

Nola Design Ltd					Page 1																																																																																																																																																																																																																																																				
8 Hasted Drive Alresford Hants SO24 9PX			Thorney down Fram Touring Site																																																																																																																																																																																																																																																						
Date 090822 File TOURING - 100YR...		Designed By RC Checked By																																																																																																																																																																																																																																																							
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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 728 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>52.175</td><td>0.175</td><td>0.0</td><td>2.0</td><td>2.0</td><td>59.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>52.234</td><td>0.234</td><td>0.0</td><td>2.0</td><td>2.0</td><td>79.9</td><td>O K</td></tr><tr><td>60 min Summer</td><td>52.295</td><td>0.295</td><td>0.0</td><td>2.0</td><td>2.0</td><td>100.8</td><td>O K</td></tr><tr><td>120 min Summer</td><td>52.353</td><td>0.353</td><td>0.0</td><td>2.0</td><td>2.0</td><td>120.8</td><td>O K</td></tr><tr><td>180 min Summer</td><td>52.382</td><td>0.382</td><td>0.0</td><td>2.0</td><td>2.0</td><td>130.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>52.397</td><td>0.397</td><td>0.0</td><td>2.0</td><td>2.0</td><td>135.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>52.414</td><td>0.414</td><td>0.0</td><td>2.0</td><td>2.0</td><td>141.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>52.420</td><td>0.420</td><td>0.0</td><td>2.0</td><td>2.0</td><td>143.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>52.420</td><td>0.420</td><td>0.0</td><td>2.0</td><td>2.0</td><td>143.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>52.419</td><td>0.419</td><td>0.0</td><td>2.0</td><td>2.0</td><td>143.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>52.414</td><td>0.414</td><td>0.0</td><td>2.0</td><td>2.0</td><td>141.7</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>52.399</td><td>0.399</td><td>0.0</td><td>2.0</td><td>2.0</td><td>136.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>52.371</td><td>0.371</td><td>0.0</td><td>2.0</td><td>2.0</td><td>126.8</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>52.341</td><td>0.341</td><td>0.0</td><td>2.0</td><td>2.0</td><td>116.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>52.284</td><td>0.284</td><td>0.0</td><td>2.0</td><td>2.0</td><td>97.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>52.228</td><td>0.228</td><td>0.0</td><td>2.0</td><td>2.0</td><td>78.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>52.172</td><td>0.172</td><td>0.0</td><td>2.0</td><td>2.0</td><td>58.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>52.136</td><td>0.136</td><td>0.0</td><td>2.0</td><td>2.0</td><td>46.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>52.118</td><td>0.118</td><td>0.0</td><td>1.9</td><td>1.9</td><td>40.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>52.196</td><td>0.196</td><td>0.0</td><td>2.0</td><td>2.0</td><td>67.2</td><td>O K</td></tr><tr><td>30 min Winter</td><td>52.262</td><td>0.262</td><td>0.0</td><td>2.0</td><td>2.0</td><td>89.7</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>131.851</td><td>19</td></tr><tr><td>30 min Summer</td><td>88.566</td><td>34</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.004</td><td>122</td></tr><tr><td>180 min Summer</td><td>25.973</td><td>182</td></tr><tr><td>240 min Summer</td><td>20.877</td><td>242</td></tr><tr><td>360 min Summer</td><td>15.365</td><td>360</td></tr><tr><td>480 min Summer</td><td>12.341</td><td>480</td></tr><tr><td>600 min Summer</td><td>10.402</td><td>536</td></tr><tr><td>720 min Summer</td><td>9.042</td><td>596</td></tr><tr><td>960 min Summer</td><td>7.241</td><td>722</td></tr><tr><td>1440 min Summer</td><td>5.284</td><td>992</td></tr><tr><td>2160 min Summer</td><td>3.848</td><td>1404</td></tr><tr><td>2880 min Summer</td><td>3.068</td><td>1816</td></tr><tr><td>4320 min Summer</td><td>2.226</td><td>2636</td></tr><tr><td>5760 min Summer</td><td>1.771</td><td>3400</td></tr><tr><td>7200 min Summer</td><td>1.483</td><td>4040</td></tr><tr><td>8640 min Summer</td><td>1.284</td><td>4592</td></tr><tr><td>10080 min Summer</td><td>1.137</td><td>5248</td></tr><tr><td>15 min Winter</td><td>131.851</td><td>19</td></tr><tr><td>30 min Winter</td><td>88.566</td><td>33</td></tr></table>								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	52.175	0.175	0.0	2.0	2.0	59.9	O K	30 min Summer	52.234	0.234	0.0	2.0	2.0	79.9	O K	60 min Summer	52.295	0.295	0.0	2.0	2.0	100.8	O K	120 min Summer	52.353	0.353	0.0	2.0	2.0	120.8	O K	180 min Summer	52.382	0.382	0.0	2.0	2.0	130.6	O K	240 min Summer	52.397	0.397	0.0	2.0	2.0	135.9	O K	360 min Summer	52.414	0.414	0.0	2.0	2.0	141.7	O K	480 min Summer	52.420	0.420	0.0	2.0	2.0	143.5	O K	600 min Summer	52.420	0.420	0.0	2.0	2.0	143.5	O K	720 min Summer	52.419	0.419	0.0	2.0	2.0	143.2	O K	960 min Summer	52.414	0.414	0.0	2.0	2.0	141.7	O K	1440 min Summer	52.399	0.399	0.0	2.0	2.0	136.5	O K	2160 min Summer	52.371	0.371	0.0	2.0	2.0	126.8	O K	2880 min Summer	52.341	0.341	0.0	2.0	2.0	116.7	O K	4320 min Summer	52.284	0.284	0.0	2.0	2.0	97.2	O K	5760 min Summer	52.228	0.228	0.0	2.0	2.0	78.0	O K	7200 min Summer	52.172	0.172	0.0	2.0	2.0	58.8	O K	8640 min Summer	52.136	0.136	0.0	2.0	2.0	46.5	O K	10080 min Summer	52.118	0.118	0.0	1.9	1.9	40.2	O K	15 min Winter	52.196	0.196	0.0	2.0	2.0	67.2	O K	30 min Winter	52.262	0.262	0.0	2.0	2.0	89.7	O K	Storm Event	Rain (mm/hr)	Time-Peak (mins)	15 min Summer	131.851	19	30 min Summer	88.566	34	60 min Summer	56.713	64	120 min Summer	35.004	122	180 min Summer	25.973	182	240 min Summer	20.877	242	360 min Summer	15.365	360	480 min Summer	12.341	480	600 min Summer	10.402	536	720 min Summer	9.042	596	960 min Summer	7.241	722	1440 min Summer	5.284	992	2160 min Summer	3.848	1404	2880 min Summer	3.068	1816	4320 min Summer	2.226	2636	5760 min Summer	1.771	3400	7200 min Summer	1.483	4040	8640 min Summer	1.284	4592	10080 min Summer	1.137	5248	15 min Winter	131.851	19	30 min Winter	88.566	33
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60 min Summer	52.295	0.295	0.0	2.0	2.0	100.8	O K																																																																																																																																																																																																																																																		
120 min Summer	52.353	0.353	0.0	2.0	2.0	120.8	O K																																																																																																																																																																																																																																																		
180 min Summer	52.382	0.382	0.0	2.0	2.0	130.6	O K																																																																																																																																																																																																																																																		
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480 min Summer	52.420	0.420	0.0	2.0	2.0	143.5	O K																																																																																																																																																																																																																																																		
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960 min Summer	52.414	0.414	0.0	2.0	2.0	141.7	O K																																																																																																																																																																																																																																																		
1440 min Summer	52.399	0.399	0.0	2.0	2.0	136.5	O K																																																																																																																																																																																																																																																		
2160 min Summer	52.371	0.371	0.0	2.0	2.0	126.8	O K																																																																																																																																																																																																																																																		
2880 min Summer	52.341	0.341	0.0	2.0	2.0	116.7	O K																																																																																																																																																																																																																																																		
4320 min Summer	52.284	0.284	0.0	2.0	2.0	97.2	O K																																																																																																																																																																																																																																																		
5760 min Summer	52.228	0.228	0.0	2.0	2.0	78.0	O K																																																																																																																																																																																																																																																		
7200 min Summer	52.172	0.172	0.0	2.0	2.0	58.8	O K																																																																																																																																																																																																																																																		
8640 min Summer	52.136	0.136	0.0	2.0	2.0	46.5	O K																																																																																																																																																																																																																																																		
10080 min Summer	52.118	0.118	0.0	1.9	1.9	40.2	O K																																																																																																																																																																																																																																																		
15 min Winter	52.196	0.196	0.0	2.0	2.0	67.2	O K																																																																																																																																																																																																																																																		
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120 min Summer	35.004	122																																																																																																																																																																																																																																																							
180 min Summer	25.973	182																																																																																																																																																																																																																																																							
240 min Summer	20.877	242																																																																																																																																																																																																																																																							
360 min Summer	15.365	360																																																																																																																																																																																																																																																							
480 min Summer	12.341	480																																																																																																																																																																																																																																																							
600 min Summer	10.402	536																																																																																																																																																																																																																																																							
720 min Summer	9.042	596																																																																																																																																																																																																																																																							
960 min Summer	7.241	722																																																																																																																																																																																																																																																							
1440 min Summer	5.284	992																																																																																																																																																																																																																																																							
2160 min Summer	3.848	1404																																																																																																																																																																																																																																																							
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60 min Winter	52.331	0.331	0.0	2.0	2.0	113.2	O K																																																						
120 min Winter	52.397	0.397	0.0	2.0	2.0	135.8	O K																																																						
180 min Winter	52.430	0.430	0.0	2.0	2.0	147.1	O K																																																						
240 min Winter	52.449	0.449	0.0	2.1	2.1	153.4	O K																																																						
360 min Winter	52.470	0.470	0.0	2.1	2.1	160.8	O K																																																						
480 min Winter	52.479	0.479	0.0	2.1	2.1	163.7	O K																																																						
600 min Winter	52.480	0.480	0.0	2.1	2.1	164.2	O K																																																						
720 min Winter	52.478	0.478	0.0	2.1	2.1	163.3	O K																																																						
960 min Winter	52.470	0.470	0.0	2.1	2.1	160.8	O K																																																						
1440 min Winter	52.449	0.449	0.0	2.1	2.1	153.5	O K																																																						
2160 min Winter	52.407	0.407	0.0	2.0	2.0	139.1	O K																																																						
2880 min Winter	52.363	0.363	0.0	2.0	2.0	124.0	O K																																																						
4320 min Winter	52.276	0.276	0.0	2.0	2.0	94.3	O K																																																						
5760 min Winter	52.175	0.175	0.0	2.0	2.0	59.9	O K																																																						
7200 min Winter	52.121	0.121	0.0	2.0	2.0	41.3	O K																																																						
8640 min Winter	52.102	0.102	0.0	1.8	1.8	34.9	O K																																																						
10080 min Winter	52.092	0.092	0.0	1.6	1.6	31.3	O K																																																						
<table><tr><td>Storm Event</td><td>Rain (mm/hr)</td><td>Time-Peak (mins)</td></tr><tr><td>60 min Winter</td><td>56.713</td><td>62</td></tr><tr><td>120 min Winter</td><td>35.004</td><td>120</td></tr><tr><td>180 min Winter</td><td>25.973</td><td>180</td></tr><tr><td>240 min Winter</td><td>20.877</td><td>238</td></tr><tr><td>360 min Winter</td><td>15.365</td><td>352</td></tr><tr><td>480 min Winter</td><td>12.341</td><td>462</td></tr><tr><td>600 min Winter</td><td>10.402</td><td>570</td></tr><tr><td>720 min Winter</td><td>9.042</td><td>670</td></tr><tr><td>960 min Winter</td><td>7.241</td><td>758</td></tr><tr><td>1440 min Winter</td><td>5.284</td><td>1066</td></tr><tr><td>2160 min Winter</td><td>3.848</td><td>1516</td></tr><tr><td>2880 min Winter</td><td>3.068</td><td>1960</td></tr><tr><td>4320 min Winter</td><td>2.226</td><td>2812</td></tr><tr><td>5760 min Winter</td><td>1.771</td><td>3512</td></tr><tr><td>7200 min Winter</td><td>1.483</td><td>3960</td></tr><tr><td>8640 min Winter</td><td>1.284</td><td>4584</td></tr><tr><td>10080 min Winter</td><td>1.137</td><td>5248</td></tr></table>								Storm Event	Rain (mm/hr)	Time-Peak (mins)	60 min Winter	56.713	62	120 min Winter	35.004	120	180 min Winter	25.973	180	240 min Winter	20.877	238	360 min Winter	15.365	352	480 min Winter	12.341	462	600 min Winter	10.402	570	720 min Winter	9.042	670	960 min Winter	7.241	758	1440 min Winter	5.284	1066	2160 min Winter	3.848	1516	2880 min Winter	3.068	1960	4320 min Winter	2.226	2812	5760 min Winter	1.771	3512	7200 min Winter	1.483	3960	8640 min Winter	1.284	4584	10080 min Winter	1.137	5248
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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)	20.000	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time / Area Diagram

Total Area (ha) 0.247

Time (mins)	Area (ha)
0-4	0.247

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Model Details

Storage is Online Cover Level (m) 52.500

Cellular Storage Structure

Invert Level (m) 52.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	360.0	360.0	1.300	360.0	393.6
0.100	360.0	393.6	1.400	360.0	393.6
0.200	360.0	393.6	1.500	360.0	393.6
0.300	360.0	393.6	1.600	360.0	393.6
0.400	360.0	393.6	1.700	360.0	393.6
0.500	360.0	393.6	1.800	360.0	393.6
0.600	360.0	393.6	1.900	360.0	393.6
0.700	360.0	393.6	2.000	360.0	393.6
0.800	360.0	393.6	2.100	360.0	393.6
0.900	360.0	393.6	2.200	360.0	393.6
1.000	360.0	393.6	2.300	360.0	393.6
1.100	360.0	393.6	2.400	360.0	393.6
1.200	360.0	393.6	2.500	360.0	393.6

Hydro-Brake® Outflow Control

Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 52.000
Design Flow (l/s) 3.0 Diameter (mm) 63

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.8	1.200	3.4	3.000	5.4	7.000	8.2
0.200	1.7	1.400	3.7	3.500	5.8	7.500	8.5
0.300	1.7	1.600	3.9	4.000	6.2	8.000	8.7
0.400	2.0	1.800	4.1	4.500	6.6	8.500	9.0
0.500	2.2	2.000	4.4	5.000	6.9	9.000	9.3
0.600	2.4	2.200	4.6	5.500	7.3	9.500	9.5
0.800	2.8	2.400	4.8	6.000	7.6		
1.000	3.1	2.600	5.0	6.500	7.9		