

Ironside Farrar Ltd		Page 1
3 Worsley Court	Rowland Homes	
High Street Worsley	Dilworth Lane Longridge	
Manchester	Existing Site Run-off	
Date June 2011	Designed By SRG	
File	Checked By	
Micro Drainage	Source Control W.12.4	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	2.037	Urban	0.000
SAAR (mm)	997	Region Number	Region 10

Results 1/s

QBAR Rural	13.5
QBAR Urban	13.5

Q100 years 28.2

Q1 year 11.8

Q30 years 22.9

Q100 years 28.2

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3 Worsley Court High Street Worsley Manchester			Dilworth lane Longridge Proposed S.W Network						
Date 13.01.12			Designed by JCM						
File 3981 Proposed S.W Network Alte...			Checked by						
Micro Drainage			Network W.12.6						
Existing Network Details for Storm									
PN	Length (m)	Fall (m)	Slope (1:X)	I. Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
1.000	11.372	0.379	30.0	0.096	4.00	0.600	o	225	
1.001	16.218	0.541	30.0	0.038	0.00	0.600	o	225	
1.002	20.314	0.677	30.0	0.078	0.00	0.600	o	225	
1.003	14.092	0.465	30.3	0.034	0.00	0.600	o	225	
1.004	12.897	0.441	29.2	0.074	0.00	0.600	o	225	
1.005	46.130	1.545	29.9	0.106	0.00	0.600	o	225	
1.006	16.500	0.173	95.4	0.000	0.00	0.600	o	300	
1.007	12.295	0.139	88.5	0.000	0.00	0.600	o	300	
2.000	56.506	0.188	300.6	0.187	4.00	0.600	o	900	
3.000	33.784	0.113	299.0	0.083	4.00	0.600	o	900	
2.001	12.934	0.043	300.8	0.104	0.00	0.600	o	900	
2.002	20.017	0.067	298.8	0.049	0.00	0.600	o	900	
2.003	17.992	0.060	299.9	0.081	0.00	0.600	o	900	
2.004	21.291	0.082	259.6	0.000	0.00	0.600	o	300	
2.005	5.418	0.022	246.3	0.040	0.00	0.600	o	300	
1.008	36.000	0.072	500.0	0.000	0.00	0.600	4o	-1	
1.009	4.000	0.013	307.7	0.000	0.00	0.600	o	1200	
1.010	6.211	0.030	207.0	0.000	0.00	0.600	o	300	
PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.000	S9	116.188	114.300	1.663	115.681	113.921	1.535		1200
1.001	S9	115.681	113.921	1.535	115.031	113.380	1.426		1200
1.002	S8	115.031	113.380	1.426	114.792	112.703	1.864		1500
1.003	S7	114.792	112.703	1.864	114.646	112.238	2.183		1200
1.004	S6	114.646	112.238	2.183	114.646	111.797	2.624		1500
1.005	S5	114.646	111.797	2.624	111.533	110.252	1.056		1500
1.006	S4	111.533	110.177	1.056	111.600	110.004	1.296		1500
1.007	S3	111.600	110.004	1.296	111.120	109.865	0.955		1800
2.000	S17	112.420	110.174	1.346	113.561	109.986	2.675		2100
3.000	S18	114.248	110.099	3.249	113.561	109.986	2.675		2100
2.001	S16	113.561	109.986	2.675	113.072	109.943	2.229		2700
2.002	S15	113.072	109.943	2.229	112.032	109.876	1.256		2400
2.003	S14	112.032	109.876	1.256	111.750	109.816	1.034		2400
2.004	S13	111.750	109.816	1.634	111.200	109.734	1.166	Hydro-Brake®	2100
2.005	S12	111.200	109.734	1.166	111.120	109.712	1.108		1500
1.008	S2	111.120	108.965	0.955	111.200	108.893	1.107		2700
1.009	Weholite	111.200	108.893	1.107	111.200	108.880	1.120		2700
1.010	S1	111.200	108.880	2.020	110.000	108.850	0.850	Hydro-Brake®	2700

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3 Worsley Court High Street Worsley Manchester	Dilworth lane Longridge Proposed S.W Network	
Date 13.01.12 File 3981 Proposed S.W Network Alte...	Designed by JCM Checked by	
Micro Drainage Network W.12.6		

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name	Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.010		110.000	108.850	108.850	1200	0
Datum (m) 108.850 Offset (mins) 0						

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
10	1.300	220	1.300	430	1.300	640	1.300	850	1.300	1060	1.300	1270	1.300
20	1.300	230	1.300	440	1.300	650	1.300	860	1.300	1070	1.300	1280	1.300
30	1.300	240	1.300	450	1.300	660	1.300	870	1.300	1080	1.300	1290	1.300
40	1.300	250	1.300	460	1.300	670	1.300	880	1.300	1090	1.300	1300	1.300
50	1.300	260	1.300	470	1.300	680	1.300	890	1.300	1100	1.300	1310	1.300
60	1.300	270	1.300	480	1.300	690	1.300	900	1.300	1110	1.300	1320	1.300
70	1.300	280	1.300	490	1.300	700	1.300	910	1.300	1120	1.300	1330	1.300
80	1.300	290	1.300	500	1.300	710	1.300	920	1.300	1130	1.300	1340	1.300
90	1.300	300	1.300	510	1.300	720	1.300	930	1.300	1140	1.300	1350	1.300
100	1.300	310	1.300	520	1.300	730	1.300	940	1.300	1150	1.300	1360	1.300
110	1.300	320	1.300	530	1.300	740	1.300	950	1.300	1160	1.300	1370	1.300
120	1.300	330	1.300	540	1.300	750	1.300	960	1.300	1170	1.300	1380	1.300
130	1.300	340	1.300	550	1.300	760	1.300	970	1.300	1180	1.300	1390	1.300
140	1.300	350	1.300	560	1.300	770	1.300	980	1.300	1190	1.300	1400	1.300
150	1.300	360	1.300	570	1.300	780	1.300	990	1.300	1200	1.300	1410	1.300
160	1.300	370	1.300	580	1.300	790	1.300	1000	1.300	1210	1.300	1420	1.300
170	1.300	380	1.300	590	1.300	800	1.300	1010	1.300	1220	1.300	1430	1.300
180	1.300	390	1.300	600	1.300	810	1.300	1020	1.300	1230	1.300	1440	1.300
190	1.300	400	1.300	610	1.300	820	1.300	1030	1.300	1240	1.300		
200	1.300	410	1.300	620	1.300	830	1.300	1040	1.300	1250	1.300		
210	1.300	420	1.300	630	1.300	840	1.300	1050	1.300	1260	1.300		

Simulation Criteria for Storm

Volumetric Runoff Coeff 0.840	Additional Flow - % of Total Flow 0.000
Areal Reduction Factor 1.000	MADD Factor * 10m ³ /ha Storage 2.500
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) 2880
Foul Sewage per hectare (l/s) 0.000	Output Interval (mins) 24

Number of Input Hydrographs 0	Number of Storage Structures 0
Number of Online Controls 2	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 0.334
Return Period (years)	30	Profile Type Winter
Region England and Wales	Cv (Summer) 0.750	
M5-60 (mm)	18.500	Cv (Winter) 0.840

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Date 13.01.12	Designed by JCM	
File 3981 Proposed S.W Network Alte...	Checked by	
Micro Drainage	Network W.12.6	
<u>Synthetic Rainfall Details</u> Storm Duration (mins) 1440		
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Online Controls for Storm

Hydro-Brake® Manhole: S13, DS/PN: 2.004, Volume (m³): 16.7

Design Head (m) 2.000 Hydro-Brake® Iype Md6 SW Only Invert Level (m) 109.816
Design Flow (l/s) 31.0 Diameter (mm) 195

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.5	1.200	24.6	3.000	37.6	7.000	57.4
0.200	16.6	1.400	26.1	3.500	40.6	7.500	59.4
0.300	23.6	1.600	27.6	4.000	43.4	8.000	61.4
0.400	25.2	1.800	29.2	4.500	46.0	8.500	63.3
0.500	25.1	2.000	30.7	5.000	48.5	9.000	65.1
0.600	24.4	2.200	32.2	5.500	50.9	9.500	66.9
0.800	23.3	2.400	33.6	6.000	53.1		
1.000	23.5	2.600	35.0	6.500	55.3		

Hydro-Brake® Manhole: S1, DS/PN: 1.010, Volume (m³): 14.8

Design Head (m) 2.000 Hydro-Brake® Iype Md6 SW Only Invert Level (m) 108.880
Design Flow (l/s) 28.5 Diameter (mm) 187

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.2	1.200	22.5	3.000	34.6	7.000	52.8
0.200	15.7	1.400	23.9	3.500	37.3	7.500	54.6
0.300	21.7	1.600	25.4	4.000	39.9	8.000	56.4
0.400	22.8	1.800	26.8	4.500	42.3	8.500	58.2
0.500	22.5	2.000	28.2	5.000	44.6	9.000	59.9
0.600	21.8	2.200	29.6	5.500	46.8	9.500	61.5
0.800	21.0	2.400	30.9	6.000	48.9		
1.000	21.4	2.600	32.2	6.500	50.9		

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

Margin for Flood Risk Warning (mm)	300.0
Analysis Iimstep 2.5 Second Increment (Extended)	
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440	
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	1	0%					
1.001	15 Winter	1	0%					
1.002	15 Winter	1	0%					
1.003	15 Winter	1	0%	30/15 Summer				
1.004	15 Winter	1	0%	30/15 Summer				
1.005	15 Winter	1	0%	30/15 Summer				
1.006	15 Winter	1	0%	30/15 Summer				
1.007	15 Winter	1	0%	30/15 Summer				
2.000	15 Winter	1	0%					
3.000	15 Summer	1	0%					
2.001	15 Summer	1	0%					
2.002	15 Summer	1	0%					
2.003	15 Winter	1	0%					
2.004	30 Winter	1	0%	1/15 Summer				
2.005	30 Winter	1	0%	1/360 Summer				
1.008	15 Winter	1	0%	1/480 Winter				
1.009	1440 Summer	1	0%	1/360 Winter				
1.010	1440 Summer	1	0%	1/15 Summer				

PN	US/MH Name	Water Level (m)	Surched Depth (m)	Flooded Volume (m³)	Flow / Cap	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	S9	114.359	-0.166	0.000	0.15	0.0	12.4	OK
1.001	S9	113.988	-0.158	0.000	0.19	0.0	16.4	OK
1.002	S8	113.461	-0.144	0.000	0.28	0.0	24.3	OK
1.003	S7	112.793	-0.135	0.000	0.33	0.0	27.6	OK
1.004	S6	112.341	-0.122	0.000	0.42	0.0	35.3	OK
1.005	S5	111.911	-0.111	0.000	0.51	0.0	46.2	OK
1.006	S4	110.323	-0.154	0.000	0.48	0.0	46.1	OK
1.007	S3	110.153	-0.151	0.000	0.49	0.0	45.6	OK
2.000	S17	110.275	-0.799	0.000	0.02	0.0	23.4	OK
3.000	S18	110.179	-0.820	0.000	0.01	0.0	10.1	OK
2.001	S16	110.172	-0.714	0.000	0.05	0.0	31.2	OK
2.002	S15	110.170	-0.673	0.000	0.04	0.0	31.7	OK
2.003	S14	110.186	-0.590	0.000	0.04	0.0	28.6	OK
2.004	S13	110.184	0.068	0.000	0.38	0.0	23.0	SURCHARGED
2.005	S12	109.888	-0.146	0.000	0.52	0.0	25.0	OK

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

PN	US/MH Name	Water		Flooded		Pipe		Status
		Level (m)	Surch'ed Depth (m)	Volume (m³)	Flow / Cap.	O'flow (l/s)	Flow (l/s)	
1.008	S2	109.425	-0.740	0.000	0.01	0.0	64.7	OK
1.009	Weholite	110.200	0.107	0.000	0.03	0.0	26.5	SURCHARGED
1.010	S1	110.201	1.021	0.000	0.42	0.0	22.8	SURCHARGED

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

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DIS Status ON
 DVD Status ON
 Inertia Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 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%					
1.001	15 Winter	30	0%					
1.002	15 Summer	30	0%					
1.003	15 Summer	30	0%	30/15 Summer				
1.004	15 Summer	30	0%	30/15 Summer				
1.005	15 Winter	30	0%	30/15 Summer				
1.006	15 Winter	30	0%	30/15 Summer				
1.007	15 Winter	30	0%	30/15 Summer				
2.000	15 Winter	30	0%					
3.000	15 Summer	30	0%					
2.001	15 Summer	30	0%					
2.002	15 Summer	30	0%					
2.003	15 Summer	30	0%					
2.004	15 Summer	30	0%	1/15 Summer				
2.005	15 Winter	30	0%	1/360 Summer				
1.008	15 Winter	30	0%	1/480 Winter				
1.009	960 Winter	30	0%	1/360 Winter				
1.010	1440 Summer	30	0%	1/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	S9	114.395	-0.130	0.000	0.38	0.0	30.4	OK
1.001	S9	114.034	-0.112	0.000	0.50	0.0	42.5	OK
1.002	S8	113.533	-0.072	0.000	0.78	0.0	67.3	OK
1.003	S7	113.245	0.317	0.000	0.82	0.0	67.9	SURCHARGED
1.004	S6	112.971	0.508	0.000	0.98	0.0	81.3	SURCHARGED
1.005	S5	112.589	0.567	0.000	1.15	0.0	104.9	SURCHARGED
1.006	S4	110.530	0.053	0.000	1.08	0.0	104.3	SURCHARGED
1.007	S3	110.327	0.023	0.000	1.12	0.0	105.0	SURCHARGED
2.000	S17	110.472	-0.602	0.000	0.06	0.0	55.8	OK
3.000	S18	110.421	-0.578	0.000	0.03	0.0	22.6	OK
2.001	S16	110.420	-0.466	0.000	0.07	0.0	45.8	OK
2.002	S15	110.416	-0.427	0.000	0.06	0.0	46.6	OK
2.003	S14	110.407	-0.369	0.000	0.06	0.0	45.0	OK
2.004	S13	110.395	0.279	0.000	0.42	0.0	25.2	SURCHARGED
2.005	S12	109.932	-0.102	0.000	0.76	0.0	36.2	OK

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

PN	US/MH Name	Water	Surch'd Depth (m)	Flooded	Flow / Cap.	O'flow	Pipe	Status
		Level (m)		Volume (m³)		(l/s)	Flow (l/s)	
1.008	S2	109.879	-0.286	0.000	0.02	0.0	132.5	OK
1.009	Weholite	110.387	0.294	0.000	0.03	0.0	23.9	SURCHARGED
1.010	S1	110.371	1.191	0.000	0.42	0.0	22.9	SURCHARGED