

ABA Consulting					Page 1	
Unit A, Racecourse Business ... Dovefields, Uttoxeter Staffordshire, ST14 8GB			Bell Lane SW attenuation check Model 01			
Date 03/10/2023 16:45 File 16576 ABA attenuation c...			Designed by BD Checked by			
Innovyze			Source Control 2020.1			
Summary of Results for 100 year Return Period (+40%)						
	Storm Event		Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³) Status
	15 min Summer		97.623	0.623	29.8	84.1 O K
	30 min Summer		97.813	0.813	29.8	109.8 O K
	60 min Summer		97.923	0.923	29.8	124.7 O K
	120 min Summer		97.920	0.920	29.8	124.3 O K
	180 min Summer		97.847	0.847	29.8	114.4 O K
	240 min Summer		97.748	0.748	29.8	101.0 O K
	360 min Summer		97.578	0.578	29.8	78.0 O K
	480 min Summer		97.443	0.443	29.8	59.8 O K
	600 min Summer		97.346	0.346	29.7	46.7 O K
	720 min Summer		97.281	0.281	29.2	38.0 O K
	960 min Summer		97.222	0.222	26.5	30.0 O K
	1440 min Summer		97.178	0.178	20.2	24.1 O K
	2160 min Summer		97.147	0.147	15.0	19.8 O K
	2880 min Summer		97.129	0.129	12.1	17.4 O K
	4320 min Summer		97.108	0.108	8.9	14.5 O K
	5760 min Summer		97.095	0.095	7.1	12.8 O K
	7200 min Summer		97.086	0.086	5.9	11.7 O K
	8640 min Summer		97.080	0.080	5.2	10.8 O K
	10080 min Summer		97.075	0.075	4.6	10.1 O K
	15 min Winter		97.713	0.713	29.8	96.3 O K
	30 min Winter		97.935	0.935	29.8	126.3 O K
	Storm Event		Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
	15 min Summer		121.962	0.0	109.5	22
	30 min Summer		82.861	0.0	148.9	33
	60 min Summer		53.779	0.0	193.5	54
	120 min Summer		33.683	0.0	242.4	88
	180 min Summer		25.213	0.0	272.2	122
	240 min Summer		20.366	0.0	293.2	154
	360 min Summer		15.066	0.0	325.3	216
	480 min Summer		12.151	0.0	349.8	274
	600 min Summer		10.275	0.0	369.8	330
	720 min Summer		8.954	0.0	386.6	384
	960 min Summer		7.198	0.0	414.5	498
	1440 min Summer		5.281	0.0	456.1	738
	2160 min Summer		3.866	0.0	500.9	1104
	2880 min Summer		3.093	0.0	534.4	1468
	4320 min Summer		2.255	0.0	584.2	2188
	5760 min Summer		1.799	0.0	621.7	2912
	7200 min Summer		1.512	0.0	653.3	3672
	8640 min Summer		1.312	0.0	680.3	4392
	10080 min Summer		1.164	0.0	703.9	5080
	15 min Winter		121.962	0.0	122.7	22
	30 min Winter		82.861	0.0	166.8	34
©1982-2020 Innovyze						

ABA Consulting					Page 2
Unit A, Racecourse Business ... Dovefields, Uttoxeter Staffordshire, ST14 8GB		Bell Lane SW attenuation check Model 01			
Date 03/10/2023 16:45 File 16576 ABA attenuation c...		Designed by BD Checked by			
Innovyze		Source Control 2020.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	99.801	2.801	45.1	137.4	FLOOD
120 min Winter	99.076	2.076	39.0	136.1	O K
180 min Winter	97.916	0.916	29.8	123.6	O K
240 min Winter	97.754	0.754	29.8	101.8	O K
360 min Winter	97.488	0.488	29.8	65.9	O K
480 min Winter	97.316	0.316	29.5	42.7	O K
600 min Winter	97.235	0.235	28.1	31.7	O K
720 min Winter	97.209	0.209	24.8	28.2	O K
960 min Winter	97.178	0.178	20.2	24.0	O K
1440 min Winter	97.146	0.146	14.9	19.7	O K
2160 min Winter	97.122	0.122	11.0	16.4	O K
2880 min Winter	97.107	0.107	8.8	14.4	O K
4320 min Winter	97.090	0.090	6.4	12.2	O K
5760 min Winter	97.080	0.080	5.1	10.7	O K
7200 min Winter	97.073	0.073	4.3	9.8	O K
8640 min Winter	97.067	0.067	3.7	9.1	O K
10080 min Winter	97.063	0.063	3.3	8.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	53.779	2.3	216.7	50	
120 min Winter	33.683	0.0	271.5	88	
180 min Winter	25.213	0.0	304.9	132	
240 min Winter	20.366	0.0	328.4	166	
360 min Winter	15.066	0.0	364.4	224	
480 min Winter	12.151	0.0	391.8	276	
600 min Winter	10.275	0.0	414.1	320	
720 min Winter	8.954	0.0	433.1	380	
960 min Winter	7.198	0.0	464.2	498	
1440 min Winter	5.281	0.0	510.8	736	
2160 min Winter	3.866	0.0	561.0	1100	
2880 min Winter	3.093	0.0	598.6	1468	
4320 min Winter	2.255	0.0	654.4	2204	
5760 min Winter	1.799	0.0	696.3	2920	
7200 min Winter	1.512	0.0	731.7	3584	
8640 min Winter	1.312	0.0	761.9	4296	
10080 min Winter	1.164	0.0	788.4	5024	
©1982-2020 Innovyze					

ABA Consulting		Page 3																																																																																																			
Unit A, Racecourse Business ... Dovefields, Uttoexter Staffordshire, ST14 8GB	Bell Lane SW attenuation check Model 01																																																																																																				
Date 03/10/2023 16:45 File 16576 ABA attenuation c...	Designed by BD Checked by																																																																																																				
Innovyze																																																																																																					
Source Control 2020.1																																																																																																					
Model Details Storage is Online Cover Level (m) 99.800 Tank or Pond Structure Invert Level (m) 97.000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>135.0</td><td>1.000</td><td>135.0</td><td>1.001</td><td>0.0</td></tr></tbody></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0234-3000-1200-3000 Design Head (m) 1.200 Design Flow (l/s) 30.0 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 234 Invert Level (m) 97.000 Minimum Outlet Pipe Diameter (mm) 300 Suggested Manhole Diameter (mm) 1800 Control Points <table><thead><tr><th></th><th>Head (m)</th><th>Flow (l/s)</th></tr></thead><tbody><tr><td>Design Point (Calculated)</td><td>1.200</td><td>30.0</td></tr><tr><td>Flush-Flo™</td><td>0.406</td><td>29.8</td></tr><tr><td>Kick-Flo®</td><td>0.855</td><td>25.5</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>25.2</td></tr></tbody></table> 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 <table><thead><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr></thead><tbody><tr><td>0.100</td><td>7.8</td><td>1.200</td><td>30.0</td><td>3.000</td><td>46.6</td><td>7.000</td><td>70.3</td></tr><tr><td>0.200</td><td>23.6</td><td>1.400</td><td>32.3</td><td>3.500</td><td>50.2</td><td>7.500</td><td>72.7</td></tr><tr><td>0.300</td><td>29.4</td><td>1.600</td><td>34.4</td><td>4.000</td><td>53.5</td><td>8.000</td><td>75.0</td></tr><tr><td>0.400</td><td>29.8</td><td>1.800</td><td>36.4</td><td>4.500</td><td>56.7</td><td>8.500</td><td>77.2</td></tr><tr><td>0.500</td><td>29.6</td><td>2.000</td><td>38.3</td><td>5.000</td><td>59.7</td><td>9.000</td><td>79.4</td></tr><tr><td>0.600</td><td>29.1</td><td>2.200</td><td>40.1</td><td>5.500</td><td>62.5</td><td>9.500</td><td>81.5</td></tr><tr><td>0.800</td><td>26.9</td><td>2.400</td><td>41.8</td><td>6.000</td><td>65.2</td><td></td><td></td></tr><tr><td>1.000</td><td>27.5</td><td>2.600</td><td>43.5</td><td>6.500</td><td>67.8</td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	135.0	1.000	135.0	1.001	0.0		Head (m)	Flow (l/s)	Design Point (Calculated)	1.200	30.0	Flush-Flo™	0.406	29.8	Kick-Flo®	0.855	25.5	Mean Flow over Head Range	-	25.2	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	7.8	1.200	30.0	3.000	46.6	7.000	70.3	0.200	23.6	1.400	32.3	3.500	50.2	7.500	72.7	0.300	29.4	1.600	34.4	4.000	53.5	8.000	75.0	0.400	29.8	1.800	36.4	4.500	56.7	8.500	77.2	0.500	29.6	2.000	38.3	5.000	59.7	9.000	79.4	0.600	29.1	2.200	40.1	5.500	62.5	9.500	81.5	0.800	26.9	2.400	41.8	6.000	65.2			1.000	27.5	2.600	43.5	6.500	67.8		
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)																																																																																																
0.000	135.0	1.000	135.0	1.001	0.0																																																																																																
	Head (m)	Flow (l/s)																																																																																																			
Design Point (Calculated)	1.200	30.0																																																																																																			
Flush-Flo™	0.406	29.8																																																																																																			
Kick-Flo®	0.855	25.5																																																																																																			
Mean Flow over Head Range	-	25.2																																																																																																			
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																																														
0.100	7.8	1.200	30.0	3.000	46.6	7.000	70.3																																																																																														
0.200	23.6	1.400	32.3	3.500	50.2	7.500	72.7																																																																																														
0.300	29.4	1.600	34.4	4.000	53.5	8.000	75.0																																																																																														
0.400	29.8	1.800	36.4	4.500	56.7	8.500	77.2																																																																																														
0.500	29.6	2.000	38.3	5.000	59.7	9.000	79.4																																																																																														
0.600	29.1	2.200	40.1	5.500	62.5	9.500	81.5																																																																																														
0.800	26.9	2.400	41.8	6.000	65.2																																																																																																
1.000	27.5	2.600	43.5	6.500	67.8																																																																																																
©1982-2020 Innovyze																																																																																																					