Blessington, Co. Wicklow – Trial Pit Photographs

TP04

Blessington, Co. Wicklow – Trial Pit Photographs

TP04

Blessington, Co. Wicklow – Trial Pit Photographs

TP05

Blessington, Co. Wicklow – Trial Pit Photographs

TP05

Blessington, Co. Wicklow – Trial Pit Photographs

TP06

Blessington, Co. Wicklow – Trial Pit Photographs

TP06

Blessington, Co. Wicklow – Trial Pit Photographs

IT01

Blessington, Co. Wicklow – Trial Pit Photographs

IT01

Blessington, Co. Wicklow – Trial Pit Photographs

IT02

Blessington, Co. Wicklow – Trial Pit Photographs

IT02

Blessington, Co. Wicklow – Trial Pit Photographs

IT03

Blessington, Co. Wicklow – Trial Pit Photographs

IT03

Blessington, Co. Wicklow – Trial Pit Photographs

IT04

Blessington, Co. Wicklow – Trial Pit Photographs

IT04

Blessington, Co. Wicklow – Trial Pit Photographs

IT05

Blessington, Co. Wicklow – Trial Pit Photographs

IT06

Blessington, Co. Wicklow – Trial Pit Photographs

IT06

APPENDIX 3 – Soakaway Records

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GROUND INVESTIGATIONS IRELAND
Geotechnical & Environmental

Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin.
D22 YD52

Tel: 01 601 5175 / 5176
Email: info@gii.ie
Web: www.gii.ie

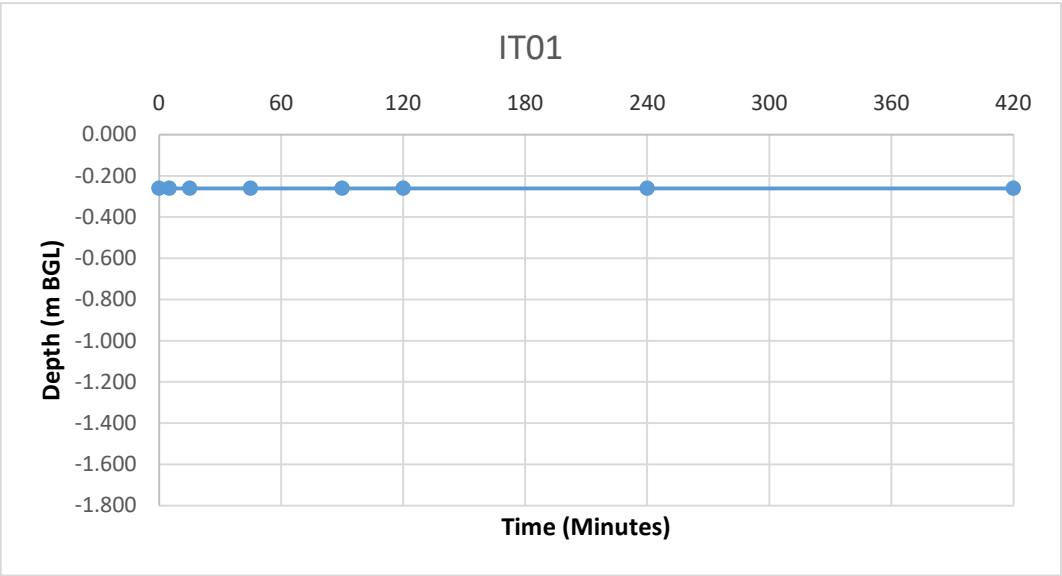
IT01

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.80m x 0.40m x 1.80m (L x W x D)

Date	Time	Water level (m bgl)
30/01/2020	0	-0.260
30/01/2020	5	-0.260
30/01/2020	15	-0.260
30/01/2020	45	-0.260
30/01/2020	90	-0.260
30/01/2020	120	-0.260
30/01/2020	240	-0.260
30/01/2020	420	-0.260

*** Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.260	1.800	1.540	0.645	1.415



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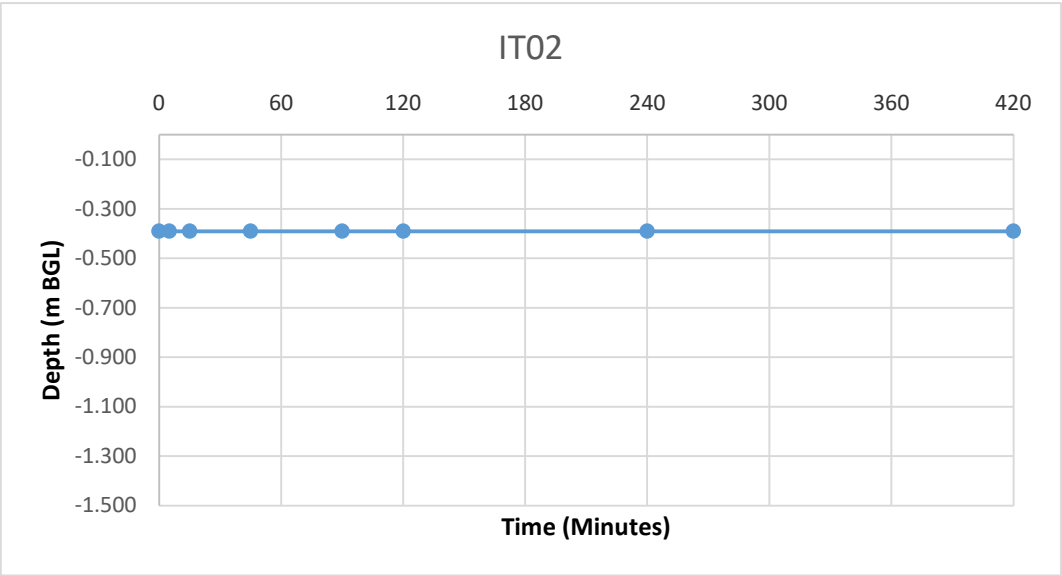
IT02

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.70m x 0.40m x 1.50m (L x W x D)

Date	Time	Water level (m bgl)
30/01/2020	0	-0.390
30/01/2020	5	-0.390
30/01/2020	15	-0.390
30/01/2020	45	-0.390
30/01/2020	90	-0.390
30/01/2020	120	-0.390
30/01/2020	240	-0.390
30/01/2020	420	-0.390

*** Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.390	1.500	1.110	0.668	1.223



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D22 YD52

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IT03

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.60m x 0.40m x 1.60m (L x W x D)

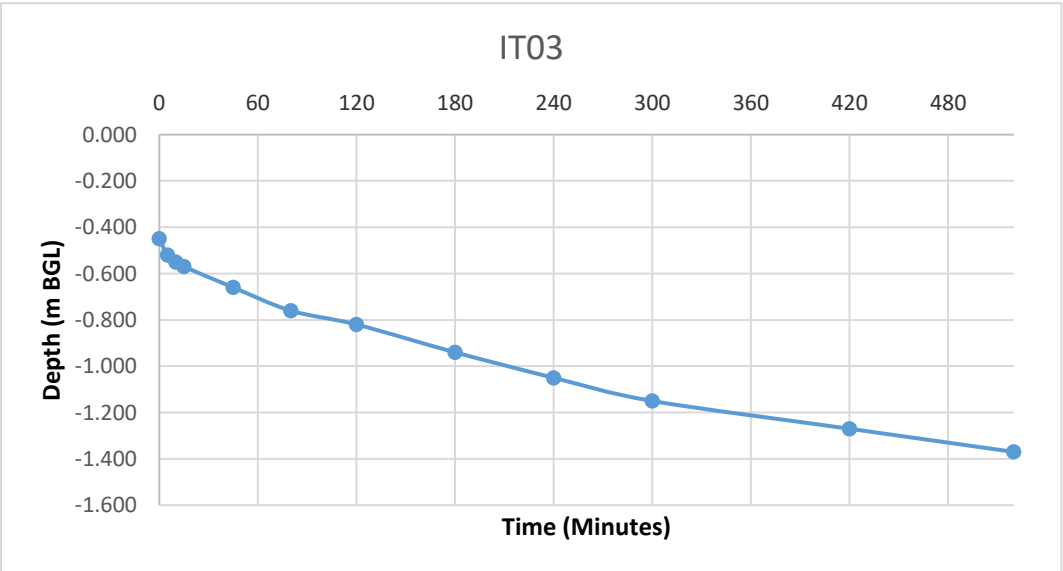
Date	Time	Water level (m bgl)
30/01/2020	0	-0.450
30/01/2020	5	-0.520
30/01/2020	10	-0.550
30/01/2020	15	-0.570
30/01/2020	45	-0.660
30/01/2020	80	-0.760
30/01/2020	120	-0.820
30/01/2020	180	-0.940
30/01/2020	240	-1.050
30/01/2020	300	-1.150
30/01/2020	420	-1.270
30/01/2020	520	-1.370

Start depth	Depth of Pit	Diff	75% full	25%full
0.450	**1.600**	**1.150**	**0.738**	**1.313**

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
1.600	0.400	0.575	0.368

Tp75-25 (from graph) (s)	**23850**	50% Eff Depth	ap50 (m2)
		0.575	2.94

f = 5.248E-06 m/s



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Co. Dublin.
D22 YD52

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IT04

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.80m x 0.45m x 1.70m (L x W x D)

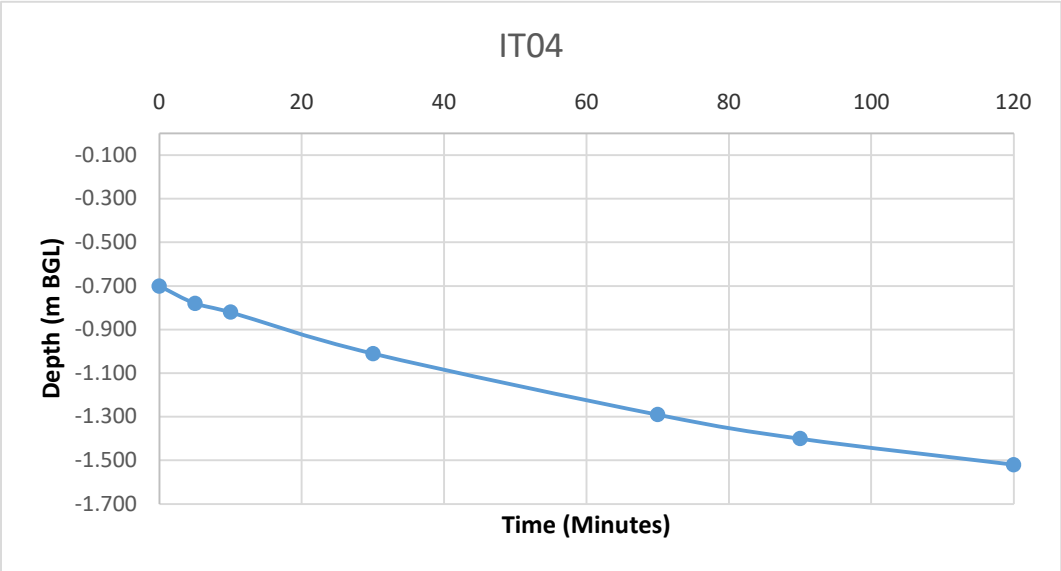
Date	Time	Water level (m bgl)
30/01/2020	0	-0.700
30/01/2020	5	-0.780
30/01/2020	10	-0.820
30/01/2020	30	-1.010
30/01/2020	70	-1.290
30/01/2020	90	-1.400
30/01/2020	120	-1.520

Start depth	Depth of Pit	Diff	75% full	25%full
0.700	**1.700**	**1.000**	**0.950**	**1.450**

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
1.600	0.400	0.500	0.320

Tp75-25 (from graph) (s)	**4320**	50% Eff Depth	ap50 (m2)
		0.500	2.64

f = 2.806E-05 m/s



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Geotechnical & Environmental

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IT05

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.60m x 0.4m x 1.50m (L x W x D)

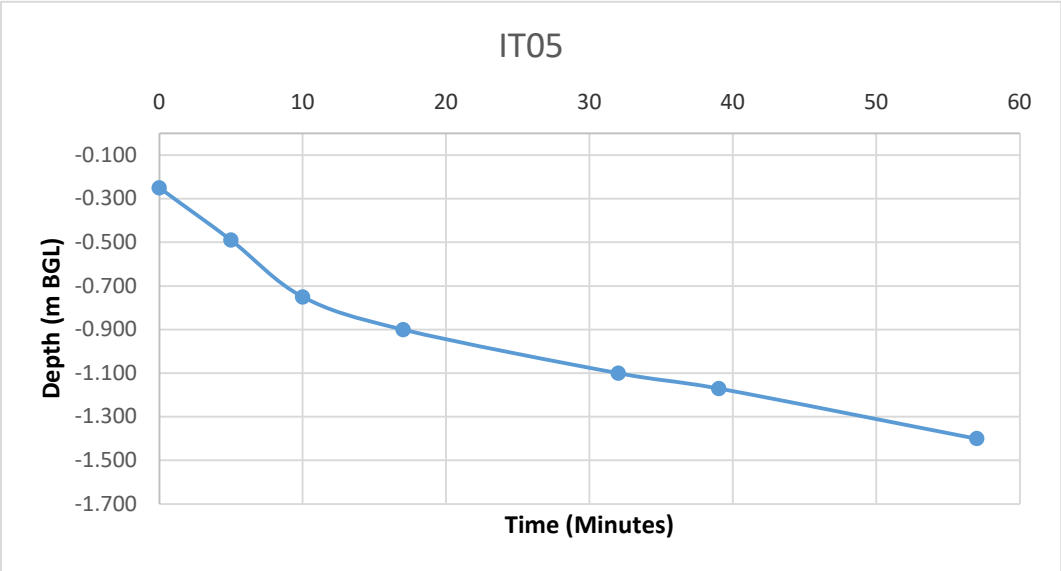
Date	Time	Water level (m bgl)
30/01/2020	0	-0.250
30/01/2020	5	-0.490
30/01/2020	10	-0.750
30/01/2020	17	-0.900
30/01/2020	32	-1.100
30/01/2020	39	-1.170
30/01/2020	57	-1.400

Start depth	Depth of Pit	Diff	75% full	25%full
0.250	**1.500**	**1.250**	**0.563**	**1.188**

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
1.600	0.400	0.625	0.400

Tp75-25 (from graph) (s)	**1320**	50% Eff Depth	ap50 (m2)
		0.625	3.14

f = 9.651E-05 m/s



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Web: www.gii.ie

IT06

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.65m x 0.40m x 1.50m (L x W x D)

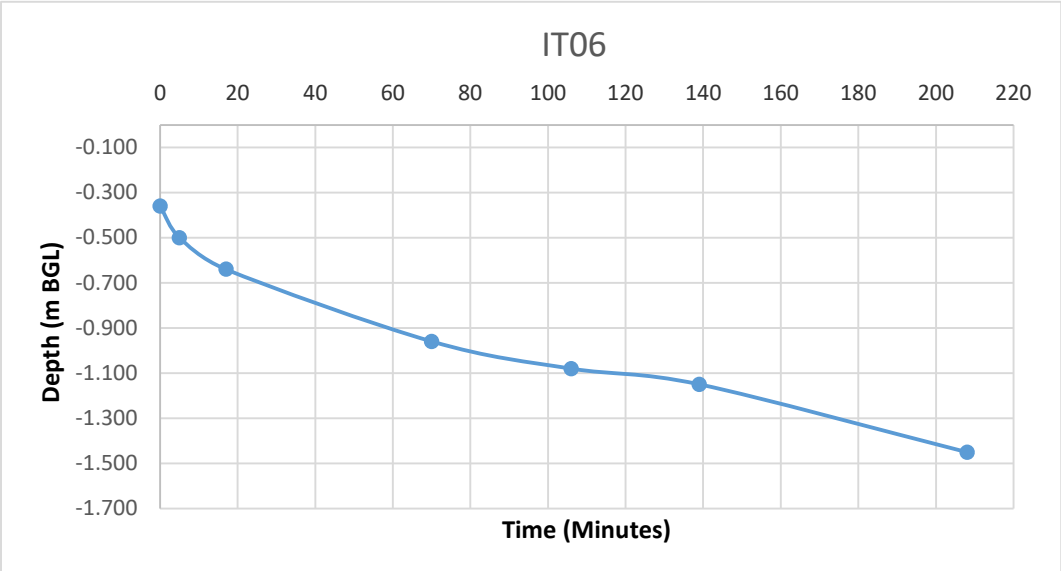
Date	Time	Water level (m bgl)
30/01/2020	0	-0.360
30/01/2020	5	-0.500
30/01/2020	17	-0.640
30/01/2020	70	-0.960
30/01/2020	106	-1.080
30/01/2020	139	-1.150
30/01/2020	208	-1.450

Start depth	Depth of Pit	Diff	75% full	25%full
0.360	**1.500**	**1.140**	**0.645**	**1.215**

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
1.650	0.400	0.570	0.376

Tp75-25 (from graph) (s)	**7320**	50% Eff Depth	ap50 (m2)
		0.570	2.997

f = 1.715E-05 m/s



Appendix B : Source Control Calculations

Summary of Results for 100 year Return Period (+20%)

Half Drain Time : 377 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	200.879	0.576	0.0	6.0	6.0	104.9	O K
30 min Summer	201.103	0.800	0.0	6.0	6.0	145.8	O K
60 min Summer	201.323	1.020	0.0	6.4	6.4	185.9	O K
120 min Summer	201.532	1.229	0.0	6.9	6.9	224.0	O K
180 min Summer	201.630	1.327	0.0	7.2	7.2	241.8	O K
240 min Summer	201.679	1.376	0.0	7.3	7.3	250.7	O K
360 min Summer	201.712	1.409	0.0	7.4	7.4	256.8	O K
480 min Summer	201.722	1.419	0.0	7.4	7.4	258.6	O K
600 min Summer	201.727	1.424	0.0	7.4	7.4	259.5	O K
720 min Summer	201.728	1.425	0.0	7.4	7.4	259.7	O K
960 min Summer	201.720	1.417	0.0	7.4	7.4	258.3	O K
1440 min Summer	201.676	1.373	0.0	7.3	7.3	250.1	O K
2160 min Summer	201.576	1.273	0.0	7.0	7.0	231.9	O K
2880 min Summer	201.465	1.162	0.0	6.8	6.8	211.7	O K
4320 min Summer	201.253	0.950	0.0	6.2	6.2	173.1	O K
5760 min Summer	201.063	0.760	0.0	6.0	6.0	138.4	O K
7200 min Summer	200.880	0.577	0.0	6.0	6.0	105.1	O K
8640 min Summer	200.638	0.335	0.0	6.0	6.0	61.0	O K
10080 min Summer	200.502	0.199	0.0	6.0	6.0	36.3	O K
15 min Winter	200.952	0.649	0.0	6.0	6.0	118.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	91.310	0.0	111.0	23
30 min Summer	64.573	0.0	157.2	37
60 min Summer	42.815	0.0	207.8	66
120 min Summer	27.648	0.0	269.3	126
180 min Summer	21.251	0.0	310.5	184
240 min Summer	17.587	0.0	342.7	244
360 min Summer	13.439	0.0	392.2	312
480 min Summer	11.091	0.0	431.7	378
600 min Summer	9.553	0.0	464.8	444
720 min Summer	8.455	0.0	493.9	512
960 min Summer	6.973	0.0	542.8	652
1440 min Summer	5.304	0.0	619.6	928
2160 min Summer	4.026	0.0	705.6	1344
2880 min Summer	3.307	0.0	773.1	1760
4320 min Summer	2.505	0.0	877.5	2552
5760 min Summer	2.057	0.0	961.3	3336
7200 min Summer	1.767	0.0	1031.4	4112
8640 min Summer	1.561	0.0	1094.7	4752
10080 min Summer	1.407	0.0	1149.9	5344
15 min Winter	91.310	0.0	124.3	22

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Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	201.207	0.904	0.0	6.1	6.1	164.8	O K
60 min Winter	201.462	1.159	0.0	6.8	6.8	211.2	O K
120 min Winter	201.711	1.408	0.0	7.4	7.4	256.5	O K
180 min Winter	201.836	1.533	0.0	7.6	7.6	279.4	O K
240 min Winter	201.907	1.604	0.0	7.8	7.8	292.2	O K
360 min Winter	201.965	1.662	0.0	7.9	7.9	302.8	O K
480 min Winter	201.976	1.673	0.0	7.9	7.9	304.8	O K
600 min Winter	201.977	1.674	0.0	7.9	7.9	305.1	O K
720 min Winter	201.966	1.663	0.0	7.9	7.9	303.1	O K
960 min Winter	201.938	1.635	0.0	7.8	7.8	298.0	O K
1440 min Winter	201.844	1.541	0.0	7.6	7.6	280.8	O K
2160 min Winter	201.667	1.364	0.0	7.3	7.3	248.5	O K
2880 min Winter	201.488	1.185	0.0	6.8	6.8	216.0	O K
4320 min Winter	201.165	0.862	0.0	6.0	6.0	157.0	O K
5760 min Winter	200.833	0.530	0.0	6.0	6.0	96.6	O K
7200 min Winter	200.471	0.168	0.0	6.0	6.0	30.5	O K
8640 min Winter	200.345	0.042	0.0	5.8	5.8	7.6	O K
10080 min Winter	200.303	0.000	0.0	5.4	5.4	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	64.573	0.0	175.9	37
60 min Winter	42.815	0.0	233.4	66
120 min Winter	27.648	0.0	301.6	124
180 min Winter	21.251	0.0	347.8	180
240 min Winter	17.587	0.0	383.2	236
360 min Winter	13.439	0.0	439.5	344
480 min Winter	11.091	0.0	483.6	392
600 min Winter	9.553	0.0	520.8	468
720 min Winter	8.455	0.0	552.9	546
960 min Winter	6.973	0.0	607.9	706
1440 min Winter	5.304	0.0	693.8	1012
2160 min Winter	4.026	0.0	789.9	1452
2880 min Winter	3.307	0.0	865.1	1876
4320 min Winter	2.505	0.0	982.9	2688
5760 min Winter	2.057	0.0	1075.9	3576
7200 min Winter	1.767	0.0	1155.5	4032
8640 min Winter	1.561	0.0	1225.3	4576
10080 min Winter	1.407	0.0	1288.2	0

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	18.300	Shortest Storm (mins)	15
Ratio R	0.233	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+20

Time Area Diagram

Total Area (ha) 0.000

Time (mins) From:	To:	Area (ha)
0	4	0.000

Time Area Diagram

Total Area (ha) 0.649

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.000	4	8	0.649

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Model Details

Storage is Online Cover Level (m) 203.000

Cellular Storage Structure

Invert Level (m) 200.303 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.69
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	264.1	0.0	1.676	0.0	0.0
1.675	264.1	0.0			

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0115-6000-1000-6000
Design Head (m)	1.000
Design Flow (l/s)	6.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	115
Invert Level (m)	200.160
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	6.0
Flush-Flo™	0.298	6.0
Kick-Flo®	0.647	4.9
Mean Flow over Head Range	-	5.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.0	1.200	6.5	3.000	10.0	7.000	15.0
0.200	5.8	1.400	7.0	3.500	10.8	7.500	15.5
0.300	6.0	1.600	7.5	4.000	11.5	8.000	16.0
0.400	5.9	1.800	7.9	4.500	12.2	8.500	16.5
0.500	5.7	2.000	8.3	5.000	12.8	9.000	17.0
0.600	5.3	2.200	8.7	5.500	13.4	9.500	17.4
0.800	5.4	2.400	9.0	6.000	14.0		
1.000	6.0	2.600	9.4	6.500	14.5		

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Cascade Summary of Results for CAT-B.SRCX

Upstream Structures	Outflow To	Overflow To
(None)	CAT-C.SRCX	(None)

Half Drain Time : 1120 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	200.603	0.326	0.0	3.4	3.4	106.3	O K
30 min Summer	200.734	0.457	0.0	3.4	3.4	148.9	O K
60 min Summer	200.873	0.596	0.0	3.4	3.4	194.2	O K
120 min Summer	201.027	0.750	0.0	3.4	3.4	244.2	O K
180 min Summer	201.119	0.842	0.0	3.4	3.4	274.1	O K
240 min Summer	201.182	0.905	0.0	3.4	3.4	294.8	O K
360 min Summer	201.266	0.989	0.0	3.4	3.4	322.1	O K
480 min Summer	201.317	1.040	0.0	3.4	3.4	338.7	O K
600 min Summer	201.349	1.072	0.0	3.4	3.4	349.2	O K
720 min Summer	201.369	1.092	0.0	3.4	3.4	355.6	O K
960 min Summer	201.387	1.110	0.0	3.4	3.4	361.4	O K
1440 min Summer	201.397	1.120	0.0	3.4	3.4	364.7	O K
2160 min Summer	201.390	1.113	0.0	3.4	3.4	362.5	O K
2880 min Summer	201.373	1.096	0.0	3.4	3.4	356.9	O K
4320 min Summer	201.321	1.044	0.0	3.4	3.4	340.0	O K
5760 min Summer	201.258	0.981	0.0	3.4	3.4	319.6	O K
7200 min Summer	201.191	0.914	0.0	3.4	3.4	297.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	91.310	0.0	109.4	23
30 min Summer	64.573	0.0	154.8	38
60 min Summer	42.815	0.0	205.3	68
120 min Summer	27.648	0.0	265.2	128
180 min Summer	21.251	0.0	305.8	186
240 min Summer	17.587	0.0	337.4	246
360 min Summer	13.439	0.0	386.9	366
480 min Summer	11.091	0.0	425.7	486
600 min Summer	9.553	0.0	458.3	604
720 min Summer	8.455	0.0	487.0	724
960 min Summer	6.973	0.0	531.1	896
1440 min Summer	5.304	0.0	524.0	1142
2160 min Summer	4.026	0.0	695.6	1540
2880 min Summer	3.307	0.0	761.9	1964
4320 min Summer	2.505	0.0	865.7	2812
5760 min Summer	2.057	0.0	948.0	3632
7200 min Summer	1.767	0.0	1017.3	4464

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