

Hydrock Consultants Ltd						Page 2																																																																																																																																																																																																																						
239 Ashley Road Hale Cheshire WA15 9NE			Bericote Properties L... Oldlands Farm Bognor Regis																																																																																																																																																																																																																									
Date 20th June 2014 File WARE1.MDX			Designed by JH Checked by																																																																																																																																																																																																																									
Micro Drainage			Network 2013.1.1																																																																																																																																																																																																																									
Network Design Table for Storm <table><tr><th>PN</th><th>Length (m)</th><th>Fall (m)</th><th>Slope (1:X)</th><th>I.Area (ha)</th><th>T.E. (mins)</th><th>Base Flow (l/s)</th><th>k (mm)</th><th>HYD SECT</th><th>DIA (mm)</th></tr><tr><td>2.000</td><td>63.000</td><td>0.335</td><td>188.1</td><td>1.280</td><td>4.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>1.001</td><td>31.500</td><td>0.080</td><td>393.8</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>3.000</td><td>16.000</td><td>0.050</td><td>320.0</td><td>0.613</td><td>4.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>3.001</td><td>64.000</td><td>0.183</td><td>349.7</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>3.002</td><td>60.000</td><td>0.230</td><td>260.9</td><td>1.280</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>3.003</td><td>31.000</td><td>0.487</td><td>63.7</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>600</td></tr><tr><td>4.000</td><td>100.000</td><td>1.000</td><td>100.0</td><td>2.230</td><td>4.00</td><td>0.0</td><td>0.600</td><td>o</td><td>900</td></tr><tr><td>1.002</td><td>10.000</td><td>0.100</td><td>100.0</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>900</td></tr><tr><td>5.000</td><td>24.000</td><td>0.143</td><td>167.8</td><td>0.023</td><td>4.00</td><td>0.0</td><td>0.600</td><td>o</td><td>150</td></tr></table> Network Results Table <table><tr><th>PN</th><th>Rain (mm/hr)</th><th>T.C. (mins)</th><th>US/IL (m)</th><th>Σ I.Area (ha)</th><th>Σ Base Flow (l/s)</th><th>Foul (l/s)</th><th>Add Flow (l/s)</th><th>Vel (m/s)</th><th>Cap (l/s)</th><th>Flow (l/s)</th></tr><tr><td>2.000</td><td>50.00</td><td>4.59</td><td>1.650</td><td>1.280</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.77</td><td>501.1</td><td>173.3</td></tr><tr><td>1.001</td><td>50.00</td><td>5.02</td><td>1.250</td><td>2.321</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.22</td><td>345.2</td><td>314.3</td></tr><tr><td>3.000</td><td>50.00</td><td>4.20</td><td>2.000</td><td>0.613</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.36</td><td>383.4</td><td>83.0</td></tr><tr><td>3.001</td><td>50.00</td><td>5.02</td><td>1.650</td><td>0.613</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.30</td><td>366.5</td><td>83.0</td></tr><tr><td>3.002</td><td>50.00</td><td>5.68</td><td>1.467</td><td>1.893</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.50</td><td>425.0</td><td>256.3</td></tr><tr><td>3.003</td><td>50.00</td><td>5.85</td><td>1.237</td><td>1.893</td><td>0.0</td><td>0.0</td><td>0.0</td><td>3.06</td><td>864.0</td><td>256.3</td></tr><tr><td>4.000</td><td>50.00</td><td>4.53</td><td>1.450</td><td>2.230</td><td>0.0</td><td>0.0</td><td>0.0</td><td>3.13</td><td>1993.5</td><td>302.0</td></tr><tr><td>1.002</td><td>50.00</td><td>5.91</td><td>0.450</td><td>6.444</td><td>0.0</td><td>0.0</td><td>0.0</td><td>3.13</td><td>1993.5</td><td>872.6</td></tr><tr><td>5.000</td><td>50.00</td><td>4.52</td><td>0.000</td><td>0.023</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.77</td><td>13.7</td><td>3.1</td></tr></table>											PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	2.000	63.000	0.335	188.1	1.280	4.00	0.0	0.600	o	600	1.001	31.500	0.080	393.8	0.000	0.00	0.0	0.600	o	600	3.000	16.000	0.050	320.0	0.613	4.00	0.0	0.600	o	600	3.001	64.000	0.183	349.7	0.000	0.00	0.0	0.600	o	600	3.002	60.000	0.230	260.9	1.280	0.00	0.0	0.600	o	600	3.003	31.000	0.487	63.7	0.000	0.00	0.0	0.600	o	600	4.000	100.000	1.000	100.0	2.230	4.00	0.0	0.600	o	900	1.002	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	900	5.000	24.000	0.143	167.8	0.023	4.00	0.0	0.600	o	150	PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	2.000	50.00	4.59	1.650	1.280	0.0	0.0	0.0	1.77	501.1	173.3	1.001	50.00	5.02	1.250	2.321	0.0	0.0	0.0	1.22	345.2	314.3	3.000	50.00	4.20	2.000	0.613	0.0	0.0	0.0	1.36	383.4	83.0	3.001	50.00	5.02	1.650	0.613	0.0	0.0	0.0	1.30	366.5	83.0	3.002	50.00	5.68	1.467	1.893	0.0	0.0	0.0	1.50	425.0	256.3	3.003	50.00	5.85	1.237	1.893	0.0	0.0	0.0	3.06	864.0	256.3	4.000	50.00	4.53	1.450	2.230	0.0	0.0	0.0	3.13	1993.5	302.0	1.002	50.00	5.91	0.450	6.444	0.0	0.0	0.0	3.13	1993.5	872.6	5.000	50.00	4.52	0.000	0.023	0.0	0.0	0.0	0.77	13.7	3.1
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Micro Drainage				Network 2013.1.1						
Manhole Schedules for Storm										
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN	Invert Level (m)	Diameter (mm)	Pipes In PN	Invert Level (m)	Diameter (mm)
1	2.625	0.800	Open Manhole	1350	1.000	1.825	450			
2	2.850	1.200	Open Manhole	1500	2.000	1.650	600			
3	2.210	0.960	Open Manhole	1500	1.001	1.250	600	1.000	1.250	450
								2.000	1.315	600
4	2.800	0.800	Open Manhole	1500	3.000	2.000	600			
5	2.850	1.200	Open Manhole	1500	3.001	1.650	600	3.000	1.950	600
6	2.900	1.433	Open Manhole	1500	3.002	1.467	600	3.001	1.467	600
7	2.900	1.663	Open Manhole	1500	3.003	1.237	600	3.002	1.237	600
9	3.200	1.750	Open Manhole	1800	4.000	1.450	900			
10	2.400	1.950	Open Manhole	1800	1.002	0.450	900	1.001	1.170	600
								3.003	0.750	600
								4.000	0.450	900
	2.400	2.050	Open Manhole	0		OUTFALL		1.002	0.350	900
10	2.071	2.071	Open Manhole	1200	5.000	0.000	150			
	2.524	2.667	Open Manhole	0		OUTFALL		5.000	-0.143	150
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PIPELINE SCHEDULES for Storm								
Upstream Manhole								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	450	1	2.625	1.825	0.800	Open Manhole	1350
2.000	o	600	2	2.850	1.650	0.600	Open Manhole	1500
1.001	o	600	3	2.210	1.250	0.960	Open Manhole	1500
3.000	o	600	4	2.800	2.000	0.800	Open Manhole	1500
3.001	o	600	5	2.850	1.650	0.600	Open Manhole	1500
3.002	o	600	6	2.900	1.467	0.833	Open Manhole	1500
3.003	o	600	7	2.900	1.237	1.063	Open Manhole	1500
4.000	o	900	9	2.200	1.450	0.850	Open Manhole	1800
1.002	o	900	10	2.400	0.450	1.050	Open Manhole	1800
5.000	o	150	10	2.071	0.000	1.921	Open Manhole	1200
Downstream Manhole								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	28.100	48.9	3	2.210	1.250	0.960	Open Manhole	1500
2.000	63.000	188.1	3	2.210	1.315	0.295	Open Manhole	1500
1.001	31.500	393.8	10	2.400	1.170	0.630	Open Manhole	1800
3.000	16.000	320.0	5	2.850	1.950	0.300	Open Manhole	1500
3.001	64.000	349.7	6	2.900	1.467	0.833	Open Manhole	1500
3.002	60.000	260.9	7	2.900	1.237	1.063	Open Manhole	1500
3.003	31.000	63.7	10	2.400	0.750	1.050	Open Manhole	1800
4.000	100.000	100.0	10	2.400	0.450	1.050	Open Manhole	1800
1.002	10.000	100.0		2.400	0.350	1.150	Open Manhole	0
5.000	24.000	167.8		2.524	-0.143	2.517	Open Manhole	0
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	1.041	1.041	1.041
2.000	-	-	100	1.280	1.280	1.280
1.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.613	0.613	0.613
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	1.280	1.280	1.280
3.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	2.230	2.230	2.230
1.002	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.023	0.023	0.023
				Total	Total	Total
				6.467	6.467	6.467

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.002		2.400	0.350	0.200	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
5.000		2.524	-0.143	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.348
Return Period (years)	30	Profile Type	Summer
Region England and Wales	Cv (Summer)		0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

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Synthetic Rainfall Details Storm Duration (mins) 30		
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Online Controls for Storm

Complex Manhole: 10, DS/PN: 1.002, Volume (m³): 84.2

Hydro-Brake®

Design Head (m) 1.200 Hydro-Brake® Type Md9 Invert Level (m) 0.450
 Design Flow (l/s) 30.0 Diameter (mm) 191

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.9	1.200	29.9	3.000	47.3	7.000	72.2
0.200	11.3	1.400	32.3	3.500	51.0	7.500	74.7
0.300	14.9	1.600	34.5	4.000	54.6	8.000	77.2
0.400	17.3	1.800	36.6	4.500	57.9	8.500	79.6
0.500	19.3	2.000	38.6	5.000	61.0	9.000	81.9
0.600	21.1	2.200	40.5	5.500	64.0	9.500	84.1
0.800	24.4	2.400	42.3	6.000	66.8		
1.000	27.3	2.600	44.0	6.500	69.6		

Orifice

Diameter (m) 0.214 Discharge Coefficient 0.600 Invert Level (m) 1.250

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<u>Storage Structures for Storm</u> <u>Tank or Pond Manhole: 10, DS/PN: 1.002</u> Invert Level (m) 0.450 <table border="1"> <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> <th>Depth (m)</th> <th>Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>843.4</td> <td>2.800</td> <td>0.0</td> <td>5.600</td> <td>0.0</td> <td>8.400</td> <td>0.0</td> </tr> <tr> <td>0.400</td> <td>940.6</td> <td>3.200</td> <td>0.0</td> <td>6.000</td> <td>0.0</td> <td>8.800</td> <td>0.0</td> </tr> <tr> <td>0.800</td> <td>1038.7</td> <td>3.600</td> <td>0.0</td> <td>6.400</td> <td>0.0</td> <td>9.200</td> <td>0.0</td> </tr> <tr> <td>1.200</td> <td>1220.7</td> <td>4.000</td> <td>0.0</td> <td>6.800</td> <td>0.0</td> <td>9.600</td> <td>0.0</td> </tr> <tr> <td>1.600</td> <td>1321.0</td> <td>4.400</td> <td>0.0</td> <td>7.200</td> <td>0.0</td> <td>10.000</td> <td>0.0</td> </tr> <tr> <td>2.000</td> <td>1421.9</td> <td>4.800</td> <td>0.0</td> <td>7.600</td> <td>0.0</td> <td></td> <td></td> </tr> <tr> <td>2.400</td> <td>1492.7</td> <td>5.200</td> <td>0.0</td> <td>8.000</td> <td>0.0</td> <td></td> <td></td> </tr> </tbody> </table>			Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	0.000	843.4	2.800	0.0	5.600	0.0	8.400	0.0	0.400	940.6	3.200	0.0	6.000	0.0	8.800	0.0	0.800	1038.7	3.600	0.0	6.400	0.0	9.200	0.0	1.200	1220.7	4.000	0.0	6.800	0.0	9.600	0.0	1.600	1321.0	4.400	0.0	7.200	0.0	10.000	0.0	2.000	1421.9	4.800	0.0	7.600	0.0			2.400	1492.7	5.200	0.0	8.000	0.0		
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales Cv (Summer)	0.750		
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
Return Period(s) (years)	1, 30
Climate Change (%)	0, 0

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	30	0%	30/15 Summer				
2.000	15 Winter	30	0%	30/15 Summer				
1.001	15 Winter	30	0%	30/15 Summer				
3.000	15 Winter	30	0%					
3.001	15 Winter	30	0%					
3.002	15 Winter	30	0%	30/15 Summer				
3.003	240 Winter	30	0%	30/120 Winter				
4.000	240 Winter	30	0%					
1.002	240 Winter	30	0%	30/15 Winter				
5.000	15 Winter	30	0%					

PN	US/MH Name	Water		Flooded		Pipe		Status
		Level (m)	Surch'd Depth (m)	Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	
1.000	1	2.466	0.191	0.000	0.72	0.0	283.6	FLOOD RISK
2.000	2	2.385	0.135	0.000	0.82	0.0	368.2	SURCHARGED
1.001	3	2.181	0.311	0.000	2.29	0.0	648.3	FLOOD RISK
3.000	4	2.385	-0.215	0.000	0.73	0.0	199.8	OK
3.001	5	2.240	-0.010	0.000	0.55	0.0	179.7	OK
3.002	6	2.189	0.122	0.000	1.24	0.0	470.9	SURCHARGED
3.003	7	1.919	0.082	0.000	0.16	0.0	113.2	SURCHARGED
4.000	9	1.917	-0.433	0.000	0.08	0.0	141.5	OK

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<u>Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	1	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.200
Ratio R	0.348	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm at outfall (pipe 1.002)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	5.030	4-8	1.414

Total Area Contributing (ha) = 6.444

Total Pipe Volume (m³) = 149.516

Time Area Diagram at outfall (pipe 5.000)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.020	4-8	0.003

Total Area Contributing (ha) = 0.023

Total Pipe Volume (m³) = 0.424

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	28.100	0.575	48.9	1.041	4.00	0.0	0.600	o	450

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	4.16	1.825	1.041	0.0	0.0	0.0	2.91	463.4	141.0

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<u>Manhole Schedules for Storm</u>										
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
1	2.625	0.800	Open Manhole	1350	1.000	1.825	450			
2	2.850	1.200	Open Manhole	1500	2.000	1.650	600			
3	2.210	0.960	Open Manhole	1500	1.001	1.250	600	1.000	1.250	450
								2.000	1.315	600
4	2.800	0.800	Open Manhole	1500	3.000	2.000	600			
5	2.850	1.200	Open Manhole	1500	3.001	1.650	600	3.000	1.950	600
6	2.900	1.433	Open Manhole	1500	3.002	1.467	600	3.001	1.467	600
7	2.900	1.663	Open Manhole	1500	3.003	1.237	600	3.002	1.237	600
9	3.200	1.750	Open Manhole	1800	4.000	1.450	900			
10	2.400	1.950	Open Manhole	1800	1.002	0.450	900	1.001	1.170	600
								3.003	0.750	600
								4.000	0.450	900
	2.400	2.050	Open Manhole	0		OUTFALL		1.002	0.350	900
10	2.071	2.071	Open Manhole	1200	5.000	0.000	150			
	2.524	2.667	Open Manhole	0		OUTFALL		5.000	-0.143	150
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<u>PIPELINE SCHEDULES for Storm</u> <u>Upstream Manhole</u>								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	450	1	2.625	1.825	0.350	Open Manhole	1350
2.000	o	600	2	2.850	1.650	0.600	Open Manhole	1500
1.001	o	600	3	2.210	1.250	0.360	Open Manhole	1500
3.000	o	600	4	2.800	2.000	0.200	Open Manhole	1500
3.001	o	600	5	2.850	1.650	0.600	Open Manhole	1500
3.002	o	600	6	2.900	1.467	0.833	Open Manhole	1500
3.003	o	600	7	2.900	1.237	1.063	Open Manhole	1500
4.000	o	900	9	2.200	1.450	0.850	Open Manhole	1800
1.002	o	900	10	2.400	0.450	1.050	Open Manhole	1800
5.000	o	150	10	2.071	0.000	1.921	Open Manhole	1200
<u>Downstream Manhole</u>								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	28.100	48.9	3	2.210	1.250	0.510	Open Manhole	1500
2.000	63.000	188.1	3	2.210	1.315	0.295	Open Manhole	1500
1.001	31.500	393.8	10	2.400	1.170	0.630	Open Manhole	1800
3.000	16.000	320.0	5	2.850	1.950	0.300	Open Manhole	1500
3.001	64.000	349.7	6	2.900	1.467	0.833	Open Manhole	1500
3.002	60.000	260.9	7	2.900	1.237	1.063	Open Manhole	1500
3.003	31.000	63.7	10	2.400	0.750	1.050	Open Manhole	1800
4.000	100.000	100.0	10	2.400	0.450	1.050	Open Manhole	1800
1.002	10.000	100.0		2.400	0.350	1.150	Open Manhole	0
5.000	24.000	167.8		2.524	-0.143	2.517	Open Manhole	0
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	1.041	1.041	1.041
2.000	-	-	100	1.280	1.280	1.280
1.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.613	0.613	0.613
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	1.280	1.280	1.280
3.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	2.230	2.230	2.230
1.002	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.023	0.023	0.023
				Total	Total	Total
				6.467	6.467	6.467

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.002		2.400	0.350	0.200	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
5.000		2.524	-0.143	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.348
Return Period (years)	100	Profile Type	Summer
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

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Synthetic Rainfall Details Storm Duration (mins) 30		
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Online Controls for Storm

Complex Manhole: 10, DS/PN: 1.002, Volume (m³): 84.2

Hydro-Brake®

Design Head (m) 1.200 Hydro-Brake® Type Md9 Invert Level (m) 0.450
 Design Flow (l/s) 30.0 Diameter (mm) 191

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.9	1.200	29.9	3.000	47.3	7.000	72.2
0.200	11.3	1.400	32.3	3.500	51.0	7.500	74.7
0.300	14.9	1.600	34.5	4.000	54.6	8.000	77.2
0.400	17.3	1.800	36.6	4.500	57.9	8.500	79.6
0.500	19.3	2.000	38.6	5.000	61.0	9.000	81.9
0.600	21.1	2.200	40.5	5.500	64.0	9.500	84.1
0.800	24.4	2.400	42.3	6.000	66.8		
1.000	27.3	2.600	44.0	6.500	69.6		

Orifice

Diameter (m) 0.214 Discharge Coefficient 0.600 Invert Level (m) 1.250

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Storage Structures for Storm

Tank or Pond Manhole: 10, DS/PN: 1.002

Invert Level (m) 0.450

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	843.4	2.800	0.0	5.600	0.0	8.400	0.0
0.400	940.6	3.200	0.0	6.000	0.0	8.800	0.0
0.800	1038.7	3.600	0.0	6.400	0.0	9.200	0.0
1.200	1220.7	4.000	0.0	6.800	0.0	9.600	0.0
1.600	1321.0	4.400	0.0	7.200	0.0	10.000	0.0
2.000	1421.9	4.800	0.0	7.600	0.0		
2.400	1492.7	5.200	0.0	8.000	0.0		

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Summary Wizard of 15 minute 1 year Summer I+0% for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.350
Region England and Wales	Cv (Summer)	0.750	
M5-60 (mm)	19.000 Cv (Winter)	0.840	

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
Return Period(s) (years)	1
Climate Change (%)	0

PN	US/MH Name	Rank	Water		Flooded		Pipe			Status
			Level (m)	Surch'ed Depth (m)	Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)		
1.000	1	2	2.010	-0.265	0.000	0.36	0.0	140.2	OK	
2.000	2	2	1.907	-0.343	0.000	0.36	0.0	163.4	OK	
1.001	3	2	1.745	-0.105	0.000	1.00	0.0	283.5	OK	
3.000	4	2	2.224	-0.376	0.000	0.29	0.0	80.5	OK	
3.001	5	2	1.861	-0.389	0.000	0.23	0.0	76.3	OK	
3.002	6	2	1.762	-0.305	0.000	0.48	0.0	181.9	OK	
3.003	7	2	1.443	-0.394	0.000	0.26	0.0	181.5	OK	
4.000	9	2	1.697	-0.653	0.000	0.17	0.0	299.5	OK	
1.002	10	22	0.811	-0.539	0.000	0.02	0.0	16.4	OK	
5.000	10	2	0.050	-0.100	0.000	0.23	0.0	3.0	OK	

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