

H2OK Systems Limited		Page 1
Nanjerrick Court Allet, Truro TR4 9DJ		
Date 19/06/2018 13:57 File Trench 3.srcx	Designed by HShort Checked by	

Micro Drainage

Source Control 2017.1.2

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 1 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max E Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	2.873	0.673	0.1	159.3	0.0	159.4	17.0	0 K
30 min Summer	2.902	0.702	0.1	166.4	0.0	166.4	18.5	Flood Risk
60 min Summer	2.850	0.650	0.1	153.5	0.0	153.5	15.8	0 K
120 min Summer	2.732	0.532	0.0	119.3	0.0	119.4	10.6	0 K
180 min Summer	2.643	0.443	0.0	92.1	0.0	92.2	7.3	0 K
240 min Summer	2.549	0.349	0.0	80.7	0.0	80.7	4.6	0 K
360 min Summer	2.479	0.279	0.0	60.9	0.0	60.9	2.9	0 K
480 min Summer	2.445	0.245	0.0	51.3	0.0	51.3	2.2	0 K
600 min Summer	2.421	0.221	0.0	44.0	0.0	44.0	1.8	0 K
720 min Summer	2.405	0.205	0.0	36.8	0.0	36.8	1.6	0 K
960 min Summer	2.382	0.182	0.0	32.2	0.0	32.2	1.2	0 K
1440 min Summer	2.352	0.152	0.0	23.3	0.0	23.3	0.9	0 K
2160 min Summer	2.326	0.126	0.0	16.0	0.0	16.0	0.6	0 K
2880 min Summer	2.312	0.112	0.0	13.0	0.0	13.0	0.5	0 K
4320 min Summer	2.297	0.097	0.0	9.6	0.0	9.6	0.4	0 K
5760 min Summer	2.290	0.090	0.0	8.3	0.0	8.3	0.4	0 K
7200 min Summer	2.279	0.079	0.0	6.6	0.0	6.6	0.3	0 K
8640 min Summer	2.274	0.074	0.0	5.8	0.0	5.8	0.3	0 K
10080 min Summer	2.272	0.072	0.0	5.3	0.0	5.4	0.3	0 K
15 min Winter	2.934	0.734	0.1	173.9	0.0	173.9	20.2	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Overflow Volume (m ³)	Time-Peak (mins)
15 min Summer	124.633	0.0	123.4	0.0	15
30 min Summer	83.789	0.0	165.9	0.0	22
60 min Summer	53.779	0.0	213.0	0.0	38
120 min Summer	33.337	0.0	264.1	0.0	68
180 min Summer	24.832	0.0	295.0	0.0	100
240 min Summer	20.006	0.0	316.9	0.0	126
360 min Summer	14.706	0.0	349.4	0.0	188
480 min Summer	11.818	0.0	374.4	0.0	252
600 min Summer	9.966	0.0	394.6	0.0	302
720 min Summer	8.665	0.0	411.8	0.0	368
960 min Summer	6.943	0.0	439.9	0.0	474
1440 min Summer	5.071	0.0	482.0	0.0	734
2160 min Summer	3.696	0.0	526.9	0.0	1108
2880 min Summer	2.949	0.0	560.6	0.0	1428
4320 min Summer	2.142	0.0	610.6	0.0	2144
5760 min Summer	1.705	0.0	644.9	0.0	2832
7200 min Summer	1.427	0.0	674.4	0.0	3552
8640 min Summer	1.235	0.0	700.1	0.0	4504
10080 min Summer	1.093	0.0	723.9	0.0	5400
15 min Winter	124.633	0.0	138.2	0.0	15

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	2.938	0.738	0.1	174.9	0.0	174.9	20.5	Flood Risk
60 min Winter	2.818	0.618	0.0	145.1	0.0	145.2	14.3	0 K
120 min Winter	2.675	0.475	0.0	98.7	0.0	98.7	8.5	0 K
180 min Winter	2.527	0.327	0.0	75.6	0.0	75.6	4.0	0 K
240 min Winter	2.483	0.283	0.0	63.2	0.0	63.2	3.0	0 K
360 min Winter	2.437	0.237	0.0	46.5	0.0	46.5	2.1	0 K
480 min Winter	2.404	0.204	0.0	36.8	0.0	36.8	1.6	0 K
600 min Winter	2.390	0.190	0.0	32.2	0.0	32.2	1.3	0 K
720 min Winter	2.374	0.174	0.0	27.7	0.0	27.8	1.2	0 K
960 min Winter	2.352	0.152	0.0	23.1	0.0	23.1	0.9	0 K
1440 min Winter	2.327	0.127	0.0	16.2	0.0	16.2	0.6	0 K
2160 min Winter	2.309	0.109	0.0	12.3	0.0	12.3	0.5	0 K
2880 min Winter	2.297	0.097	0.0	9.6	0.0	9.6	0.4	0 K
4320 min Winter	2.283	0.083	0.0	6.8	0.0	6.8	0.3	0 K
5760 min Winter	2.277	0.077	0.0	5.8	0.0	5.8	0.3	0 K
7200 min Winter	2.272	0.072	0.0	5.3	0.0	5.4	0.3	0 K
8640 min Winter	2.266	0.066	0.0	4.6	0.0	4.6	0.2	0 K
10080 min Winter	2.266	0.066	0.0	4.2	0.0	4.2	0.3	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)
30 min Winter	83.789	0.0	185.8	0.0	23
60 min Winter	53.779	0.0	238.5	0.0	38
120 min Winter	33.337	0.0	295.7	0.0	68
180 min Winter	24.832	0.0	330.4	0.0	100
240 min Winter	20.006	0.0	354.9	0.0	124
360 min Winter	14.706	0.0	391.4	0.0	184
480 min Winter	11.818	0.0	419.3	0.0	234
600 min Winter	9.966	0.0	442.0	0.0	302
720 min Winter	8.665	0.0	461.2	0.0	362
960 min Winter	6.943	0.0	492.7	0.0	514
1440 min Winter	5.071	0.0	539.8	0.0	672
2160 min Winter	3.696	0.0	590.2	0.0	1172
2880 min Winter	2.949	0.0	627.9	0.0	1472
4320 min Winter	2.142	0.0	683.9	0.0	2040
5760 min Winter	1.705	0.0	722.2	0.0	2592
7200 min Winter	1.427	0.0	756.0	0.0	3096
8640 min Winter	1.235	0.0	784.4	0.0	4384
10080 min Winter	1.093	0.0	809.2	0.0	5656

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.528

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.200	4 8	0.200	8 12	0.128

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<u>Model Details</u> Storage is Online Cover Level (m) 3.000 <u>Infiltration Trench Structure</u> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00100</td> <td>Trench Width (m)</td> <td>0.5</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>0.00100</td> <td>Trench Length (m)</td> <td>645.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Slope (1:X)</td> <td>500.0</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Cap Volume Depth (m)</td> <td>0.000</td> </tr> <tr> <td>Invert Level (m)</td> <td>2.200</td> <td>Cap Infiltration Depth (m)</td> <td>0.000</td> </tr> </table> <u>Pipe Outflow Control</u> <table> <tr> <td>Diameter (m)</td> <td>0.450</td> <td>Entry Loss Coefficient</td> <td>0.500</td> </tr> <tr> <td>Slope (1:X)</td> <td>1000.0</td> <td>Coefficient of Contraction</td> <td>0.600</td> </tr> <tr> <td>Length (m)</td> <td>100.000</td> <td>Upstream Invert Level (m)</td> <td>2.200</td> </tr> <tr> <td>Roughness k (mm)</td> <td>0.600</td> <td></td> <td></td> </tr> </table> <u>Weir Overflow Control</u> Discharge Coef 0.544 Width (m) 10.000 Invert Level (m) 3.000			Infiltration Coefficient Base (m/hr)	0.00100	Trench Width (m)	0.5	Infiltration Coefficient Side (m/hr)	0.00100	Trench Length (m)	645.0	Safety Factor	2.0	Slope (1:X)	500.0	Porosity	0.30	Cap Volume Depth (m)	0.000	Invert Level (m)	2.200	Cap Infiltration Depth (m)	0.000	Diameter (m)	0.450	Entry Loss Coefficient	0.500	Slope (1:X)	1000.0	Coefficient of Contraction	0.600	Length (m)	100.000	Upstream Invert Level (m)	2.200	Roughness k (mm)	0.600		
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Event: 30 min Winter

