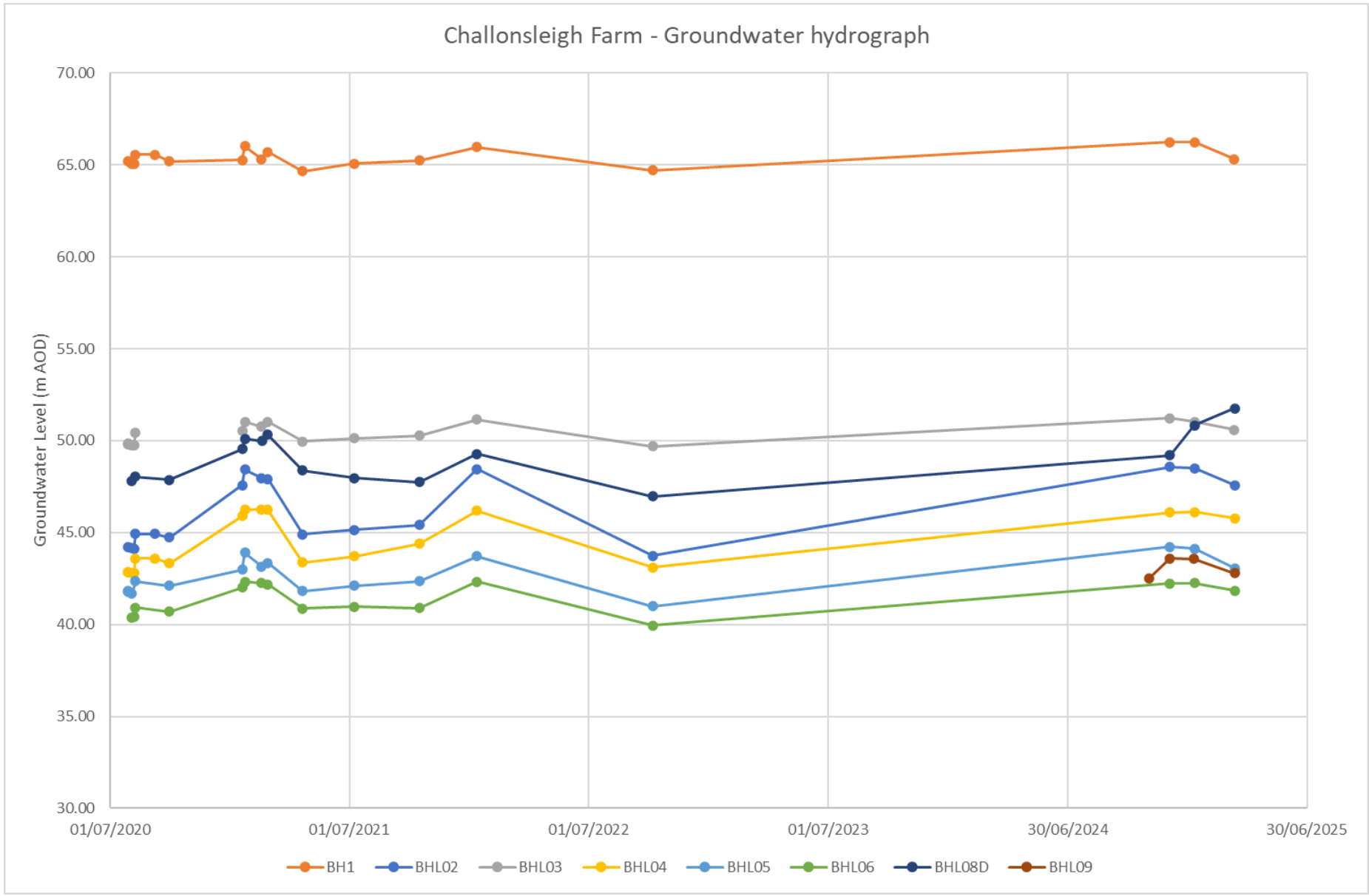
Site	Challonsleigh Farm
Project	Inert Landfill
Sheet	Monitoring Data (WIP)

						Groundwater Level				Ground Gas									Groundwater											
	Date	Ground Level (mAOD)	Top of Case (magl)	Top of Case (mAOD)	Bottom of hole (mbTOC)	Water level (mbTOC)	Water Level (mAOD)	mbgl	Response Zone Flooded?	Methane (% Vol)	Cardon Dioxide (% Vol)	Oxygen (% Vol)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Balance (%Vol)	Barometric Pressure (mbar)	Diff. Pressure mb	Flow (l/hr)	CH4 x flow	Temp (˚C)	Dissolved oxygen (mg/l)	Dissolved Oxygen (%)	Specific Conductivity (µS)	pH	Redox Potential (pH/mV)	Redox Potential (ORP/mV)	TDS (ppm)	GW Depth End of Purge (mbTOC)	Purge Volume (l)	Time sample taken	Depth sample taken (mbgl)	Observations / Comments
Borehole Locations																															
BHL01																															
BHL01	29/07/2020 00:00	70.85	0.275	71.13		5.93	**65.20**	**5.7**	**NOT FLOODED**																						Groundwater level only.
BHL01	03/08/2020 09:05	70.85	0.275	71.13		6.09	**65.04**	**5.8**	**NOT FLOODED**	<0.1	0.6	19.1	<1	<1		1010	<0.001	<0.1													
BHL01	07/08/2020 00:00	70.85	0.275	71.13		6.08	**65.05**	**5.8**	**NOT FLOODED**																						Groundwater level only.
BHL01	08/08/2020 09:05	70.85	0.275	71.13		5.58	**65.55**	**5.3**	**NOT FLOODED**	<0.1	1.7	16.0	<1	<1		1019	<0.001	<0.1													
BHL01	08/09/2020 00:00	70.85	0.275	71.13		5.58	**65.55**	**5.3**	**NOT FLOODED**																						Groundwater level only.
BHL01	29/09/2020 08:42	70.85	0.275	71.13		5.93	**65.20**	**5.7**	**NOT FLOODED**	<0.1	2.1	15.5	<1	<1		1008	<0.001	<0.1													
BHL01	18/01/2021 12:48	70.85	0.275	71.13		5.86	**65.27**	**5.6**	**NOT FLOODED**	0	2.2	17.3	0	<1	80.5	1015	0.09	0													
BHL01	22/01/2021 10:47	70.85	0.275	71.13		5.11	**66.02**	**4.8**	**NOT FLOODED**	0	2.6	17.0	0	<1	80.3	987	0.04	0.1													
BHL01	17/02/2021 00:00	70.85	0.275	71.13		5.83	**65.30**	**5.6**	**NOT FLOODED**																						Groundwater level only.
BHL01	26/02/2021 11:07	70.85	0.275	71.13		5.41	**65.71**	**5.1**	**NOT FLOODED**	0	1.9		0			1036	0.7	<0.1													
BHL01	20/04/2021 17:19	70.85	0.275	71.13		6.48	**64.65**	**6.2**	**NOT FLOODED**	0	1.9	18.7	3	0	79.4	1012	0.2	0.2													
BHL01	08/07/2021 14:27	70.85	0.275	71.13		6.05	**65.08**	**5.8**	**NOT FLOODED**	0	2.3	17.9	2	1	79.8	1015	0.02	0.3													
BHL01	15/10/2021 12:34	70.85	0.275	71.13		5.90	**65.23**	**5.6**	**NOT FLOODED**	0	3	17.3	1	0	79.7	1015	0.26	0.1													
BHL01	11/01/2022 11:56	70.85	0.275	71.13		5.15	**65.98**	**4.9**	**NOT FLOODED**	0	2.7	16.9	2	0	80.5	1028	0.09	0.2													
BHL01	06/10/2022 09:09	70.85	0.275	71.13		6.43	**64.70**	**6.2**	**NOT FLOODED**	0	2.5	18.1	0	0		1020	0	-1													
BHL01	03/12/2024 00:00	70.85	0.275	71.13	12.77	4.88	**66.25**	**4.6**	**NOT FLOODED**	0	3.7	16.0	0	0	80.4	1014	-2.22	0.8		13.00		70.80	672.00	7.08		146.1		4.89	4.4	10:00:00	10.00	Clear, no sheen or odour.
BHL01	09/01/2025 09:39	70.85	0.275	71.13		4.90	**66.23**	**4.6**	**NOT FLOODED**	0	3	16.7	0	0	80.3	1003	-0.83	0.7		12.80		66.10	688.00	7.14		-11.0		4.91	4.9	09:58:00	10.00	Clear, no sheen or odour.
BHL01	11/03/2025 09:25	70.85	0.275	71.13	12.73	5.81	**65.32**	**5.5**	**NOT FLOODED**	0	2.5	17.3	0	0	80.1	1001	-0.54	0.3		12.60	7.14	67.40	644.00	7.00		143.6		5.81	7.0	09:37:00		Clear, no sheen or odour. No corcking bolt on cover.
BHL01	09/04/2026 09:33	70.85	0.275	71.13		6.02	**65.11**	**5.7**	**NOT FLOODED**	0	1.8	17.0	0	0	81.1	1009	-0.26	0													
BHL01	15/04/2026 13:21	70.85	0.275	71.13		6.04	**65.09**	**5.8**	**NOT FLOODED**											12.90	7.86	74.60	642.00	7.40		337.9		6.04	8.0	13:35:00		
	average						**65.41**	**5.4**																							
	Maximum				**12.77**	**6.48**	**66.25**	**6.2**		**0.00**	**3.70**	**19.1**	**3.00**	**1.00**	**81.10**	**1036.00**	**0.70**	**0.80**	**0.00**	**13.00**	**7.86**	**74.60**	**688.00**	**7.40**	**0.00**	**337.90**	**0.00**	**6.04**	**8.00**		**10.00**	
	Minimum				**12.73**	**4.88**	**64.65**	**4.6**		**0.00**	**0.60**	**15.5**	**0.00**	**0.00**	**79.40**	**987.00**	**-2.22**	**-1.00**	**0.00**	**12.60**	**7.14**	**66.10**	**642.00**	**7.00**	**0.00**	**-11.00**	**0.00**	**4.89**	**4.40**		**10.00**	
BHL02																															
BHL02	29/07/2020 00:00	48.99	0.300	49.29		5.07	**44.22**	**4.8**	**NOT FLOODED**																						Groundwater level only.
BHL02	03/08/2020 10:35	48.99	0.300	49.29		5.13	**44.16**	**4.8**	**NOT FLOODED**	<0.1	0.6	19.5	<1	<1		1013	<0.001	<0.1													
BHL02	07/08/2020 00:00	48.99	0.300	49.29		5.2	**44.09**	**4.9**	**NOT FLOODED**																						Groundwater level only.
BHL02	08/08/2020 10:40	48.99	0.300	49.29		4.37	**44.92**	**4.1**	**NOT FLOODED**	<0.1	2.1	17.8	<1	<1		1020	<0.001	<0.1													
BHL02	08/09/2020 00:00	48.99	0.300	49.29		4.37	**44.92**	**4.1**	**NOT FLOODED**																						Groundwater level only.
BHL02	29/09/2020 11:54	48.99	0.300	49.29		4.55	**44.74**	**4.3**	**NOT FLOODED**	<0.1	2.3	16.2	<1	<1		1010	<0.001	<0.1													
BHL02	18/01/2021 13:51	48.99	0.300	49.29		1.725	**47.57**	**1.4**	**FLOODED**	0	2.3	16.5	3	<1	81.2	1015	0.11	10.9													
BHL02	22/01/2021 12:40	48.99	0.300	49.29		0.86	**48.43**	**0.6**	**FLOODED**	0	2.4	17.2	2	<1	80.4	989	10.97	-8.4													
BHL02	17/02/2021 00:00	48.99	0.300	49.29		1.325	**47.97**	**1.0**	**FLOODED**																						Groundwater level only.
BHL02	26/02/2021 12:15	48.99	0.300	49.29		1.372	**47.92**	**1.1**	**FLOODED**	0	0		0			1036	0.47	<0.1													
BHL02	20/04/2021 15:59	48.99	0.300	49.29		4.375	**44.92**	**4.1**	**NOT FLOODED**	0	2.6	17.5	3	1	79.9	1014	0.05	0.1													
BHL02	08/07/2021 12:48	48.99	0.300	49.29		4.135	**45.16**	**3.8**	**NOT FLOODED**	0	2.6	17.5	3	1	79.9	1014	0.05	0.1													
BHL02	15/10/2021 10:49	48.99	0.300	49.29		3.865	**45.43**	**3.6**	**NOT FLOODED**	0	0.1	20.8	0	0	79.1	1016	-0.02	0.4													
BHL02	11/01/2022 10:59	48.99	0.300	49.29		0.845	**48.45**	**0.5**	**FLOODED**	0	0.1	20.6	0	0	79.1	1026	0.02	-11.1													
BHL02	06/10/2022 15:20	48.99	0.300	49.29		5.56	**43.73**	**5.3**	**NOT FLOODED**	0	2.7	10.3	0	0		1021	0	0													
BHL02	03/12/2024 00:00	48.99	0.300	49.29	11.79	0.73	**48.56**	**0.4**	**FLOODED**	0	2.8	6.4	0	0	90.8	1017	126.36	19.4		11.50		36.00	592.00	7.27		82.0		0.65	6.3	14:30:00	6.00	Cloudy, grey.
BHL02	09/01/2025 14:35	48.99	0.300	49.29		0.78	**48.51**	**0.5**	**NOT FLOODED**	0	2	13.9	0	0	84.1	1009	-7.44	6.3		11.30	2.75	25.20	592.00	7.30		150.5		0.86	6.9	14:30:00	6.00	Clear, no sheen or odour.
BHL02	11/03/2025 13:10	48.99	0.300	49.29	11.73	1.72	**47.57**	**1.4**	**NOT FLOODED**	0	1.7	14.2	0	0	84.1	1004	-47.1	-11.6		11.60	2.08	19.20	542.00	7.16		71.5		1.75	6.5	13:25:00		Clear, no odour.
BHL02	09/04/2026 10:42	48.99	0.300	49.29		2.95	**46.34**	**2.7**	**NOT FLOODED**	0	1	11.1	0	0	87.8	1013	0.02	8.1		10.90	2.14	19.40	499.00	7.58		354.6			6.5	17:39:00		
BHL02	15/04/2026 00:00	48.99	0.300	49.29		3.37	**45.92**	**3.1**	**NOT FLOODED**																						Groundwater level only.
	average						**46.17**	**2.8**																							
	Maximum				**11.79**	**5.56**	**48.56**	**5.3**		**0.00**	**2.80**	**20.8**	**3.00**	**1.00**	**90.80**	**1036.00**	**126.36**	**19.40**	**0.00**	**11.60**	**2.75**	**36.00**	**592.00**	**7.58**	**0.00**	**354.60**	**0.00**	**1.75**	**6.90**		**6.00**	
	Minimum				**11.73**	**0.73**	**43.73**	**0.4**		**0.00**	**0.00**	**6.4**	**0.00**	**0.00**	**79.10**	**989.00**	**-47.10**	**-11.60**	**0.00**	**10.90**	**2.08**	**19.20**	**499.00**	**7.16**	**0.00**	**71.50**	**0.00**	**0.65**	**6.30**		**6.00**	
BHL03																															
BHL03	28/07/2020 00:00	52.94	0.260	53.20		3.42	**49.78**	**3.2**	**NOT FLOODED**																						Groundwater level only.
BHL03	29/07/2020 00:00	52.94	0.260	53.20		3.35	**49.85**	**3.1**	**NOT FLOODED**																						Groundwater level only.
BHL03	03/08/2020 09:36	52.94	0.00	53.20		3.45	**49.75**	**3.5**	**NOT FLOODED**	<0.1	1.9	19.9	<1	<1		1015	<0.001	<0.1													
BHL03	07/08/2020 00:00	52.94	0.260	53.20		3.46	**49.74**	**3.2**	**NOT FLOODED**																						Groundwater level only.
BHL03	08/08/2020 12:08	52.94	0.00	53.20		2.77	**50.43**	**2.8**	**NOT FLOODED**	<0.1	2.1	2.1				1021	<0.001	<0.1													
BHL03	29/09/2020 10:21	52.94	0.00	53.20						<0.1	2.1					1011	<0.001	<0.1													
BHL03	18/01/2021 13:09	52.94	0.260	53.20		2.67	**50.53**	**2.4**	**NOT FLOODED**	0	3.4	15.9	0	<1	80.7	1016	-0.07	-0.1													
BHL03	22/01/2021 11:06	52.94	0.260	53.20		2.165	**51.04**	**1.9**	**FLOODED**	0	3.8	15.2	0	<1	81	989	0.02	-3.4													
BHL03	17/02/2021 00:00	52.94	0.260	53.20		2.445	**50.76**	**2.2**	**NOT FLOODED**																						Groundwater level only.
BHL03	26/02/2021 11:15	52.94	0.260	53.20		2.172	**51.03**	**1.9**	**FLOODED**	0	3.3	17.7	0		79	1037	0.6	<0.1													
BHL03	20/04/2021 16:54	52.94	0.260	53.20		3.235	**49.97**	**3.0**	**NOT FLOODED**	0	3.3	19.7	1-2	0	77	1014	0.02	0.1													
BHL03	08/07/2021 14:01	52.94	0.260	53.20		3.065	**50.14**	**2.8**	**NOT FLOODED**	0	3.2	18.7	1	1	78.1	1017	-0.05	0.3													
BHL03	15/10/2021 12:06	52.94	0.260	53.20		2.917	**50.28**	**2.7**	**NOT FLOODED**	0	2.8	18.7	0	0	78.6	1017	0.05	0.3													
BHL03	11/01/2022 11:34	52.94	0.260	53.20		2.045	**51.16**	**1.8**	**FLOODED**	0	3	16.1	1	0	80.9	1028	0	-5.6													
BHL03	06/10/2022 10:11	52.94	0.260	53.20		3.5	**49.70**	**3.2**	**NOT FLOODED**	0	2.5	19.2	0	0		1022	0	0													
BHL03	03/12/2024 00:00	52.94	0.260	53.20	6.80	1.98	**51.22**	**1.7**	**FLOODED**	0	4	15.9	0	0	80.1	1015	-2.88	-6		13.1		62.10	435.30	6.77		152.3		2.00	6.4	11:00:00	4.50	Clear, no sheen or odour.
BHL03	09/01/2025 10:32	52.94	0.260	53.20		2.18	**51.02**	**1.9**	**NOT FLOODED**	0	4.3	15.1	0	0	80.6	1003	0.07	4.9		12.3		65.70	429.00	6.83		5.4		2.18	7.3	10:26:00	4.50	Clear, no sheen or odour. Saved on gas meter as BHL02.
BHL03	11/03/2025 09:55	52.94	0.260	53.20	6.77	2.61	**50.59**	**2.4**	**NOT FLOODED**	0	4.4	15.4	0	0	80.2	1003	-0.97	0.3		11.7	7.15	65.70	419.40	6.71		127.4		2.63	5.6	10:10:00		Clear, no sheen or odour. No locking bolt on cover.
BHL03	09/04/2026 09:46	52.94	0.260	53.20		2.99	**50.21**	**2.7**	**NOT FLOODED**	0	4.1	16.1	0	0	79.7	1011	0	0													
BHL03	15/04/2026 13:55	52.94	0.260	53.20		3.05	**50.15**	**2.8**	**NOT FLOODED**											12.3	6.67	63.50	428.10	7.06		350.5		3.07	9.5	13:57:00		Clear, no odour. DUP1 retrieved here.
	average						**50.39**	**2.6**																							
	Maximum				**6.80**	**3.50**	**51.22**	**3.5**		**0.00**	**4.40**	**19.9**	**1.00**	**1.00**	**81.00**	**1037.00**	**0.60**	**4.90**	**0.00**	**13.10**	**7.15**	**65.70**	**435.30**	**7.06**	**0.00**	**350.50**	**0.00**	**3.07**	**9.50**		**4.50**	
	Minimum				**6.77**	**1.98**	**49.70**	**1.7**		**0.00**	**1.90**	**2.1**	**0.00**	**0.00**	**77.00**	**989.00**	**-2.88**	**-6.00**	**0.00**	**11.70**	**6.67**	**62.10**	**419.40**	**6.71**	**0.00**	**5.40**	**0.00**	**2.00**	**5.60**		**4.50**	
BHL04																															
BHL04	28/07/2020 00:00	47.00	0.310	47.31		4.45	**42.86**	**4.1**	**NOT FLOODED**																						Groundwater level only.
BHL04	29/07/2020 00:00	47.00	0.310	47.31		4.46	**42.85**	**4.2**	**NOT FLOODED**																						Groundwater level only.
BHL04	03/08/2020 08:35	47.00	0.00	47.31		4.5	**42.81**	**4.5**	**NOT FLOODED**	<0.1	1.3	19.1	<1	<1		1015	<0.001	<0.1													
BHL04	07/08/2020 00:00	47.00	0.310	47.31		4.51	**42.80**	**4.2**	**NOT FLOODED**																						Groundwater level only.
BHL04	08/08/2020 11:48	47.00	0.00	47.31		3.73	**43.58**	**3.7**	**NOT FLOODED**	<0.1	2.1	16.5	<1	<1		1021	<0.001	<0.1													
BHL04	08/09/2020 00:00	47.00	0.310	47.31		3.73	**43.58**	**3.4**	**NOT FLOODED**																						Groundwater level only.
BHL04	29/09/2020 13:59	47.00	0.00	47.31		3.98	**43.33**	**4.0**	**NOT FLOODED**	0.6	2.2	17.1	-10	<1		1011	<0.001	<0.1													
BHL04	18/01/2021 14:11	47.00	0.310	47.31		1.42	**45.89**	**1.1**	**FLOODED**	0	2.4	16.1	0	<1	81.5	1015	0.05	9.2													
BHL04	22/01/2021 11:17	47.00	0.310	47.31		1.07	**46.24**	**0.8**	**FLOODED**	0	2.4	15.4	0	1	82.2	989	32.12	9.2													
BHL04	17/02/2021 00:00	47.00	0.310	47.31		1.05	**46.26**	**0.7**	**FLOODED**																						Groundwater level only.
BHL04	26/02/2021 12:20	47.00	0.310	47.31		1.07	**46.24**	**0.8**	**FLOODED**	0	1.9		0			1036	0.46	<0.1													
BHL04	20/04/2021 17:05	47.00	0.310	47.31		3.93	**43.38**	**3.6**	**NOT FLOODED**	0	2	18.0	1	0	80	1016	0.24	0.2													
BHL04	08/07/2021 14:13	47.00	0.310	47.31		3.59	**43.72**	**3.3**	**NOT FLOODED**	0	2.5	17.4	1	1	80.2	1018	0.03	0.3													
BHL04	15/10/2021 12:19	47.00	0.310	47.31		2.91	**44.40**	**2.6**	**NOT FLOODED**	0	2.9	15.7	0	0	81.4	1017	0.67	0.2													
BHL04	11/01/2022 11:44	47.00	0.310	47.31		1.13	**46.18**	**0.8**	**FLOODED**	0	2.5	14.7	2	0	82.8	1028	0.07	11.2													
BHL04	06/10/2022 12:48	47.00	0.310	47.31		4.2	**43.11**	**3.9**	**NOT FLOODED**	0	1.9	17.4	0			1023	0	0													
BHL04	03/12/2024 00:00	47.00	0.310	47.31	8.09	1.21	**46.10**	**0.9**	**FLOODED**	0	3	13.9	0	0	83.1	1019	77.24	13.4		13.6		73.20	443.20	6.76		167.9		1.22	6.6	12:18:00	7.00	Slightly cloudy grey. BH hissed when bung was removed.
BHL04	09/01/2025 12:15	47.00	0.310	47.31		1.19	**46.12**	**0.9**	**NOT FLOODED**	0	3	18.9	0	0	78.1	1008	5.76	-3.2		12		67.10	435.80	6.83		5.4		1.19	8.0	12:16:00		Clear, no sheen or odour. Potential spring near by approx 19m from BH.
BHL04	11/03/2025 11:19	47.00	0.310	47.31	8.01	1.52	**45.79**	**1.2**	**NOT FLOODED**	0	2.6	18.6	0	0	78.7	1005	-24.16	-13.4		10.8	7.36	66.60	425.80	6.70		121.3		1.53	7.5	11:34:00		Clear, no sheen or odour. Slight hiss when removing bung.
BHL04	09/04/2026 10:13	47.00	0.310	47.31		2.67	**44.64**	**2.4**	**NOT FLOODED**	0	2.2	13.3	0	0	84.4	1013	0.02	0.1		11.5	7.8	73.40	404.50	7.02		389.8		2.69	6.5	16:12:00		
BHL04	15/04/2026 00:00	47.00	0.310	47.31		3.11	**44.20**	**2.8**	**NOT FLOODED**																						Groundwater level only.
	average						**44.48**	**2.6**																							
	Maximum				**8.09**	**4.51**	**46.26**	**4.5**		**0.60**	**3.00**	**19.1**	**2.00**	**1.00**	**84.40**	**1036.00**	**77.24**	**13.40**	**0.00**	**13.60**	**7.80**	**73.40**	**443.20**	**7.02**	**0.00**	**389.80**	**0.00**	**2.69**	**8.00**		**7.00**	
	Minimum				**8.01**	**1.05**	**42.80**	**0.7**		**0.00**	**1.30**	**13.3**	**-10.00**	**0.00**	**78.10**	**989.00**	**-24.16**	**-13.40**	**0.00**	**10.80**	**7.36**	**66.60**	**404.50**	**6.70**	**0.00**	**5.40**	**0.00**	**1.19**	**6.50**		**7.00**	
BHL05																															
BHL05	28/07/2020 00:00	44.52	0.380	44.90		3.09	**41.81**	**2.7**	**NOT FLOODED**																						Groundwater level only.
BHL05	29/07/2020 00:00	44.52	0.380	44.90		3.14	**41.76**	**2.8**	**NOT FLOODED**																						Groundwater level only.
BHL05	03/08/2020 10:05	44.52	0.00	44.90		3.23	**41.67**	**3.2**	**NOT FLOODED**	<0.1	0.7	18.9	<1	<1		1015	<0.001	<0.1													
BHL05	08/08/2020 10:48	44.52	0.00	44.90		2.55	**42.35**	**2.6**	**NOT FLOODED**	<0.1	0.9	18.4	<1	<1		1020	<0.001	<0.1													
BHL05	29/09/2020 11:38	44.52	0.00	44.90		2.8	**42.10**	**2.8**	**NOT FLOODED**	<0.1	4.7	13.3	<1	<1		1012	<0.001	<0.1													
BHL05	18/01/2021 13:22	44.52	0.380	44.90		1.905	**43.00**	**1.5**	**FLOODED**	0	2.7	14.4	4	<1	82.9	1017	0.02	-17.3													
BHL05	22/01/2021 11:54	44.52	0.380	44.90		1	**43.90**	**0.6**	**FLOODED**	0	1.9	18.8	0	<1	79.3	990	17.78	-8.8													
BHL05	17/02/2021 00:00	44.52	0.380	44.90		1.755	**43.15**	**1.4**	**FLOODED**																						Groundwater level only.
BHL05	26/02/2021 11:20	44.52	0.380	44.90		1.552	**43.35**	**1.2**	**FLOODED**	0	1.9		0			10.8	0.57	<0.1													
BHL05	20/04/2021 16:43	44.52	0.380	44.90		3.075	**41.83**	**2.7**	**NOT FLOODED**	0	3.1	18.8	1	0	78.1	1015	0.02	0.1													
BHL05	08/07/2021 13:47	44.52	0.380	44.90		2.79	**42.11**	**2.4**	**FLOODED**	0	3.6	16.2	2	1	80.2	1018	0.1	0.4													
BHL05	15/10/2021 11:51	44.52	0.380	44.90		2.55	**42.35**	**2.2**	**FLOODED**	0	4.1	16.9	2	0	79	1016	0.02	-5.6													
BHL05	11/01/2022 11:21	44.52	0.380	44.90		1.18	**43.72**	**0.8**	**FLOODED**	0	3.2	15.0	0	0	81.8	1028	0.07	11.4													
BHL05	06/10/2022 11:11	44.52	0.380	44.90		3.92	**40.98**	**3.5**	**NOT FLOODED**	0	2.5	18.8	0	0		1023	0	0													
BHL05	03/12/2024 00:00	44.52	0.380	44.90	7.56	0.68	**44.22**	**0.3**	**FLOODED**	0	3.5	14.2	0	1	82.4	1019	5.71	-6.4		11.9		66.80	229.90	6.47		175.3		0.69	6.0	11:40:00	5.00	Clear, no sheen or odour.
BHL05	09/01/2025 11:04	44.52	0.380	44.90		0.77	**44.13**	**0.4**	**NOT FLOODED**	0	2.8	19.2	0	0	78	1006	44.28	9.2		10.3		66.40	246.70	6.58		18.7		0.78	7.5	11:03:00	5.00	Clear, no colour or odour. High gas flow on first reading. Allowed to vent and re-tested where flow =0.0l/hr.
BHL05	11/03/2025 10:33	44.52	0.380	44.90	7.52	1.84	**43.06**	**1.5**	**NOT FLOODED**	0	3.1	17.7	0	0	79.2	1005	-69.55	-19.9		9.9	6.23	54.90	256.50	6.54		133.1		1.85	8.0	10:48:00		Clear, no odour, very slight broken sheen. Locking bolt on case present.
BHL05	09/04/2026 09:58	44.52	0.380	44.90		2.5	**42.40**	**2.1**	**NOT FLOODED**	0	2	16.9	0	0	81	1012	0	6.1		11.1	7.14	65.00	261.60	6.91		395.9		2.52	6.0	16:43:00		
BHL05	15/04/2026 00:00	44.52	0.380	44.90		2.58	**42.32**	**2.2**	**NOT FLOODED**																						Groundwater level only.
	average						**42.64**	**1.9**																							
	Maximum				**7.56**	**3.92**	**44.22**	**3.5**		**0.00**	**4.70**	**19.2**	**4.00**	**1.00**	**82.90**	**1028.00**	**44.28**	**11.40**	**0.00**	**11.90**	**7.14**	**66.80**	**261.60**	**6.91**	**0.00**	**395.90**	**0.00**	**2.52**	**8.00**		**5.00**	
	Minimum				**7.52**	**0.68**	**40.98**	**0.3**		**0.00**	**0.70**	**13.3**	**0.00**	**0.00**	**78.00**	**10.80**	**-69.55**	**-19.90**	**0.00**	**9.90**	**6.23**	**54.90**	**229.90**	**6.47**	**0.00**	**18.70**	**0.00**	**0.69**	**6.00**		**5.00**	
BHL06																															
BHL06	03/08/2020 11:05	42.95	0.00	43.25		2.88	**40.37**	**2.9**	**NOT FLOODED**	<0.1	0.9	20.0	<1	<1		1014	<0.001	<0.1													
BHL06	07/08/2020 00:00

BHL06	08/08/2020 12:25	42.95	0.00	43.25		2.33	**40.92**	**2.3**	**NOT FLOODED**	<0.1	1.5	15.6	<1	<1		1020	<0.001	<0.1													
BHL06	29/09/2020 13:39	42.95	0.00	43.25		2.54	**40.71**	**2.5**	**NOT FLOODED**	<0.1	2.1	13.3	<1	<1		1011	<0.001	<0.1													
BHL06	18/01/2021 13:35	42.95	0.300	43.25		1.245	**42.01**	**0.9**	**FLOODED**	0	1.8	14.7	11	<1	83.6	1016	6.57	6.2													
BHL06	22/01/2021 12:13	42.95	0.300	43.25		0.92	**42.33**	**0.6**	**FLOODED**	0	1.8	15.8	7	<1	82.4	989	8.7	-10.9													
BHL06	17/02/2021 00:00	42.95	0.300	43.25		0.993	**42.26**	**0.7**	**FLOODED**																						Groundwater level only.
BHL06	26/02/2021 11:30	42.95	0.300	43.25		1.08	**42.17**	**0.8**	**FLOODED**	0	0.8		0			1036	0.4	<0.1													
BHL06	20/04/2021 16:08	42.95	0.300	43.25		2.39	**40.86**	**2.1**	**NOT FLOODED**	0	0.6	20.9	1	1	78.5	1016	0.09	-15.4													
BHL06	08/07/2021 13:02	42.95	0.300	43.25		2.273	**40.98**	**2.0**	**FLOODED**	0	1.9	1.6	5	1	82.1	1015	-2.97	-14.4													
BHL06	15/10/2021 11:02	42.95	0.300	43.25		2.35	**40.90**	**2.1**	**NOT FLOODED**	0	2.8	16.2	2	0	81	1017	0	-5													
BHL06	11/01/2022 11:11	42.95	0.300	43.25		0.925	**42.33**	**0.6**	**FLOODED**	0	1.2	19.4	1	0	79.4	1028	0.02	-10.2													
BHL06	06/10/2022 13:11	42.95	0.300	43.25		3.3	**39.95**	**3.0**	**NOT FLOODED**	0	2.1	18.2	0	0		1023	0	0													
BHL06	03/12/2024 00:00	42.95	0.300	43.25	7.52	1.01	**42.24**	**0.7**	**FLOODED**	0	2	14.1	0	0	83.9	1017	0.81	0.5	12.9		32.60	598.00	7.17		140.7		1.00	6.7	13:40:00	5.00	Clear, no sheen or odour.
BHL06	09/01/2025 13:55	42.95	0.300	43.25		1	**42.25**	**0.7**	**FLOODED**	0	2.3	16.8	2.3	0	81	1009	1.68	6.5	12	3.29	30.50	586.00	7.23		155.8		1.01	8.9	13:51:00	5.00	Clear, no sheen or odour.
BHL06	11/03/2025 12:21	42.95	0.300	43.25	7.44	1.4	**41.85**	**1.1**	**FLOODED**	0	2	15.3	0	0	82.8	1005	-29.74	-9.2	11.2	2.8	25.40	568.00	7.09		72.8		1.41	6.0	12:36:00	5.00	Clear, no odour. Locking bolt in place. Flow rising through reading process.
BHL06	10/06/2025 12:29	42.95	0.300	43.25		2.58	**40.67**	**2.3**	**NOT FLOODED**										12	3.06	28.60	580.00	7.14		85.9		2.58	6.0	12:35:00	5.00	No gas readings recorded. Clear, sheen or odour.
BHL06	09/04/2026 10:28	42.95	0.300	43.25		1.77	**41.48**	**1.5**	**NOT FLOODED**	0	0.7	17.3	0	0	82	1013	0	0	11.3	2.4	22.00	566.00	7.42		365.8			6.0	17:10:00		
BHL06	15/04/2026 00:00	42.95	0.300	43.25		1.94	**41.31**	**1.6**	**NOT FLOODED**																						Groundwater level only.
average							**41.37**	**1.6**																							
Maximum					**7.52**	**3.30**	**42.33**	**3.0**		**0.00**	**2.80**	**20.9**	**11.00**	**1.00**	**83.90**	**1036.00**	**8.70**	**6.50**	**0.00**	**12.90**	**3.29**	**32.60**	**598.00**	**7.42**	**0.00**	**365.80**	**0.00**	**2.58**	**8.90**		**5.00**		
Minimum					**7.44**	**0.92**	**39.95**	**0.6**		**0.00**	**0.60**	**1.6**	**0.00**	**0.00**	**78.50**	**989.00**	**-29.74**	**-15.40**	**0.00**	**11.20**	**2.40**	**22.00**	**566.00**	**7.09**	**0.00**	**72.80**	**0.00**	**1.00**	**6.00**		**5.00**		
BHL08D (50mm)																															
BHL08D	03/08/2020 08:04	57.26	0.00	57.63		9.8	**47.83**	**9.8**	**NOT FLOODED**	<0.1	3.9	5.2	<1	<1		1014	<0.001	<0.1	#VALUE!													
BHL08D	08/08/2020 11:05	57.26	0.00	57.63		9.59	**48.04**	**9.6**	**NOT FLOODED**	<0.1	6.6	0.7	<1	<1		1019	<0.001	<0.1	#VALUE!													
BHL08D	29/09/2020 15:38	57.26	0.00	57.63		9.76	**47.87**	**9.8**	**NOT FLOODED**	<0.1	8.2	2.1	<1	<1		1008	<0.001	<0.1	#VALUE!													
BHL08D	18/01/2021 14:31	57.26	0.370	57.63		8.09	**49.54**	**7.7**	**NOT FLOODED**	3	6.4	0.2	0	<1	90.4	1013	6.17	0.5	0.015													
BHL08D	22/01/2021 12:57	57.26	0.370	57.63		7.53	**50.10**	**7.2**	**NOT FLOODED**	2.6	6	1.5	0	<1	89.9	988	7.75	-2.3	-0.0598													
BHL08D	17/02/2021 11:32	57.26	0.370	57.63		7.638	**49.99**	**7.3**	**NOT FLOODED**	1.8	3.6		0			1003	-0.04	<0.1	#VALUE!													
BHL08D	26/02/2021 12:30	57.26	0.370	57.63		7.31	**50.32**	**6.9**	**NOT FLOODED**	1.6	3.4		0			1034	0.46	<0.1	#VALUE!													
BHL08D	20/04/2021 15:28	57.26	0.370	57.63		9.245	**48.39**	**8.9**	**NOT FLOODED**	1.8	4.5	0.2	4	1	93.5	1012	14.4	<0.1	#VALUE!													
BHL08D	08/07/2021 12:26	57.26	0.370	57.63		9.675	**47.96**	**9.3**	**NOT FLOODED**	0.2	7.5	2.5	2	1	89.9	1015	-0.26	0.5	0.001													
BHL08D	15/10/2021 10:22	57.26	0.370	57.63		9.89	**47.74**	**9.5**	**NOT FLOODED**	0.1	9.8	0.2	0	0	89.8	1015	0.1	0.5	0.0005													
BHL08D	11/01/2022 10:40	57.26	0.370	57.63		8.355	**49.28**	**8.0**	**NOT FLOODED**	1	10.3	0.3	1	0	88.4	1024	5.29	-1	-0.01													
BHL08D	06/10/2022 16:14	57.26	0.370	57.63		10.66	**46.97**	**10.3**	**NOT FLOODED**	0	8.8	7.0	0	0		1020	2	2	0													
BHL08D	03/12/2024 00:00	57.26	0.370	57.63	11.87	8.43	**49.20**	**8.1**	**NOT FLOODED**	1.4	9.1	0.2	0	0	89.2	1016	7.27	-1.9	-0.0266	11.90		6.10	2269.00	6.85		-35.1		8.29	4.2	15:45:00	10.00	Slightly cloudy brown, no odour.
BHL08D	09/01/2025 16:25	57.26	0.370	57.63		6.8	**50.83**	**6.4**	**FLOODED**	1.1	8.2	0.2	0	0	90.5	1009	2.7	-3.7	-0.0407	11.80	0.34	3.10	2027.00	6.92		-36.9		7.09	5.0	16:25:00	10.00	Slightly cloudy brown, no odour or sheen. Low O_2 concentration. Hard to start and draw, ochre deposits on tube at depth.
BHL08D	11/03/2025 14:38	57.26	0.370	57.63	11.78	5.88	**51.75**	**5.5**	**FLOODED**	1	6.4	1.1	0	0	91.5	1002	3.76	6	0.06	12.20	0.83	7.80	1624.00	6.78		-61.4		6.05	5.2	14:53:00	10.00	Clear, no odour. Some fine ochre sediment in draw. Also present on retrieved diptape.
BHL08D	10/06/2025 09:38	57.26	0.370	57.63		9.52	**48.11**	**9.2**	**NOT FLOODED**											14.00	0.41	4.00	2425.00	6.69		62.8		9.57	2.8	09:50:00	10.00	No gas readings recorded. Slightly cloudy, no odour or sheen. Ochre deposits on sampling tube at depth. Bubbles present during purging - reason unknown.
BHL08D	09/04/2026 11:35	57.26	0.370	57.63		8.38	**49.25**	**8.0**	**NOT FLOODED**	0.4	4.7	3.3	0	0	91.6	1012	-0.2	6.2	0.0248	12.20	0.40	3.70	2626.00	7.15		28.7			5.8	13:32:00		Ocre on dip tape when retrieved, first draw heavy ocre - not passed through YSI
BHL08D	15/04/2026 00:00	57.26	0.370	57.63		8.57	**49.06**	**8.2**	**NOT FLOODED**																						Groundwater level only.
average							**49.01**	**8.3**																							
Maximum					**11.87**	**10.66**	**51.75**	**10.3**		**3.00**	**10.30**	**7.0**	**4.00**	**1.00**	**93.50**	**1034.00**	**14.40**	**6.20**	**#VALUE!**	**14.00**	**0.83**	**7.80**	**2626.00**	**7.15**	**0.00**	**62.80**	**0.00**	**9.57**	**5.80**		**10.00**		
Minimum					**11.78**	**5.88**	**46.97**	**5.5**		**0.00**	**3.40**	**0.2**	**0.00**	**0.00**	**88.40**	**988.00**	**-0.26**	**-3.70**	**#VALUE!**	**11.80**	**0.34**	**3.10**	**1624.00**	**6.69**	**0.00**	**-61.40**	**0.00**	**6.05**	**2.80**		**10.00**		
BHL08S (19mm)																															
BHL08S	03/08/2020 11:16	57.26	0.260	57.52		Dry				<0.1	6.6	4.8	<1	<1		1014	<0.001	<0.1	#VALUE!													
BHL08S	08/08/2020 12:42	57.26	0.260	57.52		Dry				2.8	7.8	<0.1	<1	<1		1019	<0.001	<0.1	#VALUE!													
BHL08S	29/09/2020 15:31	57.26	0.260	57.52		Dry				4.5	8.4	<0.1	<1	<1		1008	<0.001	<0.1	#VALUE!													
BHL08S	18/01/2021 14:41	57.26	0.260	57.52		Dry				5.2	7.4	0.1	0	<1	87.4	1013	2.25	0	0													
BHL08S	22/01/2021 13:08	57.26	0.260	57.52		Dry				6.4	7.8	0.0	0	<1	85.8	988	0	0.2	0.0128													
BHL08S	17/02/2021 11:36	57.26	0.260	57.52		Dry				6.3	6.8		0			1034	0.46	<0.1	#VALUE!													
BHL08S	26/02/2021 12:35	57.26	0.260	57.52		Dry				6.7	6.8		0			1003	-0.004	<0.1	#VALUE!													
BHL08S	20/04/2021 15:36	57.26	0.260	57.52		Dry				4.6	6.6	0.2	1	1	88.6	1014	-0.02	0.1	0.0046													
BHL08S	08/07/2021 12:34	57.26	0.260	57.52		Dry				0.1	5.3	10.4	0	1	84.2	1016	0	0.4	0.0004													
BHL08S	15/10/2021 10:33	57.26	0.260	57.52		Dry				2.1	9.3	0.0	1	0	88.6	1015	-0.03	0.4	0.0084													
BHL08S	11/01/2022 10:48	57.26	0.260	57.52		Dry				3.9	9.3	0.2	0	0	86.6	1026	0.07	0.4	0.0156													
BHL08S	06/10/2022 16:13	57.26	0.260	57.52		Dry				0	6.5	12.7	0	0		1020	0	0	0													
BHL08S	03/12/2024 00:00	57.26	0.260	57.52	4.92	Dry				0	0.2	20.8	0	0	79.1	1016	-0.02	0.1	0												Vented gas reading - bung dropped.
BHL08S	09/01/2025 13:55	57.26	0.260	57.52	4.89	Dry				0	0.2	20.7	0	0	79.1	1010	-0.02		0												Vented gas reading - bung missing.
BHL08S	11/03/2025 00:00	57.26	0.260	57.52	4.88	Dry				0	0.2	20.7	0	0	79.1	1002			0												Vented gas reading- bung replaced.
BHL08S	09/04/2026 11:42	57.26	0.260	57.52	4.84	Dry				0	0.1	21.1	0	0	78.8	1012	0	0.2	0													
BHL08S	15/04/2026 00:00	57.26	0.260	57.52	4.85	Dry																									Groundwater level only.
Maximum					**4.92**	**0.00**	**0.00**	**0.0**		**6.70**	**9.30**	**21.1**	**1.00**	**1.00**	**88.60**	**1034.00**	**2.25**	**0.40**	**#VALUE!**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		
Minimum					**4.84**	**0.00**	**0.00**	**0.0**		**0.00**	**0.10**	**0.0**	**0.00**	**0.00**	**78.80**	**988.00**	**-0.03**	**0.00**	**#VALUE!**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		
BHL09																															
BHL09	01/11/2024 00:00	47.14	0.430	47.57	8.48	5.06	**42.51**	**4.6**	**NOT FLOODED**																						
BHL09	03/12/2024 00:00	47.14	0.430	47.57	8.48	3.99	**43.58**	**3.6**	**NOT FLOODED**	0	4.9	14.1	0	0	81.1	1018	0.17	0.7		11.3		56.50	458.00	6.54		167.1		4.15	6.1	16:42:00	6.00	Clear, no sheen or odour.
BHL09	09/01/2025 00:00	47.14	0.430	47.57		4.00	**43.57**	**3.6**	**NOT FLOODED**	0	5.1	14.4	0	0	80.4	1010	0.02	0.1													Sample tube lost.
BHL09	11/03/2025 15:51	47.14	0.430	47.57	8.42	4.78	**42.79**	**4.4**	**NOT FLOODED**	0	4.6	15.5	0	0	80	1003	-0.63	0.2		10.2	6.52	58.60	574.00	6.46		147.3		1.90	6.9	16:06:00	5.80	Slightly cloudy, no sheed or odour. DUP 1 collected here.
BHL09	10/06/2025 11:37	47.14	0.430	47.57		5.60	**41.97**	**5.2**	**NOT FLOODED**											11.6	7.04	64.90	608.00	6.75		93.3		5.94	7.0	11:45:00	5.80	No gas readings recorded. Purged volume cloudy but sample clear. No odour or sheen.
BHL09	09/04/2026 11:00	47.14	0.430	47.57		5.39	**42.18**	**5.0**	**NOT FLOODED**	0	7.3	13.2	0	0	79.5	1013	0	0.2		10.9	4.26	38.50	761.00	6.98		374.3		5.82	6.0	14:24:00		Grey in colour.
BHL09	15/04/2026 00:00	47.14	0.430	47.57		5.43	**42.14**	**5.0**	**NOT FLOODED**																						Groundwater level only.
average							**42.68**	**4.5**																							
Maximum					**8.48**	**5.60**	**43.58**	**5.2**		**0.00**	**7.30**	**15.5**	**0.00**	**0.00**	**81.10**	**1018.00**	**0.17**	**0.70**	**0.00**	**11.60**	**7.04**	**64.90**	**761.00**	**6.98**	**0.00**	**374.30**	**0.00**	**5.94**	**7.00**		**6.00**		00/01/1900 00:00
Minimum					**8.42**	**3.99**	**41.97**	**3.6**		**0.00**	**4.60**	**13.2**	**0.00**	**0.00**	**79.50**	**1003.00**	**-0.63**	**0.10**	**0.00**	**10.20**	**4.26**	**38.50**	**458.00**	**6.46**	**0.00**	**93.30**	**0.00**	**1.90**	**6.00**		**5.80**		00/01/1900 00:00
Surface Water Locations																															
RL1																															
RL1	25/02/2021 11:42																			8.00		101.30	85.90	7.46	-30.70	-63.00					Grey, opaque, in-stream
RL1	08/07/2021 00:00																			17.00			240.00	7.10			110.00				Colourless, nearly clear, in sub-sample
RL1	15/10/2021 00:00																			13.10			90.00	6.80		167.00	40.00				Colourless, clear, in sub-sample
RL1	04/12/2024 00:00																			10.00		97.60	127.30	7.30		121.70				14:47:00	Clear.
RL1	09/01/2025 11:25																			6.80		96.60	131.80	7.29		123.30				11:33:00	Relativley clear. High flow, rain and snow in preeceding day.
RL1	11/03/2025 17:02																			10.00	10.96	97.20	132.00	7.30		96.20				17:12:00	
RL1	15/04/2026 14:30																			11.30	10.99	100.40	93.20	7.56		342.70				15:44:00	
Maximum																				**17.00**	**10.99**	**101.30**	**240.00**	**7.56**	**-30.70**	**342.70**	**110.00**					
Minimum																				**6.80**	**10.96**	**96.60**	**85.90**	**6.80**	**-30.70**	**-63.00**	**40.00**					
RL3																															
RL3	25/02/2021 12:01																			8.10		104.40	92.60	7.43	-29.20	-75.00					Grey, opaque, in-stream
RL3	09/07/2021 00:00																			16.00			150.00	7.10			70.00				Colourless, nearly clear, in sub-sample
RL3	16/10/2021 00:00																			12.90			110.00	6.70		164.00	50.00				Colourless, clear, in sub-sample
RL3	03/12/2024 00:00																														No YSI data - loosing day light. Clear.
RL3	09/01/2025 15:15																			7.30	11.50	95.60	142.40	7.35		117.0				15:17:00	
RL3	11/03/2025 16:23																			10.10	10.67	94.90	146.90	7.26		141.0				16:38:00	
RL3	15/04/2026 15:51																			11.70	10.30	94.70	84.10	7.20		203.2					
Maximum																				**16.00**	**11.50**	**104.40**	**150.00**	**7.43**	**-29.20**	**203.20**	**70.00**					
Minimum																				**7.30**	**10.30**	**94.70**	**84.10**	**6.70**	**-29.20**	**-75.00**	**50.00**					
RL4																															
RL4	04/12/2024 00:00																			10		99.20	138.20	7.27		120.9				13:27:00	Clear.
RL4	09/01/2025 17:20																			7.5	11.53	96.20	147.30	7.34		97.4				17:21:00	
RL4	11/03/2025 17:38																			9.9	10.97	96.60	137.20	7.23		145.3				17:48:00	
RL4	15/04/2026 16:50																			11.6	10.98	100.00	74.00	7.11		160.4					
Maximum																				**11.60**	**11.53**	**100.00**	**147.30**	**7.34**	**0.00**	**160.40**	**0.00**					
Minimum																				**7.50**	**10.97**	**96.20**	**74.00**	**7.11**	**0.00**	**97.40**	**0.00**					

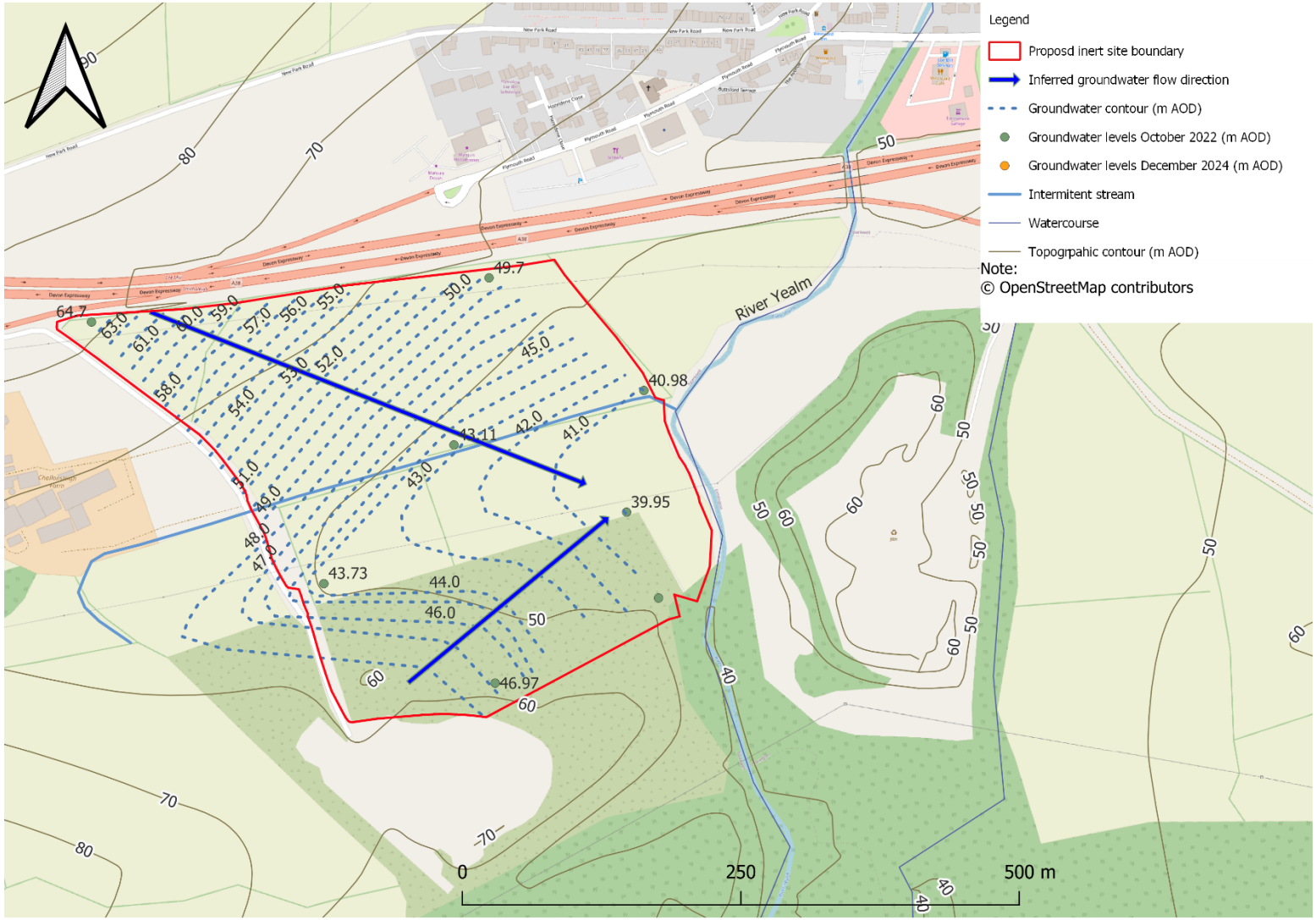
D.2 Hydrograph


Groundwater hydrograph
Groundwater Level (m AOD)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
01/07/2020
01/07/2021
01/07/2022
01/07/2023
30/06/2024
30/06/2025
BH1
BHL02
BHL03
BHL04
BHL05
BHL06
BHL08D
BHL09

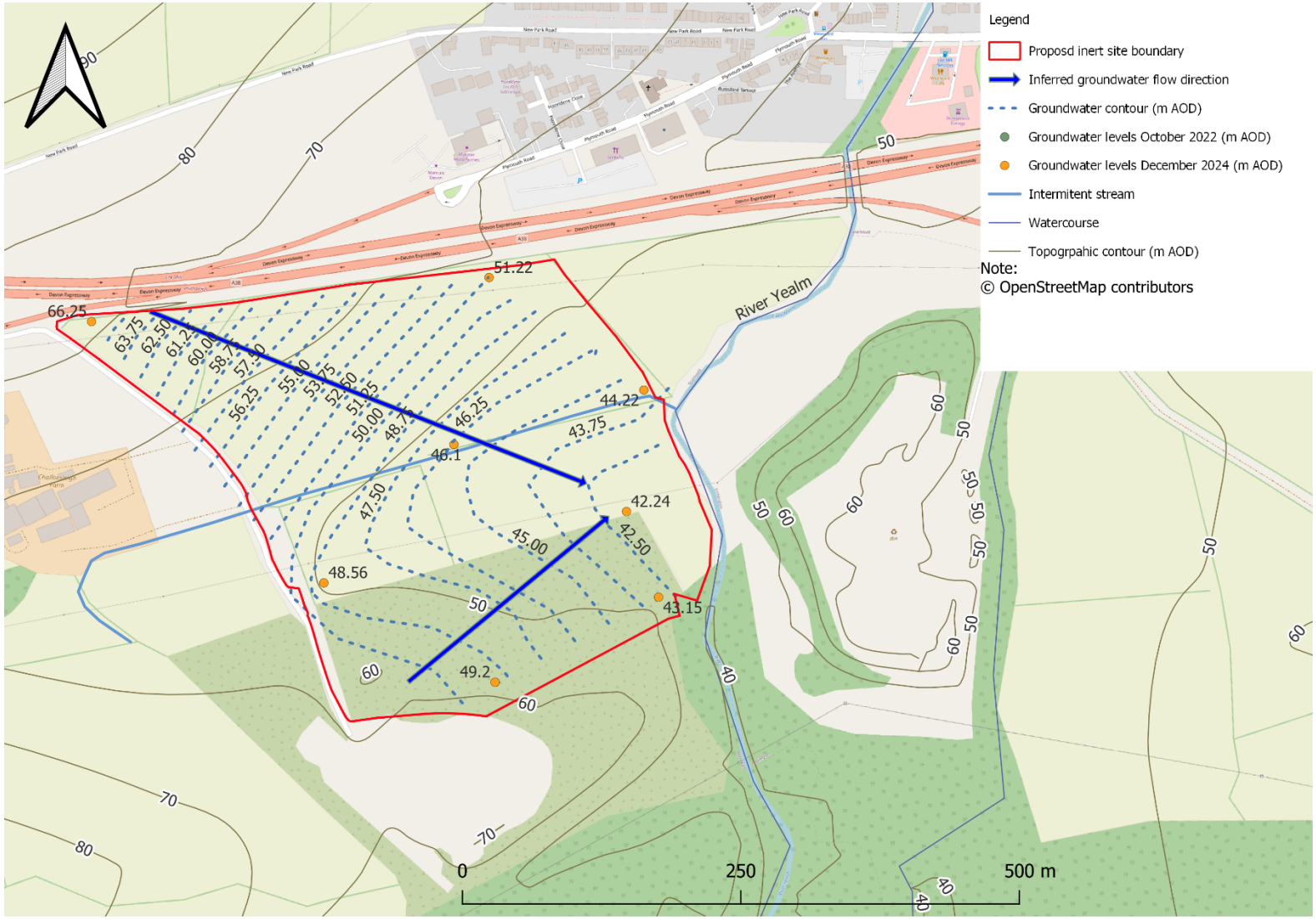

Challonsleigh Farm - Groundwater hydrograph
Groundwater Level (m AOD)
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
01/07/2020
01/07/2021
01/07/2022
01/07/2023
30/06/2024
30/06/2025
BH1
BHL02
BHL03
BHL04
BHL05
BHL06
BHL08D
BHL09

Appendix E. Groundwater contour plans

E.1 October 2022

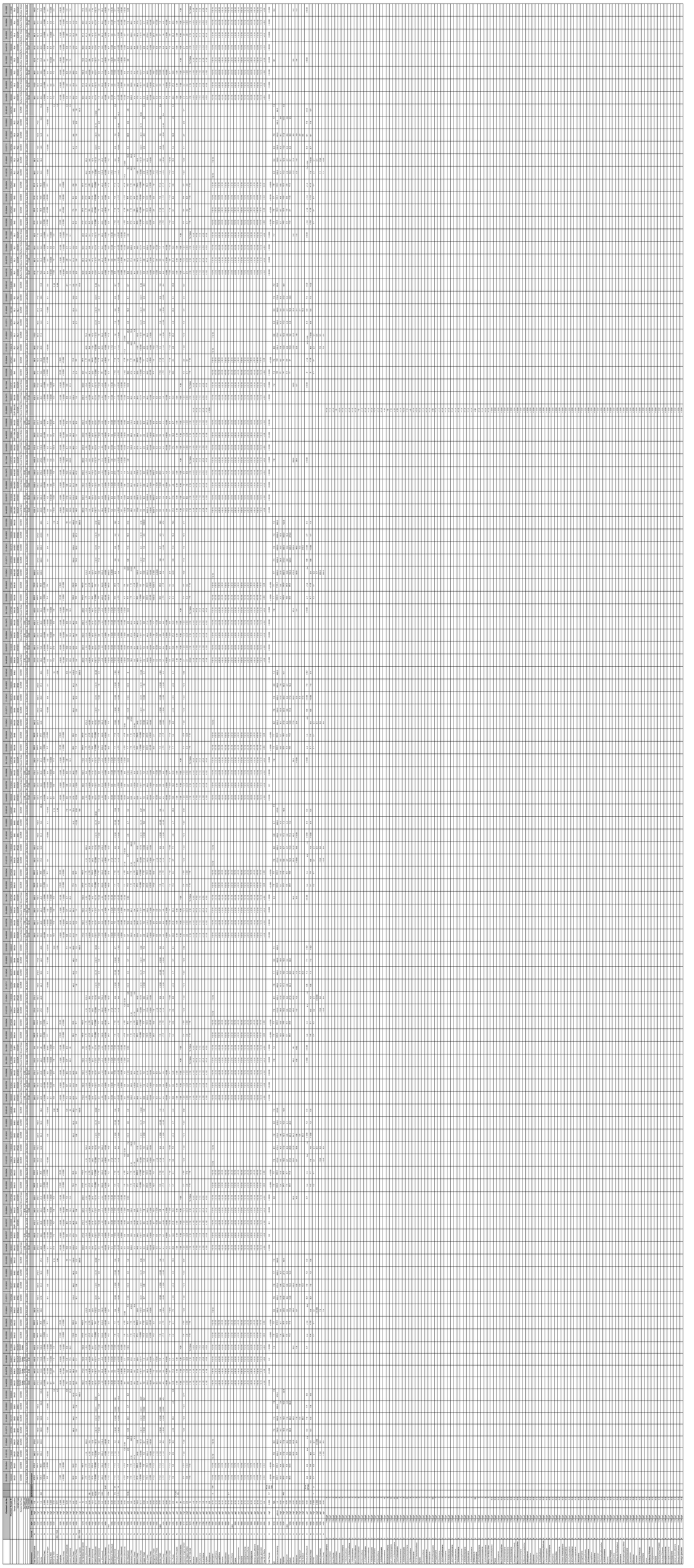


E.2 December 2024



Appendix F. Groundwater quality

F.1 Groundwater quality dataset



F.2 Surface water quality screening

Challonsleigh Farm Inert Landfill

ATKINS

Assessment Criteria :	Freshwater EQS
CaCO (mg/l):	0.00
pH	0.00
Calcium (mg/l):	0.00
DOC (mg/l)	0.00
Catchment area:	Freshwater not listed

Constituents	Unit	Limit of Detection	Generic Assessment Criteria	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	Location	Sample ID	Depth	Date	Strata	Zone
Total Dissolved Solids	mg/l	1.0	No WSV	22	62	140	0			RH1		03/08/2020		
Alkalinity (Total)	mg/l	10	No WSV	28	<10	85	0			RH1		29/09/2020		
Chloride	mg/l	1.0	250	30	13	78	0			RL1		22/01/2021		
Ammonia (Free)	mg/l	0.050	No WSV	18	<0.05	0.12	0			RL1		26/02/2021		
Ammoniacal Nitrogen	mg/l	0.050	0.2	28	0.015	1.7	6	RL1; RL3; RL3; RL2; RL4; RL4		RL1		08/07/2021		
Nitrite as NO2	mg/l	0.020	No WSV	12	<0.02	0.11	0			RL1		15/10/2021		
Nitrate as NO3	mg/l	0.50	No WSV	14	<0.5	11	0			RL1		11/01/2022		
Nitrate as N	mg/l	0.01	No WSV	2	0.98	0.99	0			RH1		12/10/2022		
Phosphate	mg/l	0.200	No WSV	18	<0.2	0.3	0			RL1		04/12/2024		
Cyanide (Total)	mg/l	0.050	N/A	18	<0.05	<0.05	0			RL1		09/01/2025		
Magnesium (Dissolved)	mg/l	0.20	N/A	14	1.5	6.8	0			RL1		11/03/2025		
Sodium (Dissolved)	mg/l	1.50	No WSV	14	7	75	0			RL1		15/04/2026		
Calcium (Total)	mg/l	5.0	No WSV	23	5.8	59	0			RH2		03/08/2020		
Potassium (Total)	mg/l	0.50	No WSV	23	1.8	3.5	0			RH2		29/09/2020		
Alkalinity as CaCO3	mg/l	3	No WSV	2	14	17	0			RH3		03/08/2020		
Total Hardness as CaCO3	mg/l	15	No WSV	18	17	180	0			RH£		29/09/2020		
Aluminium (Dissolved)	mg/l	0.005	No WSV	22	0.01	0.11	0			RL3		22/01/2021		
Arsenic (Dissolved)	mg/l	0.0002	0.05	22	<0.0002	0.0056	0			RL3		26/02/2021		
Boron (Dissolved)	mg/l	0.01	No WSV	22	0.01	0.6	0			RL3		08/07/2021		
Cadmium (Dissolved)	mg/l	0.00011	0.00008	30	<0.00002	<0.00012	0			RL3		15/10/2021		
Copper (Dissolved)	mg/l	0.0005	0.001	30	0.00079	0.0029	27	RH1; RL1; RL1; RL1; RL1; RL1; RH1; RL1; RL1; RL1; RL1; RH2; RH2; RH3; RL3; RL3; RL3; RL3; RL3; RH3; RL3; RL3; RL2; RL4; RL4; RL4; RL4						
Iron (Dissolved)	mg/l	0.005	1	22	0.0078	0.11	0							
Mercury (Dissolved)	mg/l	0.00005	0.00007	22	<<0.00005	<0.0005	0							
Manganese (Dissolved)	mg/l	0.0005	0.123	22	0.00096	0.017	0							
Molybdenum (Dissolved)	mg/l	0.0002	No WSV	14	<0.0002	<0.001	0							
Nickel (Dissolved)	mg/l	0.0005	0.004	30	<0.0005	0.0027	0							
Lead (Dissolved)	mg/l	0.0005	0.0012	30	<<0.0002	<0.001	0							
Antimony (Dissolved)	mg/l	0.0005	No WSV	12	<0.0005	<0.0005	0							
Selenium (Dissolved)	mg/l	0.0005	N/A	22	<0.0005	<0.001	0							
Zinc (Dissolved)	mg/l	0.0025	0.0123	30	0.0015	0.058	4	RH1; RL1; RL1; RL3						
Aluminium (Total)	mg/l	0.005	No WSV	19	<0.01	0.24	0							
Arsenic (Total)	mg/l	0.0002	No WSV	19	0.0003	0.0066	0							
Boron (Total)	mg/l	0.01	2	19	0.013	0.79	0							
Cadmium (Total)	mg/l	0.00011	No WSV	27	0.00005	0.00013	0							
Copper (Total)	mg/l	0.0005	No WSV	27	0.0011	0.0045	0							
Iron (Total)	mg/l	0.005	No WSV	19	0.038	0.27	0							
Mercury (Total)	mg/l	0.00005	No WSV	19	<<0.00005	<0.0005	0							
Manganese (Total)	mg/l	0.0005	No WSV	17	0.001	0.022	0							
Molybdenum (Total)	mg/l	0.0002	No WSV	11	<0.0002	<0.001	0							
Nickel (Total)	mg/l	0.0005	No WSV	27	<0.0005	0.0043	0							
Lead (Total)	mg/l	0.0005	No WSV	27	0.0004	0.0041	0							
Antimony (Total)	mg/l	0.0005	No WSV	9	<0.0005	0.00094	0							
Selenium (Total)	mg/l	0.0005	No WSV	19	<0.0005	0.001	0							
Zinc (Total)	mg/l	0.0025	No WSV	27	0.0023	0.058	0							
Chromium (Trivalent)	mg/l	0.02	No WSV	9	<0.02	<0.02	0							
Chromium (Hexavalent)	mg/l	0.02	0.0034	12	<0.02	<0.02	0							
Dissolved Organic Carbon	mg/l	2.0	No WSV	27	2	6.26	0							
Total Organic Carbon	mg/l	2.0	No WSV	15	<2	4.2	0							
Total TPH >C6-C40	mg/l	0.01	No WSV	18	0.01	<0.01	0							
Benzene	mg/l	0.001	0.01	12	<0.001	<0.001	0							
Toluene	mg/l	0.001	0.074	12	<0.001	<0.001	0							
Ethylbenzene	mg/l	0.001	0.02	12	<0.001	<0.001	0							
m & p-Xylene	mg/l	0.001	See Xylenes (total)	12	<0.001	<0.001	0							
o-Xylene	mg/l	0.001	See Xylenes (total)	12	<0.001	<0.001	0							
4-Nitrophenol	mg/l	0.0005	No WSV	0	0	0	0							
Naphthalene	mg/l	0.0001	0.002	22	<0.0001	<0.0001	0							
Acenaphthylene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Acenaphthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Fluorene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0							
Phenanthrene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Anthracene	mg/l	0.0001	0.0001	18	<0.0001	<0.0001	0							
Fluoranthene	mg/l	0.0001	0.0000063	18	<0.0001	<0.0001	0							
Pyrene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0							
Benzo[a]anthracene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Chrysene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Benzo[b]fluoranthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Benzo[k]fluoranthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Benzo[a]pyrene	mg/l	0.0001	0.00000017	18	<0.0001	<0.0001	0							
Indeno(1,2,3-c,d)Pyrene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Dibenz(a,h)Anthracene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0							
Benzo[g,h,i]perylene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0							
Total Of 16 PAH's	mg/l	0.002	No WSV	18	<0.002	<0.002	0							
Total Phenols	mg/l	0.030	No WSV	18	<0.03	<0.03	0							
pH		N/A	6-9	21	7.2	8.6	0							
Electrical Conductivity	µS/cm	1.0	No WSV	18	93	180	0							
Nitrate	mg/l	0.50	N/A	16	4.8	21	0							
Sulphate	mg/l	1.0	400	18	8.94	21	0							
Magnesium	mg/l	0.20	N/A	16	1.9	3.3	0							
Sodium	mg/l	1.50	N/A	16	2.7	21	0							
Calcium	mg/l	2.00	N/A	9	4.2	13	0							
Potassium	mg/l	0.50	N/A	9	1.3	2.2	0							
Total Magnesium	mg/l	0.50	No WSV	2	2.6	2.7	0							
Total Sodium	mg/l	0.50	No WSV	2	8.8	10	0							

Location	Sample ID	Depth	Date	Strata	Zone	RH1	RH1	RL1	RL1	RL1	RL1	RL1	RH1	RL1	RL1	RL1	RL1	RH2	RH2	RH3	RH£	RL3	RL3	RL3	RL3
						03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	04/12/2024	09/01/2025	11/03/2025	15/04/2026	03/08/2020	29/09/2020	03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021
						98	98	98	110					87	80	85	62	91	85	91	91	98	98		
						31	40	78	85	66	37	77		<10	55	23	<10	33	41	47	44	70	84	72	43
						15	15	20	17	14	14	18	13	78	15	16	14	16	16	16	16	16	16	14	14
						<0.05	<0.05							0.052	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
						<0.05	<0.05	<0.05		0.061	<0.05	0.065	0.015	0.4	0.093	0.19	0.078	<0.05	<0.05	<0.05	0.13	<0.05		<0.05	0.051
														<0.02	<0.02	0.025	<0.02								
													4.38	<0.5	7.4	5.2	3.5								
													0.99												
						<0.2	<0.2							<0.2	<0.2	<0.2	<0.2	<0.2	0.25	<0.2	0.3				
						<0.05	<0.05							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
													2.1	3	2.9	3.1	1.9								
													9	10	9.7	9.1	8.1								
						7.8	11			8	12	15	5.8	12	11	12		8.3	7	9.1	8.4			8.7	9.8
						2.4	3.5			2.1	2.1	2	1.8	2.2	2	2		2.4	1.9	2.5	3.2			1.8	1.8
													17												
						30	39							42	38	42	23	31	25	33	33				
						0.027	<0.01	0.046	0.07					0.058	0.048	0.051	0.092	0.027	<0.01	0.027	<0.01	0.048	0.06		
						0.0045	0.0025	0.0054	0.004					0.0052	0.0047	0.0038	0.0031	0.0045	0.0033	0.0046	0.0029	0.0056	0.004		
						0.022	0.39	<0.02	0.015					0.016	0.014	0.014	0.011	0.02	0.57	0.021	0.6	<0.02	0.012		
						<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	0.00003	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011
						0.0012	<0.001	0.0025	0.0014	0.0022	0.0028	0.0023	0.0021	0.0021	0.0022	0.0011	0.0016	0.0011	0.0012	0.0013	0.001	0.0029	0.0012	0.0026	0.0023
						0.065	0.032	0.083	0.059					0.038	0.043	0.035	0.06	0.063	0.043	0.064	0.04	0.11	0.043		
						<0.0005	<0.0005	<0.0005	<0.00005					<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005		
						0.0053	0.0013	0.014	0.011					0.011	0.0099	0.012	0.0015	0.0038	0.0019	0.0035	<0.001	0.017	0.0073		
								<0.001						<0.0002	0.00027	<0.0002	<0.0002					<0.001			
						<0.001	<0.001	0.0011	0.0012	0.00099	0.00082	0.00087	0.0007	0.00082	0.0026	0.0013	0.00081	<0.001	<0.001	0.0013	<0.001	0.0012	0.00086	0.00079	0.001
						<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
														<0.0005	<0.0005	<0.0005	<0.0005								
						<0.001	<0.001	<0.001	<0.0005					<0.0005	0.00062	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005		
						0.039	0.0015	0.0048	0.02	0.0028	0.016	0.0081	0.0067	0.0068	0.011	0.01	0.0028	0.0028	0.0035	0.0064	0.0043	0.0092	0.01	0.0034	0.058
						0.027	<0.01	0.046	0.07					0.063	0.077	0.22		0.027	<0.01	0.027	<0.01	0.049	0.064		
						0.0046	0.0036	0.0054	0.004					0.0061	0.0052	0.0046		0.0045	0.0039	0.0046	0.0038	0.0057	0.0041		
						0.022	0.54	<0.02	0.015					0.019	0.014	0.016		0.02	0.68	0.021	0.79	<0.02	0.013		
						<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	0.00005	<0.00011	<0.00011	<0.00011		<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011
						0.0012	0.0011	0.0025	0.0014	0.0022	0.0028	0.0023	0.0043	0.0033	0.0029	0.0023		0.0011	0.0015	0.0013	0.0014	0.0029	0.0013	0.0026	0.0023
						0.069	0.047	0.083	0.059					0.072	0.08	0.23		0.064	0.054	0.064	0.056	0.11	0.043		
						<0.0005	<0.0005	<0.0005	<0.00005					<0.00005	<0.00005	<0.00005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005		
						0.0053	0.0014	0.014						0.012	0.011	0.016		0.0038	0.0024	0.0035	0.001	0.017			
								<0.001						<0.0002	0.00044	<0.0002						<0.001			
						<0.001	<0.001	0.0011	0.0012	0.00099	0.00082	0.00087	0.001	0.002	0.0043	0.0017		<0.001	<0.001	0.0013	<0.001	0.0012	0.00086	0.00088	0.001
						<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	0.0004	0.00051	0.00071	0.00097		<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
						<0.001	<0.001	<0.001	<0.0005					<0.0005	0.00089	<0.0005		<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005		
						0.039	0.0023	0.0048	0.02	0.0028	0.023	0.0081	0.02	0.01	0.021	0.015		0.0028	0.0051	0.0064	0.0059	0.0093	0.01	0.0034	0.058
														<0.02	<0.02	<0.02									
														<0.02	<0.02	<0.02	<0.02								
						4.6	2.9	<2	<2	4.3	3.4	2.5	6.26	2.1	<2	<2		3.6	0	3.8	2.7	<2	<2	4.1	2.4
						4.1	3.1							2.1	<2	<2		4.1	3.2	4.2	3				
						<0.01	<0.01							<0.01	<0.01	<0.01	To Follow	<0.01	<0.01	<0.01	<0.01				
														<0.001	<0.001	<0.001	<0.001								
														<0.001	<0.001	<0.001	<0.001								
														<0.001	<0.001	<0.001	<0.001								
														<0.001	<0.001	<0.001	<0.001								
														<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				
						<0.002	<0.002							<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002				
						<0.03	<0.03							<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03				
						7.8	7.8	8.6	8.4	8.4	8	7.6	7.2				7.7	7.8	7.8	7.7	7.8	8.3	8.4	8.2	7.9
						150	150	150	170	160	180	170	93					140	130	140	140	150	150	130	140
						21	6.3	7.8	8.1	6.2	6	8.9						5.7	6.7	4.8	6.9	8.1	8.1	6.3	6.1
						14	12	12	10	11	9.9	21	8.94					14	12	15	13	11	12	11	11
						2.5	2.9	2.8	2.8	2.8	2.7	3.3						2.5	1.9	2.6	2.9	2.9	2.7	2.4	2.6
						11	21	10	9.2	9.8	10	14						11	2.7	11	17	10	8.7	8.9	8.9
								13	13		12						5.9					11	11		9.9
								2.2	1.9		2.1						1.5					2.2	1.9		1.9
											2.7														2.6
											10														8.8

Assessment Criteria :	Freshwater EQS																													
CaCO (mg/l):	0.00	pH	0.00																											
Calcium (mg/l):	0.00	DOC (mg/l)	0.00	Catchment area:	Freshwater not listed																									
								Location		RH1	RH1	RL1	RL1	RL1	RL1	RL1	RH1	RL1	RL1	RL1	RL1	RH2	RH2	RH3	RH£	RL3	RL3	RL3	RL3
								Sample ID																						
								Depth																						
								Date		03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	04/12/2024	09/01/2025	11/03/2025	15/04/2026	03/08/2020	29/09/2020	03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021
								Strata																						
Constituents	Unit	Limit of Detection	Generic Assessment Criteria	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	Zone																					
Chromium (Dissolved)	mg/l	0.0005	See Cr VI as first pass	21	<0.0002	0.008	0			0.002	<0.001	0.008	<0.0005	0.0063	0.006	0.0075	<0.0002				<0.0005	<0.001	<0.001	<0.001	<0.001	0.0076	<0.0005	0.0066	0.0061
Chromium (Total)	mg/l	0.0005	See Cr VI as first pass	18	<0.0002	0.008	0			0.002	<0.001	0.008	<0.0005	0.0066	0.006	0.0075	<0.0002					<0.001	<0.001	<0.001	<0.001	0.0079	<0.0005	0.0067	0.0061
Fluoride	mg/l	0.050	1	10	0.098	0.14	0			0.12	0.11	0.14	0.11									0.12	0.11	0.11	0.11	0.098	0.11		
Ammonium	mg/l	0.050	0.26	2	0.073	0.08	0						0.08														0.073		
Barium (Dissolved)	mg/l	0.005	No WSV	4	<0.005	0.0071	0					0.007	0.0051													0.0071	<0.005		
Barium (Total)	mg/l	0.005	No WSV	4	<0.005	0.0071	0					0.007	0.0051													0.0071	<0.005		

Assessment Criteria :			*Freshwater EQS*												
CaCO (mg/l):	0.00		pH	0.00											
Calcium (mg/l):	0.00		DOC (mg/l)	0.00		Catchment area:		Freshwater not listed							
Constituents	**Unit**	**Limit of Detection**	**Generic Assessment Criteria**	**Number of Samples**	**Minimum Value**	**Maximum Value**	**Number of Exceedences**	**Locations of Exceedences**	RL3	RH3	RL3	RL3	RL3	RL2	RL4
									11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	15/04/2026	04/12/2024
Total Dissolved Solids	mg/l	1.0	No WSV	22	62	140	0				88	110	96	62	91
Alkalinity (Total)	mg/l	10	No WSV	28	<10	85	0		79		60	53	56	<10	35
Chloride	mg/l	1.0	250	30	13	78	0		18	13	20	16	18	13	20
Ammonia (Free)	mg/l	0.050	No WSV	18	<0.05	0.12	0				<0.05	<0.05	<0.05	0.12	<0.05
Ammoniacal Nitrogen	mg/l	0.050	0.2	28	0.015	1.7	6	RL1; RL3; RL3; RL2; RL4; RL4	<0.05	<0.015	0.21	0.051	0.64	1.7	0.33
Nitrite as NO2	mg/l	0.020	No WSV	12	<0.02	0.11	0				0.084	0.021	0.024	<0.02	0.11
Nitrate as NO3	mg/l	0.50	No WSV	14	<0.5	11	0			4.33	11	8.4	7.5	2.5	11
Nitrate as N	mg/l	0.01	No WSV	2	0.98	0.99	0			0.98					
Phosphate	mg/l	0.200	No WSV	18	<0.2	0.3	0				<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide (Total)	mg/l	0.050	N/A	18	<0.05	<0.05	0				<0.05	<0.05	<0.05	<0.05	<0.05
Magnesium (Dissolved)	mg/l	0.20	N/A	14	1.5	6.8	0			2.2	3.4	2.8	6.8	1.6	3.3
Sodium (Dissolved)	mg/l	1.50	No WSV	14	7	75	0			9	11	9.4	75	7.3	11
Calcium (Total)	mg/l	5.0	No WSV	23	5.8	59	0		14	6.5	20	13	59		13
Potassium (Total)	mg/l	0.50	No WSV	23	1.8	3.5	0		2	1.9	2.2	2.1	2		2.1
Alkalinity as CaCO3	mg/l	3	No WSV	2	14	17	0			14					
Total Hardness as CaCO3	mg/l	15	No WSV	18	17	180	0				50	41	180	19	46
Aluminium (Dissolved)	mg/l	0.005	No WSV	22	0.01	0.11	0				0.053	0.04	0.01	0.097	0.033
Arsenic (Dissolved)	mg/l	0.0002	0.05	22	<0.0002	0.0056	0				0.0052	0.0043	<0.0002	0.0026	0.0053
Boron (Dissolved)	mg/l	0.01	No WSV	22	0.01	0.6	0				0.017	0.02	0.018	0.01	0.016
Cadmium (Dissolved)	mg/l	0.00011	0.00008	30	<0.00002	<0.00012	0		<0.00011	<0.00002	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011
Copper (Dissolved)	mg/l	0.0005	0.001	30	0.00079	0.0029	27	RH1; RL1; RL1; RL1; RL1; RL1; RH1; RL1; RL1; RL1; RL1; RH2; RH2; RH3; RL3; RL3; RL3; RL3; RL3; RH3; RL3; RL3; RL2; RL4; RL4; RL4; RL4	0.0022	0.0018	0.0014	0.0025	0.00079	0.0017	0.0013
Iron (Dissolved)	mg/l	0.005	1	22	0.0078	0.11	0				0.015	0.053	0.0078	0.061	0.019
Mercury (Dissolved)	mg/l	0.00005	0.00007	22	<<0.00005	<0.0005	0				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Manganese (Dissolved)	mg/l	0.0005	0.123	22	0.00096	0.017	0				0.013	0.014	0.0054	0.00096	0.0067
Molybdenum (Dissolved)	mg/l	0.0002	No WSV	14	<0.0002	<0.001	0				<0.0002	0.00075	<0.0002	<0.0002	<0.0002
Nickel (Dissolved)	mg/l	0.0005	0.004	30	<0.0005	0.0027	0		0.00086	0.0006	0.00066	0.0025	<0.0005	0.00087	0.00063
Lead (Dissolved)	mg/l	0.0005	0.0012	30	<<0.0002	<0.001	0		<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Antimony (Dissolved)	mg/l	0.0005	No WSV	12	<0.0005	<0.0005	0				<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium (Dissolved)	mg/l	0.0005	N/A	22	<0.0005	<0.001	0				<0.0005	0.00089	0.00076	<0.0005	<0.0005
Zinc (Dissolved)	mg/l	0.0025	0.0123	30	0.0015	0.058	4	RH1; RL1; RL1; RL3	0.0045	0.0045	0.007	0.0089	0.0079	0.0038	0.0051
Aluminium (Total)	mg/l	0.005	No WSV	19	<0.01	0.24	0				0.24	0.15	0.041		0.095
Arsenic (Total)	mg/l	0.0002	No WSV	19	0.0003	0.0066	0				0.0064	0.0049	0.0003		0.0066
Boron (Total)	mg/l	0.01	2	19	0.013	0.79	0				0.017	0.026	0.017		0.018
Cadmium (Total)	mg/l	0.00011	No WSV	27	0.00005	0.00013	0		<0.00011	0.00006	0.00013	<0.00011	<0.00011		<0.00011
Copper (Total)	mg/l	0.0005	No WSV	27	0.0011	0.0045	0		0.0022	0.0032	0.0045	0.0034	0.0012		0.0024
Iron (Total)	mg/l	0.005	No WSV	19	0.038	0.27	0				0.23	0.25	0.038		0.097
Mercury (Total)	mg/l	0.00005	No WSV	19	<<0.00005	<0.0005	0				<0.00005	<0.00005	<0.00005		<0.00005
Manganese (Total)	mg/l	0.0005	No WSV	17	0.001	0.022	0				0.022	0.021	0.014		0.015
Molybdenum (Total)	mg/l	0.0002	No WSV	11	<0.0002	<0.001	0				0.00031	0.00033	<0.0002		0.00025
Nickel (Total)	mg/l	0.0005	No WSV	27	<0.0005	0.0043	0		0.00086	0.0008	0.0038	0.0039	<0.0005		0.0016
Lead (Total)	mg/l	0.0005	No WSV	27	0.0004	0.0041	0		<0.0005	0.0004	0.0041	0.0019	<0.0005		0.00053
Antimony (Total)	mg/l	0.0005	No WSV	9	<0.0005	0.00094	0				0.00094	<0.0005	<0.0005		0.00065
Selenium (Total)	mg/l	0.0005	No WSV	19	<0.0005	0.001	0				0.001	<0.0005	0.00067		0.00095
Zinc (Total)	mg/l	0.0025	No WSV	27	0.0023	0.058	0		0.0045	0.0093	0.049	0.027	0.016		0.0081
Chromium (Trivalent)	mg/l	0.02	No WSV	9	<0.02	<0.02	0				<0.02	<0.02	<0.02		<0.02
Chromium (Hexavalent)	mg/l	0.02	0.0034	12	<0.02	<0.02	0				<0.02	<0.02	<0.02	<0.02	<0.02
Dissolved Organic Carbon	mg/l	2.0	No WSV	27	2	6.26	0		2.5	6.05	2.3	2.2	<2		2.1
Total Organic Carbon	mg/l	2.0	No WSV	15	<2	4.2	0				2.7	2.4	<2		2.3
Total TPH >C6-C40	mg/l	0.01	No WSV	18	0.01	<0.01	0				<0.01	<0.01	<0.01	To Follow	<0.01
Benzene	mg/l	0.001	0.01	12	<0.001	<0.001	0				<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	mg/l	0.001	0.074	12	<0.001	<0.001	0				<0.001	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	mg/l	0.001	0.02	12	<0.001	<0.001	0				<0.001	<0.001	<0.001	<0.001	<0.001
m & p-Xylene	mg/l	0.001	See Xylenes (total)	12	<0.001	<0.001	0				<0.001	<0.001	<0.001	<0.001	<0.001
o-Xylene	mg/l	0.001	See Xylenes (total)	12	<0.001	<0.001	0				<0.001	<0.001	<0.001	<0.001	<0.001
4-Nitrophenol	mg/l	0.0005	No WSV	0	0	0	0								
Naphthalene	mg/l	0.0001	0.002	22	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Acenaphthylene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Acenaphthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fluorene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Phenanthrene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Anthracene	mg/l	0.0001	0.0001	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Fluoranthene	mg/l	0.0001	0.0000063	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Pyrene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo[a]anthracene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chrysene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo[b]fluoranthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo[k]fluoranthene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo[a]pyrene	mg/l	0.0001	0.00000017	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Indeno(1,2,3-c,d)Pyrene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dibenz(a,h)Anthracene	mg/l	0.0001	N/A	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Benzo[g,h,i]perylene	mg/l	0.0001	Screen BaP only	18	<0.0001	<0.0001	0				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Of 16 PAH's	mg/l	0.002	No WSV	18	<0.002	<0.002	0				<0.002	<0.002	<0.002	<0.002	<0.002
Total Phenols	mg/l	0.030	No WSV	18	<0.03	<0.03	0				<0.03	<0.03	<0.03	<0.03	<0.03
pH		N/A	6-9	21	7.2	8.6	0		7.7	7.2				8.1	
Electrical Conductivity	µS/cm	1.0	No WSV	18	93	180	0		180	96					
Nitrate	mg/l	0.50	N/A	16	4.8	21	0		8.8						
Sulphate	mg/l	1.0	400	18	8.94	21	0		14	9.46					
Magnesium	mg/l	0.20	N/A	16	1.9	3.3	0		2.8						
Sodium	mg/l	1.50	N/A	16	2.7	21	0		9.5						
Calcium	mg/l	2.00	N/A	9	4.2	13	0							5	
Potassium	mg/l	0.50	N/A	9	1.3	2.2	0							1.4	
Total Magnesium	mg/l	0.50	No WSV	2	2.6	2.7	0								
Total Sodium	mg/l	0.50	No WSV	2	8.8	10	0								

Assessment Criteria :	*Freshwater EQS*													
CaCO (mg/l):	0.00			pH	0.00									
Calcium (mg/l):	0.00			DOC (mg/l)	0.00		Catchment area:	Freshwater not listed						
Constituents	**Unit**	**Limit of Detection**	**Generic Assessment Criteria**	**Number of Samples**	**Minimum Value**	**Maximum Value**	**Number of Exceedences**	**Locations of Exceedences**	RL3	RH3	RL3	RL3	RL3	RL2	RL4
									11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	15/04/2026	04/12/2024
Chromium (Dissolved)	mg/l	0.0005	See Cr VI as first pass	21	<0.0002	0.008	0		0.0073	<0.0002				<0.0005	
Chromium (Total)	mg/l	0.0005	See Cr VI as first pass	18	<0.0002	0.008	0		0.0073	0.0007					
Fluoride	mg/l	0.050	1	10	0.098	0.14	0								
Ammonium	mg/l	0.050	0.26	2	0.073	0.08	0								
Barium (Dissolved)	mg/l	0.005	No WSV	4	<0.005	0.0071	0								
Barium (Total)	mg/l	0.005	No WSV	4	<0.005	0.0071	0								

F.3 Groundwater screensheet

F.3.1 DWS

Assessment Criteria :	Drinking Water Standard England and Wales/WHO
CaCO (mg/l):	0.00
pH	0.00
Calcium (mg/l):	0.00
DOC (mg/l)	0.00
Catchment area:	Freshwater not listed

Constituents	Unit	Limit of Detection	Generic Assessment Criteria	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Locations of Exceedences	Location	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04
									Sample ID	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL01	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL02	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL03	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04	BHL04
									Depth																																													
									Date	03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	15/04/2026	03/08/2020	29/09/2020	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	09/04/2026	03/08/2020	29/09/2020	22/01/2021	26/02/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	15/04/2026	15/04/2026	03/08/2020	29/09/2020	22/01/2021	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025
									Strata																																												
									Zone																																													
Total Dissolved Solids	mg/l	1.0	No WSV	62	150	3800	0			410	410	540	570					420	440	430	440	410	530	360						300	400	410	340	350	340	310	310	310						280	260	270	310	310	340	320	270	270				280	280
Alkalinity (Total)	mg/l	10	No WSV	81	47	740	0			180	200	160	150	190	180	190		210	200	170	180	380	360	230	430	500	270			240	510	540	250	340	210	330	160	140	220	180				160	180	160	150	150	160	170	150	180	180	210	170		180	160
Chloride	mg/l	1.0	250	88	15	1600	0	BHL08D; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D		120	96	200	200	180	160	160	120	130	110	110	100	24	25	25	57	31	30	27	68	68	26	26	25	21	52	25	51	52	53	50	38	62	41	45	49	49	53	52	47	46	46	50	44	45	55	48
Ammonia (Free)	mg/l	0.050	No WSV	51	<0.05	<0.05	0			<0.05	<0.05							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05
Ammoniacal Nitrogen	mg/l	0.050	0.39	81	<0.015	1.2	9	BHL01; BHL04; BHL05; BHL06; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D		0.49	<0.05	<0.05		<0.05	0.078	<0.05	<0.015	0.19	<0.05	0.23	<0.05	0.086	0.093		0.052	0.24	<0.05	<0.015	0.12	<0.05	<0.05	0.38	<0.05	<0.05	<0.05	<0.05	<0.05		0.33	<0.05	<0.015	0.21	<0.05	0.23	<0.05	0.051	0.075	0.086	<0.05		<0.05	0.47	<0.05	<0.015	0.28	<0.05
Nitrite as NO2	mg/l	0.020	No WSV	37	<0.02	0.085	0											0.051	<0.02	<0.02	<0.02	<0.02								0.085	<0.02	<0.02	<0.02									0.056	<0.02	<0.02	<0.02								0.055	<0.02
Nitrate as NO3	mg/l	0.50	No WSV	44	<0.5	130	0										3.22	4.4	2.7	1.9	3							8.15	61	7.2	7.2	5.9	15							3.62	19	2.9	2.4	4.5	4.6					10.3		16	14
Nitrate as N	mg/l	0.01	No WSV	7	0.4	2.33	0										0.73											1.84												0.82											2.33				
Phosphate	mg/l	0.200	No WSV	51	<0.2	<0.2	0			<0.2	<0.2							<0.2	<0.2	<0.2	<0.2	<0.2	<0.2							<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	<0.2
Cyanide (Total)	mg/l	0.050	0.05	51	<0.05	<0.05	0			<0.05	<0.05							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05							<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				<0.05	<0.05
Magnesium (Dissolved)	mg/l	0.20	N/A	44	3.8	23	0										9	7	6.8	5.8	6.6							10	10	8.5	8.4	8.9	7.4							5.9	7.3	6.7	6.5	6.7	6.5					7.1		6.8	6.4
Sodium (Dissolved)	mg/l	1.50	No WSV	44	12	230	0										97	89	82	77	65							17	19	17	16	16	13							35	36	32	33	29	29					42		37	32
Calcium (Total)	mg/l	5.0	No WSV	67	31	410	0			62	64			66	64	56	81	65	58	60		110	160		110	97	98	130	120	97	96	96	70	55			53	52	60	62	51	56				58	55		49	50	48	69	61	53
Potassium (Total)	mg/l	0.50	No WSV	67	<0.5	74	0			2.2	11			2	1.9	1.8	2.1	2	2	2.1		6.6	9.6		6.1	5.6	5.9	6.3	6.9	5.7	5.6	5.8		0.95	3.9			0.61	0.61	0.98	0.68	0.63	0.64				1.8	3.1		0.96	0.99	0.94	0.98	1.3	1.2
Alkalinity as CaCO3	mg/l	3	No WSV	7	150	380	0										190											260												150											160			
Total Hardness as CaCO3	mg/l	15	No WSV	51	98	940	0			180	180	170	160	160	160	160	160	180	170	160	160	350	450		330	270	270	320	240	210	170			180	160	150	150	150	160	170				170	160							170	160		
Aluminium (Dissolved)	mg/l	0.005	No WSV	62	<0.005	0.98	0			<0.01	<0.01	<0.01	0.38					<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	0.41						0.015	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	0.74				<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	0.91				<0.005	<0.005
Arsenic (Dissolved)	mg/l	0.0002	0.01	62	<0.0002	0.0014	0			<0.001	<0.001	<0.001	0.001					<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	0.00025						0.0012	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	0.00032				<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	0.00045				<0.0002	<0.0002
Boron (Dissolved)	mg/l	0.01	No WSV	62	0.013	0.7	0			0.027	0.57	0.023	0.013					0.02	0.019	0.02	0.02	0.037	0.38	0.022						0.029	0.024	0.027	0.024	0.02	0.027	0.53	0.028	0.016				0.022	0.019	0.019	0.022	0.023	0.022	0.49	0.03	0.014				0.023	0.017
Cadmium (Dissolved)	mg/l	0.00011	0.005	88	<0.00002	0.00063	0			<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	0.00005	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	0.00063	<0.00012	<0.00011	<0.00011	<0.00011	<0.00002	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	<0.00002	<0.00011	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	<0.00002	<0.00011	<0.00011
Copper (Dissolved)	mg/l	0.0005	2	88	<0.0005	0.26	0			<0.001	<0.001	0.0078	0.0013	0.00064	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	0.00087	0.00055	<0.0005	<0.0005	0.00053	0.00069	0.0008	0.0009	0.0015	0.0054	<0.0005	<0.0005	0.00053	0.0011	0.003	<0.001	<0.001	0.00095	<0.0005	0.00094	0.0049	0.0034	0.00078	0.00052	<0.0005	<0.0005	<0.001	0.0015	0.0012	0.0006	<0.0005	0.0009	0.00084	0.0011	<0.0005	0.00085
Iron (Dissolved)	mg/l	0.005	0.2	62	<0.005	1.1	12	BHL01; BHL01; BHL02; BHL02; BHL03; BHL04; BHL05; BHL05; BHL06; BHL08D; BHL08D; BHL08D		0.16	0.13	0.22	1.1					<0.005	0.02	<0.005	<0.005	0.31	0.21	0.19						<0.005	<0.005	<0.005	<0.005	0.2	0.13	0.19	0.39									<0.005	0.017	<0.005	<0.005	0.15	0.098	0.16	0.72				<0.005	0.019
Mercury (Dissolved)	mg/l	0.00005	0.001	62	<<0.00005	<0.0005	0			<0.0005	<0.0005	<0.0005	<0.00005					<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.00005						<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005				<0.00005	<0.00005
Manganese (Dissolved)	mg/l	0.0005	0.05	62	<0.0005	3.4	10	BHL02; BHL03; BHL05; BHL05; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D; BHL08D		<0.001	<0.001	<0.001	0.034					<0.0005	0.00069	<0.0005	<0.0005	0.017	0.0025	0.0051						0.14	<0.0005	0.00077	<0.0005	<0.0005	0.075	0.0072	0.003	0.016									0.00088	0.00052	0.00061	<0.0005	<0.0005	0.034	0.0081	0.0016	0.042				0.00073	<0.0005
Molybdenum (Dissolved)	mg/l	0.0002	No WSV	42	<0.0002	0.005	0			<0.0002	0.00035	<0.0002						<0.0002	0.00035	<0.0002	<0.0002									0.00034	0.00036	<0.0002	<0.0002	<0.0002				<0.001				<0.0002	<0.0002	0.00057	<0.0002	<0.0002				<0.001				<0.0002	0.00028
Nickel (Dissolved)	mg/l	0.0005	0.02	88	<0.0005	0.044	2	BHL08D; BHL08D		<0.001	<0.001	<0.001	0.0012	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	0.002	<0.0005	<0.0005	0.0018	0.0013	0.00059	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0044	<0.001	<0.001	0.0024	<0.0005	<0.0005	0.0008	0.0028	0.0016	<0.0005	<0.0005	<0.0005	0.0019	<0.001	<0.001	0.00085	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	0.0016
Lead (Dissolved)	mg/l	0.0005	0.01	88	<0.0002	0.0047	0			<0.001	<0.001	<0.001	0.00064	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	0.0006	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	0.0006	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005
Antimony (Dissolved)	mg/l	0.0005	No WSV	37	<0.0005	0.0014	0											<0.0005	<0.0005	<0.0005	<0.0005									0.00054	<0.0005	<0.0005	<0.0005	<0.0005								<0.0005	<0.0005	<0.0005	<0.0005	<0.0005								<0.0005	<0.0005
Selenium (Dissolved)	mg/l	0.0005	0.01	62	<0.0005	0.0042	0			<0.001	<0.001	0.0012	<0.0005					<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.001	<0.0005						0.0091	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.001	0.0016	<0.0005				0.0064	0.00056	0.0013	<0.0005	<0.0005	<0.001	<0.001	0.0012	<0.0005				0.00096	<0.0005
Zinc (Dissolved)	mg/l	0.0025	3	88	0.0014	0.064	0			0.0019	0.0014	0.0025	0.009	<0.0025	0.024	0.0037	0.0082	0.0028	0.013	<0.0025	<0.0025	0.0021	0.0049	0.0073	<0.0025	<0.0025	0.0033	0.0034	0.0028	0.0046	0.0034	0.0045	<0.0025	0.0037	0.0043	0.0036	0.0072	<0.0025	0.0026	0.004	<0.0025	0.0051	<0.0025	<0.0025	<0.0025	0.0032	0.0086	0.0025	0.0068	<0.0025	0.0035	0.0037	0.0035	0.0037	0.01
Aluminium (Total)	mg/l	0.005	No WSV	53	<0.01	0.98	15			<0.01	<0.01	<0.01	0.38					0.063	0.089	0.051		<0.01	<0.01	0.41						0.53	0.012	0.013	0.15		<0.01	<0.01	<0.01	0.74				0.1	0.034	0.098				<0.01	<0.01	<0.01	0.91				0.15	0.025
Arsenic (Total)	mg/l	0.002	No WSV	53	0.0002	0.012	0			<0.001	<0.001	<0.001	<0.001					0.003	0.00023	0.00023		<0.001	<0.001	<0.001						0.0023	0.00034	<0.0002	0.0002		<0.001	<0.001	<0.001	0.00032				0.00042	<0.0002	0.00034				<0.001	<0.001	<0.001	0.00045				0.00041	<0.0002
Boron (Total)	mg/l	0.01	1	53	0.013	0.82	0			0.027	0.69	0.024	0.013					0.023	0.021	0.02		0.037	0.5	0.023						0.034	0.024	0.024	0.03		0.027	0.63	0.028	0.017				0.026	0.021	0.021				0.022	0.63	0.03	0.016				0.023	0.02
Cadmium (Total)	mg/l	0.00011	No WSV	79	0.00002	0.00082	0			<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	0.00007	0.00013	<0.00011	<0.00011	<0.00011	<0.00008	0.00082	<0.00012	<0.00011	<0.00011	<0.00011	0.00005	0.00015	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	<0.00002	0.00013	<0.00011	<0.00011	<0.00011	<0.00011	<0.00008	<0.00008	<0.00008	<0.00012	<0.00011	<0.00011	<0.00011	0.00002	<0.00008	<0.00011
Copper (Total)	mg/l	0.0005	No WSV	79	<0.0005	1.2	0			<0.001	0.001	0.0013	0.00068	<0.0005	<0.0005	<0.0005	0.0052	0.0018	0.0015	0.0015		<0.001	<0.001	0.00053	0.00069	0.00081	0.00096	0.0053	0.0044	0.00064	0.00054	0.0019		0.0031	<0.001	<0.001	0.00095	<0.0005	0.00097	0.005	0.033	0.0014	0.0014				0.0019	0.0012	0.00062	<0.0005	0.00096	0.00084	0.0076	0.0029	0.0016
Iron (Total)	mg/l	0.005	No WSV	53	0.018	10	0			0.17	0.15	0.22	1.3					0.15	0.068	0.073		0.31	0.26	0.19						0.93	0.036	0.025	0.34		0.2	0.14	0.19	0.39				0.22	0.047	0.081				0.15	0.15	0.17	0.72				0.36	0.11
Mercury (Total)	mg/l	0.00005	No WSV	53	<<0.00005	<0.0005	0			<0.0005	<0.0005	<0.0005	<0.00005					<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.00005						<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005				<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005				<0.00005	<0.00005
Manganese (Total)	mg/l	0.0005	No WSV	47	0.00085	5.2	0			<0.001	<0.001	<0.001						0.0052	0.0016	0.0031		0.017	0.0033							0.19	0.0014	0.0037	0.019		0.075	0.0078	0.003					0.0076	0.0013	0.0023				0.034	0.01	0.0016				0.018	0.0026
Molybdenum (Total)	mg/l	0.0002	No WSV	33	<0.0002	0.0054	0											0.00025	0.0002	<0.0002	<0.0002									0.0045	0.00052	<0.0002	<0.0002									0.0034	0.00037	<0.0002										0.0028	0.0034
Nickel (Total)	mg/l	0.0005	No WSV	79	<0.0005	0.044	0			<0.001	<0.001	<0.001	0.0012	<0.0005	<0.0005	<0.0005	0.0056	0.0028	0.0042	0.00088		0.0019	0.0015	0.00059	0.0034	0.0041	0.0018	0.0039	0.0026	0.0044	<0.001	<0.001	0.0024	<0.0005	<0.0005	0.0013	0.0031	0.0038	0.00069				0.0019	<0.001	<0.001	0.00086	<0.0005	<0.0005	<0.0005	0.0036	0.003	0.0036
Lead (Total)	mg/l	0.0002	No WSV	79	0.0002	0.037	0			<0.001	<0.001	<0.001	0.00064	<0.0005	<0.0005	<0.0005	0.0043	0.004	0.00093	0.0014		<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	0.0053	0.0091	0.00072	<0.0005	0.0019		<0.001	<0.001	<0.001	0.0006	<0.0005	<0.0005	0.0004	0.0048	0.00056	0.0013				<0.001	<0.001	<0.001	0.00061	<0.0005	<0.0005	<0.0005	0.0026	0.0042	0.00089
Antimony (Total)	mg/l	0.0005	No WSV	28	<0.0005	0.0018	0											<0.0005	<0.0005	<0.0005										0.0012	<0.0005	<0.0005	<0.0005									<0.0005	<0.0005	<0.0005										<0.0005	<0.0005
Selenium (Total)	mg/l	0.0005	No WSV	53	<0.0005	0.0043	0			<0.001	<0.001	0.0012	<0.0005					0.00085	0.00065	0.00057		0.001	<0.001	<0.0005						0.00088	0.00065	<0.0005	<0.0005		0.0011	<0.001	0.0016	<0.0005				<0.001	<0.001	0.0012	<0.0005				0.00067	<0.0005					
Zinc (Total)	mg/l	0.0025	No WSV	79	0.0017	0.078	0			0.0019	0.0032	0.0025	0.009	<0.0025	0.025	0.004	0.0088	0.012	0.011	0.0093		0.0022	0.0061	0.0073	<0.0025	<0.0025	0.0033	0.013	0.02	0.014	0.021	0.01		0.0037	0.0051	0.0036	0.0072	<0.0025	0.0027	0.0062	0.018	0.0063	0.014				0.0033	0.012	0.0026	0.0068	<0.0025	0.0037	0.0037	0.0061	0.02	0.021
Chromium (Trivalent)	mg/l	0.02	No WSV	28	<0.02	<0.02	0											<0.02	<0.02	<0.02										<0.02	<0.02	<0.02	<0.02									<0.02	<0.02	<0.02										<0.02	<0.02
Chromium (Hexavalent)	mg/l	0.02	See Total Chromium	37	<0.02	<0.02	0											<0.02	<0.02	<0.02	<0.02									<0.02	<0.02	<0.02	<0.02									<0.02	<0.02	<0.02	<0.02									<0.02	<0.02
Dissolved Organic Carbon	mg/l	2.0	No WSV	79	0.54	15	0			2.7	<2	<2	<2	<2	<2	<2	0.77	<2	<2	<2		2.6	<2	<2	<2	<2	<2	0.91	<2	<2	<2	<2	<2	2.7	<2	<2	<2	<2	<2	0.62	<2	<2	<2				2.4	<2	<2	<2	<2	<2	0.62	2.2	<2
Total Organic Carbon	mg/l	2.0	No WSV	42	<2	17	0			3.6	<2	<2	<2					<2	<2	<2		2.8	<2	<2						2.8	<2	<2	<2		2.8	17						<2	<2	<2				2.6	<2	<2	<2	<2	<2		2.2	<2
Total TPH >C6-C40	mg/l	0.01	No WSV	51	<0.01	0.41	0			<0.01	<0.01							<0.01	<0.01	<0.01	To Follow	<0.01	<0.01							<0.01	<0.01	<0.01	To Follow		<0.01	<0.01						<0.01	<0.01	<0.01	To Follow	To Follow		<0.01	<0.01					<0.01	<0.01
Benzene	mg/l	0.001	0.001	38	<0.001	<0.001	0											<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001
Toluene	mg/l	0.001	0.7	38	<0.001	<0.001	0											<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001
Ethylbenzene	mg/l	0.001	0.3	38	<0.001	<0.001	0											<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001
m & p-Xylene	mg/l	0.001	See Xylenes (total)	38	<0.001	<0.001	0											<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001
o-Xylene	mg/l	0.001	See Xylenes (total)	38	<0.001	<0.001	0											<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001	<0.001	<0.001									<0.001	<0.001
4-Nitrophenol	mg/l	0.0005	No WSV	1	<0.0005	<0.0005	0																																																							
Naphthalene	mg/l	0.0001	See BaP	62	<0.0001	<0.0001	0			<0.0001	<0.0001	<0.0001	<0.0001					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001						<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001
Acenaphthylene	mg/l	0.0001	See BaP	51	<0.0001	<0.0001	0			<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001
Acenaphthene	mg/l	0.0001	See BaP	51	<0.0001	<0.0001	0			<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001
Fluorene	mg/l	0.0001	See BaP	51	<0.0001	<0.0001	0			<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<0.0001	<0.0001
Phenanthrene	mg/l	0.0001	See BaP	51	<0.0001	<0.0001	0			<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001							<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001				<

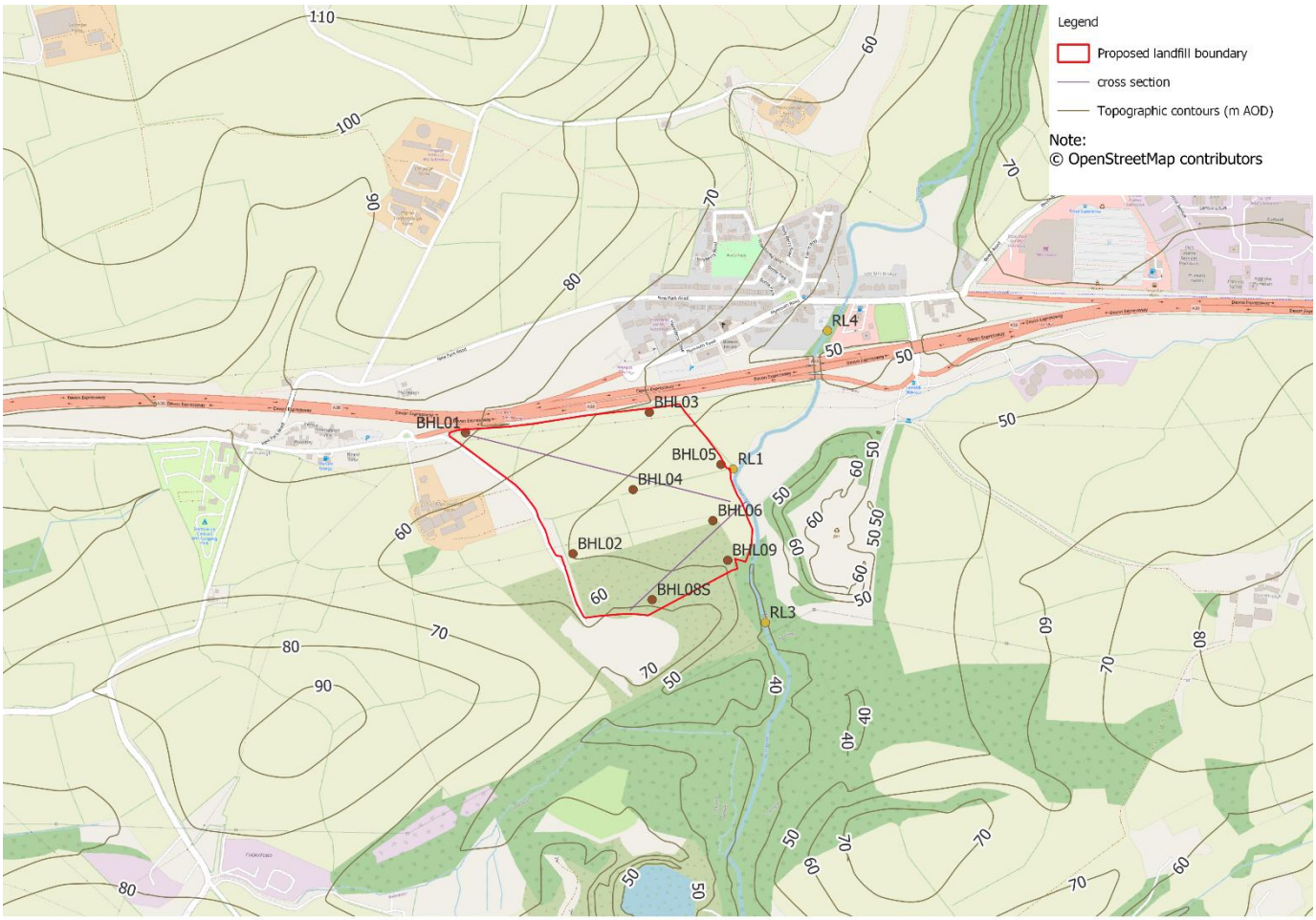
| Assessment Criteria : | | | | | | | Drinking Water Standard England and Wales/WHO | | | | | | |

F.3.2 EQS

| Assessment Criteria : | | | Freshwater EQS | | |

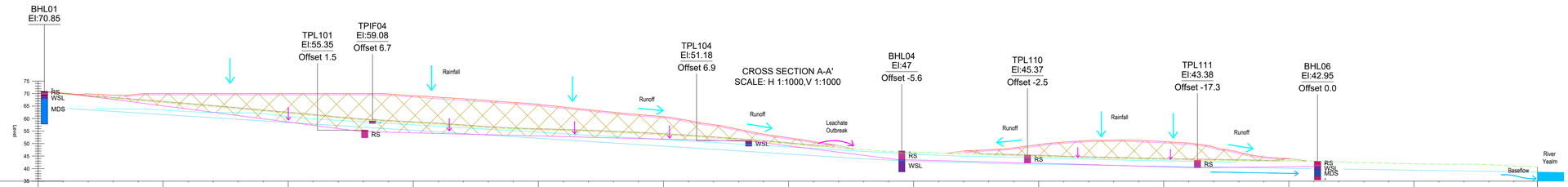
Assessment Criteria :								*Freshwater EQS*																																
CaCO (mg/l):	0.00		pH	0.00																																				
Calcium (mg/l):	0.00		DOC (mg/l)	0.00				Catchment area:																																		
Constituents	Unit	Limit of Detection	Generic Assessment Criteria	Number of Samples	Minimum Value	Maximum Value	Number of Exceedences	Freshwater not listed Locations of Exceedences	BH04	BH04	BH04	BH05	BH05	BH05	BH05	BH05	BH05	BH05	BH05	BH05	BH06	BH06	BH06	BH06	BH06	BH06	BH06	BH06	BH06	BH06	BH08D	BH08D	BH08D	BH08D	BH08D	BH08D
									09/01/2025	11/03/2025	09/04/2026	03/08/2020	29/09/2020	22/01/2021	26/02/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	09/04/2026	03/08/2020	29/09/2020	26/02/2021	08/07/2021	15/10/2021	11/01/2022	12/10/2022	03/12/2024	09/01/2025	11/03/2025	10/06/2025	09/04/2026	03/08/2020	29/09/2020	26/02/2021	08/07/2021	15/10/2021	11/01/2022
Total Dissolved Solids	mg/l	1.0	No WSV	62	150	3800	0		280	280	360	350	290	180	180				150	150	170	200	360	360	340					310	380	360	400	420	650	720	3800				
Alkalinity (Total)	mg/l	10	No WSV	81	47	740	0		160	160	160	220	200	130	88	160	130		<2	120	120	130	140	240	190	220	240	500	250		240	130	230	270	350	400	450	250	570	580	670
Chloride	mg/l	1.0	250	88	15	1600	6	BH08D; BH08D; BH08D; BH08D; BH08D; BH08D; BH08D; BH08D	48	49	45	32	29	17	18	51	15	25	17	16	20	21	28	47	24	26	29	37	28	35	74	29	28	32	59	55	1600	680	500	410
Ammonia (Free)	mg/l	0.050	No WSV	51	<0.05	<0.05	0		<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
Ammoniacal Nitrogen	mg/l	0.050	0.2	81	<0.015	1.2	25	BH(L01; BH(L01; BH(L02; BH(L02; BH(L03; BH(L03; BH(L03; BH(L04; BH(L04; BH(L04; BH(L05; BH(L05; BH(L06; BH(L06; BH(L06

Appendix G. Cross section location and Hydrogeological conceptual site model (HCSM)



0 10 MILLIMETRES 100

DO NOT SCALE



Chainage	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0	190.0	200.0	210.0	220.0	230.0	240.0	250.0	260.0	270.0	280.0	290.0	300.0	310.0	320.0	330.0	340.0	350.0	360.0	370.0	380.0	390.0	400.0	410.0	420.0	430.0	440.0	450.0	460.0	470.0	480.0	490.0	500.0	510.0	520.0	530.0	540.0	550.0	560.0	570.0	580.0	590.4
Existing Ground Level	70.922	70.012	69.066	68.249	67.461	66.664	65.859	65.015	64.138	63.220	62.353	61.447	60.495	59.613	59.088	58.514	57.973	57.275	56.568	56.059	55.751	55.476	55.155	54.737	54.300	53.764	53.205	52.509	51.765	50.992	50.147	49.236	48.344	47.607	46.831	46.553	46.263	45.945	45.715	45.451	45.137	44.803	44.546	44.314	44.043	43.853	43.676	43.502	43.359	43.183	43.121	43.026	42.864	42.409	42.127	41.943	41.775	41.773	41.564	40.973	40.667
Top Of Landfill	70.933	70.043	69.858	69.319	69.765	70.000	70.000	70.000	70.000	70.000	70.000	70.000	70.000	70.000	69.829	69.135	68.545	67.913	67.147	66.448	65.624	64.598	63.547	62.511	61.597	60.765	59.205	57.566	55.741	53.800	52.337	50.815	48.280	49.587	50.567	51.232	51.414	51.244	50.802	50.207	48.662	46.566	44.712	43.969																							
Top Of Engineering Liner	70.983	70.212	69.266	68.449	67.661	66.864	66.059	65.215	64.338	63.430	62.553	61.647	60.695	59.813	59.268	58.714	58.173	57.475	56.768	56.259	55.951	55.676	55.355	54.937	54.500	53.964	53.403	52.709	51.965	51.192	50.347	49.436	49.177					47.047	45.915	45.651	45.337	45.003	44.748	44.514	44.243	44.053	43.876	43.702	43.559	43.383	43.069									
Base Of Engineering Liner	70.483	69.712	68.786	67.949	67.161	66.364	65.559	64.715	63.838	62.930	62.053	61.147	60.195	59.313	58.768	58.214	57.673	56.975	56.268	55.759	55.451	55.176	54.855	54.437	54.000	53.464	52.903	52.209	51.465	50.692	49.847	48.936	48.677					46.547	45.415	45.151	44.837	44.503	44.248	44.014	43.743	43.553	43.376	43.202	43.059	42.883	43.409									
Groundwater Level (Dec 24)				63.914	63.796	63.393	62.805	62.444	62.326	61.877	60.819	59.867	59.280	58.673	58.085	57.492	56.902	56.314	55.725	55.137	54.550	53.961	53.369	52.781	52.196	51.608	51.000	50.411	49.848	49.260	48.661	48.067	47.477	46.926	46.353	45.804	45.329	44.953	44.733	44.514	44.294	44.075	43.834	43.545	43.279	43.108	42.938	42.715												
Groundwater Level (Oct 22)			63.499	62.868	62.237	61.606	60.975	60.344	59.713	59.082	58.451	57.820	57.189	56.558	55.927	55.296	54.666	54.035	53.404	52.773	52.142	51.511	50.880	50.249	49.618	48.988	48.359	47.728	47.097	46.462	45.829	45.198	44.548	43.929	43.425	42.965	42.708	42.407	42.110	41.908	41.752	41.595	41.439	41.283	41.059	40.891	40.747	40.602	40.458	40.301	40.141								

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

ITEM	HAZARD	RISK

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NOTES

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KEY:

- EXISTING GROUND LEVEL
- PROPOSED LANDFILL ELEVATION
- TOP OF ENHANCED GEOLOGICAL BARRIER / BASE OF LANDFILL
- BASE OF ENHANCED GEOLOGICAL BARRIER
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- LEACHATE BREAKOUT
- GROUND WATER LEVEL (DEC 2024)
- GROUND WATER LEVEL (OCT 2022)
- RAINFALL
- SURFACE WATER RUN-OFF
- PROPOSED INERT WASTE

EXPLORATORY HOLE KEY:

- RS RESIDUAL SOILS
- WSL WEATHERED SLATE
- MDS MIDDLE DEVONIAN SLATE

REV	DESCRIPTION	BY	DATE	CHK'D	AUTH

DRAWING STATUS: FOR INFORMATION

SUITABILITY: S2

ATKINS

Atkins Limited
The Octagon
Pynes Hill Court
Rydon Lane
Exeter, EX2 5AZ
England

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CLIENT: DDE(SW) LIMITED

PROJECT:
Challonsleigh Farm,
Smithaleigh, nr Ivybridge, Plymouth, PL7 5AX
Inert Landfill

TITLE:
CROSS SECTIONS
A-A'

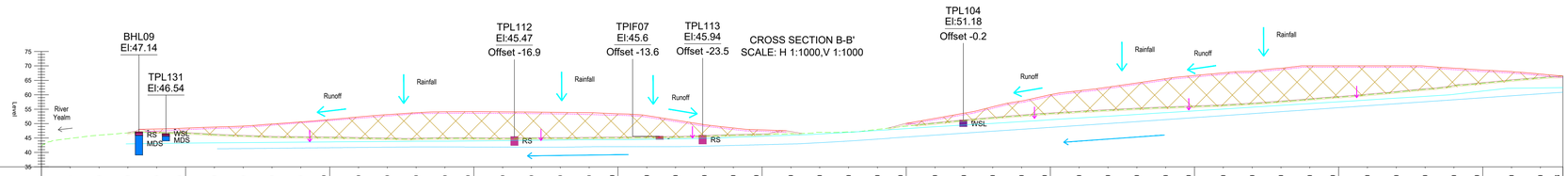
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	EXETER	10/06/2025	10/06/2025	10/06/2025	10/06/2025

DRAWING NUMBER: 5149237-ATK-DR-C- 900002

REV: P01

0 10 MILLIMETRES 100

DO NOT SCALE



Chainage	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0	190.0	200.0	210.0	220.0	230.0	240.0	250.0	260.0	270.0	280.0	290.0	300.0	310.0	320.0	330.0	340.0	350.0	360.0	370.0	380.0	390.0	400.0	410.0	420.0	430.0	440.0	450.0	460.0	470.0	480.0	490.0	500.0	510.0	520.0	527.8
Existing Ground Level	42.238	44.862	45.975	46.776	46.885	46.649	46.133	45.710	45.356	45.248	45.138	44.951	44.791	44.707	44.878	44.870	44.808	44.881	44.921	45.007	45.101	45.209	45.336	45.638	45.961	46.206	46.451	47.000	47.111	47.991	49.107	50.099	51.072	51.966	52.749	53.486	54.104	54.635	55.127	55.549	55.926	56.311	56.896	57.613	58.397	59.184	59.987	60.909	61.863	63.042	64.000	64.985	65.810	66.454
Top Of Landfill					48.128	48.447	48.815	49.148	49.847	50.576	51.365	52.298	53.109	53.744	54.086	54.146	54.064	53.979	53.899	53.761	53.393	52.774	51.201	49.628	48.482	47.814					50.088	51.828	53.576	55.823	57.850	60.036	61.398	62.845	64.078	65.571	66.666	67.586	68.159	68.196	70.000	70.000	70.000	70.000	69.913	69.227	68.572	68.019	67.182	66.495
Top Of Engineering Liner				46.601	47.136	46.857	46.333	45.910	45.556	45.448	45.338	45.151	44.991	44.907	45.078	45.070	45.008	45.081	45.121	45.207	45.301	45.409	45.536	45.838	46.161	46.406	47.239				50.063	50.299	51.272	52.166	52.949	53.686	54.304	54.835	55.327	55.749	56.126	56.511	57.096	57.813	58.597	59.384	60.167	61.109	62.063	63.242	64.200	65.185	66.010	66.462
Base Of Engineering Liner				46.301	46.636	46.357	45.833	45.410	45.056	44.948	44.838	44.651	44.491	44.407	44.578	44.570	44.508	44.581	44.621	44.707	44.801	44.909	45.036	45.338	45.661	45.906	46.739				49.563	49.799	50.772	51.666	52.449	53.186	53.804	54.335	54.827	55.249	55.626	56.011	56.596	57.313	58.097	58.884	59.687	60.609	61.563	62.742	63.700	64.685	65.510	65.962
Groundwater Level (Dec 24)				42.974	43.097	43.221	43.316	43.398	43.480	43.583	43.645	43.725	43.813	43.911	43.918	44.008	44.112	44.216	44.333	44.418	44.447	44.583	44.742	44.905	45.261	45.627	45.992	46.418	46.985	47.625	48.241	48.900	49.509	50.067	50.686	51.329	51.940	52.550	53.170	53.799	54.428	55.057	55.686	56.315	56.944	57.572	58.201	58.830	59.459	60.159	61.291	62.269	62.395	62.463
Groundwater Level (Oct 22)								41.347	41.443	41.539	41.636	41.732	41.823	41.910	41.908	41.884	41.859	41.834	41.819	41.964	42.000	42.000	42.000	42.181	42.430	42.680	42.930	43.386	43.951	44.617	45.345	46.017	46.683	47.358	48.023	48.687	49.350	50.016	50.691	51.380	52.069	52.738	53.447	54.136	54.825	55.514	56.203	56.892	57.581	58.270	58.959	59.648	60.337	60.875

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

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- BASE OF ENHANCED GEOLOGICAL BARRIER
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- LEACHATE INFILTRATING
- LEACHATE BREAKOUT
- GROUND WATER LEVEL (DEC 2024)
- GROUND WATER LEVEL (OCT 2022)
- RAINFALL
- SURFACE WATER RUN-OFF
- PROPOSED INERT WASTE

EXPLORATORY HOLE KEY:

- RS RESIDUAL SOILS
- WSL WEATHERED SLATE
- MDS MIDDLE DEVONIAN SLATE

REV	DESCRIPTION	BY	DATE	CHK'D	AUTH

DRAWING STATUS: FOR INFORMATION

SUITABILITY: S2

ATKINS

Atkins Limited
The Octagon
Pynes Hill Court
Rydon Lane
Exeter, EX2 5AZ
England

Telephone +44(0)1392 352 900
Fax +44(0)1392 352 999
www.atkinsglobal.com

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CLIENT: DDE(SW) LIMITED

PROJECT: Challonsleigh Farm, Smithaleigh, nr Ivybridge, Plymouth, PL7 5AX Inert Landfill

TITLE: CROSS SECTIONS B-B'

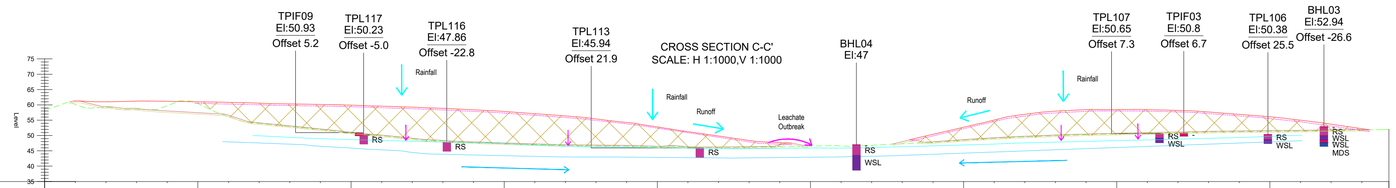
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	EXETER	10/06/2025	10/06/2025	10/06/2025	10/06/2025

DRAWING NUMBER: 5149237-ATK-DR-C- 900003

REV: P01

0 10 MILLIMETRES 100

DO NOT SCALE



Chainage	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0	190.0	200.0	210.0	220.0	230.0	240.0	250.0	260.0	270.0	280.0	290.0	300.0	310.0	320.0	330.0	340.0	350.0	360.0	370.0	380.0	390.0	400.0	410.0	420.0	430.0	438.9
Existing Ground Level	58.783	61.254	60.065	59.211	58.497	59.744	60.461	56.198	53.949	52.951	51.942	50.889	49.922	49.246	48.195	47.720	47.365	47.061	46.754	46.659	46.561	46.278	46.118	46.058	46.161	46.324	46.529	46.580	46.821	47.320	47.767	48.461	49.071	49.555	49.951	50.274	50.515	50.715	50.943	51.146	51.294	51.385	51.482	51.648	51.818	51.963
Top Of Landfill		61.254	61.008	61.236	61.157	61.603	60.823	60.548	60.297	60.133	59.908	59.888	59.246	58.865	58.395	57.841	57.129	56.370	55.407	54.287	52.790	51.252	49.826	48.402	47.689					50.396	52.705			55.042	56.931	57.949	58.424	58.460	58.438	58.207	57.872	56.911	56.105	54.987	53.687	52.227	
Top Of Engineering Liner		61.236	59.405	58.863	58.017	57.470	56.617	54.149	53.151	52.142	51.089	50.122	49.121	48.396	47.920	47.565	47.261	46.984	46.859	46.761	46.478	46.318	46.258	46.361	46.977					48.006	47.967	48.661		49.271	49.755	50.151	50.474	50.715	50.915	51.143	51.346	51.494	51.585	51.682	51.848	51.931	
Base Of Engineering Liner		60.736	58.905	58.383	57.517	56.970	56.117	53.649	52.651	51.642	50.589	49.622	48.621	47.895	47.420	47.085	46.761	46.484	46.359	46.261	45.978	45.818	45.758	45.861	46.477					47.506	47.467	48.161		48.771	49.255	49.651	49.974	50.215	50.415	50.643	50.846	50.994	51.085	51.182	51.348	51.431	
Groundwater Level (Dec 24)								49.903	49.418	48.981	48.672	48.398	48.124	47.891	47.641	47.330	46.914	46.526	46.250	46.203	46.038	45.874	45.711	45.689	45.815	45.942	45.930	46.094	46.346	46.635	46.923	47.221	47.577	47.832	48.087	48.342	48.580	48.805	49.076	49.347	49.708	50.084				
Groundwater Level (Oct 22)							47.931	47.562	47.181	46.502	45.912	45.320	44.475	43.882	43.653	43.423	43.193	43.011	43.000	42.948	42.865	42.781	42.692	42.703	42.806	42.910	43.028	43.220	43.506	43.874	44.241	44.608	44.976	45.343	45.711	46.078	46.445	46.813	47.180	47.548	47.915	48.283				

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

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- MDS MIDDLE DEVONIAN SLATE

REV	DESCRIPTION	BY	DATE	CHK'D	AUTH

DRAWING STATUS: FOR INFORMATION

SUITABILITY: S2

ATKINS
Atkins Limited
The Octagon
Pynes Hill Court
Rydon Lane
Exeter, EX2 5AZ
England
Telephone +44(0)1392 352 900
Fax +44(0)1392 352 999
www.atkinsglobal.com

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CLIENT: DDE(SW) LIMITED

PROJECT:
Challonsleigh Farm,
Smithaleigh, nr Ivybridge, Plymouth, PL7 5AX
Inert Landfill

TITLE:
CROSS SECTIONS
C-C'

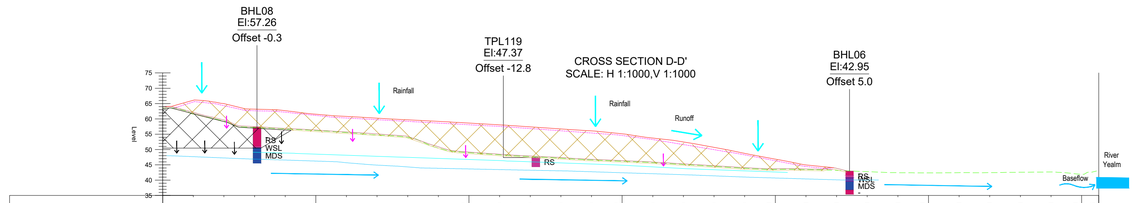
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DRAWING NUMBER: 5149237-ATK-DR-C- 900004

REV: P01

0 10 MILLIMETRES 100

DO NOT SCALE



Chainage	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0	180.0	190.0	200.0	210.0	220.0	230.0	240.0	250.0	260.0	270.0	280.0	290.0	300.0	305.6
Existing Ground Level	63.527	61.579	59.288	57.197	56.737	56.201	55.551	54.740	53.919	50.471	48.977	48.267	47.892	47.190	46.611	46.188	45.721	45.128	44.510	43.892	43.516	43.454	43.197	42.787	42.450	42.398	42.453	42.461	42.594	42.677	41.909	
Top Of Landfill		66.064	64.994	63.165	62.678	61.537	60.796	60.238	59.696	59.183	58.630	58.054	57.406	56.734	56.082	55.131	53.755	52.468	50.709	48.769	46.861	44.965										
Top Of Engineering Liner	63.869	62.126	59.638	57.481	56.886	56.353	55.715	55.105	54.257	50.884	49.177	48.467	47.892	47.390	46.811	46.388	45.921	45.328	44.710	44.092	43.716	43.656	43.862									
Base Of Engineering Liner	63.369	61.626	59.138	56.981	56.386	55.853	55.215	54.605	53.757	50.384	48.677	47.967	47.392	46.890	46.311	45.888	45.421	44.828	44.210	43.592	43.216	43.156	43.362									
Groundwater Level (Dec 24).				49.092	48.835	48.510	48.151	47.792	47.450	47.095	46.740	46.386	45.983	45.622	45.262	44.880	44.346	43.811	43.413	43.033	42.652											
Groundwater Level (Oct 22).		47.676	47.259	46.883	46.572	46.238	45.690	44.922	44.325	43.879	43.668	43.458	43.250	43.049	42.752	42.424	42.111	41.785	41.413	41.021	40.713	40.409	40.116	40.036								

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS / RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

ITEM	HAZARD	RISK

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

NOTES

1. DO NOT SCALE FROM THIS DRAWINGS
2. ALL MEASUREMENTS ARE IN METERS UNLESS STATED OTHERWISE

KEY:

- EXISTING GROUND LEVEL
- PROPOSED LANDFILL ELEVATION
- TOP OF ENHANCED GEOLOGICAL BARRIER / BASE OF LANDFILL
- BASE OF ENHANCED GEOLOGICAL BARRIER
- LEACHATE LEVEL
- LEACHATE INFILTRATING
- LEACHATE BREAKOUT
- GROUND WATER LEVEL (DEC 2024)
- GROUND WATER LEVEL (OCT 2022)
- RAINFALL
- SURFACE WATER RUN-OFF
- PROPOSED INERT WASTE
- HISTORICAL WASTE

EXPLORATORY HOLE KEY:

- RS RESIDUAL SOILS
- WSL WEATHERED SLATE
- MDS MIDDLE DEVONIAN SLATE

REV	DESCRIPTION	BY	DATE	CHK'D	AUTH

DRAWING STATUS: FOR INFORMATION

SUITABILITY: S2

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CLIENT: DDE(SW) LIMITED

PROJECT: Challonsleigh Farm, Smithaleigh, nr Ivybridge, Plymouth, PL7 5AX Inert Landfill

TITLE: CROSS SECTIONS D-D'

SCALE:	ORIGINAL SIZE:	DESIGNED:	DRAWN:	CHECKED:	AUTHORISED:
	A1	JDP	JDP	ATF	PG
	OFFICE:	DATE:	DATE:	DATE:	DATE:
	EXETER	10/06/2025	10/06/2025	10/06/2025	10/06/2025

DRAWING NUMBER: 5149237-ATK-DR-C- 900005

REV: P01

Appendix H. Landsim model

H.1 Landsim model

H.2 Reduce source term landsim model

H.3 Sensitivity analysis landsim model

H.4 Rogue landsim model

Landsim models appended separately

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