

The Old Hayloft		Page 7
Pucknall Farm	19142	
Romsey	Colt International	
Hampshire SO51 0QJ	Surcharge	
Date 19/12/2019	Designed by SJW	
File SURFACE WATER COMBINED FREEFLO...	Checked by RL	
XP Solutions	Network 2018.1.1	

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)
S40	21.100	1.430	Open Manhole	1800	S9.000	19.670	225				
S41	20.650	1.430	Open Manhole	1800	S9.001	19.220	225	S9.000	19.220	225	
S42	20.650	1.549	Open Manhole	1200	S9.002	19.101	225	S9.001	19.101	225	
S43	20.650	1.792	Open Manhole	1200	S9.003	18.858	225	S9.002	18.858	225	
S44	20.650	1.951	Open Manhole	1200	S9.004	18.699	225	S9.003	18.699	225	
S45	20.500	1.935	Open Manhole	1200	S9.005	18.565	225	S9.004	18.565	225	
S46	20.600	0.800	Open Manhole	1200	S10.000	19.800	300				
S47	20.800	1.213	Open Manhole	1200	S10.001	19.587	300	S10.000	19.587	300	
S48	21.200	0.600	Open Manhole	1500	S11.000	20.600	150				
S49	21.200	0.821	Open Manhole	1200	S11.001	20.379	150	S11.000	20.379	150	
S50	20.650	0.600	Open Manhole	1500	S12.000	20.050	150				
S51	20.800	0.600	Open Manhole	1350	S13.000	20.200	150				
S52	20.950	0.600	Open Manhole	1200	S14.000	20.350	150				
S53	20.800	0.600	Open Manhole	1350	S15.000	20.200	150				
S54	21.000	0.600	Open Manhole	1500	S16.000	20.400	150				
S55	21.000	0.859	Open Manhole	1200	S16.001	20.141	150	S16.000	20.141	150	
S56	21.000	1.023	Open Manhole	1200	S16.002	19.977	150	S16.001	19.977	150	
S57	21.000	0.600	Open Manhole	1500	S17.000	20.400	100				
S58	21.000	0.858	Open Manhole	1200	S17.001	20.142	100	S17.000	20.142	100	
S59	21.000	1.021	Open Manhole	1200	S17.002	19.979	100	S17.001	19.979	100	
S60	21.000	1.150	Open Manhole	1200	S16.003	19.850	150	S16.002	19.850	150	
								S17.002	19.900	100	
S61	20.975	2.025	Open Manhole	1200	S16.004	18.950	150	S16.003	18.950	150	
S62	20.950	2.371	Open Manhole	1200	S14.001	18.579	150	S14.000	19.999	150	1420
								S15.000	19.831	150	1252
								S16.004	18.579	150	
S63	20.800	2.373	Open Manhole	1200	S13.001	18.427	225	S13.000	19.767	150	1265
								S14.001	18.502	150	
S64	21.050	2.833	Open Manhole	1200	S11.002	18.217	225	S11.001	18.292	150	
								S12.000	19.671	150	1379
								S13.001	18.217	225	
S65	22.200	0.600	Open Manhole	1200	S18.000	21.600	100				
S66	21.250	0.600	Open Manhole	1350	S18.001	20.650	100	S18.000	20.650	100	
S67	21.100	3.055	Open Manhole	1200	S11.003	18.045	225	S11.002	18.045	225	
								S18.001	18.170	100	
S68	20.950	2.982	Open Manhole	1200	S11.004	17.968	225	S11.003	17.968	225	
S69	20.950	3.039	Open Manhole	1200	S11.005	17.911	225	S11.004	17.911	225	
S70	20.950	3.120	Open Manhole	1200	S11.006	17.830	225	S11.005	17.830	225	
S71	20.000	2.523	Open Manhole	1200	S9.006	17.477	450	S9.005	17.702	225	
								S10.001	17.627	300	
								S11.006	17.702	225	
S72	19.200	1.796	Open Manhole	1200	S9.007	17.404	450	S9.006	17.404	450	
S73	18.510	1.566	Open Manhole	1200	S1.012	16.944	600	S1.011	16.944	600	
								S9.007	17.094	450	
S74	18.510	1.663	Open Manhole	1200		OUTFALL		S1.012	16.847	600	

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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)
S1.000	600 []	600	S1	22.100	19.360	2.140	Open Manhole	900
S1.001	600 []	600	S2	22.480	19.190	2.560	Open Manhole	900
S1.002	600 []	600	S3	22.400	18.950	2.410	Open Manhole	900
S1.003	600 []	600	S4	22.350	18.800	2.570	Open Manhole	900
S1.004	o	600	S5	21.700	18.640	2.460	Open Manhole	900
S2.000	o	100	S6	25.300	24.700	0.500	Open Manhole	250
S2.001	o	100	S7	25.350	24.594	0.656	Open Manhole	1200
S2.002	o	100	S8	25.350	24.317	0.933	Open Manhole	1200
S2.003	o	150	S9	24.100	23.450	0.500	Open Manhole	1800
S2.004	o	150	S10	24.000	23.311	0.539	Open Manhole	1200
S2.005	o	150	S11	23.600	22.950	0.500	Open Manhole	1200
S3.000	o	100	S12	25.500	24.900	0.500	Open Manhole	25
S3.001	o	150	S13	25.450	24.704	0.596	Open Manhole	1200
S3.002	o	150	S14	24.900	24.250	0.500	Open Manhole	1350
S3.003	o	225	S15	24.400	23.675	0.500	Open Manhole	1500
S3.004	o	225	S16	23.900	23.175	0.500	Open Manhole	1350
S4.000	o	100	S17	24.900	24.300	0.500	Open Manhole	250
S4.001	o	100	S18	24.900	24.194	0.606	Open Manhole	1200
S5.000	o	150	S20	25.450	24.742	0.558	Open Manhole	1500
S4.002	o	300	S21	24.900	23.823	0.777	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)
S1.000	16.739	100.0	S2	22.480	19.193	2.687	Open Manhole	900
S1.001	28.014	120.0	S3	22.400	18.957	2.713	Open Manhole	900
S1.002	28.752	200.0	S4	22.350	18.806	2.504	Open Manhole	900
S1.003	20.727	150.0	S5	21.700	18.662	2.058	Open Manhole	900
S1.004	8.125	200.0	S33	21.590	18.599	2.391	Open Manhole	1500
S2.000	6.225	58.5	S7	25.350	24.594	0.656	Open Manhole	1200
S2.001	16.147	58.5	S8	25.350	24.317	0.933	Open Manhole	1200
S2.002	14.873	18.2	S9	24.100	23.500	0.500	Open Manhole	1800
S2.003	8.149	58.5	S10	24.000	23.311	0.539	Open Manhole	1200
S2.004	16.418	45.5	S11	23.600	22.950	0.500	Open Manhole	1200
S2.005	10.865	26.3	S31	23.400	22.537	0.713	Open Manhole	1500
S3.000	8.529	58.5	S13	25.450	24.754	0.596	Open Manhole	1200
S3.001	19.568	43.1	S14	24.900	24.250	0.500	Open Manhole	1350
S3.002	20.952	41.9	S15	24.400	23.750	0.500	Open Manhole	1500
S3.003	20.621	41.2	S16	23.900	23.175	0.500	Open Manhole	1350
S3.004	20.398	28.6	S31	23.400	22.462	0.713	Open Manhole	1500
S4.000	6.200	58.5	S18	24.900	24.194	0.606	Open Manhole	1200
S4.001	9.972	58.5	S21	24.900	24.023	0.777	Open Manhole	1200
S5.000	19.416	27.0	S21	24.900	24.023	0.727	Open Manhole	1200
S4.002	14.954	24.6	S24	24.700	23.216	1.184	Open Manhole	1200

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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)
S6.000	o	100	S22	24.350	23.750	0.500	Open Manhole	250
S6.001	o	100	S23	24.400	23.627	0.673	Open Manhole	1200
S4.003	o	300	S24	24.700	23.216	1.184	Open Manhole	1200
S7.000	o	100	S25	24.100	23.500	0.500	Open Manhole	250
S7.001	o	100	S26	24.100	23.394	0.606	Open Manhole	1200
S4.004	o	300	S27	24.350	22.964	1.086	Open Manhole	1200
S8.000	o	100	S28	23.700	23.100	0.500	Open Manhole	250
S8.001	o	225	S29	23.800	22.877	0.698	Open Manhole	1500
S4.005	o	300	S30	23.900	22.559	1.041	Open Manhole	1200
S2.006	o	500	S31	23.400	22.187	0.713	Open Manhole	1500
S2.007	o	500	S32	23.400	22.136	0.764	Open Manhole	2700
S1.005	o	600	S33	21.590	18.610	2.380	Open Manhole	1500
S1.006	o	600	S34	21.140	18.470	2.070	Open Manhole	1500
S1.007	o	600	S35	21.070	18.450	2.020	Open Manhole	1500
S1.008	o	600	S36	20.140	18.320	1.220	Open Manhole	1500
S1.009	o	600	S37	19.605	18.000	1.005	Open Manhole	1500
S1.010	600 []	600	S38	19.070	17.610	0.160	Open Manhole	1500
S1.011	600 []	600	S39	19.070	17.270	0.200	Open Manhole	1500

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)
S6.000	7.199	58.5	S23	24.400	23.627	0.673	Open Manhole	1200
S6.001	9.408	44.6	S24	24.700	23.416	1.184	Open Manhole	1200
S4.003	14.766	58.5	S27	24.350	22.964	1.086	Open Manhole	1200
S7.000	6.207	58.5	S26	24.100	23.394	0.606	Open Manhole	1200
S7.001	10.184	44.2	S27	24.350	23.164	1.086	Open Manhole	1200
S4.004	16.503	40.8	S30	23.900	22.559	1.041	Open Manhole	1200
S8.000	5.733	58.5	S29	23.800	23.002	0.698	Open Manhole	1500
S8.001	11.288	58.5	S30	23.900	22.684	0.991	Open Manhole	1200
S4.005	17.038	99.3	S31	23.400	22.387	0.713	Open Manhole	1500
S2.006	8.269	161.6	S32	23.400	22.136	0.764	Open Manhole	2700
S2.007	24.745	16.0	S33	21.590	20.590	0.500	Open Manhole	1500
S1.005	30.188	200.0	S34	21.140	18.459	2.081	Open Manhole	1500
S1.006	4.844	150.0	S35	21.070	18.438	2.032	Open Manhole	1500
S1.007	28.220	200.0	S36	20.140	18.309	1.231	Open Manhole	1500
S1.008	25.383	85.0	S37	19.605	18.021	0.984	Open Manhole	1500
S1.009	23.123	60.0	S38	19.070	17.615	0.855	Open Manhole	1500
S1.010	21.294	65.0	S39	19.070	17.282	0.488	Open Manhole	1500
S1.011	18.884	58.0	S73	18.510	16.944	-0.034	Open Manhole	1200

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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)
S9.000	o	225	S40	21.100	19.670	1.205	Open Manhole	1800
S9.001	o	225	S41	20.650	19.220	1.205	Open Manhole	1800
S9.002	o	225	S42	20.650	19.101	1.324	Open Manhole	1200
S9.003	o	225	S43	20.650	18.858	1.567	Open Manhole	1200
S9.004	o	225	S44	20.650	18.699	1.726	Open Manhole	1200
S9.005	o	225	S45	20.500	18.565	1.710	Open Manhole	1200
S10.000	o	300	S46	20.600	19.800	0.500	Open Manhole	1200
S10.001	o	300	S47	20.800	19.587	0.913	Open Manhole	1200
S11.000	o	150	S48	21.200	20.600	0.450	Open Manhole	1500
S11.001	o	150	S49	21.200	20.379	0.671	Open Manhole	1200
S12.000	o	150	S50	20.650	20.050	0.450	Open Manhole	1500
S13.000	o	150	S51	20.800	20.200	0.450	Open Manhole	1350
S14.000	o	150	S52	20.950	20.350	0.450	Open Manhole	1200
S15.000	o	150	S53	20.800	20.200	0.450	Open Manhole	1350
S16.000	o	150	S54	21.000	20.400	0.450	Open Manhole	1500
S16.001	o	150	S55	21.000	20.141	0.709	Open Manhole	1200
S16.002	o	150	S56	21.000	19.977	0.873	Open Manhole	1200
S17.000	o	100	S57	21.000	20.400	0.500	Open Manhole	1500

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)
S9.000	21.182	47.1	S41	20.650	19.220	1.205	Open Manhole	1800
S9.001	20.030	168.9	S42	20.650	19.101	1.324	Open Manhole	1200
S9.002	24.144	99.4	S43	20.650	18.858	1.567	Open Manhole	1200
S9.003	26.784	168.4	S44	20.650	18.699	1.726	Open Manhole	1200
S9.004	22.604	168.4	S45	20.500	18.565	1.710	Open Manhole	1200
S9.005	17.188	19.9	S71	20.000	17.702	2.073	Open Manhole	1200
S10.000	51.621	241.9	S47	20.800	19.587	0.913	Open Manhole	1200
S10.001	22.546	11.5	S71	20.000	17.627	2.073	Open Manhole	1200
S11.000	12.949	58.5	S49	21.200	20.379	0.671	Open Manhole	1200
S11.001	8.000	3.8	S64	21.050	18.292	2.608	Open Manhole	1200
S12.000	22.172	58.5	S64	21.050	19.671	1.229	Open Manhole	1200
S13.000	25.307	58.5	S63	20.800	19.767	0.883	Open Manhole	1200
S14.000	20.556	58.5	S62	20.950	19.999	0.801	Open Manhole	1200
S15.000	21.598	58.5	S62	20.950	19.831	0.969	Open Manhole	1200
S16.000	15.154	58.5	S55	21.000	20.141	0.709	Open Manhole	1200
S16.001	9.609	58.5	S56	21.000	19.977	0.873	Open Manhole	1200
S16.002	4.336	34.1	S60	21.000	19.850	1.000	Open Manhole	1200
S17.000	15.078	58.5	S58	21.000	20.142	0.758	Open Manhole	1200

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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)
S17.001	o	100	S58	21.000	20.142	0.758	Open Manhole	1200
S17.002	o	100	S59	21.000	19.979	0.921	Open Manhole	1200
S16.003	o	150	S60	21.000	19.850	1.000	Open Manhole	1200
S16.004	o	150	S61	20.975	18.950	1.875	Open Manhole	1200
S14.001	o	150	S62	20.950	18.579	2.221	Open Manhole	1200
S13.001	o	225	S63	20.800	18.427	2.148	Open Manhole	1200
S11.002	o	225	S64	21.050	18.217	2.608	Open Manhole	1200
S18.000	o	100	S65	22.200	21.600	0.500	Open Manhole	1200
S18.001	o	100	S66	21.250	20.650	0.500	Open Manhole	1350
S11.003	o	225	S67	21.100	18.045	2.830	Open Manhole	1200
S11.004	o	225	S68	20.950	17.968	2.757	Open Manhole	1200
S11.005	o	225	S69	20.950	17.911	2.814	Open Manhole	1200
S11.006	o	225	S70	20.950	17.830	2.895	Open Manhole	1200
S9.006	o	450	S71	20.000	17.477	2.073	Open Manhole	1200
S9.007	o	450	S72	19.200	17.404	1.346	Open Manhole	1200
S1.012	o	600	S73	18.510	16.944	0.966	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)
S17.001	9.548	58.5	S59	21.000	19.979	0.921	Open Manhole	1200
S17.002	4.639	58.5	S60	21.000	19.900	1.000	Open Manhole	1200
S16.003	17.602	19.6	S61	20.975	18.950	1.875	Open Manhole	1200
S16.004	19.222	51.8	S62	20.950	18.579	2.221	Open Manhole	1200
S14.001	7.631	99.0	S63	20.800	18.502	2.148	Open Manhole	1200
S13.001	35.368	168.4	S64	21.050	18.217	2.608	Open Manhole	1200
S11.002	28.906	168.4	S67	21.100	18.045	2.830	Open Manhole	1200
S18.000	30.845	32.5	S66	21.250	20.650	0.500	Open Manhole	1350
S18.001	13.059	5.3	S67	21.100	18.170	2.830	Open Manhole	1200
S11.003	12.928	168.4	S68	20.950	17.968	2.757	Open Manhole	1200
S11.004	9.743	168.4	S69	20.950	17.911	2.814	Open Manhole	1200
S11.005	13.639	168.4	S70	20.950	17.830	2.895	Open Manhole	1200
S11.006	21.428	168.4	S71	20.000	17.702	2.073	Open Manhole	1200
S9.006	18.232	250.0	S72	19.200	17.404	1.346	Open Manhole	1200
S9.007	24.502	79.0	S73	18.510	17.094	0.966	Open Manhole	1200
S1.012	21.583	222.5	S74	18.510	16.847	1.063	Open Manhole	1200

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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	0.000	0.000	0.000
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.000	0.000	0.000
2.001	User	-	100	0.016	0.016	0.016
2.002	User	-	100	0.012	0.012	0.012
2.003	User	-	100	0.016	0.016	0.016
2.004	-	-	100	0.000	0.000	0.000
2.005	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.000	0.000	0.000
3.001	User	-	100	0.071	0.071	0.071
3.002	User	-	100	0.027	0.027	0.027
	User	-	100	0.003	0.003	0.030
	User	-	100	0.002	0.002	0.032
3.003	User	-	100	0.024	0.024	0.024
3.004	User	-	100	0.024	0.024	0.024
4.000	-	-	100	0.000	0.000	0.000
4.001	User	-	100	0.006	0.006	0.006
5.000	User	-	100	0.037	0.037	0.037
	User	-	100	0.005	0.005	0.042
4.002	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.000	0.000	0.000
6.001	User	-	100	0.006	0.006	0.006
4.003	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.000	0.000	0.000
7.001	User	-	100	0.006	0.006	0.006
4.004	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.000	0.000	0.000
8.001	User	-	100	0.006	0.006	0.006
	User	-	100	0.006	0.006	0.011
4.005	-	-	100	0.000	0.000	0.000
2.006	User	-	100	0.036	0.036	0.036
2.007	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.000	0.000	0.000
1.011	-	-	100	0.000	0.000	0.000
9.000	User	-	100	0.063	0.063	0.063
9.001	User	-	100	0.024	0.024	0.024
	User	-	100	0.002	0.002	0.026
9.002	User	-	100	0.029	0.029	0.029
	User	-	100	0.004	0.004	0.032
9.003	User	-	100	0.026	0.026	0.026
	User	-	100	0.003	0.003	0.029
9.004	User	-	100	0.028	0.028	0.028
	User	-	100	0.003	0.003	0.031
9.005	-	-	100	0.000	0.000	0.000
10.000	User	-	100	0.518	0.518	0.518
10.001	User	-	100	0.027	0.027	0.027
11.000	User	-	100	0.023	0.023	0.023
	User	-	100	0.004	0.004	0.026
	User	-	100	0.007	0.007	0.033
11.001	User	-	100	0.004	0.004	0.004
12.000	User	-	100	0.030	0.030	0.030
13.000	User	-	100	0.025	0.025	0.025
14.000	User	-	100	0.020	0.020	0.020

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
15.000	User	-	100	0.023	0.023	0.023
16.000	User	-	100	0.014	0.014	0.014
16.001	User	-	100	0.012	0.012	0.012
	User	-	100	0.003	0.003	0.015
16.002	-	-	100	0.000	0.000	0.000
17.000	User	-	100	0.017	0.017	0.017
17.001	User	-	100	0.012	0.012	0.012
	User	-	100	0.003	0.003	0.016
17.002	-	-	100	0.000	0.000	0.000
16.003	-	-	100	0.000	0.000	0.000
16.004	-	-	100	0.000	0.000	0.000
14.001	-	-	100	0.000	0.000	0.000
13.001	User	-	100	0.025	0.025	0.025
11.002	-	-	100	0.000	0.000	0.000
18.000	User	-	100	0.016	0.016	0.016
18.001	User	-	100	0.036	0.036	0.036
11.003	User	-	100	0.019	0.019	0.019
11.004	-	-	100	0.000	0.000	0.000
11.005	-	-	100	0.000	0.000	0.000
11.006	-	-	100	0.000	0.000	0.000
9.006	-	-	100	0.000	0.000	0.000
9.007	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.320	1.320	1.320

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1	600	2.140	2.687	Unclassified	900	0	2.140	Unclassified
S1.001	S2	600	2.560	2.713	Unclassified	900	0	2.560	Unclassified
S1.002	S3	600	2.410	2.504	Unclassified	900	0	2.410	Unclassified
S1.003	S4	600	2.058	2.570	Unclassified	900	0	2.570	Unclassified
S1.004	S5	600	2.391	2.460	Unclassified	900	0	2.460	Unclassified
S2.000	S6	100	0.500	0.656	Unclassified	250	0	0.500	Unclassified
S2.001	S7	100	0.656	0.933	Unclassified	1200	0	0.656	Unclassified
S2.002	S8	100	0.500	0.933	Unclassified	1200	0	0.933	Unclassified
S2.003	S9	150	0.500	0.539	Unclassified	1800	0	0.500	Unclassified
S2.004	S10	150	0.500	0.539	Unclassified	1200	0	0.539	Unclassified
S2.005	S11	150	0.500	0.713	Unclassified	1200	0	0.500	Unclassified
S3.000	S12	100	0.500	0.596	Unclassified	25	0	0.500	Unclassified
S3.001	S13	150	0.500	0.596	Unclassified	1200	0	0.596	Unclassified
S3.002	S14	150	0.500	0.500	Unclassified	1350	0	0.500	Unclassified
S3.003	S15	225	0.500	0.500	Unclassified	1500	0	0.500	Unclassified
S3.004	S16	225	0.500	0.713	Unclassified	1350	0	0.500	Unclassified
S4.000	S17	100	0.500	0.606	Unclassified	250	0	0.500	Unclassified
S4.001	S18	100	0.606	0.777	Unclassified	1200	0	0.606	Unclassified
S5.000	S20	150	0.558	0.727	Unclassified	1500	0	0.558	Unclassified
S4.002	S21	300	0.777	1.184	Unclassified	1200	0	0.777	Unclassified
S6.000	S22	100	0.500	0.673	Unclassified	250	0	0.500	Unclassified
S6.001	S23	100	0.673	1.184	Unclassified	1200	0	0.673	Unclassified
S4.003	S24	300	1.086	1.184	Unclassified	1200	0	1.184	Unclassified
S7.000	S25	100	0.500	0.606	Unclassified	250	0	0.500	Unclassified
S7.001	S26	100	0.606	1.086	Unclassified	1200	0	0.606	Unclassified
S4.004	S27	300	1.041	1.086	Unclassified	1200	0	1.086	Unclassified
S8.000	S28	100	0.500	0.698	Unclassified	250	0	0.500	Unclassified
S8.001	S29	225	0.698	0.991	Unclassified	1500	0	0.698	Unclassified
S4.005	S30	300	0.713	1.041	Unclassified	1200	0	1.041	Unclassified
S2.006	S31	500	0.713	0.764	Unclassified	1500	0	0.713	Unclassified
S2.007	S32	500	0.500	0.764	Unclassified	2700	0	0.764	Unclassified
S1.005	S33	600	2.081	2.380	Unclassified	1500	0	2.380	Unclassified
S1.006	S34	600	2.032	2.070	Unclassified	1500	0	2.070	Unclassified
S1.007	S35	600	1.231	2.020	Unclassified	1500	0	2.020	Unclassified
S1.008	S36	600	0.984	1.220	Unclassified	1500	0	1.220	Unclassified
S1.009	S37	600	0.855	1.005	Unclassified	1500	0	1.005	Unclassified
S1.010	S38	600	0.160	0.488	Unclassified	1500	0	0.160	Unclassified
S1.011	S39	600	0.044	0.200	Unclassified	1500	0	0.200	Unclassified
S9.000	S40	225	1.205	1.205	Unclassified	1800	0	1.205	Unclassified
S9.001	S41	225	1.205	1.324	Unclassified	1800	0	1.205	Unclassified
S9.002	S42	225	1.324	1.567	Unclassified	1200	0	1.324	Unclassified
S9.003	S43	225	1.567	1.726	Unclassified	1200	0	1.567	Unclassified
S9.004	S44	225	1.710	1.726	Unclassified	1200	0	1.726	Unclassified
S9.005	S45	225	1.710	2.073	Unclassified	1200	0	1.710	Unclassified
S10.000	S46	300	0.500	0.913	Unclassified	1200	0	0.500	Unclassified
S10.001	S47	300	0.913	2.073	Unclassified	1200	0	0.913	Unclassified
S11.000	S48	150	0.450	0.671	Unclassified	1500	0	0.450	Unclassified
S11.001	S49	150	0.671	2.608	Unclassified	1200	0	0.671	Unclassified
S12.000	S50	150	0.450	1.229	Unclassified	1500	0	0.450	Unclassified
S13.000	S51	150	0.450	0.883	Unclassified	1350	0	0.450	Unclassified
S14.000	S52	150	0.450	0.801	Unclassified	1200	0	0.450	Unclassified
S15.000	S53	150	0.450	0.969	Unclassified	1350	0	0.450	Unclassified
S16.000	S54	150	0.450	0.709	Unclassified	1500	0	0.450	Unclassified
S16.001	S55	150	0.709	0.873	Unclassified	1200	0	0.709	Unclassified
S16.002	S56	150	0.873	1.000	Unclassified	1200	0	0.873	Unclassified
S17.000	S57	100	0.500	0.758	Unclassified	1500	0	0.500	Unclassified
S17.001	S58	100	0.758	0.921	Unclassified	1200	0	0.758	Unclassified
S17.002	S59	100	0.921	1.000	Unclassified	1200	0	0.921	Unclassified
S16.003	S60	150	1.000	1.875	Unclassified	1200	0	1.000	Unclassified

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S16.004	S61	150	1.875	2.221	Unclassified	1200	0	1.875	Unclassified
S14.001	S62	150	2.148	2.221	Unclassified	1200	0	2.221	Unclassified
S13.001	S63	225	2.148	2.608	Unclassified	1200	0	2.148	Unclassified
S11.002	S64	225	2.608	2.830	Unclassified	1200	0	2.608	Unclassified
S18.000	S65	100	0.500	0.500	Unclassified	1200	0	0.500	Unclassified
S18.001	S66	100	0.500	2.830	Unclassified	1350	0	0.500	Unclassified
S11.003	S67	225	2.757	2.830	Unclassified	1200	0	2.830	Unclassified
S11.004	S68	225	2.757	2.814	Unclassified	1200	0	2.757	Unclassified
S11.005	S69	225	2.814	2.895	Unclassified	1200	0	2.814	Unclassified
S11.006	S70	225	2.073	2.895	Unclassified	1200	0	2.895	Unclassified
S9.006	S71	450	1.346	2.073	Unclassified	1200	0	2.073	Unclassified
S9.007	S72	450	0.966	1.346	Unclassified	1200	0	1.346	Unclassified
S1.012	S73	600	0.966	1.063	Unclassified	1200	0	0.966	Unclassified

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.012 S74 18.510 16.847 16.920 1200 0

Datum (m) 0.000 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)
30	18.315	240	18.315	450	0.000	660	0.000	870	0.000	1080	0.000
60	18.315	270	0.000	480	0.000	690	0.000	900	0.000	1110	0.000
90	18.315	300	0.000	510	0.000	720	0.000	930	0.000	1140	0.000
120	18.315	330	0.000	540	0.000	750	0.000	960	0.000	1170	0.000
150	18.315	360	0.000	570	0.000	780	0.000	990	0.000	1200	0.000
180	18.315	390	0.000	600	0.000	810	0.000	1020	0.000	1230	0.000
210	18.315	420	0.000	630	0.000	840	0.000	1050	0.000	1260	0.000

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/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 Offline Controls	0
Number of Online Controls	7	Number of Storage Structures	8
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for Storm

Orifice Manhole: S13, DS/PN: S3.001, Volume (m³): 0.9

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 24.704

Orifice Manhole: S14, DS/PN: S3.002, Volume (m³): 1.3

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 24.250

Orifice Manhole: S15, DS/PN: S3.003, Volume (m³): 1.6

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 23.750

Orifice Manhole: S16, DS/PN: S3.004, Volume (m³): 1.8

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 23.175

Orifice Manhole: S30, DS/PN: S4.005, Volume (m³): 3.0

Diameter (m) 0.075 Discharge Coefficient 0.600 Invert Level (m) 22.559

Hydro-Brake® Optimum Manhole: S32, DS/PN: S2.007, Volume (m³): 8.4

Unit Reference	MD-SHE-0162-1400-1500-1400
Design Head (m)	1.500
Design Flow (l/s)	14.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	162
Invert Level (m)	22.136
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points			Head (m)	Flow (l/s)	Control Points			Head (m)	Flow (l/s)
Design Point (Calculated)			1.500	14.0	Kick-Flo®			0.950	11.3
Flush-Flo™			0.441	14.0	Mean Flow over Head Range			-	12.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.8	0.800	12.9	2.000	16.0	4.000	22.3	7.000	29.2
0.200	12.6	1.000	11.6	2.200	16.8	4.500	23.6	7.500	30.2
0.300	13.6	1.200	12.6	2.400	17.5	5.000	24.9	8.000	31.2
0.400	14.0	1.400	13.5	2.600	18.2	5.500	26.0	8.500	32.1
0.500	13.9	1.600	14.4	3.000	19.5	6.000	27.1	9.000	33.0
0.600	13.8	1.800	15.3	3.500	21.0	6.500	28.2	9.500	33.9

Hydro-Brake® Optimum Manhole: S71, DS/PN: S9.006, Volume (m³): 5.8

Unit Reference	MD-SHE-0284-5000-1800-5000
Design Head (m)	1.800
Design Flow (l/s)	50.0
Flush-Flo™	Calculated

Hydro-Brake® Optimum Manhole: S71, DS/PN: S9.006, Volume (m³): 5.8

Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	284
Invert Level (m)	17.477
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.800	50.0	Kick-Flo®	1.228	41.6
Flush-Flo™	0.562	50.0	Mean Flow over Head Range	-	42.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	0.800	49.1	2.000	52.6	4.000	73.6	7.000	96.6
0.200	29.3	1.000	47.3	2.200	55.1	4.500	77.9	7.500	99.9
0.300	46.9	1.200	42.8	2.400	57.4	5.000	82.0	8.000	103.1
0.400	49.0	1.400	44.3	2.600	59.7	5.500	85.9	8.500	106.2
0.500	49.9	1.600	47.2	3.000	64.0	6.000	89.6	9.000	109.2
0.600	50.0	1.800	50.0	3.500	69.0	6.500	93.2	9.500	112.1

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Storage Structures for Storm

Porous Car Park Manhole: S13, DS/PN: S3.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	60.0
Max Percolation (l/s)	166.7	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	24.860	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: S14, DS/PN: S3.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	61.1	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	24.210	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S15, DS/PN: S3.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	61.1	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	23.710	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S16, DS/PN: S3.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	61.1	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	23.210	Cap Volume Depth (m)	0.450

Cellular Storage Manhole: S29, DS/PN: S8.001

Invert Level (m)	22.702	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)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	54.0	0.0	0.300	54.0	0.0	0.301	0.0	0.0

Porous Car Park Manhole: S46, DS/PN: S10.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	336.0
Max Percolation (l/s)	560.0	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	20.010	Cap Volume Depth (m)	0.350

Cellular Storage Manhole: S69, DS/PN: S11.005

Invert Level (m) 17.850 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	120.0	120.0	0.800	120.0	193.6	0.801	0.0	193.6

Cellular Storage Manhole: S71, DS/PN: S9.006

Invert Level (m) 17.850 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	262.5	262.5	1.200	262.5	398.5	1.201	0.0	398.5

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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 10.000
 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 7 Number of Storage Structures 8 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

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

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) 1, 30, 100
 Climate Change (%) 0, 0, 40

US/MH		Return Climate		First (X)		First (Y)		First (Z)		Water	Surcharged
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Overflow	Act.	Level (m)	Depth (m)
S1.000	S1	10080 Winter	1	+0%						19.360	-0.600
S1.001	S2	10080 Winter	1	+0%						19.190	-0.600
S1.002	S3	10080 Winter	1	+0%						18.950	-0.600
S1.003	S4	10080 Winter	1	+0%						18.800	-0.600
S1.004	S5	15 Summer	100	+40%						18.683	-0.557
S2.000	S6	15 Winter	100	+40%	100/15 Summer					24.910	0.110
S2.001	S7	15 Winter	100	+40%	100/15 Summer					24.910	0.217
S2.002	S8	15 Winter	100	+40%	100/15 Summer					24.582	0.164
S2.003	S9	30 Winter	100	+40%	100/15 Summer					23.714	0.114
S2.004	S10	30 Winter	100	+40%	100/15 Summer					23.639	0.178
S2.005	S11	30 Winter	100	+40%	100/15 Summer					23.501	0.401
S3.000	S12	480 Winter	100	+40%	100/60 Summer					25.096	0.096
S3.001	S13	480 Winter	100	+40%	1/15 Summer					25.096	0.242
S3.002	S14	1440 Winter	100	+40%	1/1440 Winter					24.898	0.498
S3.003	S15	2160 Winter	100	+40%	30/360 Winter	100/2160 Winter				24.400	0.500
S3.004	S16	60 Winter	100	+40%						23.377	-0.023
S4.000	S17	10080 Winter	1	+0%						24.300	-0.100
S4.001	S18	15 Summer	100	+40%						24.245	-0.049
S5.000	S20	15 Summer	100	+40%						24.850	-0.042
S4.002	S21	15 Summer	100	+40%						23.906	-0.217
S6.000	S22	10080 Winter	1	+0%						23.750	-0.100
S6.001	S23	60 Winter	100	+40%						23.674	-0.053
S4.003	S24	60 Winter	100	+40%	100/30 Winter					23.670	0.154
S7.000	S25	60 Winter	100	+40%	100/60 Winter					23.671	0.071
S7.001	S26	60 Winter	100	+40%	100/30 Winter					23.670	0.177
S4.004	S27	60 Winter	100	+40%	100/15 Winter					23.666	0.403
S8.000	S28	60 Winter	100	+40%	100/15 Winter					23.663	0.463
S8.001	S29	60 Winter	100	+40%	100/15 Winter					23.663	0.561
S4.005	S30	60 Winter	100	+40%	30/15 Summer					23.662	0.803
S2.006	S31	30 Winter	100	+40%	30/15 Summer	100/30 Winter				23.401	0.714
S2.007	S32	60 Winter	100	+40%	30/15 Summer	100/30 Winter				23.400	0.764
S1.005	S33	240 Summer	100	+40%						18.683	-0.527
S1.006	S34	120 Summer	100	+40%						18.556	-0.514

The Old Hayloft		Page 21
Pucknall Farm	19142	
Romsey	Colt International	
Hampshire SO51 0QJ	Surcharge	
Date 19/12/2019	Designed by SJW	
File SURFACE WATER COMBINED FREEFLO...	Checked by RL	
XP Solutions	Network 2018.1.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)		
S1.000	S1	0.000	0.00		0.0	OK	
S1.001	S2	0.000	0.00		0.0	OK	
S1.002	S3	0.000	0.00		0.0	OK	
S1.003	S4	0.000	0.00		0.0	OK	
S1.004	S5	0.000	0.00		0.3	OK	
S2.000	S6	0.000	0.01		0.1	SURCHARGED	
S2.001	S7	0.000	1.08		8.2	SURCHARGED	
S2.002	S8	0.000	1.06		14.4	SURCHARGED	
S2.003	S9	0.000	1.04		21.1	SURCHARGED	
S2.004	S10	0.000	0.83		20.3	SURCHARGED	
S2.005	S11	0.000	0.62		19.4	FLOOD RISK	
S3.000	S12	0.000	0.00		0.0	SURCHARGED	
S3.001	S13	0.000	0.03		0.8	SURCHARGED	
S3.002	S14	0.000	0.04		1.0	FLOOD RISK	
S3.003	S15	0.222	0.01		1.0	FLOOD	2
S3.004	S16	0.000	0.02		2.2	OK	
S4.000	S17	0.000	0.00		0.0	OK	
S4.001	S18	0.000	0.52		3.8	OK	
S5.000	S20	0.000	0.87		27.9	OK	
S4.002	S21	0.000	0.17		31.8	OK	
S6.000	S22	0.000	0.00		0.0	OK	
S6.001	S23	0.000	0.23		2.0	OK	
S4.003	S24	0.000	0.15		18.1	SURCHARGED	
S7.000	S25	0.000	0.00		0.0	SURCHARGED	
S7.001	S26	0.000	0.23		2.0	SURCHARGED	
S4.004	S27	0.000	0.13		19.7	SURCHARGED	
S8.000	S28	0.000	0.00		0.0	FLOOD RISK	
S8.001	S29	0.000	0.10		5.7	FLOOD RISK	
S4.005	S30	0.000	0.08		7.4	FLOOD RISK	
S2.006	S31	1.456	0.15		31.2	FLOOD	2
S2.007	S32	0.039	0.02		14.0	FLOOD	2
S1.005	S33	0.000	0.04		14.0	OK	
S1.006	S34	0.000	0.05		14.0	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.007	S35	240 Winter	100	+40%					18.527	-0.523
S1.008	S36	240 Summer	100	+40%					18.455	-0.465
S1.009	S37	480 Summer	100	+40%					18.464	-0.136
S1.010	S38	360 Winter	100	+40%	1/120 Summer				18.462	0.252
S1.011	S39	480 Winter	30	+0%	1/30 Summer				18.487	0.617
S9.000	S40	15 Winter	100	+40%	100/15 Summer				20.375	0.480
S9.001	S41	15 Winter	100	+40%	30/15 Summer				20.299	0.854
S9.002	S42	15 Winter	100	+40%	30/15 Summer				20.177	0.850
S9.003	S43	240 Winter	100	+40%	30/15 Summer				20.076	0.993
S9.004	S44	240 Winter	100	+40%	30/15 Summer				20.059	1.135
S9.005	S45	240 Winter	100	+40%	100/60 Winter				20.030	1.240
S10.000	S46	30 Winter	100	+40%	100/15 Summer				20.169	0.069
S10.001	S47	180 Winter	100	+40%	100/120 Winter				20.025	0.138
S11.000	S48	15 Summer	100	+40%	100/15 Summer				20.752	0.002
S11.001	S49	15 Summer	100	+40%					20.434	-0.094
S12.000	S50	15 Winter	100	+40%	100/15 Summer				20.290	0.090
S13.000	S51	15 Winter	100	+40%	100/15 Summer				20.495	0.145
S14.000	S52	15 Winter	100	+40%	100/15 Summer				20.606	0.106
S15.000	S53	15 Winter	100	+40%	100/15 Summer				20.618	0.268
S16.000	S54	15 Winter	100	+40%	100/15 Summer				20.795	0.245
S16.001	S55	15 Winter	100	+40%	100/15 Summer				20.782	0.491
S16.002	S56	15 Winter	100	+40%	100/15 Summer				20.760	0.633
S17.000	S57	15 Winter	100	+40%	30/15 Summer	100/15 Winter			21.000	0.500
S17.001	S58	15 Winter	100	+40%	30/15 Summer				20.990	0.747
S17.002	S59	15 Winter	100	+40%	30/15 Summer				20.827	0.748
S16.003	S60	15 Winter	100	+40%	30/15 Winter				20.749	0.749
S16.004	S61	15 Winter	100	+40%	30/15 Summer				20.652	1.552
S14.001	S62	15 Winter	100	+40%	30/15 Summer				20.570	1.841
S13.001	S63	15 Winter	100	+40%	30/15 Summer				20.398	1.746
S11.002	S64	240 Winter	100	+40%	30/15 Summer				20.209	1.767
S18.000	S65	15 Winter	100	+40%	100/15 Summer				21.828	0.128
S18.001	S66	15 Winter	100	+40%	100/15 Summer	100/15 Summer			21.250	0.500
S11.003	S67	240 Winter	100	+40%	1/15 Winter				20.176	1.906
S11.004	S68	240 Winter	100	+40%	1/15 Winter				20.128	1.935
S11.005	S69	240 Winter	100	+40%	1/120 Summer				20.088	1.952
S11.006	S70	180 Winter	100	+40%	1/60 Winter				20.053	1.999
S9.006	S71	240 Winter	100	+40%	1/60 Summer	100/120 Winter			20.000	2.073
S9.007	S72	240 Winter	100	+40%	1/30 Summer				18.611	0.756
S1.012	S73	360 Winter	30	+0%	1/30 Summer	1/120 Winter			18.462	0.918

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.007	S35	0.000	0.04	14.0	OK	
S1.008	S36	0.000	0.03	15.0	OK	
S1.009	S37	0.000	0.04	21.8	OK	
S1.010	S38	0.000	0.06	36.1	SURCHARGED	
S1.011	S39	0.000	0.07	41.8	SURCHARGED	
S9.000	S40	0.000	0.48	33.1	SURCHARGED	
S9.001	S41	0.000	1.10	39.6	SURCHARGED	
S9.002	S42	0.000	1.09	52.3	SURCHARGED	
S9.003	S43	0.000	0.53	19.5	SURCHARGED	
S9.004	S44	0.000	0.64	23.6	SURCHARGED	
S9.005	S45	0.000	0.21	22.4	SURCHARGED	
S10.000	S46	0.000	1.18	79.1	SURCHARGED	
S10.001	S47	0.000	0.25	71.4	SURCHARGED	
S11.000	S48	0.000	1.00	21.2	SURCHARGED	

The Old Hayloft		Page 23
Pucknall Farm Romsey Hampshire SO51 0QJ	19142 Colt International Surcharge	
Date 19/12/2019 File SURFACE WATER COMBINED FREEFLO...	Designed by SJW Checked by RL	
XP Solutions	Network 2018.1.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S11.001	S49	0.000	0.30	23.6	OK	
S12.000	S50	0.000	0.85	18.8	SURCHARGED	
S13.000	S51	0.000	0.71	15.7	SURCHARGED	
S14.000	S52	0.000	0.58	12.8	SURCHARGED	
S15.000	S53	0.000	0.64	14.2	FLOOD RISK	
S16.000	S54	0.000	0.42	9.1	FLOOD RISK	
S16.001	S55	0.000	0.86	17.7	FLOOD RISK	
S16.002	S56	0.000	0.61	13.7	FLOOD RISK	
S17.000	S57	0.482	0.72	5.4	FLOOD	2
S17.001	S58	0.000	1.50	11.0	FLOOD RISK	
S17.002	S59	0.000	1.61	11.1	FLOOD RISK	
S16.003	S60	0.000	0.67	25.3	FLOOD RISK	
S16.004	S61	0.000	1.24	28.8	SURCHARGED	
S14.001	S62	0.000	2.44	37.5	SURCHARGED	
S13.001	S63	0.000	1.28	48.1	SURCHARGED	
S11.002	S64	0.000	0.72	26.8	SURCHARGED	
S18.000	S65	0.000	0.88	9.2	SURCHARGED	
S18.001	S66	0.449	0.89	22.3	FLOOD	2
S11.003	S67	0.000	1.03	35.4	SURCHARGED	
S11.004	S68	0.000	1.06	35.1	SURCHARGED	
S11.005	S69	0.000	1.00	34.7	SURCHARGED	
S11.006	S70	0.000	1.09	39.6	SURCHARGED	
S9.006	S71	0.346	0.31	50.0	FLOOD	4
S9.007	S72	0.000	0.20	61.3	SURCHARGED	
S1.012	S73	0.392	0.40	139.1	FLOOD	

Appendix E

Drainage Layout



WFBA DRAINAGE LEGEND

- STORM WATER - PRIVATE DRAIN
- FOUL WATER - PRIVATE DRAIN
- STORM WATER - PROPOSED ATTENUATION TANK
- OVERLAND FLOW ROUTE
- SITE BOUNDARY
- SW SURFACE WATER
- J JUNCTION

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT, ENGINEER & SPECIALIST DRAWINGS & THE SPECIFICATION.
 - IN THE CASE OF A DISCREPANCY BETWEEN DRAWINGS OR A LACK OF DIMENSIONS OR CLEAR INFORMATION WFBA LIMITED MUST BE CONSULTED IMMEDIATELY BEFORE WORK PROCEEDS.
 - ALL LAYOUT DIMENSIONS ARE IN METRES, DETAIL DIMENSIONS IN MILLIMETRES AND LEVELS IN METRES UNLESS NOTED OTHERWISE. ALL COORDINATES ARE TO OS GRID AND ALL LEVELS ARE TO OS DATUM UNLESS NOTED OTHERWISE.
 - THE LEVEL OF THE EXISTING FOUL AND STORM SEWERS ON SITE HAS BEEN EXTRAPOLATED FROM LEVELS OF ADJACENT MANHOLES THE EXACT LEVEL AT POINT OF CONNECTION SHALL BE CHECKED PRIOR TO THE COMMENCEMENT OF THE WORKS AND ANY VARIANCE REPORT TO THE ENGINEER IMMEDIATELY.
 - ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH BUILDING REGULATIONS.
 - ALL ADOPTABLE DRAINAGE TO BE IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION, TOGETHER WITH ANY PARTICULAR REQUIREMENTS OF THE LOCAL DRAINAGE AUTHORITY.
 - UNLESS NOTED OTHERWISE ALL DRAINAGE PIPES ARE TO BE 100mmØ. ALL GULLY LEADS ARE TO BE 150mmØ.
 - ALL EXTERNAL RWP's TO HAVE RODDING ACCESS.
 - ALL HIGHWAY WORKS TO BE IN ACCORDANCE WITH THE DTP SPECIFICATION FOR HIGHWAYS WORKS, TOGETHER WITH PARTICULAR REQUIREMENTS OF THE LOCAL HIGHWAYS AUTHORITY.
 - THE LOCATION OF KNOWN EXISTING PUBLIC UTILITY SERVICES IS AS PROVIDED BY THE STATUTORY UNDERTAKERS. NO GUARANTEE CAN BE GIVEN AS TO THE ACCURACY OF THIS INFORMATION. THE CONTRACTOR IS TO ASCERTAIN THE EXACT LOCATION PRIOR TO THE COMMENCEMENT OF WORKS.
 - ALL DUCTS TO BE LAID AT DEPTHS TO SUIT THE RELEVANT STATUTORY UNDERTAKER.
 - SERVICE ENTRY POINTS ON BUILDINGS ARE TO BE CHECKED AGAINST ARCHITECTS LAYOUTS PRIOR TO DUCT LAYING AND ANY DISCREPANCIES REPORTED WFBA IMMEDIATELY.
 - ALL RWP & SVP LOCATIONS TO BE CONFIRMED BY THE ARCHITECT PRIOR TO CONSTRUCTION.
 - ALL CONNECTIONS TO EXISTING DRAINAGE TO BE CHECKED AND VERIFIED ON SITE PRIOR TO CONSTRUCTION STAGE.
 - TOPOGRAPHICAL SURVEY PROVIDED BY MK SURVEYS. SITE SETTING OUT HAS BEEN BASED OFF OF THIS DRAWING.
 - ANY DISCREPANCY FOUND BETWEEN OVERLAIN THIRD-PARTY DRAWINGS & LATEST THIRD-PARTY DRAWINGS MUST BE RAISED WITH WFBA IMMEDIATELY.

DO NOT SCALE THIS DRAWING - IF IN DOUBT ASK.

P03	18/12/19	DRAINAGE DESIGN UPDATED TO SUIT REVISED DISCHARGE RATES	SJW	RL
P02	30/10/19	UPDATE DRAINAGE DESIGN	EM	PT
P01	27/02/19	PRELIMINARY ISSUE	KG	RL
Revision	Date Revised	Revision Notes	Amended	Checked
PRELIMINARY				S2

Project Name
**COLT INTERNATIONAL
BARTONS ROAD/MARTIN ROAD
HAVANT**

Architect
MH ARCHITECTS

Client
DREW SMITH LIMITED

WFBA
Consulting Civil & Structural Engineers
THE OLD HAYLOFT, PUCKNALL FARM
DORIS LANE, BRAISHFIELD, ROMSEY,
HAMPSHIRE, SO51 0DJ.
TEL: 01794 368241
EMAIL: CONTACT@WFBA.CO.UK WWW.WFBA.CO.UK

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Drawing Title
**SURFACE AND FOUL WATER
DRAINAGE STRATEGY
LAYOUT PLAN**

Created By KG	Checked By RL	Approved By
WFBA Project Reference: 19142	Scale: 1:400 @ A1	DATE FEB 2019
PROJECT - ORIGINATOR - VOLUME - LEVEL - TYPE - ROLE - NUMBER		REVISION
19142 - WFBA-XX-DR-X 0500		P03

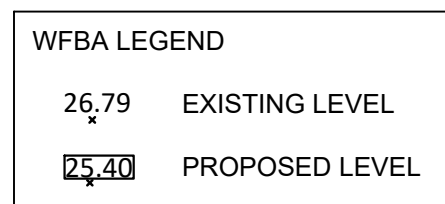
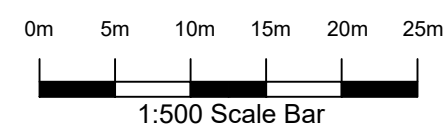
PIPE SIZE (mm)	STORAGE PER METRE (m³)
100Ø	0.008
150Ø	0.018
225Ø	0.400
300Ø	0.071
450Ø	0.159
600Ø	0.283
750Ø	0.442
900Ø	0.636

ATTENUATION TANK NUMBER	VOLUME (m³)
ATT 01	399
ATT 02	182
ATT 03	16.2
TOTAL VOLUME	597.2

HYDROBRAKE 'OPTIMUM'
FLOW CONTROL DEVICE. REF NUMBER:-
MD-SHE-0287-5000-1600-5000
ALLOWABLE DISCHARGE RATE TO EXISTING
MONSOON DRAIN LIMITED TO 50 l/s

TOTAL STORAGE REQUIRED 597.2m³
DESIGNED FOR A 1 IN 100 YEAR STORM EVENT +
40% FOR CLIMATE CHANGE.
ADDITIONAL 10% ALLOWED FOR URBAN CREEP.

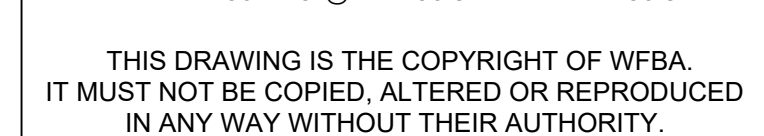
Foul Flow Rates
Peak - 4.28l/s
DWF - 0.65l/s



- DO NOT SCALE THIS DRAWING - IF IN DOUBT ASK.

PRELIMINARY Suitability Code:
S2

Client

The logo for Drew Smith Limited is displayed. It consists of two rectangular blocks: a dark grey block on the left containing the text "DREW SMITH" in white, uppercase, sans-serif font, and a red block on the right containing the text "LIMITED" in white, uppercase, sans-serif font.

PROJECT - ORIGINATOR - VOLUME - LEVEL - TYPE - ROLE - NUMBER		REVISION
19142 -WFB-XX-XX-DR-C-0600		P03

Appendix F

HCC Meeting Minutes

MEETING RECORD

Report Number: **WFBA 19142 – M01**

Project No. & Name: 19142 Colt International

Date/time of inspection: 3rd December 2019

Made By: Rob Lowe

Persons in Attendance:	Rob Lowe	WFBA
	Santiago Manzanero	HCC
	Dan O'Shea	Drew Smith

1.0 Purpose of Meeting

- 1.1 To discuss the reserved matter application drainage conditions for Colt International. There are issues with the outline strategy proposed by WYG within their Flood Risk Assessment and Drainage Strategy Issue 2 dated 24.08.18.

2.0 Observations and Comments

- 2.1 The WYG and WFBA strategies were discussed.
- 2.2 WYG strategy is based on greenfield runoff rates as opposed to a reduction in brownfield runoff rates. The WFBA strategy is based on a 30% reduction in the 1 in 1-year brownfield runoff rate for a 60-minute storm. The site was previously 100% impermeable due to the previous use as a factory. There was extensive hard standing around the factory which was used as car parking and delivery areas.
- 2.3 The WYG strategy will provide half drain times of 12 days for area 1 and 4 days for area 2. This is not an acceptable half drain times and this should be below 24 hours. The WFBA strategy provides half drain times of 2.5 hours for area 1 and 1.5 hours for area 2.
- 2.4 HCC accepted the WFBA approach as acceptable but would need to confirm what changes would be allowable to an approved strategy at outline stage. HCC would need to see detailed modelling and layout drawings to confirm this along with background calculations to confirm suitability of runoff rates.
- 2.5 The WYG strategy proposes to use large attenuation tanks to store the excess flows from the site. The surface water will be treated using a petrol interceptor to ensure the runoff is of sufficient quality. The WFBA strategy proposes to use permeable paving for both attenuation and water cleansing. HCC have requested we ensure the water is of sufficient quality with a water quality report using CIRIA guidance.

2.6 HCC requested the monsoon drain/culvert was included within the modelling to confirm this does not flood when being discharged into. HCC also requested a possible surcharge in the ultimate outfall location at the brook. This was to be a 1 in 100-year storm event surcharge in the location of the Flood Zone 2.

Rob Lowe

For and on behalf of WFBA.