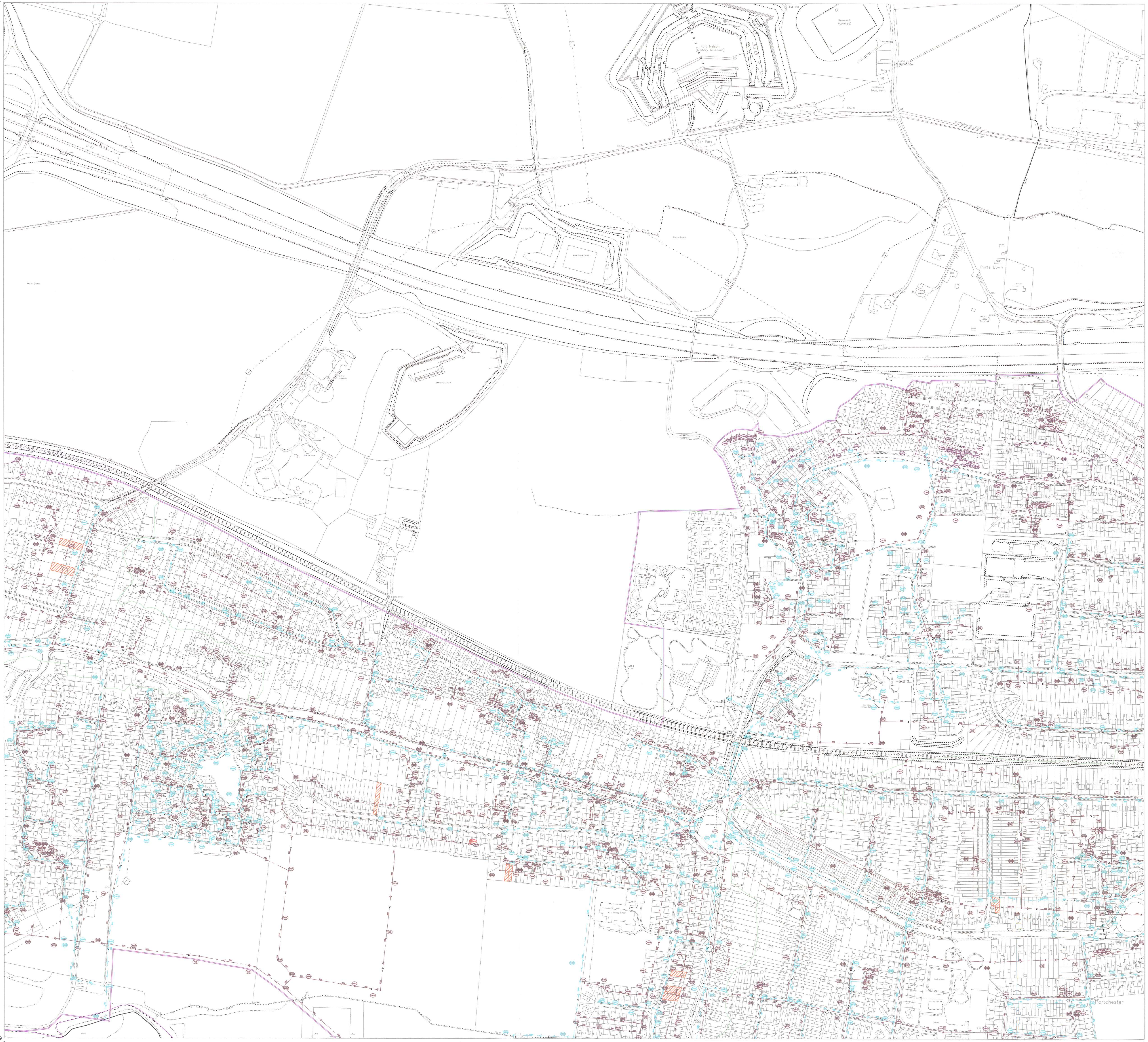
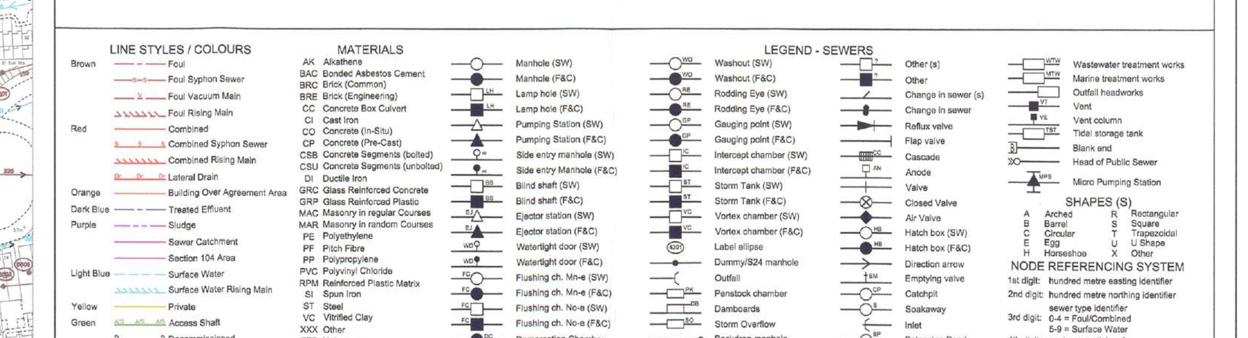


SEWER RECORDS

Node	Cover	Invert	Size	Material	Shape	
0001X	21.051	18.981	150	UNK	CIRC	*
0001X	15.095	11.835	225	UNK	CIRC	*
0002X	14.967	12.627	150	UNK	CIRC	
0003X			225	UNK	CIRC	
0004X	14.979	11.809	150	UNK	CIRC	
0005X	14.743	11.253	225	UNK	CIRC	
0006X	13.198		225	UNK	CIRC	
0050X			225	UNK	CIRC	*
0050X	20.639	17.329	225	UNK	CIRC	*
0051X	20.667	18.877	150	UNK	CIRC	*
0051X	15.095		225	UNK	CIRC	*
0052X	14.743	12.573	225	UNK	CIRC	*
0052X	16.89		375	UNK	CIRC	*
0053X	13.198		225	UNK	CIRC	*
0053X			375	UNK	CIRC	*
0101X	17.926	15.036	225	UNK	CIRC	*
0101X	24.077	22.797	150	UNK	CIRC	*
0102X	15.339	14.049	150	UNK	CIRC	
0150X	17.926	16.096	225	UNK	CIRC	*
0150X	23.874	22.594	UNK	UNK	CIRC	*
0151X	24.184	22.814	150	UNK	CIRC	
0152X	25.157		150	UNK	CIRC	
0153X	27.015	25.765	150	UNK	CIRC	
0201X	33.231	30.571	150	UNK	CIRC	
0250X	29.016		150	UNK	CIRC	
0251X	29.212	28.552	150	UNK	CIRC	
0252X	32.638	30.558	375	UNK	CIRC	
0302X	6.971		150	UNK	CIRC	
0350X	6.927		750	UNK	CIRC	
0401X	7.344	5.424	225	UNK	CIRC	*
0401X	6.331	4.801	150	UNK	CIRC	*
0401X	47.221	45.991	150	UNK	CIRC	*
0402X	51.357	49.907	150	UNK	CIRC	*
0402X	6.528	4.808	225	UNK	CIRC	*
0402X			100	VC	CIRC	*
0403X			100	VC	CIRC	*
0403X	50.706	49.036	150	UNK	CIRC	*
0405X			UNK	UNK	CIRC	
040DX			UNK	UNK	CIRC	*
040DX			UNK	UNK	CIRC	*
0450X	6.389	3.869	525	UNK	CIRC	
045CX	46.502	45.282	150	UNK	CIRC	
046CX	45.075	43.805	150	UNK	CIRC	
0501X	6.318	3.858	150	UNK	CIRC	*
0501Y	6.318		150	UNK	CIRC	*
0501X			150	UNK	CIRC	*
0502X			UNK	UNK	CIRC	*
0502X	6.352	4.112	150	UNK	CIRC	*
0503X	6.606	4.636	150	UNK	CIRC	*
0503X			150	UNK	CIRC	*
0504X			UNK	UNK	CIRC	
0505X			UNK	UNK	CIRC	
0506X			UNK	UNK	CIRC	
0550X	5.85	4.46	375	UNK	CIRC	
0551X	6.284		225	UNK	CIRC	
0552X			375	UNK	CIRC	
055ZX			450	UNK	CIRC	
0601X	6.196		150	UNK	CIRC	
0602X	5.805	4.165	UNK	UNK	CIRC	
0603X			100	UNK	CIRC	
0604X	5.45	3.758	225	UNK	CIRC	
0605X	5.45	3.633	225	UNK	CIRC	
0606X	5.45	3.569	225	UNK	CIRC	
0607X			225	UNK	CIRC	
060DX			150	UNK	CIRC	
0650X	6.246	5.176	175	UNK	CIRC	
0701X	6.754	5.324	150	UNK	CIRC	*
0701X			150	UNK	CIRC	*
0702X	6.32	5.03	150	UNK	CIRC	*
0702X			150	UNK	CIRC	*
0703X			UNK	UNK	CIRC	
070ZX			150	UNK	CIRC	
0750X	6.323	5.363	150	UNK	CIRC	
0801X	7.865		150	UNK	CIRC	
0802X	8.659		150	UNK	CIRC	
0803X	10.885	8.225	300	UNK	CIRC	
080DX			150	UNK	CIRC	
0850X	7.792	6.502	225	UNK	CIRC	
0901X	12.195		300	UNK	CIRC	*
0901X	11.492	9.672	225	UNK	CIRC	*
0902X	13.879	12.169	150	UNK	CIRC	*
0902X	10.454	8.984	225	UNK	CIRC	*
0903X	10.351		UNK	UNK	CIRC	
0950X	13.838	13.348	150	UNK	CIRC	*
0950X	16.674	9.494	225	UNK	CIRC	*
0951X	10.573	9.223	150	UNK	CIRC	*
0951X	14.387	13.837	100	UNK	CIRC	*
0952X	14.271	13.481	150	UNK	CIRC	*
0952X	10.403		300	UNK	CIRC	*
0953X	10.63	9.9	300	UNK	CIRC	
0954X	11.492	10.042	225	UNK	CIRC	
1001X	15.459	13.169	150	UNK	CIRC	*
1001X	17.737		150	UNK	CIRC	*
1002X	20.388		150	UNK	CIRC	*
1002X			150	PF	CIRC	*
1003X			150	PF	CIRC	*
1003X	20.324	18.434	150	UNK	CIRC	*
1050X	16.55	15.36	300	UNK	CIRC	*
1050X	15.034	13.254	225	UNK	CIRC	*
1051X	18.481	17.101	150	UNK	CIRC	*
1051X	14.226	13.586	150	UNK	CIRC	*
1052X	20.109	18.469	150	UNK	CIRC	
1053X	19.553	18.293	150	UNK	CIRC	
1054X	21.011	19.051	150	UNK	CIRC	
1055X	16.951	16.071	150	UNK	CIRC	
1101X			UNK	UNK	CIRC	*
1101X	21.996		150	UNK	CIRC	*
1102X			UNK	UNK	CIRC	*
1102X			UNK	UNK	CIRC	*
1103X	25.094	22.664	150	UNK	CIRC	*
1103X			UNK	UNK	CIRC	*
110DX			UNK	UNK	CIRC	
1150X	22.312		150	UNK	CIRC	
1151X	22.338	21.028	150	UNK	CIRC	
1152X	23.38	21.65	150	UNK	CIRC	
1153X	23.692		150	UNK	CIRC	
1201X	28.929	27.289	150	UNK	CIRC	
1202X	31.985	29.945	150	UNK	CIRC	
1203X	33.902	31.682	150	UNK	CIRC	
1250X	31.218	30.078	150	UNK	CIRC	
1251X	33.59	31.81	375	UNK	CIRC	
1301X	6.18		150	UNK	CIRC	*
1301X	38.157		150	UNK	CIRC	*
1302X	39.43	37.89	150	UNK	CIRC	
1303X	38.67	37.32	150	UNK	CIRC	
1304X			UNK	VC	CIRC	
1305X			150	UNK	CIRC	
130ZX			225	UNK	CIRC	
1350X	36.847	35.187	225	UNK	CIRC	
135CX	40.091	38.481	225	UNK	CIRC	
1401X	5.434		150	UNK	CIRC	*
1401X	51.251	48.681	150	UNK	CIRC	*
1402X	46.673	45.203	150	UNK	CIRC	
1403X	46.065	43.715	150	UNK	CIRC	
1404X	50.727		150	UNK	CIRC	
1405X			UNK	UNK	CIRC	
1406X			UNK	UNK	CIRC	
1407X			UNK	UNK	CIRC	
1408X			UNK	UNK	CIRC	
1409X			UNK	UNK	CIRC	
140DX			UNK	UNK	CIRC	
1411X			UNK	UNK	CIRC	
1412X			UNK	UNK	CIRC	
1413X			UNK	UNK	CIRC	
1414X			UNK	UNK	CIRC	
1450X			UNK	UNK	CIRC	
1451X	46.392		150	UNK	CIRC	
1453X			UNK	UNK	CIRC	
145CX	48.456	46.626	150	UNK	CIRC	
1501X	7.972	6.382	225	UNK	CIRC	*
1501X	5.285	3.405	100	UNK	CIRC	*
1501X			150	UNK	CIRC	*
1502X	5.364	4.014	100	UNK	CIRC	*
1502X			150	UNK	CIRC	*
1503X			UNK	UNK	CIRC	
150DX			225	UNK	CIRC	
1601X	5.301	3.901	150	UNK	CIRC	*
1601X	9.04		225	UNK	CIRC	*
1602X	5.355	3.475	225	UNK	CIRC	
1603X	5.45	3.525	UNK	UNK	CIRC	
1604X			100	VC	CIRC	
1605X			100	VC	CIRC	
1606X			100	VC	CIRC	
1607X			100	VC	CIRC	
1608X			225	UNK	CIRC	
160ZX			225	UNK	CIRC	
1650X	5.281	4.651	225	UNK	CIRC	
1651X	5.318	4.558	225	UNK	CIRC	
1701X	9.761	7.811	225	UNK	CIRC	*
1701X	6.011	4.461	150	UNK	CIRC	*
1702X	6.616	5.516	150	UNK	CIRC	*
1702X	9.631	8.031	225	UNK	CIRC	*
1703X	9.906		225	UNK	CIRC	
1704X	9.621		150	UNK	CIRC	
1705X			150	UNK	CIRC	
1750X	9.545	8.425	150	UNK	CIRC	*
1750Y	7.622	5.652	150	UNK	CIRC	*
1751X	6.09	5.01	150	UNK	CIRC	*
1751X	9.524	7.994	150	UNK	CIRC	*
1801X	7.634	5.334	150	UNK	CIRC	*
1801X	10.218	8.518	225	UNK	CIRC	*
1802X	10.134		225	UNK	CIRC	*
1802X	8.371		150	UNK	CIRC	*
1803X	9.887	8.857	150	UNK	CIRC	
1804X			UNK	UNK	CIRC	
1805X			UNK	UNK	CIRC	
1806X			UNK	UNK	CIRC	
1807X			UNK	UNK	CIRC	
181DX			UNK	UNK	CIRC	

Node	Cover	Invert	Size	Material	Shape	
1850X	10.038	9.148	300	UNK	CIRC	
1851X	10.23	9.62	300	UNK	CIRC	
1852X	10.241	9.731	300	UNK	CIRC	
1853X	9.796	8.856	150	UNK	CIRC	
1854X	9.803	9.183	150	UNK	CIRC	
1901X			225	UNK	CIRC	*
1901X	11.577		300	UNK	CIRC	*
1902X	13.58	12.25	150	UNK	CIRC	*
1902X			UNK	UNK	CIRC	*
1903X	13.203	11.553	150	UNK	CIRC	*
1903X			UNK	UNK	CIRC	*
1950X			150	UNK	CIRC	*
1950X	13.509	12.579	150	UNK	CIRC	*
1951X	13.409		300	UNK	CIRC	*
1951X			150	UNK	CIRC	*
1952X	13.216	12.046	300	UNK	CIRC	*
1952X	13.584		150	UNK	CIRC	*
1953X			150	UNK	CIRC	
2001X	15.534	13.864	150	UNK	CIRC	*
2001X	17.501	15.911	150	UNK	CIRC	*
2002X	16.128	15.048	150	UNK	CIRC	
2003X			UNK	UNK	CIRC	
200DX			UNK	UNK	CIRC	
2050X	17.223	15.453	150	UNK	CIRC	*
2050X	15.589	14.189	150	UNK	CIRC	*
2051X	17.311	15.231	150	UNK	CIRC	
205ZX			225	UNK	CIRC	
2101X	22.476		UNK	UNK	CIRC	
2301X	45.322	43.552	150	UNK	CIRC	*
2301X	5.677		225	UNK	CIRC	*
2302X	5.933		225	UNK	CIRC	*
2302X	46.189	43.919	150	UNK	CIRC	*
2303X	45.578	43.918	150	UNK	CIRC	
2304X	46.154	44.044	150	UNK	CIRC	
2305X	38.266	35.156	150	UNK	CIRC	
2307X			UNK	UNK	CIRC	
2350X	5.654	5.014	150	UNK	CIRC	
235CX	45.89	44.51	UNK	UNK	CIRC	
2401Y	5.258	4.068	150	UNK	CIRC	*
2401X	5.258	3.768	150	UNK	CIRC	*
2402X	5.653	3.073	150	UNK	CIRC	*
2402X	50.012	49.282	150	UNK	CIRC	*
2403X	52.654	51.724	150	UNK	CIRC	
2404X			UNK	UNK	CIRC	
240DX			UNK	UNK	CIRC	
2450X	5.33	4.39	150	UNK	CIRC	
2500X			150	UNK	CIRC	
2501X	4.999		225	UNK	CIRC	
2502X	4.438		225	VC	CIRC	
2503X			225	VC	CIRC	
2601X			150	UNK	CIRC	
2602X	5.268		150	UNK	CIRC	
2603X			UNK	UNK	CIRC	
2604X			UNK	UNK	CIRC	
260DX			150	UNK	CIRC	
2650X	5.031	4.241	225	UNK	CIRC	
2651X	4.832	4.072	225	UNK	CIRC	
2652X	4.887	4.037	UNK	UNK	CIRC	
265DX			225	UNK	CIRC	
2701X	6.935		150	UNK	CIRC	*
2701X	9.957	8.857	150	UNK	CIRC	*
2702X	6.322		150	UNK	CIRC	*
2702X			225	UNK	CIRC	*
2703X			150	UNK	CIRC	*
2703X	10.035	8.805	225	UNK	CIRC	*
2704X	6.459	4.999	150	UNK	CIRC	*
2704X	10.087	9.027	225	UNK	CIRC	*
2705X	9.65	8.8	150	UNK	CIRC	*
2705X			150	UNK	CIRC	*
2706X	9.954	9.474	150	UNK	CIRC	*
2706X			UNK	UNK	CIRC	*
2707X			UNK	UNK	CIRC	
270DX			150	UNK	CIRC	
2750X	9.598		UNK	UNK	CIRC	*
2750X	6.835	6.455	150	UNK	CIRC	*
2751X	5.927	5.157	150	UNK	CIRC	
2752X	7.156	6.076	150	UNK	CIRC	
2801X	7.95		150	UNK	CIRC	*
2801X	10.59	8.2	225	UNK	CIRC	*
2802X	10.326	8.226	225	UNK	CIRC	*
2802X			150	UNK	CIRC	*
285CX	10.155		225	UNK	CIRC	
286CX	10.415	9.405	225	UNK	CIRC	
2901X	14.146	12.456	150	UNK	CIRC	*
2901X	11.189	8.989	300	UNK	CIRC	*
2902X	14.058	12.858	150	UNK	CIRC	
2903X	14.069	12.999	150	UNK	CIRC	
2904X	14.044	13.064	150	UNK	CIRC	
2905X	14.466	13.188	150	UNK	CIRC	
2906X	14.474	13.404	150	UNK	CIRC	
2907X			UNK	UNK	CIRC	
2950X	11.496	10.196	150	UNK	CIRC	
3001X			150	UNK	CIRC	*
3001X			UNK	PF	CIRC	*
3002X	15.813	14.503	150	UNK	CIRC	
3003X	16.083		150	UNK	CIRC	
3004X	15.972	14.032	150	UNK	CIRC	
3050X	17.575		375	UNK	CIRC	
3051X	17.308	14.278	300	UNK	CIRC	
3052X	18.212	16.512	225	UNK	CIRC	
3053X	21.229	19.539	225	UNK	CIRC	
3101X	25.527	24.107	150	UNK	CIRC	
3102X	25.571	24.661	150	UNK	CIRC	
3103X	25.595	24.255	UNK	UNK	CIRC	
3150X	24.909	23.429	225	UNK	CIRC	
3151X	25.274	23.664	225	UNK	CIRC	
3201X	32.87	31.92	150	UNK	CIRC	
3202X			UNK	UNK	CIRC	
3203X			UNK	UNK	CIRC	
3250X	35.428	33.278	150	UNK	CIRC	
3251X	33.206		225	UNK	CIRC	
325ZX			225	UNK	CIRC	
3301X	45.106	43.126	150	UNK	CIRC	
3302Y	5.284	2.894	225	UNK	CIRC	*
3302X	38.188	34.858	150	UNK	CIRC	*
3303X	44.777		150	UNK	CIRC	
3304X	40.544	37.954	150	UNK	CIRC	
3305X	41.872	40.922	150	UNK	CIRC	*
3305X			UNK	UNK	CIRC	*
3306X	39.609	38.339	150	UNK	CIRC	
3307X	45.774	43.374	150	UNK	CIRC	
3308X	43.395	40.825	150	UNK	CIRC	
3309X	38.391		150	UNK	CIRC	
330DX			100	VC	CIRC	*
330DX			225	UNK	CIRC	*
3310X			UNK	UNK	CIRC	
3311X			UNK	UNK	CIRC	
3313X			100	VC	CIRC	
3314X			100	VC	CIRC	
3315X			100	VC	CIRC	
331DX			150	UNK	CIRC	
3350X	5.279	4.549	150	UNK	CIRC	*
3350X	8.128	3.738	1050	UNK	CIRC	*
3401X	52.456	51.006	150	UNK	CIRC	*
3401X	4.458		150	UNK	CIRC	*
3402X	4.775	3.255	150	UNK	CIRC	*
3402X	51.585	49.645	150	UNK	CIRC	*
3403X			225	UNK	CIRC	*
3403X	48.615	46.37	150	VC	CIRC	*
3404X			100	UNK	CIRC	*
3404X	46.72	45.305	150	VC	CIRC	*
3405X			UNK	UNK	CIRC	
3406X			UNK	UNK	CIRC	
3407X			UNK	UNK	CIRC	
3408X			UNK	UNK	CIRC	
3409X			UNK	UNK	CIRC	
341DX			150	UNK	CIRC	
3450X	4.495	3.525	225	UNK	CIRC	
3451X	4.851	3.721	150	UNK	CIRC	
3501X	4.248		225	UNK	CIRC	*
3501X	49.145	47.725	150	VC	CIRC	*
3502X			225	UNK	CIRC	*
3502X	51.865	50.08	150	VC	CIRC	*
3503X	49.935	47.65	150	VC	CIRC	
3504X	50.98	47.35	150	VC	CIRC	*
3504X		2.83	300	UNK	CIRC	*
3505X	4.359	2.8	300	UNK	CIRC	*
3505X	50.85	47.275	150	VC	CIRC	*
3506X			UNK	UNK	CIRC	
3550X	4.524		225	UNK	CIRC	
3552X		2.51	300	UNK	CIRC	
355ZX			300	UNK	CIRC	
3601X	5.175	3.645	150	UNK	CIRC	*
3601X			225	UNK	CIRC	*
3602X	9.82	8.99	150	UNK	CIRC	
3603X			UNK	PF	CIRC	
3604X			UNK	PF	CIRC	
3605X			UNK	PF	CIRC	
3606X			UNK	UNK	CIRC	
3607X			UNK	UNK	CIRC	
360DX			225	UNK	CIRC	
361DX			UNK	UNK	CIRC	
362DX			225	UNK	CIRC	
3650Y	4.605		375	UNK	CIRC	*
3650X	4.605		300	UNK	CIRC	*
3650X	9.653	8.343	225	UNK	CIRC	*
3651X	5.063	3.643	225	UNK	CIRC	*
3651X	9.543	8.223	300	UNK	CIRC	*
365DX			300	UNK	CIRC	
365ZX			300	UNK	CIRC	
3701X	7.016		150	UNK	CIRC	
3702X	6.228	5.028	150	UNK	CIRC	
3703X			UNK	VC	CIRC	*
3703X	5.936		150	UNK	CIRC	*
3704X	6.186		150	UNK	CIRC	*
3704X			UNK	UNK	CIRC	*
3705X			UNK	UNK	CIRC	
3706X			UNK	UNK	CIRC	
3707X			UNK	UNK	CIRC	

Node	Cover	Invert	Size	Material	Shape	
3708X			UNK	UNK	CIRC	
3709X			UNK	UNK	CIRC	
3710X			150	VC	CIRC	
3713X			UNK	UNK	CIRC	
3714X			UNK	UNK	CIRC	
3750X	6.805	6.235	150	UNK	CIRC	*
3750X	9.29		300	UNK	CIRC	*
3751X	9.583		225	UNK	CIRC	*
3751X	5.858	4.618	150	UNK	CIRC	*
3752X	9.825	8.675	150	UNK	CIRC	
3753X	9.388	8.308	UNK	UNK	CIRC	
3754X	9.398	8.568	UNK	UNK	CIRC	
3755X	10.109	8.429	UNK	UNK	CIRC	
3801X	10.616	7.956	225	UNK	CIRC	
3802X	10.598		225	UNK	CIRC	
3803X	10.598		UNK	UNK	CIRC	
3804X			UNK	UNK	CIRC	
3805X	10.52		225	UNK	CIRC	
3850X	10.541	8.831	150	UNK	CIRC	
3851X	10.681		300	UNK	CIRC	
3852X	10.44	8.01	300	UNK	CIRC	
385CX	10.583	10.003	150	UNK	CIRC	
385DX			225	UNK	CIRC	
386CX	10.688	9.938	150	UNK	CIRC	
3901X	13.565	11.025	150	UNK	CIRC	*
3901X	11.46		300	UNK	CIRC	*
3902X	12.719	10.609	150	UNK	CIRC	*
3902X			100	VC	CIRC	*
3903X	13.739		150	UNK	CIRC	*
3903X			100	VC	CIRC	*
3904X	14.492	16.889	150	UNK	CIRC	
3905X	12.613		150	UNK	CIRC	
3906X	13.96	11.61	150	UNK	CIRC	
3907X			150	UNK	CIRC	
3908X	12.105	10.165	150	UNK	CIRC	
3909X			150	UNK	CIRC	
390DX			150	VC	CIRC	
3910X	13.657	11.847	150	UNK	CIRC	
3913X	13.561	11.171	UNK	PF	CIRC	
3914X			UNK	UNK	CIRC	
3915X			UNK	UNK	CIRC	
3916X			UNK	UNK	CIRC	
391DX			150	UNK	CIRC	*
391DX			150	VC	CIRC	*
392DX			150	UNK	CIRC	
394DX			150	UNK	CIRC	
3950X	13.561	11.171	150	UNK	CIRC	*
3950X	11.372	9.752	225	UNK	CIRC	*
3951X	12.662	11.592	225	UNK	CIRC	
3952X	13.738		225	UNK	CIRC	
3953X	14.495		225	UNK	CIRC	
3954X	12.579		225	UNK	CIRC	
3955X	13.681		150	UNK	CIRC	
3957X	12.108	10.488	UNK	UNK	CIRC	
3958X	11.797	10.027	300	UNK	CIRC	
3959X	13.395	11.565	150	UNK	CIRC	
395ZX			225	UNK	CIRC	
397DX			UNK	PF	CIRC	
39ADX			UNK	UNK	CIRC	
4001X	18.222	16.752	150	UNK	CIRC	*
4001X	14.242	9.372	375	UNK	CIRC	*
4002X			UNK	UNK	CIRC	
400DX			150	UNK	CIRC	
4050X	14.289	13.619	150	UNK	CIRC	*
4050X	17.905	12.955	375	UNK	CIRC	*
4051X	17.728		150	UNK	CIRC	
4052X	17.47	13.68	375	UNK	CIRC	
4053X			100	VC	CIRC	
405CX	14.116	13.426	150	UNK	CIRC	
405DX			100	VC	CIRC	
406CX	13.939	12.609	225	UNK	CIRC	
406DX			375	UNK	CIRC	
407CX	14.18	12.79	150	UNK	CIRC	
4101X	15.756	14.566	UNK	UNK	CIRC	*
4101X	25.085	23.365	150	UNK	CIRC	*
4102X	14.596	13.576	150	UNK	CIRC	*
4102X	22.015	21.155	150	UNK	CIRC	*
4103X	14.84	13.74	150	UNK	CIRC	*
4103X	22.119	20.739	150	UNK	CIRC	*
4104X	14.607	13.257	150	UNK	CIRC	
4105X	15.366		UNK	UNK	CIRC	
410DX			UNK	UNK	CIRC	
4150X	24.146	23.136	150	UNK	CIRC	
4151X	23.828	22.698	150	UNK	CIRC	
4201X	18.241	16.831	150	UNK	CIRC	*
4201X	29.868	28.508	150	UNK	CIRC	*
4202X	32.143	31.203	150	UNK	CIRC	*
4202Y	18.265		150	UNK	CIRC	*
4202X	18.265	16.625	UNK	UNK	CIRC	*
4203X	18.321	16.501	150	UNK	CIRC	*
4203X	31.752	30.892	150	UNK	CIRC	*
4204X	17.688	16.398	150	UNK	CIRC	
4205X	18.423	16.863	150	UNK	CIRC	
4206X	17.637	16.167	UNK	UNK	CIRC	
4207X			150	UNK	CIRC	
4208X			UNK	UNK	CIRC	
4250X	30.633	29.053	150	UNK	CIRC	
4301X	22.642	21.242	UNK	UNK	CIRC	*
4301X			150	UNK	CIRC	*
4301X	8.643	7.173	225	UNK	CIRC	*
4302X	44.535	42.955	150	UNK	CIRC	*
4302X	8.791	7.261	225	UNK	CIRC	*
4302X			150	UNK	CIRC	*
4303X	19.537	18.777	150	UNK	CIRC	*
4303X	37.328	33.668	150	UNK	CIRC	*
4303X			UNK	UNK	CIRC	*
4304X	36.787	33.347	150	UNK	CIRC	*
4304X	19.601	17.651	150	UNK	CIRC	*
4350X	4.94	4.1	150	UNK	CIRC	*
4350X	8.755	4.055	1050	UNK	CIRC	*
4401X	48.641	46.701	150	UNK	CIRC	*
4401X	8.772	7.012	225	UNK	CIRC	*
4401X	22.015	20.955	150	UNK	CIRC	*
4401X	4.541	3.321	150	UNK	CIRC	*
4402X	4.885	3.065	150	UNK	CIRC	*
4402X			150	UNK	CIRC	*
4403X	4.634	3.524	150	UNK	CIRC	
4404X	4.903		225	UNK	CIRC	
440DX			UNK	UNK	CIRC	
4450X	4.615	3.445	225	UNK	CIRC	*
4450X	8.721	4.481	1050	UNK	CIRC	*
4450Y	4.615	3.435	225	UNK	CIRC	*
4451X	4.911	3.311	450	UNK	CIRC	
4452X	4.877	3.277	225	UNK	CIRC	
4453X	4.39	3.48	150	UNK	CIRC	
4501X	3.421		600	UNK	CIRC	*
4501X	4.317	2.477	150	UNK	CIRC	*
4502X	4.603		225	UNK	CIRC	*
4502X	4.29		600	UNK	CIRC	*
4503X	4.262	1.942	225	UNK	CIRC	
4504X			UNK	UNK	CIRC	
4505X	4.608	2.91	300	UNK	CIRC	*
4505X			UNK	UNK	CIRC	*
4506X		2.65	300	UNK	CIRC	
4507X			UNK	UNK	CIRC	*
4507X		2.54	600	UNK	CIRC	*
4550X			300	UNK	CIRC	
4551X			300	UNK	CIRC	
4552X	4.297		375	UNK	CIRC	
4553Y		2.59	300	UNK	CIRC	*
4553X	4.547	2.757	375	UNK	CIRC	*
4554X			450	UNK	CIRC	*
4554X	4.19	2.33	300	UNK	CIRC	*
4555X	4.426	2.996	375	UNK	CIRC	
4556X	4.207	3.477	300	UNK	CIRC	
4601X	5.31	3.625	225	UNK	CIRC	*
4601X	9.557	8.797	225	UNK	CIRC	*
4601X			150	UNK	CIRC	*
4602X	5.066	3.946	150	UNK	CIRC	*
4602X	9.236	8.586	225	UNK	CIRC	*
4602X			UNK	UNK	CIRC	*
4603X			225	UNK	CIRC	*
4603X	4.955		150	UNK	CIRC	*
4603X			UNK	UNK	CIRC	*
4604X			UNK	UNK	CIRC	*
4604X	4.914	3.404	150	UNK	CIRC	*
4604X			225	UNK	CIRC	*
4605X			UNK	UNK	CIRC	*
4605X	4.357	2.727	150	UNK	CIRC	*
4606X	4.553		150	UNK	CIRC	*
4606X			UNK	UNK	CIRC	*
4607X			150	UNK	CIRC	*
4607X			UNK	UNK	CIRC	*
4608X			UNK	UNK	CIRC	*
4608X	4.346		150	UNK	CIRC	*
4609X			UNK	UNK	CIRC	*
4609X			150	UNK	CIRC	*
460DX			UNK	UNK	CIRC	*
460DX			UNK	UNK	CIRC	*
4610X			UNK	UNK	CIRC	
4611X			UNK	UNK	CIRC	
4612X			UNK	UNK	CIRC	
462DX			UNK	UNK	CIRC	
464DX			UNK	UNK	CIRC	
4650X			150	UNK	CIRC	*
4650X	9.231	7.911	300	UNK	CIRC	*
4651X	5.156	3.646	150	UNK	CIRC	*
4651X			1050	UNK	CIRC	*
4652X			375	UNK	CIRC	*
4652X	5.107		150	UNK	CIRC	*
4652X	9.291	8.181	225	UNK	CIRC	*
4653X		3.565	450	UNK	CIRC	*
4653X	4.892	3.222	150	UNK	CIRC	*
4654X		3.49	150	UNK	CIRC	*
4654X	4.224	3.584	150	UNK	CIRC	*
4655X			150	UNK	CIRC	
4656X	4.641		150	UNK	CIRC	
4657X	4.22		150	UNK	CIRC	
4658X			150	UNK	CIRC	



WARNING: BAC pipes are constructed of Bonded Asbestos Cement

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

O.S. Ref.	SU6006SW	Drawn by:	kumaria
Scale:	1:2500	Date:	07/10/2016

Title: 225479_Site between M27 and Ta

N

Southern Water

The information contained on this plan is provided as a guide to the approximate position of existing public sewers. The accuracy thereof cannot be guaranteed.

THIS INFORMATION MUST BE TREATED WITH CAUTION AND THE ACTUAL POSITION OF THE PUBLIC SEWERS MUST BE ESTABLISHED ON SITE, IN ALL CASES.

Southern Water must be informed before lifting manhole covers or excavating trial holes.

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Southern Water

RECEIVED
21 NOV 2016

Odyssey
Tuscany House
White Hart Lane
Basingstoke
Hampshire
RG21 4AF

BAC.....
SRB.....
HB.....
RS.....
ACC.....

Developer Services
Southern Water
Sparrowgrove House
Sparrowgrove
Otterbourne
Hampshire
SO21 2SW

Tel: **0330 303 0119**
Email: ***developerservices@southernwater.co.uk***

Your Ref:

Our Ref:
CC/003144

F.A.O: Mr. Bernard Thuku ,

Date:
16 November 2016

Site: Land East of Downend Road, Fareham, Hampshire, PO16 8QF.

Dear Sirs,

I am now in receipt of the results of the capacity check you requested for the above development site.

FOUL WATER

Following initial investigations, there is currently adequate capacity in the local sewerage network to accommodate a foul flow from proposed development site at/downstream of manhole reference SU60068301. Please note that no surface water flows (existing or proposed) can be accommodated within the existing foul sewerage system.

Before any connection/s are made, an application form needs to be completed and approved by Southern Water Services.

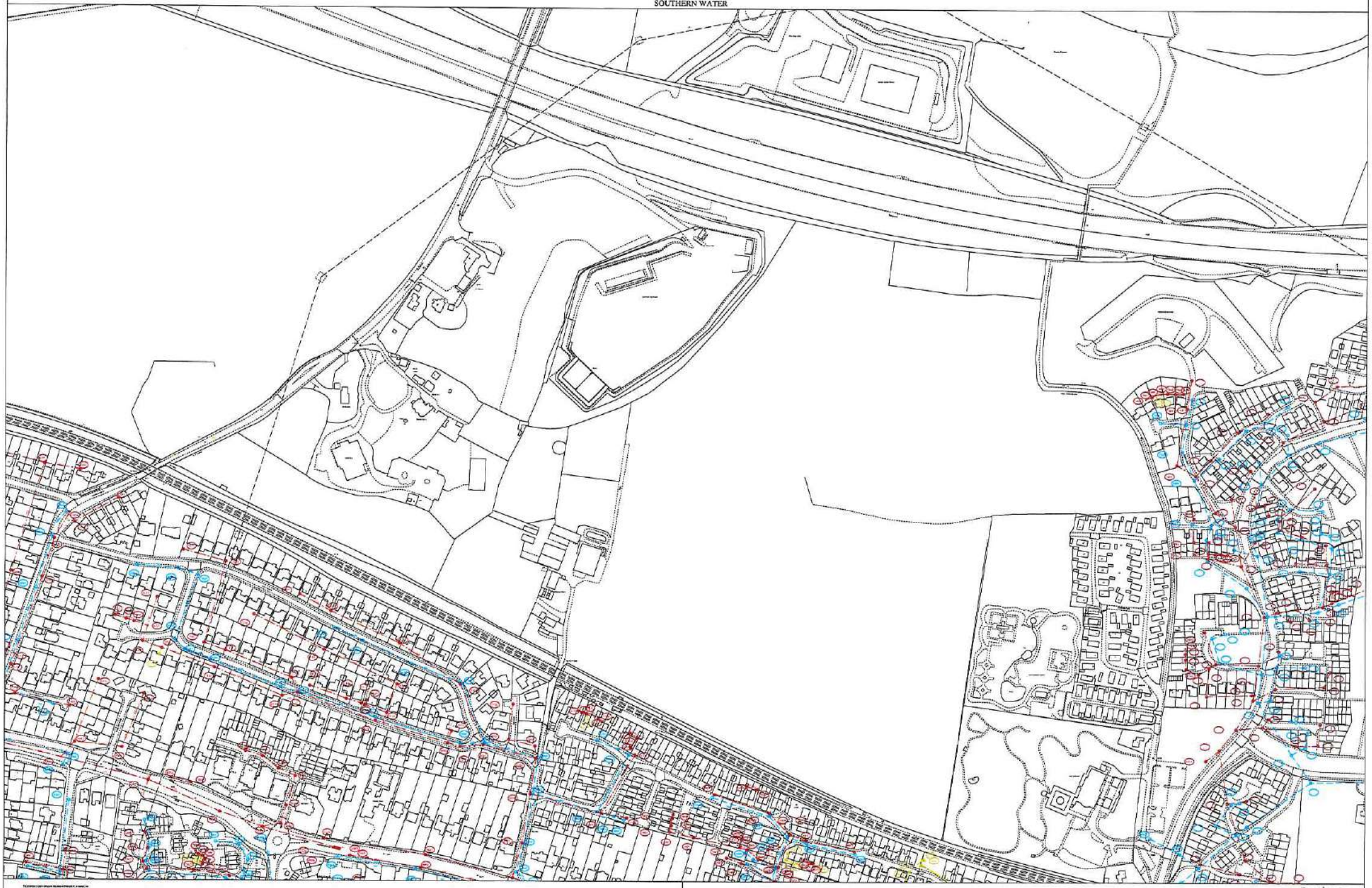
Please let me know if we can be of any further assistance in this matter.

Yours faithfully,

David Akehurst
Developer Services

Please note: -
The information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter.

SOUTHERN WATER



Sewer Plan

Scale: 1:1250

Printed by: Rosps

Site Location: Plan

Requested By:

Southern Water

APPENDIX H

Proposed Drainage Strategy and Micro Drainage Calculations

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NOTES

1. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
2. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
3. THE SUDS DESIGN IS BASED ON THE PRELIMINARY SOAKAWAY TEST RESULTS THAT WERE OBTAINED ON SITE BY GEO-ENVIRONMENTAL IN JULY 2020.
4. THE POSITION AND DIMENSIONS OF BASINS SHOULD BE REVIEWED ONCE FURTHER SITE INVESTIGATIONS, INCLUDING GROUNDWATER MONITORING AND CHALK CLASSIFICATION, HAVE BEEN CARRIED OUT ON SITE.
5. IF THE FURTHER SITE TESTING RESULTS ARE DEEMED UNFAVORABLE, ADDITIONAL CONNECTION PIPES AND / OR PUMPING STATION MAY BE REQUIRED AT THE OUTFALL OF THE PROPOSED INFILTRATION BASINS.
6. AN EASEMENT OF 15m HAS BEEN APPLIED BETWEEN THE NETWORK RAIL BOUNDARY AND THE PROPOSED INFILTRATION BASINS.
7. ALL SUDS DEVICES HAVE BEEN SIZED TO ACCOMMODATE ALL SURFACE WATER RUNOFF UP TO A 1 IN 100 YEAR (INCLUDING 40% CLIMATE CHANGE ALLOWANCE) RETURN PERIOD STORM EVENT.
8. IN ORDER TO FULFIL THE SURFACE WATER TREATMENT REQUIREMENTS, AN ADDITIONAL SUDS SOURCE CONTROL DEVICE, SUCH AS PERMEABLE PAVING, SWALES AND FILTER STRIPS ETC, SHOULD BE INCORPORATED INTO THE DESIGN PRIOR TO SURFACE WATER RUNOFF BEING DISCHARGED INTO THE BASIN.

LEGEND

- SITE BOUNDARY
- DEVELOPABLE AREA DRAINING TO INFILTRATING BASIN 1
- DEVELOPABLE AREA TO INFILTRATING BASIN 2
- DEVELOPABLE AREA DRAINING TO BASIN 3
- DEVELOPABLE AREA DRAINING TO BASIN 4
- LIDAR DTM 1m CONTOUR
- PROPOSED INFILTRATION BASIN
- PROPOSED ADOPTABLE FOUL RISING MAIN
- PROPOSED ADOPTABLE FOUL PUMPING STATION

Rev	Amendments	Drn	Chk	App	Date
F	SUDS DESIGN UPDATED TO LATEST MASTERPLAN	NM	NA	GG	21.07.20
E	SUDS DESIGN UPDATED TO LATEST MASTERPLAN	CF	NA	GG	11.10.17
D	SUDS DESIGN UPDATED TO LATEST MASTERPLAN	CF	JH	GG	07.09.17
C	SUDS DESIGN UPDATED TO LATEST SOAKAWAY TESTS; SW PUMPING STATION ADDED.	JH	GG	GG	20.02.17
B	SUDS DESIGN UPDATED TO LATEST MASTERPLAN; FW DRAINAGE ADDED.	JH	GG	GG	23.01.17
A	SUDS DESIGN AMENDED BASED ON PRELIMINARY SOAKAWAY TEST RESULTS	JH	TG	GG	23.12.16

ODYSSEY

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Hampshire RG21 4AF

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Job Title
WINNHAM FARM,
DOWNEND ROAD, PORTCHESTER

Drawing Title
PROPOSED DRAINAGE STRATEGY

Client
MILLER HOMES

Scale	Date	Designed
1:1000 @A1	NOV 16	JH
Drawn	**Checked**	**Approved**
JH	TG	GG
Job No	**Drawing No**	**Rev**
16-329	16-329/002	F

P:\16-329 - Land East of Downend Road, Portchester\TechAcad\Drawings\16-329-002 Proposed Drainage Strategy.dwg

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 3800 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	22.501	0.401	0.5	103.0	O K
30 min Summer	22.580	0.480	0.6	128.3	O K
60 min Summer	22.669	0.569	0.6	159.6	O K
120 min Summer	22.770	0.670	0.7	197.8	O K
180 min Summer	22.833	0.733	0.8	223.7	O K
240 min Summer	22.880	0.780	0.8	243.7	O K
360 min Summer	22.948	0.848	0.9	274.1	O K
480 min Summer	22.998	0.898	0.9	297.0	O K
600 min Summer	23.036	0.936	0.9	315.4	O K
720 min Summer	23.067	0.967	1.0	330.7	O K
960 min Summer	23.089	0.989	1.0	342.0	O K
1440 min Summer	23.113	1.013	1.0	354.2	Flood Risk
2160 min Summer	23.122	1.022	1.0	359.1	Flood Risk
2880 min Summer	23.118	1.018	1.0	357.0	Flood Risk
4320 min Summer	23.125	1.025	1.0	360.7	Flood Risk
5760 min Summer	23.125	1.025	1.0	360.5	Flood Risk
7200 min Summer	23.119	1.019	1.0	357.7	Flood Risk
8640 min Summer	23.111	1.011	1.0	353.3	Flood Risk
10080 min Summer	23.100	1.000	1.0	347.9	Flood Risk
15 min Winter	22.540	0.440	0.5	115.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	134.458	0.0	19
30 min Summer	83.947	0.0	34
60 min Summer	52.411	0.0	64
120 min Summer	32.722	0.0	124
180 min Summer	24.841	0.0	184
240 min Summer	20.430	0.0	244
360 min Summer	15.509	0.0	364
480 min Summer	12.755	0.0	482
600 min Summer	10.960	0.0	602
720 min Summer	9.683	0.0	722
960 min Summer	7.687	0.0	962
1440 min Summer	5.551	0.0	1442
2160 min Summer	4.009	0.0	2160
2880 min Summer	3.183	0.0	2624
4320 min Summer	2.351	0.0	3328
5760 min Summer	1.897	0.0	4096
7200 min Summer	1.606	0.0	4904
8640 min Summer	1.401	0.0	5792
10080 min Summer	1.249	0.0	6560
15 min Winter	134.458	0.0	19

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	22.625	0.525	0.6	143.8	O K
60 min Winter	22.721	0.621	0.7	178.8	O K
120 min Winter	22.829	0.729	0.8	221.8	O K
180 min Winter	22.897	0.797	0.8	250.9	O K
240 min Winter	22.947	0.847	0.9	273.5	O K
360 min Winter	23.020	0.920	0.9	307.9	O K
480 min Winter	23.073	0.973	1.0	333.9	O K
600 min Winter	23.114	1.014	1.0	354.9	Flood Risk
720 min Winter	23.147	1.047	1.0	372.4	Flood Risk
960 min Winter	23.172	1.072	1.0	385.8	Flood Risk
1440 min Winter	23.200	1.100	1.1	401.1	Flood Risk
2160 min Winter	23.215	1.115	1.1	409.4	Flood Risk
2880 min Winter	23.215	1.115	1.1	409.2	Flood Risk
4320 min Winter	23.218	1.118	1.1	410.7	Flood Risk
5760 min Winter	23.215	1.115	1.1	409.4	Flood Risk
7200 min Winter	23.206	1.106	1.1	404.2	Flood Risk
8640 min Winter	23.193	1.093	1.1	396.9	Flood Risk
10080 min Winter	23.177	1.077	1.0	388.2	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	83.947	0.0	34
60 min Winter	52.411	0.0	64
120 min Winter	32.722	0.0	122
180 min Winter	24.841	0.0	182
240 min Winter	20.430	0.0	242
360 min Winter	15.509	0.0	360
480 min Winter	12.755	0.0	478
600 min Winter	10.960	0.0	596
720 min Winter	9.683	0.0	714
960 min Winter	7.687	0.0	944
1440 min Winter	5.551	0.0	1410
2160 min Winter	4.009	0.0	2080
2880 min Winter	3.183	0.0	2736
4320 min Winter	2.351	0.0	3460
5760 min Winter	1.897	0.0	4376
7200 min Winter	1.606	0.0	5328
8640 min Winter	1.401	0.0	6224
10080 min Winter	1.249	0.0	7152

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 460850 105450 SU 60850 05450
C (1km)	-0.026
D1 (1km)	0.440
D2 (1km)	0.317
D3 (1km)	0.373
E (1km)	0.301
F (1km)	2.238
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.410

Time (mins) From:	To:	Area (ha)
0	4	0.410

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Model Details

Storage is Online Cover Level (m) 23.400

Infiltration Basin Structure

Invert Level (m) 22.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00828 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00828

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	204.9	1.300	633.4

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Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 3278 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	23.394	0.594	1.7	321.5	O K
30 min Summer	23.485	0.685	2.0	400.5	O K
60 min Summer	23.585	0.785	2.2	497.9	O K
120 min Summer	23.694	0.894	2.5	616.8	O K
180 min Summer	23.760	0.960	2.7	697.1	O K
240 min Summer	23.808	1.008	2.9	758.9	O K
360 min Summer	23.877	1.077	3.1	852.4	O K
480 min Summer	23.926	1.126	3.2	922.6	O K
600 min Summer	23.963	1.163	3.3	978.5	O K
720 min Summer	23.993	1.193	3.4	1024.5	O K
960 min Summer	24.013	1.213	3.5	1056.8	Flood Risk
1440 min Summer	24.032	1.232	3.5	1088.3	Flood Risk
2160 min Summer	24.036	1.236	3.5	1094.7	Flood Risk
2880 min Summer	24.033	1.233	3.5	1088.9	Flood Risk
4320 min Summer	24.040	1.240	3.6	1100.2	Flood Risk
5760 min Summer	24.038	1.238	3.6	1098.0	Flood Risk
7200 min Summer	24.032	1.232	3.5	1087.3	Flood Risk
8640 min Summer	24.022	1.222	3.5	1071.6	Flood Risk
10080 min Summer	24.011	1.211	3.5	1053.3	Flood Risk
15 min Winter	23.440	0.640	1.9	360.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	134.458	0.0	19
30 min Summer	83.947	0.0	34
60 min Summer	52.411	0.0	64
120 min Summer	32.722	0.0	124
180 min Summer	24.841	0.0	184
240 min Summer	20.430	0.0	244
360 min Summer	15.509	0.0	364
480 min Summer	12.755	0.0	482
600 min Summer	10.960	0.0	602
720 min Summer	9.683	0.0	722
960 min Summer	7.687	0.0	962
1440 min Summer	5.551	0.0	1442
2160 min Summer	4.009	0.0	2100
2880 min Summer	3.183	0.0	2420
4320 min Summer	2.351	0.0	3156
5760 min Summer	1.897	0.0	3976
7200 min Summer	1.606	0.0	4824
8640 min Summer	1.401	0.0	5624
10080 min Summer	1.249	0.0	6456
15 min Winter	134.458	0.0	19

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	23.536	0.736	2.1	448.7	O K
60 min Winter	23.642	0.842	2.4	558.0	O K
120 min Winter	23.756	0.956	2.7	691.5	O K
180 min Winter	23.826	1.026	2.9	782.0	O K
240 min Winter	23.877	1.077	3.1	851.7	O K
360 min Winter	23.949	1.149	3.3	957.5	O K
480 min Winter	24.001	1.201	3.4	1037.1	Flood Risk
600 min Winter	24.040	1.240	3.6	1100.8	Flood Risk
720 min Winter	24.072	1.272	3.7	1153.6	Flood Risk
960 min Winter	24.094	1.294	3.7	1192.2	Flood Risk
1440 min Winter	24.118	1.318	3.8	1233.0	Flood Risk
2160 min Winter	24.127	1.327	3.8	1249.6	Flood Risk
2880 min Winter	24.122	1.322	3.8	1241.1	Flood Risk
4320 min Winter	24.125	1.325	3.8	1245.7	Flood Risk
5760 min Winter	24.119	1.319	3.8	1235.4	Flood Risk
7200 min Winter	24.106	1.306	3.8	1213.4	Flood Risk
8640 min Winter	24.090	1.290	3.7	1185.2	Flood Risk
10080 min Winter	24.072	1.272	3.7	1154.1	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	83.947	0.0	34
60 min Winter	52.411	0.0	64
120 min Winter	32.722	0.0	122
180 min Winter	24.841	0.0	182
240 min Winter	20.430	0.0	240
360 min Winter	15.509	0.0	358
480 min Winter	12.755	0.0	476
600 min Winter	10.960	0.0	594
720 min Winter	9.683	0.0	712
960 min Winter	7.687	0.0	944
1440 min Winter	5.551	0.0	1400
2160 min Winter	4.009	0.0	2072
2880 min Winter	3.183	0.0	2680
4320 min Winter	2.351	0.0	3332
5760 min Winter	1.897	0.0	4264
7200 min Winter	1.606	0.0	5184
8640 min Winter	1.401	0.0	6056
10080 min Winter	1.249	0.0	6960

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 460850 105450 SU 60850 05450
C (1km)	-0.026
D1 (1km)	0.440
D2 (1km)	0.317
D3 (1km)	0.373
E (1km)	0.301
F (1km)	2.238
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 1.280

Time (mins) From:	To:	Area (ha)
0	4	1.280

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Model Details

Storage is Online Cover Level (m) 24.300

Infiltration Basin Structure

Invert Level (m) 22.800 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00828 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00828

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	308.0	1.500	2058.0

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Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 9027 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	17.956	0.506	3.1	1094.1	O K
30 min Summer	18.070	0.620	3.3	1364.3	O K
60 min Summer	18.207	0.757	3.5	1699.6	O K
120 min Summer	18.368	0.918	3.8	2113.7	O K
180 min Summer	18.475	1.025	4.0	2398.1	O K
240 min Summer	18.557	1.107	4.1	2620.7	O K
360 min Summer	18.680	1.230	4.4	2965.3	O K
480 min Summer	18.772	1.322	4.5	3232.3	O K
600 min Summer	18.847	1.397	4.7	3452.2	O K
720 min Summer	18.910	1.460	4.8	3639.8	O K
960 min Summer	18.965	1.515	4.9	3807.7	O K
1440 min Summer	19.038	1.588	5.0	4033.2	O K
2160 min Summer	19.100	1.650	5.1	4229.3	O K
2880 min Summer	19.134	1.684	5.2	4337.3	O K
4320 min Summer	19.194	1.744	5.3	4532.5	O K
5760 min Summer	19.217	1.767	5.3	4605.3	O K
7200 min Summer	19.222	1.772	5.3	4621.1	O K
8640 min Summer	19.223	1.773	5.3	4625.9	O K
10080 min Summer	19.221	1.771	5.3	4619.7	O K
15 min Winter	18.012	0.562	3.2	1225.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	134.458	0.0	19
30 min Summer	83.947	0.0	34
60 min Summer	52.411	0.0	64
120 min Summer	32.722	0.0	124
180 min Summer	24.841	0.0	184
240 min Summer	20.430	0.0	244
360 min Summer	15.509	0.0	364
480 min Summer	12.755	0.0	484
600 min Summer	10.960	0.0	604
720 min Summer	9.683	0.0	724
960 min Summer	7.687	0.0	964
1440 min Summer	5.551	0.0	1442
2160 min Summer	4.009	0.0	2164
2880 min Summer	3.183	0.0	2880
4320 min Summer	2.351	0.0	4320
5760 min Summer	1.897	0.0	5760
7200 min Summer	1.606	0.0	6552
8640 min Summer	1.401	0.0	7256
10080 min Summer	1.249	0.0	7968
15 min Winter	134.458	0.0	19

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	18.138	0.688	3.4	1528.5	O K
60 min Winter	18.287	0.837	3.7	1904.6	O K
120 min Winter	18.465	1.015	4.0	2369.3	O K
180 min Winter	18.582	1.132	4.2	2689.2	O K
240 min Winter	18.671	1.221	4.3	2939.7	O K
360 min Winter	18.805	1.355	4.6	3328.0	O K
480 min Winter	18.906	1.456	4.8	3629.5	O K
600 min Winter	18.988	1.538	4.9	3878.3	O K
720 min Winter	19.056	1.606	5.0	4091.1	O K
960 min Winter	19.117	1.667	5.1	4284.3	O K
1440 min Winter	19.199	1.749	5.3	4547.2	O K
2160 min Winter	19.271	1.821	5.4	4782.9	O K
2880 min Winter	19.312	1.862	5.5	4920.8	O K
4320 min Winter	19.388	1.938	5.6	5175.4	O K
5760 min Winter	19.423	1.973	5.7	5295.6	O K
7200 min Winter	19.436	1.986	5.7	5340.6	O K
8640 min Winter	19.436	1.986	5.7	5339.7	O K
10080 min Winter	19.428	1.978	5.7	5314.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	83.947	0.0	34
60 min Winter	52.411	0.0	64
120 min Winter	32.722	0.0	124
180 min Winter	24.841	0.0	182
240 min Winter	20.430	0.0	242
360 min Winter	15.509	0.0	362
480 min Winter	12.755	0.0	480
600 min Winter	10.960	0.0	598
720 min Winter	9.683	0.0	716
960 min Winter	7.687	0.0	954
1440 min Winter	5.551	0.0	1428
2160 min Winter	4.009	0.0	2124
2880 min Winter	3.183	0.0	2824
4320 min Winter	2.351	0.0	4192
5760 min Winter	1.897	0.0	5536
7200 min Winter	1.606	0.0	6840
8640 min Winter	1.401	0.0	8040
10080 min Winter	1.249	0.0	8368

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 460850 105450 SU 60850 05450
C (1km)	-0.026
D1 (1km)	0.440
D2 (1km)	0.317
D3 (1km)	0.373
E (1km)	0.301
F (1km)	2.238
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 4.350

Time (mins) From:	To:	Area (ha)
0	4	4.350

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Model Details

Storage is Online Cover Level (m) 19.750

Infiltration Basin Structure

Invert Level (m) 17.450 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00828 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00828

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1999.1	2.300	3708.7

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Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 3821 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	13.270	0.170	2.9	401.1	O K
30 min Summer	13.311	0.211	3.0	499.4	O K
60 min Summer	13.360	0.260	3.1	620.3	O K
120 min Summer	13.418	0.318	3.2	767.5	O K
180 min Summer	13.458	0.358	3.2	866.9	O K
240 min Summer	13.488	0.388	3.3	943.5	O K
360 min Summer	13.532	0.432	3.4	1059.4	O K
480 min Summer	13.566	0.466	3.4	1146.6	O K
600 min Summer	13.592	0.492	3.5	1216.6	O K
720 min Summer	13.614	0.514	3.5	1274.6	O K
960 min Summer	13.629	0.529	3.5	1314.8	O K
1440 min Summer	13.644	0.544	3.6	1355.1	O K
2160 min Summer	13.648	0.548	3.6	1365.0	O K
2880 min Summer	13.640	0.540	3.6	1345.1	O K
4320 min Summer	13.636	0.536	3.6	1332.6	O K
5760 min Summer	13.627	0.527	3.5	1309.8	O K
7200 min Summer	13.617	0.517	3.5	1282.8	O K
8640 min Summer	13.606	0.506	3.5	1253.7	O K
10080 min Summer	13.595	0.495	3.5	1223.4	O K
15 min Winter	13.290	0.190	3.0	449.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	134.458	0.0	19
30 min Summer	83.947	0.0	34
60 min Summer	52.411	0.0	64
120 min Summer	32.722	0.0	124
180 min Summer	24.841	0.0	184
240 min Summer	20.430	0.0	244
360 min Summer	15.509	0.0	364
480 min Summer	12.755	0.0	482
600 min Summer	10.960	0.0	602
720 min Summer	9.683	0.0	722
960 min Summer	7.687	0.0	962
1440 min Summer	5.551	0.0	1442
2160 min Summer	4.009	0.0	2160
2880 min Summer	3.183	0.0	2796
4320 min Summer	2.351	0.0	3460
5760 min Summer	1.897	0.0	4256
7200 min Summer	1.606	0.0	5048
8640 min Summer	1.401	0.0	5880
10080 min Summer	1.249	0.0	6752
15 min Winter	134.458	0.0	19

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	13.335	0.235	3.0	559.7	O K
60 min Winter	13.390	0.290	3.1	695.5	O K
120 min Winter	13.456	0.356	3.2	861.4	O K
180 min Winter	13.499	0.399	3.3	973.8	O K
240 min Winter	13.533	0.433	3.4	1060.5	O K
360 min Winter	13.583	0.483	3.5	1192.6	O K
480 min Winter	13.621	0.521	3.5	1292.6	O K
600 min Winter	13.651	0.551	3.6	1373.1	O K
720 min Winter	13.676	0.576	3.6	1440.3	O K
960 min Winter	13.694	0.594	3.7	1489.9	O K
1440 min Winter	13.714	0.614	3.7	1544.4	O K
2160 min Winter	13.723	0.623	3.7	1570.0	O K
2880 min Winter	13.721	0.621	3.7	1562.3	O K
4320 min Winter	13.715	0.615	3.7	1547.7	O K
5760 min Winter	13.704	0.604	3.7	1517.2	O K
7200 min Winter	13.691	0.591	3.6	1480.4	O K
8640 min Winter	13.675	0.575	3.6	1437.2	O K
10080 min Winter	13.658	0.558	3.6	1391.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	83.947	0.0	34
60 min Winter	52.411	0.0	64
120 min Winter	32.722	0.0	122
180 min Winter	24.841	0.0	182
240 min Winter	20.430	0.0	240
360 min Winter	15.509	0.0	360
480 min Winter	12.755	0.0	478
600 min Winter	10.960	0.0	596
720 min Winter	9.683	0.0	714
960 min Winter	7.687	0.0	950
1440 min Winter	5.551	0.0	1412
2160 min Winter	4.009	0.0	2096
2880 min Winter	3.183	0.0	2764
4320 min Winter	2.351	0.0	3976
5760 min Winter	1.897	0.0	4496
7200 min Winter	1.606	0.0	5408
8640 min Winter	1.401	0.0	6392
10080 min Winter	1.249	0.0	7264

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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 460850 105450 SU 60850 05450
C (1km)	-0.026
D1 (1km)	0.440
D2 (1km)	0.317
D3 (1km)	0.373
E (1km)	0.301
F (1km)	2.238
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 1.600

Time (mins) From:	To:	Area (ha)
0	4	1.600

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Model Details

Storage is Online Cover Level (m) 14.400

Infiltration Basin Structure

Invert Level (m) 13.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00828 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00828

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2300.0	1.300	3269.0

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