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Woodcote Grove Ashley Road Epsom Surrey KT18 5BW		
Date 28/09/2012 11:29 File Network 4.mdx	Designed by mill13494 Checked by	
Micro Drainage		Network W.12.6

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)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.400	Maximum Backdrop Height (m)	3.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	1000
PIMP (%)	100		

Designed with Level Soffits

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	47.023	1.881	25.0	0.044	5.00	0.0	0.600	o	225
1.001	21.815	1.818	12.0	0.015	0.00	0.0	0.600	o	225
1.002	29.435	1.962	15.0	0.093	0.00	0.0	0.600	o	225
2.000	61.816	0.773	80.0	0.317	5.00	0.0	0.600	o	225
1.003	22.212	0.740	30.0	0.021	0.00	0.0	0.600	o	225
1.004	25.737	0.086	300.0	0.000	0.00	0.0	0.600	o	375

Network Results Table

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)
1.000	50.00	5.30	122.530	0.044	0.0	0.0	0.0	2.63	104.5	7.9
1.001	50.00	5.39	120.649	0.059	0.0	0.0	0.0	3.80	151.0	10.7
1.002	50.00	5.54	118.831	0.152	0.0	0.0	0.0	3.40	135.0	27.4
2.000	50.00	5.70	117.375	0.317	0.0	0.0	0.0	1.46	58.2	57.2
1.003	50.00	5.86	116.602	0.490	0.0	0.0	0.0	2.40	95.3	88.5
1.004	50.00	6.27	115.712	0.490	0.0	0.0	0.0	1.04	115.0	88.5

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Manhole Schedules for Storm

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)	Backdrop (mm)
1	123.880	1.350	Open Manhole	1050	1.000	122.530	225				
2	122.280	1.631	Open Manhole	1050	1.001	120.649	225	1.000	120.649	225	
3	120.340	1.509	Open Manhole	1050	1.002	118.831	225	1.001	118.831	225	
4	118.800	1.425	Open Manhole	1050	2.000	117.375	225				
5	118.460	1.858	Open Manhole	1200	1.003	116.602	225	1.002	116.869	225	267
								2.000	116.602	225	
6	117.390	1.678	Open Manhole	1350	1.004	115.712	375	1.003	115.862	225	
	117.000	1.374	Open Manhole	0		OUTFALL		1.004	115.626	375	

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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	225	1	123.880	122.530	1.125	Open Manhole	1050
1.001	o	225	2	122.280	120.649	1.406	Open Manhole	1050
1.002	o	225	3	120.340	118.831	1.284	Open Manhole	1050
2.000	o	225	4	118.800	117.375	1.200	Open Manhole	1050
1.003	o	225	5	118.460	116.602	1.633	Open Manhole	1200
1.004	o	375	6	117.390	115.712	1.303	Open Manhole	1350

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	47.023	25.0	2	122.280	120.649	1.406	Open Manhole	1050
1.001	21.815	12.0	3	120.340	118.831	1.284	Open Manhole	1050
1.002	29.435	15.0	5	118.460	116.869	1.366	Open Manhole	1200
2.000	61.816	80.0	5	118.460	116.602	1.633	Open Manhole	1200
1.003	22.212	30.0	6	117.390	115.862	1.303	Open Manhole	1350
1.004	25.737	300.0		117.000	115.626	0.999	Open Manhole	0

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

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, 1440, 2160, 2880, 4320, 5760, 7200,
 8640, 10080
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 20

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%					
1.001	15 Winter	30	0%					
1.002	15 Winter	30	0%					
2.000	15 Winter	30	0%	30/15 Summer	100/15 Summer			5
1.003	15 Winter	30	0%	30/15 Summer				
1.004	15 Winter	30	0%	30/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	122.587	-0.168	0.000	0.14	0.0	14.1	OK
1.001	2	120.705	-0.169	0.000	0.14	0.0	19.2	OK
1.002	3	118.931	-0.125	0.000	0.41	0.0	51.2	OK
2.000	4	118.783	1.183	0.000	1.32	0.0	74.3	FLOOD RISK
1.003	5	117.398	0.571	0.000	1.33	0.0	115.5	SURCHARGED
1.004	6	116.097	0.010	0.000	1.15	0.0	114.9	SURCHARGED