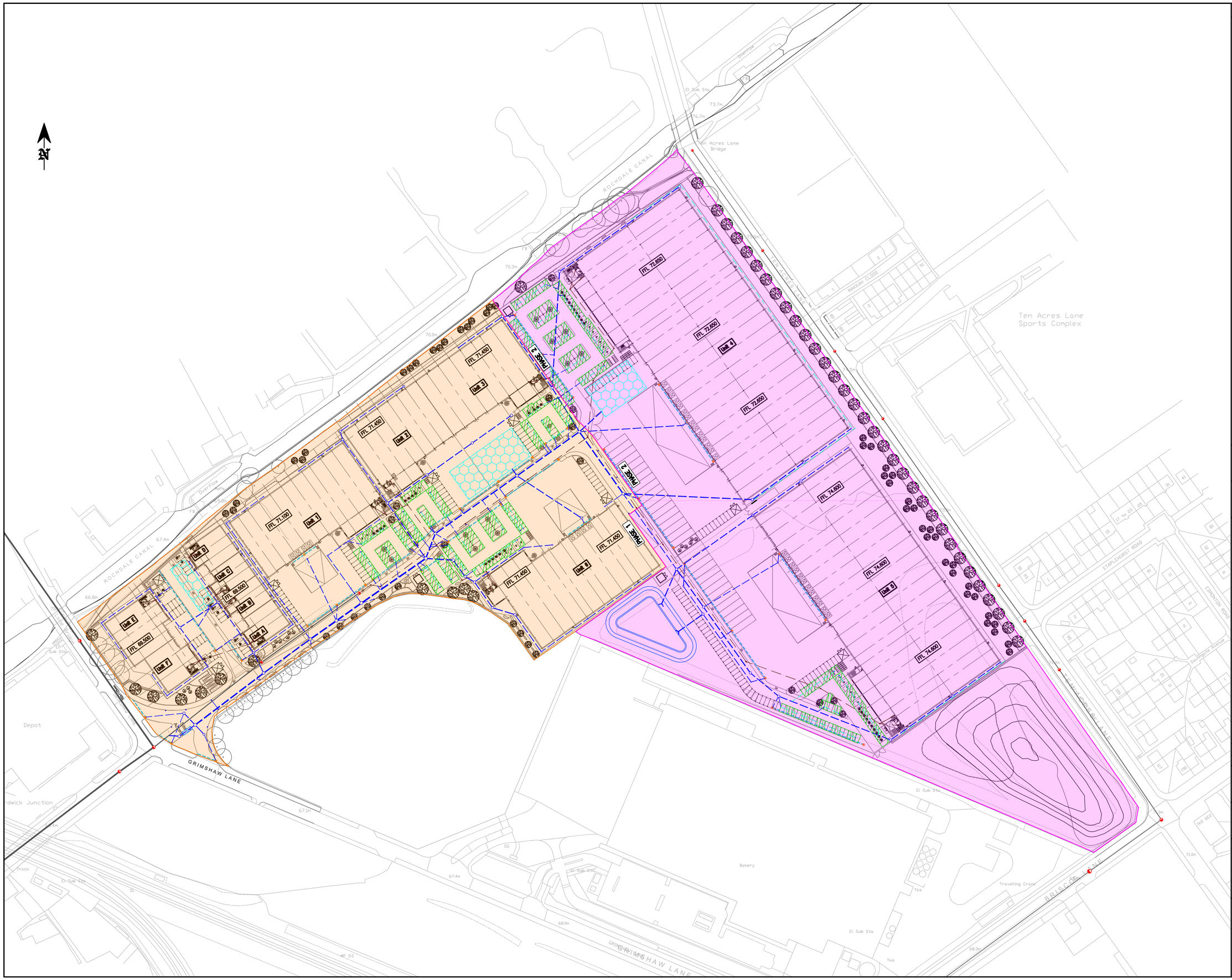
Phasing Drainage Drawings:

9762-PTA-XX-XX-DR-C-8125_Proposed Phasing Sitewide Drainage Layout_ Rev P01

9762-PTA-XX-XX-DR-C-8126_Proposed Phasing Drainage Sheet 1 of 3_ Rev P01

9762-PTA-XX-XX-DR-C-8127_Proposed Phasing Drainage Sheet 2 of 3_ Rev P01

9762-PTA-XX-XX-DR-C-8128_Proposed Phasing Drainage Sheet 3 of 3_ Rev P01



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Key:

- Site Boundary
- Attenuation Tank
- Proposed Surface Water Drainage
- Proposed Foul Water Drainage
- Existing Combined Sewer
- Drainage Channel
- Drainage Channel Chamber
- Proposed Gully
- Perforated Pipe
- Proposed Permeable Carpar
- Phase 1
- Phase 2

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DRAWING STATUS
COMMENT/COSTING/APPROVAL
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REV	DESCRIPTION	BY	DATE	CHK'D
P01	First Issue.	LB	11.11.22	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Phasing Sitewide Drainage Layout

DATE	Nov. 2022	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		
SCALE	1:1000		REVISION P01
DRG SIZE	A1		

DRAWING No
9762-PTA-XX-XX-DR-C-8125

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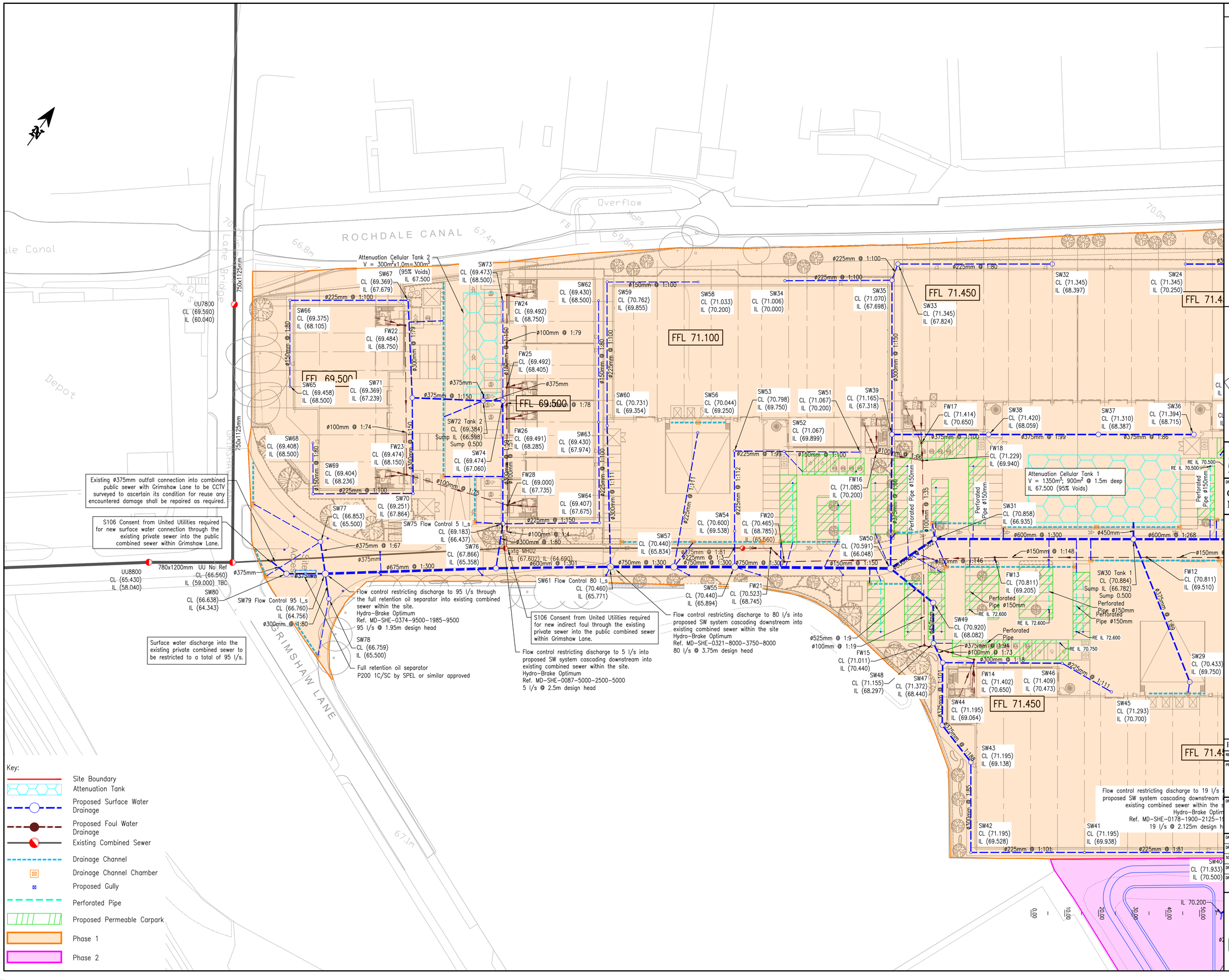

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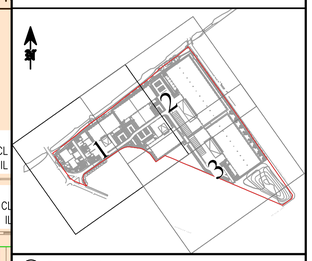
5. Contractor to allow for RWP, drainage channels, gullies and attenuation tank connections.



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DRAWING STATUS
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REV	DESCRIPTION	BY	DATE	CHK'D
P01	First Issue.	LB	11.11.22	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Phasing Drainage
Sheet 1 of 3

DATE	Nov. 2022	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		REVISION P01
SCALE	1:500		
DRG SIZE	A1		

DRAWING No
9762-PTA-XX-XX-DR-C-8126

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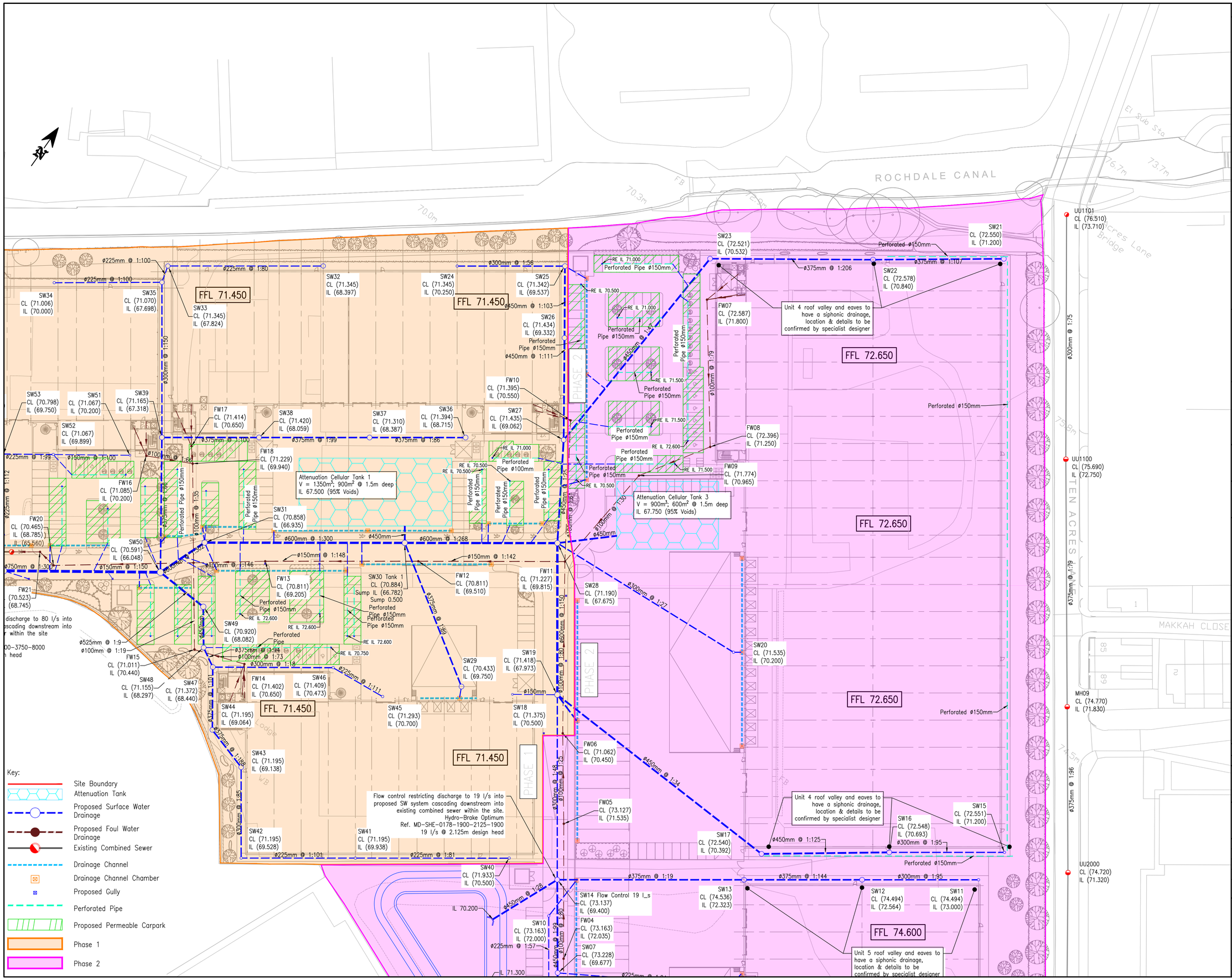

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DRAWING STATUS

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REV	DESCRIPTION	BY	DATE	CHK'D
P01	First Issue.	LB	11.11.22	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Phasing Drainage
Sheet 2 of 3

DATE	Nov. 2022	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		REVISION P01
SCALE	1:500		
DRG SIZE	A1		

DRAWING No 9762-PTA-XX-XX-DR-C-8127

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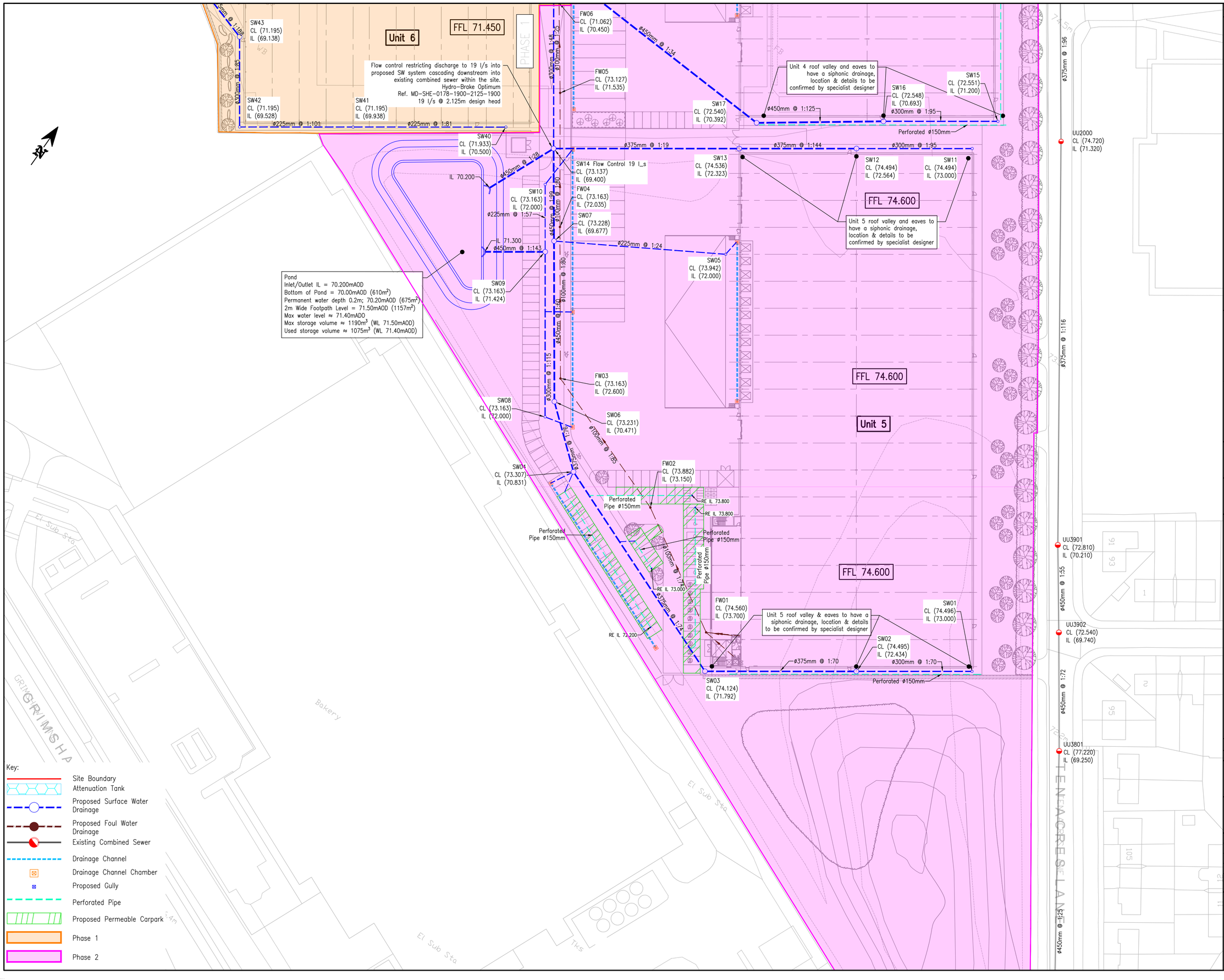

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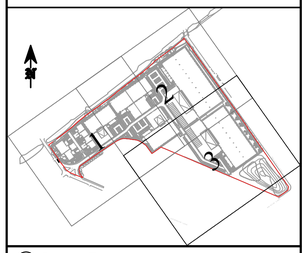

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DRAWING STATUS
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REV	DESCRIPTION	BY	DATE	CHK'D
P01	First Issue.	LB	11.11.22	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Phasing Drainage
Sheet 3 of 3

DATE	Nov. 2022	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		REVISION P01
SCALE	1:500		
DRG SIZE	A1		

DRAWING No
9762-PTA-XX-XX-DR-C-8128

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Calculations:

9762 - SW Model Phase 1 & 2 @ 95 l/s

Surface water model of Phase 1 & 2 with the split attenuation tank arrangement restricted to 95 l/s.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 9762 - SW

Pipe Sizes PTA Manhole Sizes PTA

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.352	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.000
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 9762 - SW

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.633	4-8	5.306	8-12	0.955

Total Area Contributing (ha) = 7.894

Total Pipe Volume (m³) = 313.058

Network Design Table for 9762 - SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	51.100	0.409	124.9	0.112	3.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	34.370	0.491	70.0	0.137	5.00	0.0	0.600	o	300	Pipe/Conduit	
S2.001	44.923	0.642	70.0	0.273	0.00	0.0	0.600	o	375	Pipe/Conduit	
S2.002	70.916	0.886	80.0	0.123	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	3.73	72.000	0.112	0.0	0.0	0.0	1.17	46.5	15.2
S2.000	45.38	5.30	73.000	0.137	0.0	0.0	0.0	1.88	133.0	16.8
S2.001	44.16	5.65	72.434	0.410	0.0	0.0	0.0	2.17	239.5	49.0
S2.002	42.26	6.23	71.792	0.533	0.0	0.0	0.0	2.03	223.9	61.0

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S2.003	21.608	0.360	60.0	0.169	0.00	0.0	0.600	o	450	Pipe/Conduit	
S2.004	47.640	0.794	60.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.001	27.456	0.137	200.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.000	49.000	0.426	115.0	0.109	3.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	20.000	0.426	46.9	0.218	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	30.390	0.203	149.7	0.225	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.002	35.707	0.357	100.0	0.074	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.000	34.370	0.361	95.2	0.134	5.00	0.0	0.600	o	300	Pipe/Conduit	
S5.001	34.814	0.241	144.5	0.266	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.002	55.079	3.000	18.4	0.201	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.002	54.519	0.352	154.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.000	37.202	0.357	104.2	0.193	3.00	0.0	0.600	o	300	Pipe/Conduit	
S6.001	37.671	0.301	125.2	0.341	0.00	0.0	0.600	o	450	Pipe/Conduit	
S6.002	76.344	0.477	160.0	0.221	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.003	41.85	6.37	70.831	0.702	0.0	0.0	0.0	2.63	418.0	79.6
S2.004	40.96	6.67	70.471	0.702	0.0	0.0	0.0	2.63	418.0	79.6
S1.001	40.06	6.99	69.677	0.815	0.0	0.0	0.0	1.43	227.8	88.4
S3.000	50.00	3.56	72.000	0.109	0.0	0.0	0.0	1.47	103.6	14.8
S4.000	50.00	3.14	72.000	0.218	0.0	0.0	0.0	2.30	162.6	29.5
S3.001	50.00	3.86	71.424	0.552	0.0	0.0	0.0	1.66	263.9	74.7
S3.002	50.00	4.16	70.000	0.625	0.0	0.0	0.0	2.03	323.3	84.7
S5.000	45.20	5.36	73.000	0.134	0.0	0.0	0.0	1.61	113.9	16.4
S5.001	43.85	5.74	72.564	0.400	0.0	0.0	0.0	1.51	166.3	47.5
S5.002	43.14	5.96	72.323	0.601	0.0	0.0	0.0	4.25	468.9	70.2
S1.002	38.44	7.62	69.400	2.041	0.0	0.0	0.0	1.45	160.5«	212.4
S6.000	50.00	3.40	71.200	0.193	0.0	0.0	0.0	1.54	108.9	26.2
S6.001	50.00	3.75	70.693	0.535	0.0	0.0	0.0	1.82	288.8	72.4
S6.002	48.39	4.54	70.392	0.756	0.0	0.0	0.0	1.60	255.2	99.0

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S7.000	13.250	0.194	68.3	0.053	3.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	44.696	0.149	300.0	0.276	0.00	0.0	0.600	o	600	Pipe/Conduit	
S8.000	61.091	0.309	197.7	0.131	3.00	0.0	0.600	o	300	Pipe/Conduit	
S9.000	38.578	0.360	107.2	0.188	3.00	0.0	0.600	o	375	Pipe/Conduit	
S9.001	48.054	0.233	206.2	0.332	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.002	68.686	0.339	202.6	0.167	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.000	31.794	0.563	56.5	0.069	3.00	0.0	0.600	o	300	Pipe/Conduit	
S10.001	21.157	0.205	103.2	0.161	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.002	30.078	0.270	111.4	0.176	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.003	30.472	0.154	197.9	0.087	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.004	45.004	0.167	269.5	0.222	0.00	0.0	0.600	o	600	Pipe/Conduit	
S11.000	22.767	0.256	88.9	0.036	5.00	0.0	0.600	o	375	Pipe/Conduit	
S11.001	22.767	0.256	88.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.005	59.032	0.197	299.7	0.420	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S7.000	50.00	3.18	70.500	0.053	0.0	0.0	0.0	1.22	21.5	7.2
S1.003	37.17	8.15	67.973	3.126	0.0	0.0	0.0	1.40	396.1	314.7
S8.000	50.00	3.91	70.200	0.131	0.0	0.0	0.0	1.11	78.8	17.7
S9.000	50.00	3.37	71.200	0.188	0.0	0.0	0.0	1.75	193.3	25.4
S9.001	50.00	4.00	70.840	0.520	0.0	0.0	0.0	1.26	138.9	70.3
S9.002	47.29	4.81	70.532	0.687	0.0	0.0	0.0	1.42	226.6	88.0
S10.000	50.00	3.25	70.250	0.069	0.0	0.0	0.0	2.10	148.2	9.3
S10.001	50.00	3.43	69.537	0.230	0.0	0.0	0.0	2.00	318.3	31.1
S10.002	50.00	3.69	69.332	0.405	0.0	0.0	0.0	1.93	306.3	54.9
S9.003	45.92	5.16	69.062	1.180	0.0	0.0	0.0	1.44	229.3	146.7
S1.004	36.05	8.66	67.674	4.659	0.0	0.0	0.0	1.48	418.1«	454.9
S11.000	45.78	5.20	69.750	0.036	0.0	0.0	0.0	1.92	212.3	4.4
S11.001	45.06	5.39	69.494	0.036	0.0	0.0	0.0	1.92	212.3	4.4
S1.005	34.63	9.36	67.282	5.114	0.0	0.0	0.0	1.40	396.3«	479.6

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.006	15.704	0.052	302.0	0.409	0.00	0.0	0.600	o	600	Pipe/Conduit	
S12.000	45.826	0.573	80.0	0.069	3.00	0.0	0.600	o	225	Pipe/Conduit	
S12.001	5.117	0.051	100.3	0.073	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.000	31.775	0.318	99.9	0.046	3.00	0.0	0.600	o	225	Pipe/Conduit	
S12.002	45.743	0.305	150.0	0.051	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.000	28.334	0.328	86.4	0.066	3.00	0.0	0.600	o	375	Pipe/Conduit	
S14.001	32.588	0.328	99.4	0.062	0.00	0.0	0.600	o	375	Pipe/Conduit	
S14.002	28.649	0.286	100.2	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S12.003	39.735	0.603	65.9	0.056	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.000	45.362	0.562	80.7	0.058	3.00	0.0	0.600	o	225	Pipe/Conduit	
S15.001	33.696	0.335	100.6	0.079	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.002	26.771	0.315	85.0	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.003	13.901	0.074	187.9	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.004	18.511	0.183	101.2	0.004	0.00	0.0	0.600	o	375	Pipe/Conduit	
S16.000	16.889	0.152	111.1	0.073	3.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.006	34.27	9.55	66.935	5.523	0.0	0.0	0.0	1.40	394.7«	512.6
S12.000	50.00	3.52	68.397	0.069	0.0	0.0	0.0	1.46	58.2	9.3
S12.001	50.00	3.59	67.824	0.142	0.0	0.0	0.0	1.31	51.9	19.3
S13.000	50.00	3.40	70.000	0.046	0.0	0.0	0.0	1.31	52.0	6.3
S12.002	49.97	4.18	67.698	0.240	0.0	0.0	0.0	1.28	90.6	32.4
S14.000	50.00	3.24	68.715	0.066	0.0	0.0	0.0	1.95	215.4	8.9
S14.001	50.00	3.54	68.387	0.127	0.0	0.0	0.0	1.82	200.8	17.2
S14.002	50.00	3.80	68.059	0.176	0.0	0.0	0.0	1.81	199.9	23.8
S12.003	48.66	4.48	67.318	0.472	0.0	0.0	0.0	2.24	246.9	62.2
S15.000	50.00	3.52	70.500	0.058	0.0	0.0	0.0	1.46	57.9	7.8
S15.001	50.00	3.88	69.863	0.137	0.0	0.0	0.0	1.57	110.8	18.5
S15.002	50.00	4.14	69.528	0.223	0.0	0.0	0.0	1.71	120.6	30.2
S15.003	49.37	4.31	69.138	0.232	0.0	0.0	0.0	1.32	145.6	31.0
S15.004	48.62	4.49	69.064	0.236	0.0	0.0	0.0	1.80	199.0	31.1
S16.000	50.00	3.23	70.700	0.073	0.0	0.0	0.0	1.24	49.3	9.9

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S16.001	35.495	1.958	18.1	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.005	6.363	0.068	93.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.006	12.004	0.120	100.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.007	16.234	1.829	8.9	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.007	46.248	0.154	300.3	0.098	0.00	0.0	0.600	o	750	Pipe/Conduit	
S17.000	22.605	0.226	100.0	0.047	3.00	0.0	0.600	o	150	Pipe/Conduit	
S17.001	14.717	0.149	98.8	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.002	23.769	0.212	112.1	0.053	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.003	10.624	3.119	3.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	18.014	0.060	300.2	0.132	0.00	0.0	0.600	o	750	Pipe/Conduit	
S18.000	40.375	0.364	110.9	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.009	18.838	0.063	299.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S19.000	27.034	0.270	100.1	0.046	3.00	0.0	0.600	o	150	Pipe/Conduit	
S19.001	42.616	0.426	100.0	0.050	0.00	0.0	0.600	o	225	Pipe/Conduit	
S19.002	41.865	0.378	110.8	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S16.001	50.00	3.39	70.473	0.116	0.0	0.0	0.0	3.71	262.3	15.7
S15.005	48.38	4.54	68.440	0.420	0.0	0.0	0.0	1.87	206.9	55.0
S15.006	47.97	4.64	68.297	0.420	0.0	0.0	0.0	2.03	323.3	55.0
S15.007	47.82	4.68	68.102	0.420	0.0	0.0	0.0	7.55	1634.3	55.0
S1.007	33.39	10.02	66.048	6.512	0.0	0.0	0.0	1.61	711.1	588.9
S17.000	50.00	3.37	70.200	0.047	0.0	0.0	0.0	1.00	17.8	6.3
S17.001	50.00	3.56	69.899	0.086	0.0	0.0	0.0	1.32	52.3	11.7
S17.002	50.00	3.88	69.750	0.139	0.0	0.0	0.0	1.23	49.1	18.9
S17.003	50.00	3.91	69.538	0.139	0.0	0.0	0.0	7.14	283.9	18.9
S1.008	33.06	10.21	65.894	6.783	0.0	0.0	0.0	1.61	711.2	607.3
S18.000	44.53	5.54	69.250	0.042	0.0	0.0	0.0	1.24	49.3	5.1
S1.009	32.73	10.41	65.834	6.825	0.0	0.0	0.0	1.61	712.7	607.3
S19.000	50.00	3.45	70.200	0.046	0.0	0.0	0.0	1.00	17.7	6.3
S19.001	50.00	3.99	69.855	0.097	0.0	0.0	0.0	1.31	52.0	13.1
S19.002	48.74	4.46	69.354	0.153	0.0	0.0	0.0	1.49	105.6	20.1

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.010	33.983	0.113	300.7	0.131	0.00	0.0	0.600	o	600	Pipe/Conduit	
S20.000	36.064	0.451	80.0	0.030	3.00	0.0	0.600	o	150	Pipe/Conduit	
S20.001	29.852	0.299	99.8	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
S20.002	28.645	0.191	150.0	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
S21.000	25.600	0.320	80.0	0.019	3.00	0.0	0.600	o	150	Pipe/Conduit	
S21.001	35.060	0.351	99.9	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S21.002	28.941	0.365	79.3	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.000	15.105	0.189	79.9	0.007	3.00	0.0	0.600	o	150	Pipe/Conduit	
S22.001	29.679	0.297	99.9	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S22.002	28.373	0.189	150.1	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S21.003	21.137	0.141	149.9	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S21.004	5.774	0.038	151.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S23.000	29.448	0.196	150.2	0.023	3.00	0.0	0.600	o	150	Pipe/Conduit	
S21.005	36.465	0.623	58.5	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.010	32.06	10.81	65.771	7.108	0.0	0.0	0.0	1.40	395.6«	617.2
S20.000	50.00	3.53	68.500	0.030	0.0	0.0	0.0	1.13	19.9	4.1
S20.001	50.00	3.91	67.974	0.083	0.0	0.0	0.0	1.31	52.0	11.2
S20.002	49.16	4.36	67.675	0.111	0.0	0.0	0.0	1.07	42.4	14.8
S21.000	50.00	3.38	68.500	0.019	0.0	0.0	0.0	1.12	19.9	2.6
S21.001	50.00	3.83	68.105	0.051	0.0	0.0	0.0	1.31	52.0	7.0
S21.002	50.00	4.10	67.679	0.169	0.0	0.0	0.0	1.77	124.9	22.9
S22.000	50.00	3.22	68.500	0.007	0.0	0.0	0.0	1.13	19.9	0.9
S22.001	50.00	3.60	68.236	0.022	0.0	0.0	0.0	1.31	52.0	3.0
S22.002	50.00	3.97	67.864	0.108	0.0	0.0	0.0	1.28	90.5	14.6
S21.003	49.27	4.34	67.239	0.364	0.0	0.0	0.0	1.48	163.2	48.5
S21.004	48.98	4.40	67.098	0.364	0.0	0.0	0.0	1.47	162.1	48.5
S23.000	50.00	3.60	68.500	0.023	0.0	0.0	0.0	0.82	14.4	3.1
S21.005	47.73	4.70	67.060	0.425	0.0	0.0	0.0	2.06	145.5	54.9

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S20.003	13.328	0.167	79.8	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.011	50.678	0.169	299.9	0.035	0.00	0.0	0.600	o	675	Pipe/Conduit	
S24.000	9.581	0.144	66.5	0.062	3.00	0.0	0.600	o	375	Pipe/Conduit	
S25.000	7.555	0.094	80.4	0.035	3.00	0.0	0.600	o	300	Pipe/Conduit	
S1.012	11.530	0.412	28.0	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.013	5.278	0.053	99.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S20.003	47.22	4.82	66.437	0.568	0.0	0.0	0.0	1.76	124.5	72.6
S1.011	31.18	11.37	65.358	7.711	0.0	0.0	0.0	1.51	539.7«	651.2
S24.000	50.00	3.07	65.500	0.062	0.0	0.0	0.0	2.22	245.7	8.4
S25.000	50.00	3.07	65.500	0.035	0.0	0.0	0.0	1.76	124.1	4.8
S1.012	31.10	11.43	64.756	7.894	0.0	0.0	0.0	3.44	379.6«	664.9
S1.013	31.02	11.47	64.343	7.894	0.0	0.0	0.0	1.82	200.5«	664.9

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.112	0.112	0.112
2.000	User	-	100	0.137	0.137	0.137
2.001	User	-	100	0.273	0.273	0.273
2.002	User	-	100	0.123	0.123	0.123
2.003	User	-	100	0.169	0.169	0.169
2.004	-	-	100	0.000	0.000	0.000
1.001	-	-	100	0.000	0.000	0.000
3.000	User	-	100	0.109	0.109	0.109
4.000	User	-	100	0.218	0.218	0.218
3.001	User	-	100	0.225	0.225	0.225
3.002	User	-	100	0.074	0.074	0.074
5.000	User	-	100	0.134	0.134	0.134
5.001	User	-	100	0.266	0.266	0.266
5.002	User	-	100	0.201	0.201	0.201
1.002	-	-	100	0.000	0.000	0.000
6.000	User	-	100	0.193	0.193	0.193
6.001	User	-	100	0.341	0.341	0.341
6.002	User	-	100	0.221	0.221	0.221
7.000	User	-	100	0.053	0.053	0.053
1.003	User	-	100	0.276	0.276	0.276
8.000	User	-	100	0.131	0.131	0.131
9.000	User	-	100	0.188	0.188	0.188
9.001	User	-	100	0.332	0.332	0.332
9.002	User	-	100	0.167	0.167	0.167
10.000	User	-	100	0.069	0.069	0.069
10.001	User	-	100	0.161	0.161	0.161
10.002	User	-	100	0.176	0.176	0.176
9.003	User	-	100	0.087	0.087	0.087
1.004	User	-	100	0.222	0.222	0.222
11.000	User	-	100	0.036	0.036	0.036
11.001	-	-	100	0.000	0.000	0.000
1.005	User	-	100	0.420	0.420	0.420
1.006	User	-	100	0.409	0.409	0.409
12.000	User	-	100	0.069	0.069	0.069
12.001	User	-	100	0.073	0.073	0.073
13.000	User	-	100	0.046	0.046	0.046
12.002	User	-	100	0.051	0.051	0.051
14.000	User	-	100	0.066	0.066	0.066
14.001	User	-	100	0.062	0.062	0.062
14.002	User	-	100	0.049	0.049	0.049
12.003	User	-	100	0.056	0.056	0.056
15.000	User	-	100	0.058	0.058	0.058
15.001	User	-	100	0.079	0.079	0.079
15.002	User	-	100	0.086	0.086	0.086
15.003	User	-	100	0.009	0.009	0.009
15.004	User	-	100	0.004	0.004	0.004
16.000	User	-	100	0.073	0.073	0.073
16.001	User	-	100	0.043	0.043	0.043
15.005	User	-	100	0.067	0.067	0.067
15.006	-	-	100	0.000	0.000	0.000
15.007	-	-	100	0.000	0.000	0.000

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.007	User	-	100	0.098	0.098	0.098
17.000	User	-	100	0.047	0.047	0.047
17.001	User	-	100	0.039	0.039	0.039
17.002	User	-	100	0.053	0.053	0.053
17.003	-	-	100	0.000	0.000	0.000
1.008	User	-	100	0.132	0.132	0.132
18.000	User	-	100	0.042	0.042	0.042
1.009	-	-	100	0.000	0.000	0.000
19.000	User	-	100	0.046	0.046	0.046
19.001	User	-	100	0.050	0.050	0.050
19.002	User	-	100	0.056	0.056	0.056
1.010	User	-	100	0.131	0.131	0.131
20.000	User	-	100	0.030	0.030	0.030
20.001	User	-	100	0.052	0.052	0.052
20.002	User	-	100	0.028	0.028	0.028
21.000	User	-	100	0.019	0.019	0.019
21.001	User	-	100	0.032	0.032	0.032
21.002	User	-	100	0.118	0.118	0.118
22.000	User	-	100	0.007	0.007	0.007
22.001	User	-	100	0.015	0.015	0.015
22.002	User	-	100	0.086	0.086	0.086
21.003	User	-	100	0.086	0.086	0.086
21.004	-	-	100	0.000	0.000	0.000
23.000	User	-	100	0.023	0.023	0.023
21.005	User	-	100	0.038	0.038	0.038
20.003	User	-	100	0.032	0.032	0.032
1.011	User	-	100	0.035	0.035	0.035
24.000	User	-	100	0.062	0.062	0.062
25.000	User	-	100	0.035	0.035	0.035
1.012	User	-	100	0.086	0.086	0.086
1.013	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				7.894	7.894	7.894

Free Flowing Outfall Details for 9762 - SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.013	S	66.500	64.290	0.000	0	0

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Simulation Criteria for 9762 - SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	4
Number of Online Controls	5	Number of Time/Area Diagrams	0
Number of Offline Controls	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)	18.200	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for 9762 - SW

Hydro-Brake® Optimum Manhole: S14 Flow Control 19 l/s, DS/PN: S1.002, Volume (m³): 20.9

Unit Reference	MD-SHE-0178-1900-2125-1900
Design Head (m)	2.125
Design Flow (l/s)	19.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	178
Invert Level (m)	69.400
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.125	19.0
Flush-Flo™	0.616	19.0
Kick-Flo®	1.295	15.0
Mean Flow over Head Range	-	16.6

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)
0.100	6.3	1.200	16.4	3.000	22.4	7.000	33.6
0.200	15.6	1.400	15.6	3.500	24.1	7.500	34.8
0.300	17.4	1.600	16.6	4.000	25.7	8.000	35.9
0.400	18.4	1.800	17.5	4.500	27.2	8.500	36.9
0.500	18.8	2.000	18.4	5.000	28.6	9.000	38.0
0.600	19.0	2.200	19.3	5.500	29.9	9.500	39.0
0.800	18.7	2.400	20.1	6.000	31.2		
1.000	18.0	2.600	20.9	6.500	32.5		

Non Return Valve Manhole: S31, DS/PN: S11.001, Volume (m³): 4.0

Hydro-Brake® Optimum Manhole: S61 Flow Control 80 l/s, DS/PN: S1.010, Volume (m³): 22.3

Unit Reference	MD-SHE-0321-8000-3750-8000
Design Head (m)	3.750
Design Flow (l/s)	80.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface

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Hydro-Brake® Optimum Manhole: S61 Flow Control 80 l/s, DS/PN: S1.010, Volume (m³): 22.3

Sump Available	Yes
Diameter (mm)	321
Invert Level (m)	65.771
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.750	79.9
Flush-Flo™	1.078	79.9
Kick-Flo®	2.273	62.7
Mean Flow over Head Range	-	69.7

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)
0.100	9.6	1.200	79.7	3.000	71.7	7.000	108.2
0.200	32.8	1.400	78.9	3.500	77.3	7.500	111.9
0.300	57.7	1.600	77.4	4.000	82.5	8.000	115.5
0.400	68.3	1.800	75.1	4.500	87.3	8.500	119.0
0.500	72.4	2.000	71.4	5.000	91.9	9.000	122.4
0.600	75.3	2.200	65.6	5.500	96.3	9.500	125.6
0.800	78.6	2.400	64.4	6.000	100.4		
1.000	79.8	2.600	66.9	6.500	104.4		

Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S20.003, Volume (m³): 6.7

Unit Reference	MD-SHE-0087-5000-2500-5000
Design Head (m)	2.500
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	87
Invert Level (m)	66.437
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	5.0
Flush-Flo™	0.379	3.6
Kick-Flo®	0.777	2.9
Mean Flow over Head Range	-	3.8

The hydrological calculations have been based on the Head/Discharge relationship for the

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Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S20.003, Volume (m³): 6.7

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)
0.100	2.6	1.200	3.6	3.000	5.4	7.000	8.1
0.200	3.4	1.400	3.8	3.500	5.8	7.500	8.4
0.300	3.6	1.600	4.1	4.000	6.2	8.000	8.6
0.400	3.6	1.800	4.3	4.500	6.6	8.500	8.9
0.500	3.6	2.000	4.5	5.000	6.9	9.000	9.1
0.600	3.5	2.200	4.7	5.500	7.2	9.500	9.4
0.800	2.9	2.400	4.9	6.000	7.5		
1.000	3.3	2.600	5.1	6.500	7.8		

Hydro-Brake® Optimum Manhole: S79 Flow Control 95 l/s, DS/PN: S1.012, Volume (m³): 25.6

Unit Reference	MD-SHE-0374-9500-1985-9500
Design Head (m)	1.985
Design Flow (l/s)	95.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	374
Invert Level (m)	64.756
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.985	94.9
Flush-Flo™	0.658	94.9
Kick-Flo®	1.400	80.2
Mean Flow over Head Range	-	80.3

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)
0.100	10.6	1.000	92.3	2.400	104.1	5.500	156.0
0.200	37.4	1.200	88.7	2.600	108.2	6.000	162.7
0.300	70.7	1.400	80.4	3.000	116.0	6.500	169.2
0.400	91.0	1.600	85.5	3.500	125.1	7.000	175.5
0.500	93.7	1.800	90.5	4.000	133.5	7.500	181.5
0.600	94.8	2.000	95.3	4.500	141.4	8.000	187.3
0.800	94.4	2.200	99.8	5.000	148.9	8.500	193.0

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Hydro-Brake® Optimum Manhole: S79 Flow Control 95 l/s, DS/PN: S1.012, Volume (m³): 25.6

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
9.000	198.5	9.500	203.8				

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Storage Structures for 9762 - SW

Tank or Pond Manhole: S8 Pond, DS/PN: S3.002

Invert Level (m) 70.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	675.4	1.300	1157.0

Cellular Storage Manhole: S28 Tank 3, DS/PN: S1.004

Invert Level (m) 67.750 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)
0.000	600.0	0.0	1.501	0.0	0.0
1.500	600.0	0.0	3.000	0.0	0.0

Cellular Storage Manhole: S30 Tank 1, DS/PN: S1.005

Invert Level (m) 67.500 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)
0.000	900.0	0.0	1.501	0.0	0.0
1.500	900.0	0.0	2.000	0.0	0.0

Cellular Storage Manhole: S72 Tank 2, DS/PN: S21.004

Invert Level (m) 67.500 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)
0.000	300.0	0.0	1.001	0.0	0.0
1.000	300.0	0.0	2.000	0.0	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 4
Number of Online Controls 5 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S1.000	S05	15 Summer	1	+0%	100/15 Summer	
S2.000	S01	15 Winter	1	+0%	100/15 Summer	
S2.001	S02	15 Winter	1	+0%	100/15 Summer	
S2.002	S03	15 Winter	1	+0%	100/15 Summer	
S2.003	S04	15 Winter	1	+0%	30/15 Summer	
S2.004	S6	30 Winter	1	+0%	30/15 Summer	
S1.001	S7	15 Winter	1	+0%	1/15 Summer	
S3.000	S08	15 Summer	1	+0%		
S4.000	S10	15 Summer	1	+0%	100/15 Summer	
S3.001	S09	15 Summer	1	+0%	100/15 Summer	
S3.002	S8 Pond	120 Winter	1	+0%	30/15 Summer	
S5.000	S11	15 Winter	1	+0%	100/15 Summer	
S5.001	S12	15 Winter	1	+0%	100/15 Summer	
S5.002	S13	15 Winter	1	+0%	100/15 Summer	
S1.002	S14 Flow Control 19 l/s	30 Winter	1	+0%	1/15 Summer	
S6.000	S15	15 Summer	1	+0%	100/15 Summer	
S6.001	S16	15 Summer	1	+0%	100/15 Summer	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S1.000	S05			72.096	-0.129	0.000	0.37
S2.000	S01			73.073	-0.227	0.000	0.13
S2.001	S02			72.548	-0.261	0.000	0.20
S2.002	S03			71.924	-0.243	0.000	0.26
S2.003	S04			70.972	-0.309	0.000	0.21
S2.004	S6			70.765	-0.156	0.000	0.16
S1.001	S7			70.667	0.540	0.000	0.42
S3.000	S08			72.082	-0.218	0.000	0.16
S4.000	S10			72.097	-0.203	0.000	0.22
S3.001	S09			71.595	-0.279	0.000	0.31
S3.002	S8 Pond			70.375	-0.075	0.000	0.06
S5.000	S11			73.079	-0.221	0.000	0.15
S5.001	S12			72.702	-0.237	0.000	0.29
S5.002	S13			72.418	-0.280	0.000	0.14
S1.002	S14 Flow Control 19 l/s			70.681	0.906	0.000	0.13
S6.000	S15			71.310	-0.190	0.000	0.27
S6.001	S16			70.842	-0.301	0.000	0.24

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S05			16.5	OK	
S2.000	S01			16.2	OK	
S2.001	S02			44.0	OK	
S2.002	S03			55.5	OK	
S2.003	S04			72.1	OK	
S2.004	S6			61.6	OK	
S1.001	S7			82.1	SURCHARGED	
S3.000	S08			15.7	OK	
S4.000	S10			31.5	OK	
S3.001	S09			69.3	OK	
S3.002	S8 Pond			17.0	OK	
S5.000	S11			15.8	OK	
S5.001	S12			42.9	OK	
S5.002	S13			63.1	OK	
S1.002	S14 Flow Control 19 l/s			18.9	SURCHARGED	
S6.000	S15			27.2	OK	
S6.001	S16			60.5	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S6.002	S17	15 Winter	1	+0%	100/15 Summer	
S7.000	S18	15 Summer	1	+0%	100/15 Summer	
S1.003	S19	15 Winter	1	+0%	100/15 Summer	
S8.000	S20	15 Summer	1	+0%	100/15 Summer	
S9.000	S21	15 Summer	1	+0%	100/15 Summer	
S9.001	S22	15 Winter	1	+0%	30/15 Summer	
S9.002	S23	15 Winter	1	+0%	100/15 Summer	
S10.000	S24	15 Summer	1	+0%	100/15 Summer	
S10.001	S25	15 Summer	1	+0%	30/15 Winter	
S10.002	S26	15 Winter	1	+0%	30/15 Summer	
S9.003	S27	15 Winter	1	+0%	30/15 Summer	
S1.004	S28 Tank 3	30 Winter	1	+0%	30/120 Winter	
S11.000	S29	15 Winter	1	+0%		
S11.001	S31	15 Winter	1	+0%	100/240 Winter	
S1.005	S30 Tank 1	120 Winter	1	+0%	30/15 Winter	
S1.006	S31	30 Winter	1	+0%	1/15 Summer	
S12.000	S32	15 Summer	1	+0%	30/15 Summer	
S12.001	S33	15 Summer	1	+0%	30/15 Summer	
S13.000	S34	15 Summer	1	+0%	100/15 Winter	
S12.002	S35	15 Summer	1	+0%	30/15 Summer	
S14.000	S36	15 Summer	1	+0%	100/15 Summer	
S14.001	S37	15 Summer	1	+0%	30/15 Summer	
S14.002	S38	15 Winter	1	+0%	30/15 Summer	
S12.003	S39	30 Winter	1	+0%	1/15 Winter	
S15.000	S40	15 Summer	1	+0%	100/15 Summer	
S15.001	S41	15 Summer	1	+0%	100/15 Summer	
S15.002	S42	15 Winter	1	+0%	100/15 Summer	
S15.003	S43	15 Winter	1	+0%	100/15 Summer	
S15.004	S44	15 Winter	1	+0%	100/15 Summer	
S16.000	S45	15 Summer	1	+0%	100/15 Summer	
S16.001	S46	15 Summer	1	+0%		
S15.005	S47	15 Winter	1	+0%	30/15 Summer	
S15.006	S48	15 Winter	1	+0%	30/15 Summer	
S15.007	S49	15 Winter	1	+0%	30/15 Summer	
S1.007	S50	30 Winter	1	+0%	1/15 Summer	
S17.000	S51	15 Summer	1	+0%	100/15 Summer	
S17.001	S52	15 Summer	1	+0%	100/15 Summer	
S17.002	S53	15 Winter	1	+0%	100/15 Summer	
S17.003	S54	15 Winter	1	+0%	100/120 Winter	
S1.008	S55	30 Winter	1	+0%	1/15 Summer	
S18.000	S56	15 Winter	1	+0%	100/15 Summer	
S1.009	S57	30 Winter	1	+0%	1/15 Summer	
S19.000	S58	15 Summer	1	+0%	100/15 Summer	
S19.001	S59	15 Summer	1	+0%	100/15 Summer	
S19.002	S60	15 Winter	1	+0%	100/15 Summer	
S1.010	S61 Flow Control 80 l/s	30 Winter	1	+0%	1/15 Summer	
S20.000	S62	15 Summer	1	+0%	100/15 Summer	
S20.001	S63	15 Summer	1	+0%	100/15 Summer	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S6.002	S17			70.576	-0.266	0.000	0.35
S7.000	S18			70.567	-0.083	0.000	0.39
S1.003	S19			68.231	-0.342	0.000	0.38
S8.000	S20			70.304	-0.196	0.000	0.26
S9.000	S21			71.300	-0.275	0.000	0.15
S9.001	S22			71.018	-0.197	0.000	0.45
S9.002	S23			70.717	-0.265	0.000	0.35
S10.000	S24			70.305	-0.245	0.000	0.07
S10.001	S25			69.632	-0.355	0.000	0.10
S10.002	S26			69.454	-0.328	0.000	0.16
S9.003	S27			69.322	-0.190	0.000	0.63
S1.004	S28 Tank 3			67.930	-0.344	0.000	0.38
S11.000	S29			69.789	-0.336	0.000	0.02
S11.001	S31			69.533	-0.336	0.000	0.02
S1.005	S30 Tank 1			67.711	-0.171	0.000	0.26
S1.006	S31			67.741	0.206	0.000	0.45
S12.000	S32			68.462	-0.160	0.000	0.17
S12.001	S33			67.940	-0.109	0.000	0.53
S13.000	S34			70.056	-0.169	0.000	0.13
S12.002	S35			67.816	-0.182	0.000	0.32
S14.000	S36			68.770	-0.320	0.000	0.05
S14.001	S37			68.461	-0.301	0.000	0.09
S14.002	S38			68.143	-0.291	0.000	0.11
S12.003	S39			67.783	0.090	0.000	0.19
S15.000	S40			70.559	-0.166	0.000	0.15
S15.001	S41			69.943	-0.220	0.000	0.16
S15.002	S42			69.625	-0.203	0.000	0.22
S15.003	S43			69.262	-0.251	0.000	0.24
S15.004	S44			69.163	-0.276	0.000	0.16
S16.000	S45			70.776	-0.149	0.000	0.24
S16.001	S46			70.521	-0.252	0.000	0.06
S15.005	S47			68.612	-0.203	0.000	0.43
S15.006	S48			68.445	-0.302	0.000	0.24
S15.007	S49			68.173	-0.454	0.000	0.04
S1.007	S50			67.742	0.944	0.000	0.29
S17.000	S51			70.268	-0.082	0.000	0.39
S17.001	S52			69.973	-0.151	0.000	0.23
S17.002	S53			69.841	-0.134	0.000	0.35
S17.003	S54			69.576	-0.187	0.000	0.07
S1.008	S55			67.747	1.103	0.000	0.26
S18.000	S56			69.299	-0.176	0.000	0.11
S1.009	S57			67.747	1.163	0.000	0.19
S19.000	S58			70.267	-0.083	0.000	0.39
S19.001	S59			69.929	-0.151	0.000	0.23
S19.002	S60			69.439	-0.215	0.000	0.18
S1.010	S61 Flow Control 80 l/s			67.745	1.374	0.000	0.24
S20.000	S62			68.549	-0.101	0.000	0.22

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.001	S63			68.041	-0.158	0.000	0.19

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S6.002	S17			83.1	OK	
S7.000	S18			7.7	OK	
S1.003	S19			131.7	OK	
S8.000	S20			19.5	OK	
S9.000	S21			26.2	OK	
S9.001	S22			57.5	OK	
S9.002	S23			74.1	OK	
S10.000	S24			9.8	OK	
S10.001	S25			25.5	OK	
S10.002	S26			43.0	OK	
S9.003	S27			124.3	OK	
S1.004	S28 Tank 3		18	137.8	OK	
S11.000	S29			4.3	OK	
S11.001	S31			4.2	OK	
S1.005	S30 Tank 1		50	93.0	OK	
S1.006	S31			126.6	SURCHARGED	
S12.000	S32			9.6	OK	
S12.001	S33			16.9	OK	
S13.000	S34			6.5	OK	
S12.002	S35			27.2	OK	
S14.000	S36			9.4	OK	
S14.001	S37			15.3	OK	
S14.002	S38			19.9	OK	
S12.003	S39			42.9	SURCHARGED	
S15.000	S40			8.2	OK	
S15.001	S41			16.0	OK	
S15.002	S42			24.4	OK	
S15.003	S43			25.5	OK	
S15.004	S44			26.0	OK	
S16.000	S45			10.4	OK	
S16.001	S46			14.5	OK	
S15.005	S47			45.9	OK	
S15.006	S48			46.1	OK	
S15.007	S49			46.1	OK	
S1.007	S50			172.3	SURCHARGED	
S17.000	S51			6.6	OK	
S17.001	S52			10.6	OK	
S17.002	S53			15.7	OK	
S17.003	S54			15.6	OK	
S1.008	S55			127.3	SURCHARGED	
S18.000	S56			5.1	OK	3

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.009	S57			96.0	SURCHARGED	
S19.000	S58			6.6	OK	
S19.001	S59			11.6	OK	
S19.002	S60			17.2	OK	
S1.010	S61 Flow Control 80 l/s			79.7	SURCHARGED	
S20.000	S62			4.3	OK	
S20.001	S63			9.4	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S20.002	S64	15 Winter	1	+0%	30/120 Winter	
S21.000	S65	15 Summer	1	+0%	100/360 Winter	
S21.001	S66	15 Summer	1	+0%	100/120 Winter	
S21.002	S67	15 Winter	1	+0%	100/15 Summer	
S22.000	S68	15 Summer	1	+0%	100/360 Winter	
S22.001	S69	15 Summer	1	+0%	100/240 Winter	
S22.002	S70	15 Winter	1	+0%	100/60 Summer	
S21.003	S71	30 Winter	1	+0%	1/15 Winter	
S21.004	S72 Tank 2	120 Winter	1	+0%	1/15 Summer	
S23.000	S73	15 Summer	1	+0%	100/15 Summer	
S21.005	S74	180 Winter	1	+0%	1/15 Summer	
S20.003	S75 Flow Control 5 l/s	240 Winter	1	+0%	1/15 Summer	
S1.011	S76	30 Winter	1	+0%	100/15 Summer	
S24.000	S77	15 Summer	1	+0%	100/15 Summer	
S25.000	S78	15 Summer	1	+0%	100/15 Summer	
S1.012	S79 Flow Control 95 l/s	30 Winter	1	+0%	1/15 Summer	
S1.013	S80	30 Winter	1	+0%		

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.002	S64			67.761	-0.139	0.000	0.31
S21.000	S65			68.539	-0.111	0.000	0.14
S21.001	S66			68.157	-0.173	0.000	0.12
S21.002	S67			67.759	-0.220	0.000	0.16
S22.000	S68			68.523	-0.127	0.000	0.06
S22.001	S69			68.269	-0.192	0.000	0.05
S22.002	S70			67.938	-0.226	0.000	0.14
S21.003	S71			67.642	0.028	0.000	0.22
S21.004	S72 Tank 2			67.626	0.153	0.000	0.07
S23.000	S73			68.550	-0.100	0.000	0.24
S21.005	S74			67.638	0.278	0.000	0.04
S20.003	S75 Flow Control 5 l/s			67.646	0.909	0.000	0.04
S1.011	S76			65.553	-0.480	0.000	0.18
S24.000	S77			65.561	-0.314	0.000	0.06
S25.000	S78			65.552	-0.248	0.000	0.06
S1.012	S79 Flow Control 95 l/s			65.315	0.184	0.000	0.38
S1.013	S80			64.616	-0.102	0.000	0.88

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S20.002	S64			12.2	OK	
S21.000	S65			2.7	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S21.001	S66			6.0	OK	
S21.002	S67			17.7	OK	
S22.000	S68			1.0	OK	
S22.001	S69			2.5	OK	
S22.002	S70			11.2	OK	
S21.003	S71			30.0	SURCHARGED	
S21.004	S72 Tank 2		102	7.6	SURCHARGED	
S23.000	S73			3.3	OK	
S21.005	S74			6.0	SURCHARGED	
S20.003	S75 Flow Control 5 l/s			3.6	SURCHARGED	
S1.011	S76			85.3	OK	
S24.000	S77			8.9	OK	
S25.000	S78			5.0	OK	
S1.012	S79 Flow Control 95 l/s			94.5	SURCHARGED	
S1.013	S80			94.5	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 4
Number of Online Controls 5 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S1.000	S05	15 Summer	30	+0%	100/15 Summer	
S2.000	S01	15 Winter	30	+0%	100/15 Summer	
S2.001	S02	15 Winter	30	+0%	100/15 Summer	
S2.002	S03	15 Winter	30	+0%	100/15 Summer	
S2.003	S04	15 Winter	30	+0%	30/15 Summer	
S2.004	S6	15 Winter	30	+0%	30/15 Summer	
S1.001	S7	120 Winter	30	+0%	1/15 Summer	
S3.000	S08	15 Summer	30	+0%		
S4.000	S10	15 Summer	30	+0%	100/15 Summer	
S3.001	S09	15 Summer	30	+0%	100/15 Summer	
S3.002	S8 Pond	240 Winter	30	+0%	30/15 Summer	
S5.000	S11	15 Winter	30	+0%	100/15 Summer	
S5.001	S12	15 Winter	30	+0%	100/15 Summer	
S5.002	S13	15 Winter	30	+0%	100/15 Summer	
S1.002	S14 Flow Control 19 l/s	15 Winter	30	+0%	1/15 Summer	
S6.000	S15	15 Summer	30	+0%	100/15 Summer	
S6.001	S16	15 Summer	30	+0%	100/15 Summer	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S1.000	S05			72.170	-0.055	0.000	0.90
S2.000	S01			73.119	-0.181	0.000	0.33
S2.001	S02			72.638	-0.171	0.000	0.56
S2.002	S03			72.049	-0.118	0.000	0.74
S2.003	S04			71.633	0.352	0.000	0.57
S2.004	S6			71.417	0.496	0.000	0.51
S1.001	S7			71.184	1.057	0.000	0.39
S3.000	S08			72.134	-0.166	0.000	0.38
S4.000	S10			72.161	-0.139	0.000	0.55
S3.001	S09			71.738	-0.136	0.000	0.82
S3.002	S8 Pond			70.807	0.357	0.000	0.06
S5.000	S11			73.128	-0.172	0.000	0.37
S5.001	S12			72.825	-0.114	0.000	0.80
S5.002	S13			72.493	-0.205	0.000	0.41
S1.002	S14 Flow Control 19 l/s			71.010	1.235	0.000	0.12
S6.000	S15			71.387	-0.113	0.000	0.65
S6.001	S16			70.969	-0.174	0.000	0.68

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S05			40.2	OK	
S2.000	S01			39.7	OK	
S2.001	S02			124.1	OK	
S2.002	S03			157.5	OK	
S2.003	S04			194.4	SURCHARGED	
S2.004	S6			191.5	SURCHARGED	
S1.001	S7			75.7	SURCHARGED	
S3.000	S08			37.1	OK	
S4.000	S10			77.3	OK	
S3.001	S09			186.0	OK	
S3.002	S8 Pond			17.9	SURCHARGED	
S5.000	S11			38.8	OK	
S5.001	S12			119.1	OK	
S5.002	S13			180.6	OK	
S1.002	S14 Flow Control 19 l/s			18.7	SURCHARGED	
S6.000	S15			65.6	OK	
S6.001	S16			173.7	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S6.002	S17	15 Summer	30	+0%	100/15 Summer	
S7.000	S18	15 Summer	30	+0%	100/15 Summer	
S1.003	S19	15 Winter	30	+0%	100/15 Summer	
S8.000	S20	15 Summer	30	+0%	100/15 Summer	
S9.000	S21	15 Summer	30	+0%	100/15 Summer	
S9.001	S22	15 Summer	30	+0%	30/15 Summer	
S9.002	S23	15 Winter	30	+0%	100/15 Summer	
S10.000	S24	15 Summer	30	+0%	100/15 Summer	
S10.001	S25	15 Winter	30	+0%	30/15 Winter	
S10.002	S26	15 Winter	30	+0%	30/15 Summer	
S9.003	S27	15 Winter	30	+0%	30/15 Summer	
S1.004	S28 Tank 3	180 Winter	30	+0%	30/120 Winter	
S11.000	S29	15 Winter	30	+0%		
S11.001	S31	15 Winter	30	+0%	100/240 Winter	
S1.005	S30 Tank 1	180 Winter	30	+0%	30/15 Winter	
S1.006	S31	30 Winter	30	+0%	1/15 Summer	
S12.000	S32	15 Summer	30	+0%	30/15 Summer	
S12.001	S33	15 Summer	30	+0%	30/15 Summer	
S13.000	S34	15 Summer	30	+0%	100/15 Winter	
S12.002	S35	15 Winter	30	+0%	30/15 Summer	
S14.000	S36	15 Winter	30	+0%	100/15 Summer	
S14.001	S37	15 Winter	30	+0%	30/15 Summer	
S14.002	S38	15 Winter	30	+0%	30/15 Summer	
S12.003	S39	15 Winter	30	+0%	1/15 Winter	
S15.000	S40	15 Summer	30	+0%	100/15 Summer	
S15.001	S41	15 Summer	30	+0%	100/15 Summer	
S15.002	S42	15 Summer	30	+0%	100/15 Summer	
S15.003	S43	15 Summer	30	+0%	100/15 Summer	
S15.004	S44	15 Summer	30	+0%	100/15 Summer	
S16.000	S45	15 Summer	30	+0%	100/15 Summer	
S16.001	S46	15 Summer	30	+0%		
S15.005	S47	15 Summer	30	+0%	30/15 Summer	
S15.006	S48	15 Summer	30	+0%	30/15 Summer	
S15.007	S49	60 Winter	30	+0%	30/15 Summer	
S1.007	S50	60 Winter	30	+0%	1/15 Summer	
S17.000	S51	15 Summer	30	+0%	100/15 Summer	
S17.001	S52	15 Summer	30	+0%	100/15 Summer	
S17.002	S53	15 Summer	30	+0%	100/15 Summer	
S17.003	S54	15 Summer	30	+0%	100/120 Winter	
S1.008	S55	60 Winter	30	+0%	1/15 Summer	
S18.000	S56	15 Winter	30	+0%	100/15 Summer	
S1.009	S57	60 Winter	30	+0%	1/15 Summer	
S19.000	S58	15 Summer	30	+0%	100/15 Summer	
S19.001	S59	15 Summer	30	+0%	100/15 Summer	
S19.002	S60	15 Summer	30	+0%	100/15 Summer	
S1.010	S61 Flow Control 80 l/s	60 Winter	30	+0%	1/15 Summer	
S20.000	S62	15 Summer	30	+0%	100/15 Summer	
S20.001	S63	15 Summer	30	+0%	100/15 Summer	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S6.002	S17			70.761	-0.081	0.000	1.00
S7.000	S18			70.626	-0.024	0.000	0.95
S1.003	S19			68.497	-0.076	0.000	0.98
S8.000	S20			70.375	-0.125	0.000	0.64
S9.000	S21			71.372	-0.203	0.000	0.36
S9.001	S22			71.322	0.107	0.000	1.19
S9.002	S23			70.875	-0.107	0.000	0.94
S10.000	S24			70.337	-0.213	0.000	0.18
S10.001	S25			69.992	0.005	0.000	0.27
S10.002	S26			69.879	0.097	0.000	0.37
S9.003	S27			69.728	0.216	0.000	1.57
S1.004	S28 Tank 3			68.315	0.041	0.000	0.49
S11.000	S29			69.808	-0.317	0.000	0.06
S11.001	S31			69.552	-0.317	0.000	0.06
S1.005	S30 Tank 1			68.303	0.421	0.000	0.29
S1.006	S31			68.712	1.177	0.000	0.72
S12.000	S32			69.079	0.457	0.000	0.41
S12.001	S33			69.027	0.978	0.000	1.25
S13.000	S34			70.092	-0.133	0.000	0.33
S12.002	S35			68.952	0.954	0.000	0.82
S14.000	S36			68.910	-0.180	0.000	0.12
S14.001	S37			68.897	0.135	0.000	0.29
S14.002	S38			68.837	0.403	0.000	0.40
S12.003	S39			68.853	1.160	0.000	0.66
S15.000	S40			70.597	-0.128	0.000	0.35
S15.001	S41			70.003	-0.160	0.000	0.44
S15.002	S42			69.706	-0.122	0.000	0.65
S15.003	S43			69.369	-0.144	0.000	0.67
S15.004	S44			69.243	-0.196	0.000	0.45
S16.000	S45			70.827	-0.098	0.000	0.58
S16.001	S46			70.555	-0.218	0.000	0.16
S15.005	S47			69.179	0.364	0.000	1.23
S15.006	S48			69.050	0.303	0.000	0.74
S15.007	S49			68.928	0.301	0.000	0.10
S1.007	S50			68.910	2.112	0.000	0.48
S17.000	S51			70.334	-0.016	0.000	0.96
S17.001	S52			70.029	-0.095	0.000	0.63
S17.002	S53			69.937	-0.038	0.000	0.99
S17.003	S54			69.604	-0.159	0.000	0.19
S1.008	S55			69.079	2.436	0.000	0.43
S18.000	S56			69.329	-0.146	0.000	0.26
S1.009	S57			69.126	2.542	0.000	0.29
S19.000	S58			70.323	-0.027	0.000	0.93
S19.001	S59			69.988	-0.092	0.000	0.63
S19.002	S60			69.504	-0.150	0.000	0.48
S1.010	S61 Flow Control 80 l/s			69.134	2.763	0.000	0.24
S20.000	S62			68.582	-0.068	0.000	0.53

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.001	S63			68.095	-0.104	0.000	0.55

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S6.002	S17			238.6	OK	
S7.000	S18			18.8	OK	
S1.003	S19			336.6	OK	
S8.000	S20			47.7	OK	
S9.000	S21			63.6	OK	
S9.001	S22			152.8	SURCHARGED	
S9.002	S23			197.7	OK	
S10.000	S24			24.2	OK	
S10.001	S25			70.1	SURCHARGED	
S10.002	S26			96.7	SURCHARGED	
S9.003	S27			309.5	SURCHARGED	
S1.004	S28 Tank 3		145	175.5	SURCHARGED	
S11.000	S29			10.4	OK	
S11.001	S31			10.3	OK	
S1.005	S30 Tank 1		173	103.7	SURCHARGED	
S1.006	S31			203.8	SURCHARGED	
S12.000	S32			22.9	SURCHARGED	
S12.001	S33			39.8	SURCHARGED	
S13.000	S34			15.9	OK	
S12.002	S35			69.6	SURCHARGED	
S14.000	S36			21.9	OK	
S14.001	S37			51.7	SURCHARGED	
S14.002	S38			70.7	SURCHARGED	
S12.003	S39			147.3	SURCHARGED	
S15.000	S40			19.6	OK	
S15.001	S41			44.7	OK	
S15.002	S42			71.0	OK	
S15.003	S43			72.2	OK	
S15.004	S44			74.7	OK	
S16.000	S45			25.7	OK	
S16.001	S46			38.6	OK	
S15.005	S47			132.3	SURCHARGED	
S15.006	S48			145.1	SURCHARGED	
S15.007	S49			104.3	SURCHARGED	
S1.007	S50			286.6	SURCHARGED	
S17.000	S51			16.1	OK	
S17.001	S52			28.7	OK	
S17.002	S53			44.6	OK	
S17.003	S54			44.3	OK	
S1.008	S55			209.5	SURCHARGED	
S18.000	S56			12.4	OK	3

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.009	S57			141.6	SURCHARGED	
S19.000	S58			15.8	OK	
S19.001	S59			31.2	OK	
S19.002	S60			47.4	OK	
S1.010	S61 Flow Control 80 l/s			79.7	SURCHARGED	
S20.000	S62			10.3	OK	
S20.001	S63			26.8	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S20.002	S64	360 Winter	30	+0%	30/120 Winter	
S21.000	S65	15 Summer	30	+0%	100/360 Winter	
S21.001	S66	15 Summer	30	+0%	100/120 Winter	
S21.002	S67	240 Winter	30	+0%	100/15 Summer	
S22.000	S68	15 Summer	30	+0%	100/360 Winter	
S22.001	S69	15 Summer	30	+0%	100/240 Winter	
S22.002	S70	15 Summer	30	+0%	100/60 Summer	
S21.003	S71	240 Winter	30	+0%	1/15 Winter	
S21.004	S72 Tank 2	240 Winter	30	+0%	1/15 Summer	
S23.000	S73	15 Summer	30	+0%	100/15 Summer	
S21.005	S74	240 Winter	30	+0%	1/15 Summer	
S20.003	S75 Flow Control 5 l/s	240 Winter	30	+0%	1/15 Summer	
S1.011	S76	30 Winter	30	+0%	100/15 Summer	
S24.000	S77	30 Winter	30	+0%	100/15 Summer	
S25.000	S78	30 Winter	30	+0%	100/15 Summer	
S1.012	S79 Flow Control 95 l/s	30 Winter	30	+0%	1/15 Summer	
S1.013	S80	60 Summer	30	+0%		

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.002	S64			67.975	0.075	0.000	0.13
S21.000	S65			68.563	-0.087	0.000	0.35
S21.001	S66			68.197	-0.133	0.000	0.34
S21.002	S67			67.969	-0.010	0.000	0.09
S22.000	S68			68.537	-0.113	0.000	0.14
S22.001	S69			68.294	-0.167	0.000	0.15
S22.002	S70			67.999	-0.165	0.000	0.42
S21.003	S71			67.968	0.354	0.000	0.16
S21.004	S72 Tank 2			67.966	0.493	0.000	0.07
S23.000	S73			68.584	-0.066	0.000	0.57
S21.005	S74			67.998	0.638	0.000	0.04
S20.003	S75 Flow Control 5 l/s			68.012	1.275	0.000	0.04
S1.011	S76			65.718	-0.315	0.000	0.19
S24.000	S77			65.668	-0.207	0.000	0.10
S25.000	S78			65.668	-0.132	0.000	0.11
S1.012	S79 Flow Control 95 l/s			65.666	0.535	0.000	0.38
S1.013	S80			64.617	-0.101	0.000	0.88

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S20.002	S64			5.1	SURCHARGED	
S21.000	S65			6.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S21.001	S66			16.8	OK	
S21.002	S67			10.4	OK	
S22.000	S68			2.5	OK	
S22.001	S69			7.2	OK	
S22.002	S70			34.2	OK	
S21.003	S71			21.7	SURCHARGED	
S21.004	S72 Tank 2		329	7.1	SURCHARGED	
S23.000	S73			7.9	OK	
S21.005	S74			5.8	SURCHARGED	
S20.003	S75 Flow Control 5 l/s			4.0	SURCHARGED	
S1.011	S76			86.3	OK	
S24.000	S77			15.2	OK	
S25.000	S78			8.6	OK	
S1.012	S79 Flow Control 95 l/s			94.8	SURCHARGED	
S1.013	S80			94.8	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 4
Number of Online Controls 5 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S1.000	S05	15 Summer	100	+40%	100/15 Summer	
S2.000	S01	15 Winter	100	+40%	100/15 Summer	
S2.001	S02	15 Winter	100	+40%	100/15 Summer	
S2.002	S03	15 Winter	100	+40%	100/15 Summer	
S2.003	S04	15 Winter	100	+40%	30/15 Summer	
S2.004	S6	15 Winter	100	+40%	30/15 Summer	
S1.001	S7	15 Winter	100	+40%	1/15 Summer	
S3.000	S08	15 Summer	100	+40%		
S4.000	S10	15 Summer	100	+40%	100/15 Summer	
S3.001	S09	15 Summer	100	+40%	100/15 Summer	
S3.002	S8 Pond	360 Winter	100	+40%	30/15 Summer	
S5.000	S11	15 Winter	100	+40%	100/15 Summer	
S5.001	S12	15 Winter	100	+40%	100/15 Summer	
S5.002	S13	15 Winter	100	+40%	100/15 Summer	
S1.002	S14 Flow Control 19 l/s	15 Winter	100	+40%	1/15 Summer	
S6.000	S15	15 Winter	100	+40%	100/15 Summer	
S6.001	S16	15 Winter	100	+40%	100/15 Summer	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S1.000	S05			72.831	0.606	0.000	1.52
S2.000	S01			74.204	0.904	0.000	0.53
S2.001	S02			74.082	1.273	0.000	0.76
S2.002	S03			73.730	1.563	0.000	0.97
S2.003	S04			72.875	1.594	0.000	0.79
S2.004	S6			72.640	1.719	0.000	0.70
S1.001	S7			72.236	2.109	0.000	1.59
S3.000	S08			72.245	-0.055	0.000	0.67
S4.000	S10			72.428	0.128	0.000	0.92
S3.001	S09			72.052	0.178	0.000	1.38
S3.002	S8 Pond			71.407	0.957	0.000	0.08
S5.000	S11			73.515	0.215	0.000	0.63
S5.001	S12			73.390	0.451	0.000	1.34
S5.002	S13			73.042	0.344	0.000	0.62
S1.002	S14 Flow Control 19 l/s			71.896	2.121	0.000	0.14
S6.000	S15			72.204	0.704	0.000	0.96
S6.001	S16			71.888	0.745	0.000	1.04

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S05			68.0	SURCHARGED	
S2.000	S01			64.5	FLOOD RISK	
S2.001	S02			167.7	SURCHARGED	
S2.002	S03			205.5	SURCHARGED	
S2.003	S04			266.8	SURCHARGED	
S2.004	S6			264.9	SURCHARGED	
S1.001	S7			307.6	SURCHARGED	
S3.000	S08			65.7	OK	
S4.000	S10			129.8	SURCHARGED	
S3.001	S09			313.0	SURCHARGED	
S3.002	S8 Pond			24.1	SURCHARGED	
S5.000	S11			66.0	SURCHARGED	
S5.001	S12			199.7	SURCHARGED	
S5.002	S13			271.4	SURCHARGED	
S1.002	S14 Flow Control 19 l/s			20.5	SURCHARGED	
S6.000	S15			96.6	SURCHARGED	
S6.001	S16			265.8	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S6.002	S17	15 Winter	100	+40%	100/15 Summer	
S7.000	S18	15 Summer	100	+40%	100/15 Summer	
S1.003	S19	240 Winter	100	+40%	100/15 Summer	
S8.000	S20	240 Winter	100	+40%	100/15 Summer	
S9.000	S21	15 Winter	100	+40%	100/15 Summer	
S9.001	S22	15 Winter	100	+40%	30/15 Summer	
S9.002	S23	15 Winter	100	+40%	100/15 Summer	
S10.000	S24	15 Winter	100	+40%	100/15 Summer	
S10.001	S25	15 Winter	100	+40%	30/15 Winter	
S10.002	S26	240 Winter	100	+40%	30/15 Summer	
S9.003	S27	240 Winter	100	+40%	30/15 Summer	
S1.004	S28 Tank 3	240 Winter	100	+40%	30/120 Winter	
S11.000	S29	360 Winter	100	+40%		
S11.001	S31	360 Winter	100	+40%	100/240 Winter	
S1.005	S30 Tank 1	240 Winter	100	+40%	30/15 Winter	
S1.006	S31	240 Winter	100	+40%	1/15 Summer	
S12.000	S32	15 Winter	100	+40%	30/15 Summer	
S12.001	S33	240 Winter	100	+40%	30/15 Summer	
S13.000	S34	240 Winter	100	+40%	100/15 Winter	
S12.002	S35	240 Winter	100	+40%	30/15 Summer	
S14.000	S36	240 Winter	100	+40%	100/15 Summer	
S14.001	S37	240 Winter	100	+40%	30/15 Summer	
S14.002	S38	240 Winter	100	+40%	30/15 Summer	
S12.003	S39	240 Winter	100	+40%	1/15 Winter	
S15.000	S40	15 Winter	100	+40%	100/15 Summer	
S15.001	S41	15 Summer	100	+40%	100/15 Summer	
S15.002	S42	15 Winter	100	+40%	100/15 Summer	
S15.003	S43	240 Winter	100	+40%	100/15 Summer	
S15.004	S44	240 Winter	100	+40%	100/15 Summer	
S16.000	S45	15 Summer	100	+40%	100/15 Summer	
S16.001	S46	15 Summer	100	+40%		
S15.005	S47	240 Winter	100	+40%	30/15 Summer	
S15.006	S48	240 Winter	100	+40%	30/15 Summer	
S15.007	S49	240 Winter	100	+40%	30/15 Summer	
S1.007	S50	240 Winter	100	+40%	1/15 Summer	
S17.000	S51	15 Summer	100	+40%	100/15 Summer	
S17.001	S52	240 Winter	100	+40%	100/15 Summer	
S17.002	S53	240 Winter	100	+40%	100/15 Summer	
S17.003	S54	240 Winter	100	+40%	100/120 Winter	
S1.008	S55	240 Winter	100	+40%	1/15 Summer	
S18.000	S56	180 Winter	100	+40%	100/15 Summer	
S1.009	S57	240 Winter	100	+40%	1/15 Summer	
S19.000	S58	15 Summer	100	+40%	100/15 Summer	
S19.001	S59	240 Winter	100	+40%	100/15 Summer	
S19.002	S60	240 Winter	100	+40%	100/15 Summer	
S1.010	S61 Flow Control 80 l/s	240 Winter	100	+40%	1/15 Summer	
S20.000	S62	480 Winter	100	+40%	100/15 Summer	
S20.001	S63	480 Winter	100	+40%	100/15 Summer	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S6.002	S17			71.548	0.706	0.000	1.57
S7.000	S18			71.026	0.376	0.000	1.67
S1.003	S19			70.674	2.101	0.000	0.41
S8.000	S20			70.668	0.168	0.000	0.20
S9.000	S21			72.446	0.871	0.000	0.47
S9.001	S22			72.321	1.106	0.000	1.90
S9.002	S23			71.437	0.455	0.000	1.50
S10.000	S24			70.784	0.234	0.000	0.30
S10.001	S25			70.750	0.763	0.000	0.42
S10.002	S26			70.675	0.893	0.000	0.18
S9.003	S27			70.673	1.161	0.000	0.68
S1.004	S28 Tank 3			70.666	2.392	0.000	0.47
S11.000	S29			69.969	-0.156	0.000	0.02
S11.001	S31			69.969	0.100	0.000	0.04
S1.005	S30 Tank 1			70.543	2.661	0.000	0.37
S1.006	S31			70.500	2.965	0.000	0.41
S12.000	S32			70.551	1.929	0.000	0.51
S12.001	S33			70.503	2.454	0.000	1.27
S13.000	S34			70.503	0.278	0.000	0.11
S12.002	S35			70.501	2.503	0.000	0.62
S14.000	S36			70.500	1.410	0.000	0.07
S14.001	S37			70.499	1.737	0.000	0.29
S14.002	S38			70.497	2.063	0.000	0.47
S12.003	S39			70.495	2.802	0.000	0.64
S15.000	S40			70.974	0.249	0.000	0.61
S15.001	S41			70.854	0.691	0.000	0.71
S15.002	S42			70.700	0.872	0.000	0.90
S15.003	S43			70.499	0.986	0.000	0.26
S15.004	S44			70.497	1.058	0.000	0.24
S16.000	S45			70.946	0.021	0.000	1.03
S16.001	S46			70.584	-0.189	0.000	0.29
S15.005	S47			70.495	1.680	0.000	0.84
S15.006	S48			70.493	1.746	0.000	0.54
S15.007	S49			70.491	1.864	0.000	0.11
S1.007	S50			70.489	3.691	0.000	0.41
S17.000	S51			70.956	0.606	0.000	1.44
S17.001	S52			70.489	0.365	0.000	0.21
S17.002	S53			70.486	0.511	0.000	0.35
S17.003	S54			70.481	0.718	0.000	0.07
S1.008	S55			70.477	3.833	0.000	0.36
S18.000	S56			70.044	0.569	0.000	0.22
S1.009	S57			70.468	3.884	0.000	0.24
S19.000	S58			70.779	0.429	0.000	1.55
S19.001	S59			70.467	0.387	0.000	0.22
S19.002	S60			70.462	0.808	0.000	0.18
S1.010	S61 Flow Control 80 l/s			70.458	4.087	0.000	0.27
S20.000	S62			69.022	0.372	0.000	0.11

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.001	S63			69.020	0.821	0.000	0.12

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S6.002	S17			374.4	SURCHARGED	
S7.000	S18			32.9	SURCHARGED	
S1.003	S19			139.0	SURCHARGED	
S8.000	S20			15.0	SURCHARGED	
S9.000	S21			81.4	FLOOD RISK	
S9.001	S22			243.1	FLOOD RISK	
S9.002	S23			316.6	SURCHARGED	
S10.000	S24			40.3	SURCHARGED	
S10.001	S25			107.8	SURCHARGED	
S10.002	S26			46.3	SURCHARGED	
S9.003	S27			134.5	SURCHARGED	
S1.004	S28 Tank 3		399	168.7	SURCHARGED	
S11.000	S29			3.0	OK	
S11.001	S31			6.8	SURCHARGED	
S1.005	S30 Tank 1		452	129.4	SURCHARGED	
S1.006	S31			116.0	SURCHARGED	
S12.000	S32			28.1	SURCHARGED	
S12.001	S33			40.5	SURCHARGED	
S13.000	S34			5.3	SURCHARGED	
S12.002	S35			52.9	SURCHARGED	
S14.000	S36			13.6	SURCHARGED	
S14.001	S37			51.3	SURCHARGED	
S14.002	S38			82.1	SURCHARGED	
S12.003	S39			143.6	SURCHARGED	
S15.000	S40			33.7	SURCHARGED	
S15.001	S41			72.6	SURCHARGED	
S15.002	S42			97.7	SURCHARGED	
S15.003	S43			27.5	SURCHARGED	
S15.004	S44			39.7	SURCHARGED	
S16.000	S45			45.2	SURCHARGED	
S16.001	S46			70.0	OK	
S15.005	S47			89.7	SURCHARGED	
S15.006	S48			106.1	SURCHARGED	
S15.007	S49			118.0	SURCHARGED	
S1.007	S50			244.5	FLOOD RISK	
S17.000	S51			24.1	FLOOD RISK	
S17.001	S52			9.8	SURCHARGED	
S17.002	S53			15.9	SURCHARGED	
S17.003	S54			15.9	FLOOD RISK	
S1.008	S55			173.9	FLOOD RISK	
S18.000	S56			10.5	FLOOD RISK*	3

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.009	S57			118.6	FLOOD RISK	
S19.000	S58			26.3	FLOOD RISK	
S19.001	S59			11.0	FLOOD RISK	
S19.002	S60			17.4	FLOOD RISK	
S1.010	S61 Flow Control 80 l/s			89.1	FLOOD RISK	
S20.000	S62			2.0	SURCHARGED	
S20.001	S63			5.8	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S20.002	S64	480 Winter	100	+40%	30/120 Winter	
S21.000	S65	480 Winter	100	+40%	100/360 Winter	
S21.001	S66	480 Winter	100	+40%	100/120 Winter	
S21.002	S67	480 Winter	100	+40%	100/15 Summer	
S22.000	S68	480 Winter	100	+40%	100/360 Winter	
S22.001	S69	480 Winter	100	+40%	100/240 Winter	
S22.002	S70	480 Winter	100	+40%	100/60 Summer	
S21.003	S71	480 Winter	100	+40%	1/15 Winter	
S21.004	S72 Tank 2	480 Winter	100	+40%	1/15 Summer	
S23.000	S73	480 Winter	100	+40%	100/15 Summer	
S21.005	S74	480 Winter	100	+40%	1/15 Summer	
S20.003	S75 Flow Control 5 l/s	480 Winter	100	+40%	1/15 Summer	
S1.011	S76	30 Winter	100	+40%	100/15 Summer	
S24.000	S77	30 Winter	100	+40%	100/15 Summer	
S25.000	S78	30 Winter	100	+40%	100/15 Summer	
S1.012	S79 Flow Control 95 l/s	30 Winter	100	+40%	1/15 Summer	
S1.013	S80	240 Winter	100	+40%		

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S20.002	S64			69.018	1.118	0.000	0.18
S21.000	S65			69.027	0.377	0.000	0.07
S21.001	S66			69.026	0.696	0.000	0.07
S21.002	S67			69.025	1.046	0.000	0.10
S22.000	S68			69.024	0.374	0.000	0.03
S22.001	S69			69.024	0.563	0.000	0.03
S22.002	S70			69.024	0.860	0.000	0.09
S21.003	S71			69.023	1.409	0.000	0.17
S21.004	S72 Tank 2			69.021	1.548	0.000	0.07
S23.000	S73			69.022	0.372	0.000	0.11
S21.005	S74			69.020	1.660	0.000	0.04
S20.003	S75 Flow Control 5 l/s			69.015	2.278	0.000	0.05
S1.011	S76			66.728	0.695	0.000	0.19
S24.000	S77			66.715	0.840	0.000	0.15
S25.000	S78			66.714	0.914	0.000	0.15
S1.012	S79 Flow Control 95 l/s			66.713	1.582	0.000	0.38
S1.013	S80			64.617	-0.101	0.000	0.88

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S20.002	S64			7.2	SURCHARGED	
S21.000	S65			1.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S21.001	S66			3.5	SURCHARGED	
S21.002	S67			11.0	SURCHARGED	
S22.000	S68			0.5	SURCHARGED	
S22.001	S69			1.5	SURCHARGED	
S22.002	S70			7.0	FLOOD RISK	
S21.003	S71			23.0	SURCHARGED	
S21.004	S72 Tank 2		652	6.7	SURCHARGED	
S23.000	S73			1.5	SURCHARGED	
S21.005	S74			5.4	SURCHARGED	
S20.003	S75 Flow Control 5 l/s			5.1	FLOOD RISK	
S1.011	S76			86.3	SURCHARGED	
S24.000	S77			22.3	FLOOD RISK	
S25.000	S78			11.8	FLOOD RISK	
S1.012	S79 Flow Control 95 l/s			94.8	FLOOD RISK	
S1.013	S80			94.9	OK	

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9762 - SW Phase 1 Only @ 95 l/s with final flow controls.

Surface water model of Phase 1 only with an attenuation tank No.2 volume reduced and final vortex flow controls restricting peak surface water discharge to 95 l/s.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 9762 - SW

Pipe Sizes PTA Manhole Sizes PTA

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.352	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.000
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 9762 - SW

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.515	4-8	2.015	8-12	0.007

Total Area Contributing (ha) = 3.537

Total Pipe Volume (m³) = 187.863

Network Design Table for 9762 - SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.000	31.794	0.563	56.5	0.069	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	21.157	0.205	103.2	0.061	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.002	30.078	0.270	111.4	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.003	30.472	0.154	197.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S3.000	50.00	3.25	70.250	0.069	0.0	0.0	0.0	2.10	148.2	9.3
S3.001	50.00	3.43	69.537	0.130	0.0	0.0	0.0	2.00	318.3	17.6
S3.002	50.00	3.69	69.332	0.182	0.0	0.0	0.0	1.93	306.3	24.7
S3.003	50.00	4.04	69.062	0.182	0.0	0.0	0.0	1.44	229.3	24.7

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S4.000	13.250	0.194	68.3	0.053	3.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	44.696	0.149	300.0	0.021	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.004	45.004	0.167	269.5	0.045	0.00	0.0	0.600	o	600	Pipe/Conduit	
S5.000	45.533	0.512	88.9	0.036	5.00	0.0	0.600	o	375	Pipe/Conduit	
S3.005	59.032	0.197	299.7	0.420	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.006	15.704	0.052	302.0	0.409	0.00	0.0	0.600	o	600	Pipe/Conduit	
S6.000	45.826	0.573	80.0	0.069	3.00	0.0	0.600	o	225	Pipe/Conduit	
S6.001	5.117	0.051	100.3	0.073	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.000	31.775	0.318	99.9	0.046	3.00	0.0	0.600	o	225	Pipe/Conduit	
S6.002	45.743	0.305	150.0	0.051	0.00	0.0	0.600	o	300	Pipe/Conduit	
S8.000	28.334	0.328	86.4	0.066	3.00	0.0	0.600	o	375	Pipe/Conduit	
S8.001	32.588	0.328	99.4	0.062	0.00	0.0	0.600	o	375	Pipe/Conduit	
S8.002	28.649	0.286	100.2	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.003	39.735	0.603	65.9	0.056	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S4.000	50.00	3.18	70.500	0.053	0.0	0.0	0.0	1.22	21.5	7.2
S4.001	50.00	3.71	67.973	0.075	0.0	0.0	0.0	1.40	396.1	10.1
S3.004	48.36	4.55	67.674	0.302	0.0	0.0	0.0	1.48	418.1	39.5
S5.000	45.06	5.39	69.750	0.036	0.0	0.0	0.0	1.92	212.3	4.3
S3.005	42.69	6.10	67.282	0.757	0.0	0.0	0.0	1.40	396.3	87.5
S3.006	42.11	6.28	66.935	1.166	0.0	0.0	0.0	1.40	394.7	132.9
S6.000	50.00	3.52	68.397	0.069	0.0	0.0	0.0	1.46	58.2	9.3
S6.001	50.00	3.59	67.824	0.142	0.0	0.0	0.0	1.31	51.9	19.3
S7.000	50.00	3.40	70.000	0.046	0.0	0.0	0.0	1.31	52.0	6.3
S6.002	49.97	4.18	67.698	0.240	0.0	0.0	0.0	1.28	90.6	32.4
S8.000	50.00	3.24	68.715	0.066	0.0	0.0	0.0	1.95	215.4	8.9
S8.001	50.00	3.54	68.387	0.127	0.0	0.0	0.0	1.82	200.8	17.2
S8.002	50.00	3.80	68.059	0.176	0.0	0.0	0.0	1.81	199.9	23.8
S6.003	48.66	4.48	67.318	0.472	0.0	0.0	0.0	2.24	246.9	62.2

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S9.000	45.362	0.562	80.7	0.058	3.00	0.0	0.600	o	225	Pipe/Conduit	
S9.001	33.696	0.335	100.6	0.079	0.00	0.0	0.600	o	300	Pipe/Conduit	
S9.002	26.771	0.315	85.0	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S9.003	13.901	0.074	187.9	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.004	18.511	0.183	101.2	0.004	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.000	16.889	0.152	111.1	0.073	3.00	0.0	0.600	o	225	Pipe/Conduit	
S10.001	35.495	1.958	18.1	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	
S9.005	6.363	0.068	93.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.006	12.004	0.120	100.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.007	16.234	1.829	8.9	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.007	46.248	0.154	300.3	0.098	0.00	0.0	0.600	o	600	Pipe/Conduit	
S11.000	22.605	0.226	100.0	0.047	3.00	0.0	0.600	o	150	Pipe/Conduit	
S11.001	14.717	0.149	98.8	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.002	23.769	0.212	112.1	0.053	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.003	10.624	3.119	3.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.008	18.014	0.060	300.2	0.132	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S9.000	50.00	3.52	70.500	0.058	0.0	0.0	0.0	1.46	57.9	7.8
S9.001	50.00	3.88	69.863	0.137	0.0	0.0	0.0	1.57	110.8	18.5
S9.002	50.00	4.14	69.528	0.223	0.0	0.0	0.0	1.71	120.6	30.2
S9.003	49.37	4.31	69.138	0.232	0.0	0.0	0.0	1.32	145.6	31.0
S9.004	48.62	4.49	69.064	0.236	0.0	0.0	0.0	1.80	199.0	31.1
S10.000	50.00	3.23	70.700	0.073	0.0	0.0	0.0	1.24	49.3	9.9
S10.001	50.00	3.39	70.473	0.116	0.0	0.0	0.0	3.71	262.3	15.7
S9.005	48.38	4.54	68.440	0.420	0.0	0.0	0.0	1.87	206.9	55.0
S9.006	47.97	4.64	68.297	0.420	0.0	0.0	0.0	2.03	323.3	55.0
S9.007	47.82	4.68	68.102	0.420	0.0	0.0	0.0	7.55	1634.3	55.0
S3.007	40.49	6.83	66.198	2.155	0.0	0.0	0.0	1.40	395.8	236.3
S11.000	50.00	3.37	70.200	0.047	0.0	0.0	0.0	1.00	17.8	6.3
S11.001	50.00	3.56	69.899	0.086	0.0	0.0	0.0	1.32	52.3	11.7
S11.002	50.00	3.88	69.750	0.139	0.0	0.0	0.0	1.23	49.1	18.9
S11.003	50.00	3.91	69.538	0.139	0.0	0.0	0.0	7.14	283.9	18.9
S3.008	39.91	7.05	66.044	2.425	0.0	0.0	0.0	1.40	395.9	262.1

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S12.000	40.375	0.364	110.9	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.009	18.838	0.063	299.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S13.000	27.034	0.270	100.1	0.046	3.00	0.0	0.600	o	150	Pipe/Conduit	
S13.001	42.616	0.426	100.0	0.050	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.002	41.865	0.378	110.8	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.010	33.983	0.113	300.7	0.131	0.00	0.0	0.600	o	600	Pipe/Conduit	
S14.000	36.064	0.451	80.0	0.030	3.00	0.0	0.600	o	150	Pipe/Conduit	
S14.001	29.852	0.299	99.8	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
S14.002	28.645	0.191	150.0	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
S15.000	25.600	0.320	80.0	0.019	3.00	0.0	0.600	o	150	Pipe/Conduit	
S15.001	35.060	0.351	99.9	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S15.002	28.941	0.365	79.3	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S16.000	15.105	0.189	79.9	0.007	3.00	0.0	0.600	o	150	Pipe/Conduit	
S16.001	29.679	0.297	99.9	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	28.373	0.189	150.1	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S12.000	44.53	5.54	69.250	0.042	0.0	0.0	0.0	1.24	49.3	5.1
S3.009	39.31	7.27	65.984	2.468	0.0	0.0	0.0	1.40	396.7	262.7
S13.000	50.00	3.45	70.200	0.046	0.0	0.0	0.0	1.00	17.7	6.3
S13.001	50.00	3.99	69.855	0.097	0.0	0.0	0.0	1.31	52.0	13.1
S13.002	48.74	4.46	69.354	0.153	0.0	0.0	0.0	1.49	105.6	20.1
S3.010	38.29	7.68	65.771	2.751	0.0	0.0	0.0	1.40	395.6	285.3
S14.000	50.00	3.53	68.500	0.030	0.0	0.0	0.0	1.13	19.9	4.1
S14.001	50.00	3.91	67.974	0.083	0.0	0.0	0.0	1.31	52.0	11.2
S14.002	49.16	4.36	67.675	0.111	0.0	0.0	0.0	1.07	42.4	14.8
S15.000	50.00	3.38	68.500	0.019	0.0	0.0	0.0	1.12	19.9	2.6
S15.001	50.00	3.83	68.105	0.051	0.0	0.0	0.0	1.31	52.0	7.0
S15.002	50.00	4.10	67.679	0.169	0.0	0.0	0.0	1.77	124.9	22.9
S16.000	50.00	3.22	68.500	0.007	0.0	0.0	0.0	1.13	19.9	0.9
S16.001	50.00	3.60	68.236	0.022	0.0	0.0	0.0	1.31	52.0	3.0
S16.002	50.00	3.97	67.864	0.108	0.0	0.0	0.0	1.28	90.5	14.6

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S15.003	21.137	0.141	149.9	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S15.004	5.774	0.038	151.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S17.000	29.448	0.196	150.2	0.023	3.00	0.0	0.600	o	150	Pipe/Conduit	
S15.005	36.465	0.623	58.5	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.003	13.328	0.167	79.8	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.011	50.678	0.169	299.9	0.035	0.00	0.0	0.600	o	675	Pipe/Conduit	
S18.000	9.581	0.144	66.5	0.062	3.00	0.0	0.600	o	375	Pipe/Conduit	
S19.000	7.555	0.094	80.4	0.035	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.012	11.530	0.412	28.0	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.013	5.278	0.053	99.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S15.003	49.27	4.34	67.239	0.364	0.0	0.0	0.0	1.48	163.2	48.5
S15.004	48.98	4.40	67.098	0.364	0.0	0.0	0.0	1.47	162.1	48.5
S17.000	50.00	3.60	68.500	0.023	0.0	0.0	0.0	0.82	14.4	3.1
S15.005	47.73	4.70	67.060	0.425	0.0	0.0	0.0	2.06	145.5	54.9
S14.003	47.22	4.82	66.437	0.568	0.0	0.0	0.0	1.76	124.5	72.6
S3.011	36.97	8.24	65.358	3.354	0.0	0.0	0.0	1.51	539.7	335.8
S18.000	50.00	3.07	65.500	0.062	0.0	0.0	0.0	2.22	245.7	8.4
S19.000	50.00	3.07	65.500	0.035	0.0	0.0	0.0	1.76	124.1	4.8
S3.012	36.84	8.29	64.756	3.537	0.0	0.0	0.0	3.44	379.6	353.0
S3.013	36.74	8.34	64.343	3.537	0.0	0.0	0.0	1.82	200.5«	353.0

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.000	User	-	100	0.069	0.069	0.069
3.001	User	-	100	0.061	0.061	0.061
3.002	User	-	100	0.052	0.052	0.052
3.003	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.053	0.053	0.053
4.001	User	-	100	0.021	0.021	0.021
3.004	User	-	100	0.045	0.045	0.045
5.000	User	-	100	0.036	0.036	0.036
3.005	User	-	100	0.420	0.420	0.420
3.006	User	-	100	0.409	0.409	0.409
6.000	User	-	100	0.069	0.069	0.069
6.001	User	-	100	0.073	0.073	0.073
7.000	User	-	100	0.046	0.046	0.046
6.002	User	-	100	0.051	0.051	0.051
8.000	User	-	100	0.066	0.066	0.066
8.001	User	-	100	0.062	0.062	0.062
8.002	User	-	100	0.049	0.049	0.049
6.003	User	-	100	0.056	0.056	0.056
9.000	User	-	100	0.058	0.058	0.058
9.001	User	-	100	0.079	0.079	0.079
9.002	User	-	100	0.086	0.086	0.086
9.003	User	-	100	0.009	0.009	0.009
9.004	User	-	100	0.004	0.004	0.004
10.000	User	-	100	0.073	0.073	0.073
10.001	User	-	100	0.043	0.043	0.043
9.005	User	-	100	0.067	0.067	0.067
9.006	-	-	100	0.000	0.000	0.000
9.007	-	-	100	0.000	0.000	0.000
3.007	User	-	100	0.098	0.098	0.098
11.000	User	-	100	0.047	0.047	0.047
11.001	User	-	100	0.039	0.039	0.039
11.002	User	-	100	0.053	0.053	0.053
11.003	-	-	100	0.000	0.000	0.000
3.008	User	-	100	0.132	0.132	0.132
12.000	User	-	100	0.042	0.042	0.042
3.009	-	-	100	0.000	0.000	0.000
13.000	User	-	100	0.046	0.046	0.046
13.001	User	-	100	0.050	0.050	0.050
13.002	User	-	100	0.056	0.056	0.056
3.010	User	-	100	0.131	0.131	0.131
14.000	User	-	100	0.030	0.030	0.030
14.001	User	-	100	0.052	0.052	0.052
14.002	User	-	100	0.028	0.028	0.028
15.000	User	-	100	0.019	0.019	0.019
15.001	User	-	100	0.032	0.032	0.032
15.002	User	-	100	0.118	0.118	0.118
16.000	User	-	100	0.007	0.007	0.007
16.001	User	-	100	0.015	0.015	0.015
16.002	User	-	100	0.086	0.086	0.086
15.003	User	-	100	0.086	0.086	0.086

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
15.004	-	-	100	0.000	0.000	0.000
17.000	User	-	100	0.023	0.023	0.023
15.005	User	-	100	0.038	0.038	0.038
14.003	User	-	100	0.032	0.032	0.032
3.011	User	-	100	0.035	0.035	0.035
18.000	User	-	100	0.062	0.062	0.062
19.000	User	-	100	0.035	0.035	0.035
3.012	User	-	100	0.086	0.086	0.086
3.013	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				3.537	3.537	3.537

Free Flowing Outfall Details for 9762 - SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.013	S	66.500	64.290	0.000	0	0

Simulation Criteria for 9762 - SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	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)	18.200	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for 9762 - SW

Hydro-Brake® Optimum Manhole: S61 Flow Control 80 l/s, DS/PN: S3.010, Volume (m³): 16.0

Unit Reference	MD-SHE-0321-8000-3750-8000
Design Head (m)	3.750
Design Flow (l/s)	80.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	321
Invert Level (m)	65.771
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	3.750	79.9
Flush-Flo™	1.078	79.9
Kick-Flo®	2.273	62.7
Mean Flow over Head Range	-	69.7

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)**
0.100	9.6	1.200	79.7	3.000	71.7	7.000	108.2
0.200	32.8	1.400	78.9	3.500	77.3	7.500	111.9
0.300	57.7	1.600	77.4	4.000	82.5	8.000	115.5
0.400	68.3	1.800	75.1	4.500	87.3	8.500	119.0
0.500	72.4	2.000	71.4	5.000	91.9	9.000	122.4
0.600	75.3	2.200	65.6	5.500	96.3	9.500	125.6
0.800	78.6	2.400	64.4	6.000	100.4		
1.000	79.8	2.600	66.9	6.500	104.4		

Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S14.003, Volume (m³): 6.7

Unit Reference	MD-SHE-0087-5000-2500-5000
Design Head (m)	2.500
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	87
Invert Level (m)	66.437

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Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S14.003, Volume (m³): 6.7

Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	5.0
Flush-Flo™	0.379	3.6
Kick-Flo®	0.777	2.9
Mean Flow over Head Range	-	3.8

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)
0.100	2.6	1.200	3.6	3.000	5.4	7.000	8.1
0.200	3.4	1.400	3.8	3.500	5.8	7.500	8.4
0.300	3.6	1.600	4.1	4.000	6.2	8.000	8.6
0.400	3.6	1.800	4.3	4.500	6.6	8.500	8.9
0.500	3.6	2.000	4.5	5.000	6.9	9.000	9.1
0.600	3.5	2.200	4.7	5.500	7.2	9.500	9.4
0.800	2.9	2.400	4.9	6.000	7.5		
1.000	3.3	2.600	5.1	6.500	7.8		

Hydro-Brake® Optimum Manhole: S79 Flow Control 95 l/s, DS/PN: S3.012, Volume (m³): 25.6

Unit Reference	MD-SHE-0374-9500-1985-9500
Design Head (m)	1.985
Design Flow (l/s)	95.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	374
Invert Level (m)	64.756
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.985	94.9
Flush-Flo™	0.658	94.9
Kick-Flo®	1.400	80.2
Mean Flow over Head Range	-	80.3

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

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Hydro-Brake® Optimum Manhole: S79 Flow Control 95 l/s, DS/PN: S3.012, Volume (m³): 25.6

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.6	1.200	88.7	3.000	116.0	7.000	175.5
0.200	37.4	1.400	80.4	3.500	125.1	7.500	181.5
0.300	70.7	1.600	85.5	4.000	133.5	8.000	187.3
0.400	91.0	1.800	90.5	4.500	141.4	8.500	193.0
0.500	93.7	2.000	95.3	5.000	148.9	9.000	198.5
0.600	94.8	2.200	99.8	5.500	156.0	9.500	203.8
0.800	94.4	2.400	104.1	6.000	162.7		
1.000	92.3	2.600	108.2	6.500	169.2		

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Storage Structures for 9762 - SW

Cellular Storage Manhole: S30 Tank 1, DS/PN: S3.005

Invert Level (m) 67.500 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)
0.000	900.0	0.0	1.501	0.0	0.0
1.500	900.0	0.0	2.000	0.0	0.0

Cellular Storage Manhole: S72 Tank 2, DS/PN: S15.004

Invert Level (m) 67.500 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)
0.000	300.0	0.0	1.001	0.0	0.0
1.000	300.0	0.0	2.000	0.0	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	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	0.346
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.200	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	1	+0%				
S3.001	S25	15 Summer	1	+0%				
S3.002	S26	15 Summer	1	+0%				
S3.003	S27	15 Winter	1	+0%				
S4.000	S18	15 Summer	1	+0%	100/15 Summer			
S4.001	S19	15 Summer	1	+0%				
S3.004	S28	15 Summer	1	+0%	100/30 Winter			
S5.000	S29	15 Winter	1	+0%				
S3.005	S30 Tank 1	30 Winter	1	+0%	100/15 Summer			
S3.006	S31	15 Winter	1	+0%	1/15 Summer			
S6.000	S32	15 Summer	1	+0%	30/15 Summer			
S6.001	S33	15 Summer	1	+0%	30/15 Summer			
S7.000	S34	15 Summer	1	+0%	100/15 Winter			
S6.002	S35	30 Winter	1	+0%	30/15 Summer			
S8.000	S36	15 Summer	1	+0%	100/15 Summer			
S8.001	S37	15 Summer	1	+0%	30/15 Summer			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.305	-0.245	0.000	0.07			9.8	OK
S3.001	S25	69.610	-0.377	0.000	0.06			15.8	OK
S3.002	S26	69.416	-0.366	0.000	0.08			20.9	OK
S3.003	S27	69.159	-0.353	0.000	0.11			20.9	OK
S4.000	S18	70.567	-0.083	0.000	0.39			7.7	OK
S4.001	S19	68.040	-0.533	0.000	0.03			10.0	OK
S3.004	S28	67.799	-0.475	0.000	0.10			34.7	OK
S5.000	S29	69.788	-0.337	0.000	0.02			4.2	OK
S3.005	S30 Tank 1	67.550	-0.332	0.000	0.27		11	97.1	OK
S3.006	S31	67.734	0.199	0.000	0.42			118.9	SURCHARGED
S6.000	S32	68.462	-0.160	0.000	0.17			9.6	OK
S6.001	S33	67.940	-0.109	0.000	0.53			16.9	OK
S7.000	S34	70.056	-0.169	0.000	0.13			6.5	OK
S6.002	S35	67.867	-0.131	0.000	0.26			22.1	OK
S8.000	S36	68.770	-0.320	0.000	0.05			9.4	OK
S8.001	S37	68.461	-0.301	0.000	0.09			15.3	OK

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S3.004	S28	
S5.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S6.000	S32	
S6.001	S33	
S7.000	S34	
S6.002	S35	
S8.000	S36	
S8.001	S37	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S8.002	S38	15 Winter	1	+0%	30/15 Summer	
S6.003	S39	30 Winter	1	+0%	1/15 Winter	
S9.000	S40	15 Summer	1	+0%	100/15 Summer	
S9.001	S41	15 Summer	1	+0%	100/15 Summer	
S9.002	S42	15 Winter	1	+0%	100/15 Summer	
S9.003	S43	15 Winter	1	+0%	100/15 Summer	
S9.004	S44	15 Winter	1	+0%	100/15 Summer	
S10.000	S45	15 Summer	1	+0%	100/15 Summer	
S10.001	S46	15 Summer	1	+0%		
S9.005	S47	15 Winter	1	+0%	30/15 Summer	
S9.006	S48	15 Winter	1	+0%	30/15 Summer	
S9.007	S49	15 Winter	1	+0%	30/15 Summer	
S3.007	S50	30 Winter	1	+0%	1/15 Summer	
S11.000	S51	15 Summer	1	+0%	100/15 Summer	
S11.001	S52	15 Summer	1	+0%	100/15 Summer	
S11.002	S53	15 Winter	1	+0%	100/15 Summer	
S11.003	S54	15 Winter	1	+0%	100/60 Winter	
S3.008	S55	30 Winter	1	+0%	1/15 Summer	
S12.000	S56	15 Winter	1	+0%	100/15 Summer	
S3.009	S57	30 Winter	1	+0%	1/15 Summer	
S13.000	S58	15 Summer	1	+0%	100/15 Summer	
S13.001	S59	15 Summer	1	+0%	100/15 Summer	
S13.002	S60	15 Winter	1	+0%	100/15 Summer	
S3.010	S61 Flow Control 80 l/s	30 Winter	1	+0%	1/15 Summer	
S14.000	S62	15 Summer	1	+0%	100/15 Summer	
S14.001	S63	15 Summer	1	+0%	100/15 Summer	
S14.002	S64	15 Winter	1	+0%	30/120 Winter	
S15.000	S65	15 Summer	1	+0%	100/360 Winter	
S15.001	S66	15 Summer	1	+0%	100/120 Winter	
S15.002	S67	15 Winter	1	+0%	100/15 Summer	
S16.000	S68	15 Summer	1	+0%	100/360 Winter	
S16.001	S69	15 Summer	1	+0%	100/240 Winter	
S16.002	S70	15 Winter	1	+0%	100/60 Summer	
S15.003	S71	30 Winter	1	+0%	1/15 Winter	
S15.004	S72 Tank 2	120 Winter	1	+0%	1/15 Summer	
S17.000	S73	15 Summer	1	+0%	100/15 Summer	
S15.005	S74	180 Winter	1	+0%	1/15 Summer	
S14.003	S75 Flow Control 5 l/s	240 Winter	1	+0%	1/15 Summer	
S3.011	S76	15 Winter	1	+0%	100/15 Summer	
S18.000	S77	15 Summer	1	+0%	100/15 Summer	
S19.000	S78	15 Summer	1	+0%	100/15 Summer	
S3.012	S79 Flow Control 95 l/s	30 Winter	1	+0%	1/15 Summer	
S3.013	S80	30 Winter	1	+0%		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S8.002	S38			68.143	-0.291	0.000	0.11
S6.003	S39			67.843	0.150	0.000	0.21
S9.000	S40			70.559	-0.166	0.000	0.15
S9.001	S41			69.943	-0.220	0.000	0.16
S9.002	S42			69.625	-0.203	0.000	0.22
S9.003	S43			69.262	-0.251	0.000	0.24
S9.004	S44			69.163	-0.276	0.000	0.16
S10.000	S45			70.776	-0.149	0.000	0.24
S10.001	S46			70.521	-0.252	0.000	0.06
S9.005	S47			68.612	-0.203	0.000	0.43
S9.006	S48			68.445	-0.302	0.000	0.24
S9.007	S49			68.173	-0.454	0.000	0.04
S3.007	S50			67.806	1.008	0.000	0.44
S11.000	S51			70.268	-0.082	0.000	0.39
S11.001	S52			69.973	-0.151	0.000	0.23
S11.002	S53			69.841	-0.134	0.000	0.35
S11.003	S54			69.576	-0.187	0.000	0.07
S3.008	S55			67.915	1.271	0.000	0.39
S12.000	S56			69.299	-0.176	0.000	0.11
S3.009	S57			67.919	1.336	0.000	0.34
S13.000	S58			70.267	-0.083	0.000	0.39
S13.001	S59			69.929	-0.151	0.000	0.23
S13.002	S60			69.439	-0.215	0.000	0.18
S3.010	S61 Flow Control 80 l/s			67.916	1.545	0.000	0.24
S14.000	S62			68.549	-0.101	0.000	0.22
S14.001	S63			68.041	-0.158	0.000	0.19
S14.002	S64			67.761	-0.139	0.000	0.31
S15.000	S65			68.539	-0.111	0.000	0.14
S15.001	S66			68.157	-0.173	0.000	0.12
S15.002	S67			67.759	-0.220	0.000	0.16
S16.000	S68			68.523	-0.127	0.000	0.06
S16.001	S69			68.269	-0.192	0.000	0.05
S16.002	S70			67.938	-0.226	0.000	0.14
S15.003	S71			67.642	0.028	0.000	0.22
S15.004	S72 Tank 2			67.626	0.153	0.000	0.07
S17.000	S73			68.550	-0.100	0.000	0.24
S15.005	S74			67.638	0.278	0.000	0.04
S14.003	S75 Flow Control 5 l/s			67.646	0.909	0.000	0.04
S3.011	S76			65.554	-0.479	0.000	0.18
S18.000	S77			65.561	-0.314	0.000	0.06
S19.000	S78			65.551	-0.249	0.000	0.06
S3.012	S79 Flow Control 95 l/s			65.332	0.201	0.000	0.38
S3.013	S80			64.617	-0.101	0.000	0.88

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S8.002	S38			19.9	OK	
S6.003	S39			46.2	SURCHARGED	
S9.000	S40			8.2	OK	
S9.001	S41			16.0	OK	
S9.002	S42			24.4	OK	
S9.003	S43			25.5	OK	
S9.004	S44			26.0	OK	
S10.000	S45			10.4	OK	
S10.001	S46			14.5	OK	
S9.005	S47			45.9	OK	
S9.006	S48			46.1	OK	
S9.007	S49			46.1	OK	
S3.007	S50			150.6	SURCHARGED	
S11.000	S51			6.6	OK	
S11.001	S52			10.6	OK	
S11.002	S53			15.7	OK	
S11.003	S54			15.6	OK	
S3.008	S55			114.1	SURCHARGED	
S12.000	S56			5.1	OK	1
S3.009	S57			100.7	SURCHARGED	
S13.000	S58			6.6	OK	
S13.001	S59			11.6	OK	
S13.002	S60			17.2	OK	
S3.010	S61 Flow Control 80 l/s			79.7	SURCHARGED	
S14.000	S62			4.3	OK	
S14.001	S63			9.4	OK	
S14.002	S64			12.2	OK	
S15.000	S65			2.7	OK	
S15.001	S66			6.0	OK	
S15.002	S67			17.7	OK	
S16.000	S68			1.0	OK	
S16.001	S69			2.5	OK	
S16.002	S70			11.2	OK	
S15.003	S71			30.0	SURCHARGED	
S15.004	S72 Tank 2		102	7.6	SURCHARGED	
S17.000	S73			3.3	OK	
S15.005	S74			6.0	SURCHARGED	
S14.003	S75 Flow Control 5 l/s			3.6	SURCHARGED	
S3.011	S76			84.5	OK	
S18.000	S77			8.8	OK	
S19.000	S78			5.0	OK	
S3.012	S79 Flow Control 95 l/s			94.6	SURCHARGED	
S3.013	S80			94.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	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	0.346
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.200	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	30	+0%				
S3.001	S25	15 Summer	30	+0%				
S3.002	S26	15 Summer	30	+0%				
S3.003	S27	15 Summer	30	+0%				
S4.000	S18	15 Summer	30	+0%	100/15 Summer			
S4.001	S19	15 Summer	30	+0%				
S3.004	S28	15 Summer	30	+0%	100/30 Winter			
S5.000	S29	15 Winter	30	+0%				
S3.005	S30 Tank 1	60 Winter	30	+0%	100/15 Summer			
S3.006	S31	30 Winter	30	+0%	1/15 Summer			
S6.000	S32	30 Winter	30	+0%	30/15 Summer			
S6.001	S33	30 Winter	30	+0%	30/15 Summer			
S7.000	S34	15 Summer	30	+0%	100/15 Winter			
S6.002	S35	30 Winter	30	+0%	30/15 Summer			
S8.000	S36	30 Winter	30	+0%	100/15 Summer			
S8.001	S37	30 Winter	30	+0%	30/15 Summer			

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.337	-0.213	0.000	0.18			24.2	OK
S3.001	S25	69.663	-0.324	0.000	0.17			43.0	OK
S3.002	S26	69.478	-0.304	0.000	0.23			60.3	OK
S3.003	S27	69.231	-0.281	0.000	0.30			58.8	OK
S4.000	S18	70.626	-0.024	0.000	0.95			18.8	OK
S4.001	S19	68.083	-0.490	0.000	0.07			25.7	OK
S3.004	S28	67.887	-0.387	0.000	0.27			96.5	OK
S5.000	S29	69.806	-0.319	0.000	0.05			10.3	OK
S3.005	S30 Tank 1	67.880	-0.002	0.000	0.40		44	142.8	OK
S3.006	S31	68.837	1.302	0.000	0.52			146.4	SURCHARGED
S6.000	S32	69.127	0.505	0.000	0.41			22.6	SURCHARGED
S6.001	S33	69.074	1.025	0.000	1.63			52.0	SURCHARGED
S7.000	S34	70.092	-0.133	0.000	0.33			15.9	OK
S6.002	S35	68.976	0.978	0.000	0.83			70.1	SURCHARGED
S8.000	S36	68.900	-0.190	0.000	0.09			16.2	OK
S8.001	S37	68.877	0.115	0.000	0.29			52.7	SURCHARGED

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S3.004	S28	
S5.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S6.000	S32	
S6.001	S33	
S7.000	S34	
S6.002	S35	
S8.000	S36	
S8.001	S37	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S8.002	S38	30 Winter	30	+0%	30/15 Summer	
S6.003	S39	30 Summer	30	+0%	1/15 Winter	
S9.000	S40	15 Summer	30	+0%	100/15 Summer	
S9.001	S41	15 Summer	30	+0%	100/15 Summer	
S9.002	S42	15 Summer	30	+0%	100/15 Summer	
S9.003	S43	15 Summer	30	+0%	100/15 Summer	
S9.004	S44	15 Summer	30	+0%	100/15 Summer	
S10.000	S45	15 Summer	30	+0%	100/15 Summer	
S10.001	S46	15 Summer	30	+0%		
S9.005	S47	30 Winter	30	+0%	30/15 Summer	
S9.006	S48	30 Winter	30	+0%	30/15 Summer	
S9.007	S49	30 Winter	30	+0%	30/15 Summer	
S3.007	S50	30 Winter	30	+0%	1/15 Summer	
S11.000	S51	15 Summer	30	+0%	100/15 Summer	
S11.001	S52	15 Summer	30	+0%	100/15 Summer	
S11.002	S53	15 Summer	30	+0%	100/15 Summer	
S11.003	S54	15 Summer	30	+0%	100/60 Winter	
S3.008	S55	30 Winter	30	+0%	1/15 Summer	
S12.000	S56	15 Winter	30	+0%	100/15 Summer	
S3.009	S57	30 Winter	30	+0%	1/15 Summer	
S13.000	S58	15 Summer	30	+0%	100/15 Summer	
S13.001	S59	15 Summer	30	+0%	100/15 Summer	
S13.002	S60	15 Summer	30	+0%	100/15 Summer	
S3.010	S61 Flow Control 80 l/s	30 Winter	30	+0%	1/15 Summer	
S14.000	S62	15 Summer	30	+0%	100/15 Summer	
S14.001	S63	15 Summer	30	+0%	100/15 Summer	
S14.002	S64	360 Winter	30	+0%	30/120 Winter	
S15.000	S65	15 Summer	30	+0%	100/360 Winter	
S15.001	S66	15 Summer	30	+0%	100/120 Winter	
S15.002	S67	240 Winter	30	+0%	100/15 Summer	
S16.000	S68	15 Summer	30	+0%	100/360 Winter	
S16.001	S69	15 Summer	30	+0%	100/240 Winter	
S16.002	S70	15 Summer	30	+0%	100/60 Summer	
S15.003	S71	240 Winter	30	+0%	1/15 Winter	
S15.004	S72 Tank 2	240 Winter	30	+0%	1/15 Summer	
S17.000	S73	15 Summer	30	+0%	100/15 Summer	
S15.005	S74	240 Winter	30	+0%	1/15 Summer	
S14.003	S75 Flow Control 5 l/s	240 Winter	30	+0%	1/15 Summer	
S3.011	S76	30 Winter	30	+0%	100/15 Summer	
S18.000	S77	30 Winter	30	+0%	100/15 Summer	
S19.000	S78	30 Winter	30	+0%	100/15 Summer	
S3.012	S79 Flow Control 95 l/s	30 Winter	30	+0%	1/15 Summer	
S3.013	S80	15 Summer	30	+0%		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S8.002	S38			68.846	0.412	0.000	0.54
S6.003	S39			68.890	1.197	0.000	0.73
S9.000	S40			70.597	-0.128	0.000	0.35
S9.001	S41			70.003	-0.160	0.000	0.44
S9.002	S42			69.706	-0.122	0.000	0.65
S9.003	S43			69.369	-0.144	0.000	0.67
S9.004	S44			69.243	-0.196	0.000	0.45
S10.000	S45			70.827	-0.098	0.000	0.58
S10.001	S46			70.555	-0.218	0.000	0.16
S9.005	S47			69.188	0.373	0.000	1.03
S9.006	S48			69.087	0.340	0.000	0.65
S9.007	S49			69.005	0.378	0.000	0.16
S3.007	S50			68.986	2.188	0.000	0.75
S11.000	S51			70.334	-0.016	0.000	0.96
S11.001	S52			70.029	-0.095	0.000	0.63
S11.002	S53			69.937	-0.038	0.000	0.99
S11.003	S54			69.604	-0.159	0.000	0.19
S3.008	S55			69.094	2.450	0.000	0.75
S12.000	S56			69.329	-0.146	0.000	0.26
S3.009	S57			69.114	2.530	0.000	0.49
S13.000	S58			70.323	-0.027	0.000	0.93
S13.001	S59			69.988	-0.092	0.000	0.63
S13.002	S60			69.504	-0.150	0.000	0.48
S3.010	S61 Flow Control 80 l/s			69.113	2.742	0.000	0.24
S14.000	S62			68.582	-0.068	0.000	0.53
S14.001	S63			68.095	-0.104	0.000	0.55
S14.002	S64			67.975	0.075	0.000	0.13
S15.000	S65			68.563	-0.087	0.000	0.35
S15.001	S66			68.197	-0.133	0.000	0.34
S15.002	S67			67.969	-0.010	0.000	0.09
S16.000	S68			68.537	-0.113	0.000	0.14
S16.001	S69			68.294	-0.167	0.000	0.15
S16.002	S70			67.999	-0.165	0.000	0.42
S15.003	S71			67.968	0.354	0.000	0.16
S15.004	S72 Tank 2			67.966	0.493	0.000	0.07
S17.000	S73			68.584	-0.066	0.000	0.57
S15.005	S74			67.998	0.638	0.000	0.04
S14.003	S75 Flow Control 5 l/s			68.012	1.275	0.000	0.04
S3.011	S76			65.753	-0.280	0.000	0.19
S18.000	S77			65.700	-0.175	0.000	0.10
S19.000	S78			65.699	-0.101	0.000	0.11
S3.012	S79 Flow Control 95 l/s			65.698	0.567	0.000	0.38
S3.013	S80			64.617	-0.101	0.000	0.88

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S8.002	S38			94.4	SURCHARGED	
S6.003	S39			163.4	SURCHARGED	
S9.000	S40			19.6	OK	
S9.001	S41			44.7	OK	
S9.002	S42			71.0	OK	
S9.003	S43			72.2	OK	
S9.004	S44			74.9	OK	
S10.000	S45			25.7	OK	
S10.001	S46			38.6	OK	
S9.005	S47			110.2	SURCHARGED	
S9.006	S48			127.6	SURCHARGED	
S9.007	S49			165.5	SURCHARGED	
S3.007	S50			258.1	SURCHARGED	
S11.000	S51			16.1	OK	
S11.001	S52			28.7	OK	
S11.002	S53			44.6	OK	
S11.003	S54			44.3	OK	
S3.008	S55			217.9	SURCHARGED	
S12.000	S56			12.4	OK	1
S3.009	S57			145.3	SURCHARGED	
S13.000	S58			15.8	OK	
S13.001	S59			31.2	OK	
S13.002	S60			47.4	OK	
S3.010	S61 Flow Control 80 l/s			79.7	SURCHARGED	
S14.000	S62			10.3	OK	
S14.001	S63			26.8	OK	
S14.002	S64			5.1	SURCHARGED	
S15.000	S65			6.6	OK	
S15.001	S66			16.8	OK	
S15.002	S67			10.4	OK	
S16.000	S68			2.5	OK	
S16.001	S69			7.2	OK	
S16.002	S70			34.2	OK	
S15.003	S71			21.7	SURCHARGED	
S15.004	S72 Tank 2		329	7.1	SURCHARGED	
S17.000	S73			7.9	OK	
S15.005	S74			5.8	SURCHARGED	
S14.003	S75 Flow Control 5 l/s			4.0	SURCHARGED	
S3.011	S76			86.6	OK	
S18.000	S77			15.1	OK	
S19.000	S78			8.5	OK	
S3.012	S79 Flow Control 95 l/s			94.8	SURCHARGED	
S3.013	S80			94.8	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	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	0.346
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.200	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	100	+40%				
S3.001	S25	15 Summer	100	+40%				
S3.002	S26	15 Summer	100	+40%				
S3.003	S27	15 Summer	100	+40%				
S4.000	S18	15 Summer	100	+40%	100/15 Summer			
S4.001	S19	120 Winter	100	+40%				
S3.004	S28	120 Winter	100	+40%	100/30 Winter			
S5.000	S29	15 Winter	100	+40%				
S3.005	S30 Tank 1	120 Winter	100	+40%	100/15 Summer			
S3.006	S31	60 Winter	100	+40%	1/15 Summer			
S6.000	S32	15 Winter	100	+40%	30/15 Summer			
S6.001	S33	15 Winter	100	+40%	30/15 Summer			
S7.000	S34	15 Winter	100	+40%	100/15 Winter			
S6.002	S35	15 Winter	100	+40%	30/15 Summer			
S8.000	S36	15 Winter	100	+40%	100/15 Summer			
S8.001	S37	15 Winter	100	+40%	30/15 Summer			

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.370	-0.180	0.000	0.32			43.8	OK
S3.001	S25	69.710	-0.277	0.000	0.30			77.6	OK
S3.002	S26	69.535	-0.247	0.000	0.41			108.9	OK
S3.003	S27	69.299	-0.213	0.000	0.54			106.4	OK
S4.000	S18	71.026	0.376	0.000	1.67			32.9	SURCHARGED
S4.001	S19	68.490	-0.083	0.000	0.04			13.9	OK
S3.004	S28	68.490	0.216	0.000	0.15			53.9	SURCHARGED
S5.000	S29	69.828	-0.297	0.000	0.10			18.6	OK
S3.005	S30 Tank 1	68.488	0.606	0.000	0.42		109	147.1	SURCHARGED
S3.006	S31	69.374	1.839	0.000	0.41			115.9	SURCHARGED
S6.000	S32	70.543	1.921	0.000	0.51			28.5	SURCHARGED
S6.001	S33	70.410	2.361	0.000	1.93			61.6	SURCHARGED
S7.000	S34	70.271	0.046	0.000	0.57			27.6	SURCHARGED
S6.002	S35	70.228	2.230	0.000	1.19			101.4	SURCHARGED
S8.000	S36	70.106	1.016	0.000	0.15			28.3	SURCHARGED
S8.001	S37	70.090	1.328	0.000	0.32			57.7	SURCHARGED

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S3.004	S28	
S5.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S6.000	S32	
S6.001	S33	
S7.000	S34	
S6.002	S35	
S8.000	S36	
S8.001	S37	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S8.002	S38	15 Winter	100	+40%	30/15 Summer	
S6.003	S39	15 Winter	100	+40%	1/15 Winter	
S9.000	S40	15 Winter	100	+40%	100/15 Summer	
S9.001	S41	15 Winter	100	+40%	100/15 Summer	
S9.002	S42	15 Winter	100	+40%	100/15 Summer	
S9.003	S43	15 Winter	100	+40%	100/15 Summer	
S9.004	S44	15 Winter	100	+40%	100/15 Summer	
S10.000	S45	15 Summer	100	+40%	100/15 Summer	
S10.001	S46	15 Summer	100	+40%		
S9.005	S47	15 Winter	100	+40%	30/15 Summer	
S9.006	S48	15 Winter	100	+40%	30/15 Summer	
S9.007	S49	15 Winter	100	+40%	30/15 Summer	
S3.007	S50	60 Winter	100	+40%	1/15 Summer	
S11.000	S51	15 Summer	100	+40%	100/15 Summer	
S11.001	S52	15 Summer	100	+40%	100/15 Summer	
S11.002	S53	15 Summer	100	+40%	100/15 Summer	
S11.003	S54	60 Winter	100	+40%	100/60 Winter	
S3.008	S55	60 Winter	100	+40%	1/15 Summer	
S12.000	S56	60 Winter	100	+40%	100/15 Summer	
S3.009	S57	60 Winter	100	+40%	1/15 Summer	
S13.000	S58	15 Summer	100	+40%	100/15 Summer	
S13.001	S59	60 Winter	100	+40%	100/15 Summer	
S13.002	S60	60 Winter	100	+40%	100/15 Summer	
S3.010	S61 Flow Control 80 l/s	60 Winter	100	+40%	1/15 Summer	
S14.000	S62	480 Winter	100	+40%	100/15 Summer	
S14.001	S63	480 Winter	100	+40%	100/15 Summer	
S14.002	S64	480 Winter	100	+40%	30/120 Winter	
S15.000	S65	480 Winter	100	+40%	100/360 Winter	
S15.001	S66	480 Winter	100	+40%	100/120 Winter	
S15.002	S67	480 Winter	100	+40%	100/15 Summer	
S16.000	S68	480 Winter	100	+40%	100/360 Winter	
S16.001	S69	480 Winter	100	+40%	100/240 Winter	
S16.002	S70	480 Winter	100	+40%	100/60 Summer	
S15.003	S71	480 Winter	100	+40%	1/15 Winter	
S15.004	S72 Tank 2	480 Winter	100	+40%	1/15 Summer	
S17.000	S73	480 Winter	100	+40%	100/15 Summer	
S15.005	S74	480 Winter	100	+40%	1/15 Summer	
S14.003	S75 Flow Control 5 l/s	480 Winter	100	+40%	1/15 Summer	
S3.011	S76	60 Winter	100	+40%	100/15 Summer	
S18.000	S77	60 Winter	100	+40%	100/15 Summer	
S19.000	S78	60 Winter	100	+40%	100/15 Summer	
S3.012	S79 Flow Control 95 l/s	60 Winter	100	+40%	1/15 Summer	
S3.013	S80	60 Winter	100	+40%		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S8.002	S38			69.946	1.512	0.000	0.49
S6.003	S39			69.799	2.106	0.000	0.91
S9.000	S40			70.906	0.181	0.000	0.61
S9.001	S41			70.805	0.642	0.000	0.70
S9.002	S42			70.665	0.837	0.000	0.87
S9.003	S43			70.397	0.884	0.000	1.04
S9.004	S44			70.299	0.860	0.000	0.78
S10.000	S45			70.946	0.021	0.000	1.03
S10.001	S46			70.584	-0.189	0.000	0.29
S9.005	S47			70.145	1.330	0.000	1.86
S9.006	S48			69.928	1.181	0.000	1.09
S9.007	S49			69.808	1.181	0.000	0.24
S3.007	S50			69.646	2.848	0.000	0.82
S11.000	S51			70.956	0.606	0.000	1.44
S11.001	S52			70.480	0.356	0.000	0.97
S11.002	S53			70.330	0.355	0.000	1.61
S11.003	S54			70.146	0.383	0.000	0.20
S3.008	S55			69.916	3.273	0.000	0.67
S12.000	S56			70.044	0.569	0.000	0.40
S3.009	S57			69.973	3.389	0.000	0.42
S13.000	S58			70.778	0.428	0.000	1.55
S13.001	S59			70.192	0.112	0.000	0.58
S13.002	S60			70.209	0.555	0.000	0.60
S3.010	S61 Flow Control 80 l/s			69.994	3.623	0.000	0.24
S14.000	S62			69.022	0.372	0.000	0.11
S14.001	S63			69.020	0.821	0.000	0.12
S14.002	S64			69.018	1.118	0.000	0.18
S15.000	S65			69.027	0.377	0.000	0.07
S15.001	S66			69.026	0.696	0.000	0.07
S15.002	S67			69.025	1.046	0.000	0.10
S16.000	S68			69.024	0.374	0.000	0.03
S16.001	S69			69.024	0.563	0.000	0.03
S16.002	S70			69.024	0.860	0.000	0.09
S15.003	S71			69.023	1.409	0.000	0.17
S15.004	S72 Tank 2			69.021	1.548	0.000	0.07
S17.000	S73			69.022	0.372	0.000	0.11
S15.005	S74			69.020	1.660	0.000	0.04
S14.003	S75 Flow Control 5 l/s			69.015	2.278	0.000	0.05
S3.011	S76			66.754	0.721	0.000	0.18
S18.000	S77			66.741	0.866	0.000	0.10
S19.000	S78			66.741	0.941	0.000	0.10
S3.012	S79 Flow Control 95 l/s			66.737	1.606	0.000	0.38
S3.013	S80			64.617	-0.101	0.000	0.88

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S8.002	S38			86.3	SURCHARGED	
S6.003	S39			204.2	SURCHARGED	
S9.000	S40			33.7	SURCHARGED	
S9.001	S41			70.7	SURCHARGED	
S9.002	S42			94.3	SURCHARGED	
S9.003	S43			111.2	SURCHARGED	
S9.004	S44			128.6	SURCHARGED	
S10.000	S45			45.2	SURCHARGED	
S10.001	S46			70.0	OK	
S9.005	S47			199.2	SURCHARGED	
S9.006	S48			212.3	SURCHARGED	
S9.007	S49			251.4	SURCHARGED	
S3.007	S50			280.4	SURCHARGED	
S11.000	S51			24.1	FLOOD RISK	
S11.001	S52			44.4	SURCHARGED	
S11.002	S53			72.4	SURCHARGED	
S11.003	S54			46.5	SURCHARGED	
S3.008	S55			196.4	SURCHARGED	
S12.000	S56			18.7	FLOOD RISK*	1
S3.009	S57			125.2	SURCHARGED	
S13.000	S58			26.3	FLOOD RISK	
S13.001	S59			28.7	SURCHARGED	
S13.002	S60			58.7	SURCHARGED	
S3.010	S61 Flow Control 80 l/s			79.8	SURCHARGED	
S14.000	S62			2.0	SURCHARGED	
S14.001	S63			5.8	SURCHARGED	
S14.002	S64			7.2	SURCHARGED	
S15.000	S65			1.3	SURCHARGED	
S15.001	S66			3.5	SURCHARGED	
S15.002	S67			11.0	SURCHARGED	
S16.000	S68			0.5	SURCHARGED	
S16.001	S69			1.5	SURCHARGED	
S16.002	S70			7.0	FLOOD RISK	
S15.003	S71			23.0	SURCHARGED	
S15.004	S72 Tank 2		652	6.7	SURCHARGED	
S17.000	S73			1.5	SURCHARGED	
S15.005	S74			5.4	SURCHARGED	
S14.003	S75 Flow Control 5 l/s			5.1	FLOOD RISK	
S3.011	S76			85.5	SURCHARGED	
S18.000	S77			14.5	FLOOD RISK	
S19.000	S78			7.9	FLOOD RISK	
S3.012	S79 Flow Control 95 l/s			94.8	FLOOD RISK	
S3.013	S80			94.8	OK	

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9762 - SW Phase 1 Only @ 42.8l/s

Surface water model of Phase 1 only with an attenuation tank No.2 volume reduced and temporary vortex flow controls restricting peak surface water discharge to 42.8 l/s.

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 9762 - SW

Pipe Sizes PTA Manhole Sizes PTA

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.352	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.000
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for 9762 - SW

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.000	31.794	0.563	56.5	0.069	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	21.157	0.205	103.2	0.061	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.002	30.078	0.270	111.4	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.003	30.472	0.154	197.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S4.000	13.250	0.194	68.3	0.053	3.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	44.696	0.149	300.0	0.021	0.00	0.0	0.600	o	600	Pipe/Conduit	
S5.000	61.091	0.309	197.7	0.000	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.004	45.004	0.167	269.5	0.045	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S3.000	50.00	3.25	70.250	0.069	0.0	0.0	0.0	2.10	148.2	9.3
S3.001	50.00	3.43	69.537	0.130	0.0	0.0	0.0	2.00	318.3	17.6
S3.002	50.00	3.69	69.332	0.182	0.0	0.0	0.0	1.93	306.3	24.7
S3.003	50.00	4.04	69.062	0.182	0.0	0.0	0.0	1.44	229.3	24.7
S4.000	50.00	3.18	70.500	0.053	0.0	0.0	0.0	1.22	21.5	7.2
S4.001	50.00	3.71	67.973	0.075	0.0	0.0	0.0	1.40	396.1	10.1
S5.000	50.00	3.91	70.200	0.000	0.0	0.0	0.0	1.11	78.8	0.0
S3.004	48.36	4.55	67.674	0.302	0.0	0.0	0.0	1.48	418.1	39.5

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.000	45.533	0.512	88.9	0.036	5.00	0.0	0.600	o	375	Pipe/Conduit	
S3.005	59.032	0.197	299.7	0.420	0.00	0.0	0.600	o	600	Pipe/Conduit	
S3.006	15.704	0.052	302.0	0.409	0.00	0.0	0.600	o	600	Pipe/Conduit	
S7.000	45.826	0.573	80.0	0.069	3.00	0.0	0.600	o	225	Pipe/Conduit	
S7.001	5.117	0.051	100.3	0.073	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.000	31.775	0.318	99.9	0.046	3.00	0.0	0.600	o	225	Pipe/Conduit	
S7.002	45.743	0.305	150.0	0.051	0.00	0.0	0.600	o	300	Pipe/Conduit	
S9.000	28.334	0.328	86.4	0.066	3.00	0.0	0.600	o	375	Pipe/Conduit	
S9.001	32.588	0.328	99.4	0.062	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.002	28.649	0.286	100.2	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.003	39.735	0.603	65.9	0.056	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.000	45.362	0.562	80.7	0.058	3.00	0.0	0.600	o	225	Pipe/Conduit	
S10.001	33.696	0.335	100.6	0.079	0.00	0.0	0.600	o	300	Pipe/Conduit	
S10.002	26.771	0.315	85.0	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S6.000	45.06	5.39	69.750	0.036	0.0	0.0	0.0	1.92	212.3	4.3
S3.005	42.69	6.10	67.282	0.757	0.0	0.0	0.0	1.40	396.3	87.5
S3.006	42.11	6.28	66.935	1.166	0.0	0.0	0.0	1.40	394.7	132.9
S7.000	50.00	3.52	68.397	0.069	0.0	0.0	0.0	1.46	58.2	9.3
S7.001	50.00	3.59	67.824	0.142	0.0	0.0	0.0	1.31	51.9	19.3
S8.000	50.00	3.40	70.000	0.046	0.0	0.0	0.0	1.31	52.0	6.3
S7.002	49.97	4.18	67.698	0.240	0.0	0.0	0.0	1.28	90.6	32.4
S9.000	50.00	3.24	68.715	0.066	0.0	0.0	0.0	1.95	215.4	8.9
S9.001	50.00	3.54	68.387	0.127	0.0	0.0	0.0	1.82	200.8	17.2
S9.002	50.00	3.80	68.059	0.176	0.0	0.0	0.0	1.81	199.9	23.8
S7.003	48.66	4.48	67.318	0.472	0.0	0.0	0.0	2.24	246.9	62.2
S10.000	50.00	3.52	70.500	0.058	0.0	0.0	0.0	1.46	57.9	7.8
S10.001	50.00	3.88	69.863	0.137	0.0	0.0	0.0	1.57	110.8	18.5
S10.002	50.00	4.14	69.528	0.223	0.0	0.0	0.0	1.71	120.6	30.2

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S10.003	13.901	0.074	187.9	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.004	18.511	0.183	101.2	0.004	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.000	16.889	0.152	111.1	0.073	3.00	0.0	0.600	o	225	Pipe/Conduit	
S11.001	35.495	1.958	18.1	0.043	0.00	0.0	0.600	o	300	Pipe/Conduit	
S10.005	6.363	0.068	93.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S10.006	12.004	0.120	100.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.007	16.234	1.829	8.9	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.007	46.248	0.154	300.3	0.098	0.00	0.0	0.600	o	600	Pipe/Conduit	
S12.000	22.605	0.226	100.0	0.047	3.00	0.0	0.600	o	150	Pipe/Conduit	
S12.001	14.717	0.149	98.8	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S12.002	23.769	0.212	112.1	0.053	0.00	0.0	0.600	o	225	Pipe/Conduit	
S12.003	10.624	3.119	3.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.008	18.014	0.060	300.2	0.132	0.00	0.0	0.600	o	600	Pipe/Conduit	
S13.000	40.375	0.364	110.9	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.009	18.838	0.063	299.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S10.003	49.37	4.31	69.138	0.232	0.0	0.0	0.0	1.32	145.6	31.0
S10.004	48.62	4.49	69.064	0.236	0.0	0.0	0.0	1.80	199.0	31.1
S11.000	50.00	3.23	70.700	0.073	0.0	0.0	0.0	1.24	49.3	9.9
S11.001	50.00	3.39	70.473	0.116	0.0	0.0	0.0	3.71	262.3	15.7
S10.005	48.38	4.54	68.440	0.420	0.0	0.0	0.0	1.87	206.9	55.0
S10.006	47.97	4.64	68.297	0.420	0.0	0.0	0.0	2.03	323.3	55.0
S10.007	47.82	4.68	68.102	0.420	0.0	0.0	0.0	7.55	1634.3	55.0
S3.007	40.49	6.83	66.198	2.155	0.0	0.0	0.0	1.40	395.8	236.3
S12.000	50.00	3.37	70.200	0.047	0.0	0.0	0.0	1.00	17.8	6.3
S12.001	50.00	3.56	69.899	0.086	0.0	0.0	0.0	1.32	52.3	11.7
S12.002	50.00	3.88	69.750	0.139	0.0	0.0	0.0	1.23	49.1	18.9
S12.003	50.00	3.91	69.538	0.139	0.0	0.0	0.0	7.14	283.9	18.9
S3.008	39.91	7.05	66.044	2.425	0.0	0.0	0.0	1.40	395.9	262.1
S13.000	44.53	5.54	69.250	0.042	0.0	0.0	0.0	1.24	49.3	5.1
S3.009	39.31	7.27	65.984	2.468	0.0	0.0	0.0	1.40	396.7	262.7

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S14.000	27.034	0.270	100.1	0.046	3.00	0.0	0.600	o	150	Pipe/Conduit	
S14.001	42.616	0.426	100.0	0.050	0.00	0.0	0.600	o	225	Pipe/Conduit	
S14.002	41.865	0.378	110.8	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.010	33.983	0.113	300.7	0.131	0.00	0.0	0.600	o	600	Pipe/Conduit	
S15.000	36.064	0.451	80.0	0.030	3.00	0.0	0.600	o	150	Pipe/Conduit	
S15.001	29.852	0.299	99.8	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
S15.002	28.645	0.191	150.0	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.000	25.600	0.320	80.0	0.019	3.00	0.0	0.600	o	150	Pipe/Conduit	
S16.001	35.060	0.351	99.9	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	28.941	0.365	79.3	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.000	15.105	0.189	79.9	0.007	3.00	0.0	0.600	o	150	Pipe/Conduit	
S17.001	29.679	0.297	99.9	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.002	28.373	0.189	150.1	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
S16.003	21.137	0.141	149.9	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S16.004	5.774	0.038	151.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S14.000	50.00	3.45	70.200	0.046	0.0	0.0	0.0	1.00	17.7	6.3
S14.001	50.00	3.99	69.855	0.097	0.0	0.0	0.0	1.31	52.0	13.1
S14.002	48.74	4.46	69.354	0.153	0.0	0.0	0.0	1.49	105.6	20.1
S3.010	38.29	7.68	65.771	2.751	0.0	0.0	0.0	1.40	395.6	285.3
S15.000	50.00	3.53	68.500	0.030	0.0	0.0	0.0	1.13	19.9	4.1
S15.001	50.00	3.91	67.974	0.083	0.0	0.0	0.0	1.31	52.0	11.2
S15.002	49.16	4.36	67.675	0.111	0.0	0.0	0.0	1.07	42.4	14.8
S16.000	50.00	3.38	68.500	0.019	0.0	0.0	0.0	1.12	19.9	2.6
S16.001	50.00	3.83	68.105	0.051	0.0	0.0	0.0	1.31	52.0	7.0
S16.002	50.00	4.10	67.679	0.169	0.0	0.0	0.0	1.77	124.9	22.9
S17.000	50.00	3.22	68.500	0.007	0.0	0.0	0.0	1.13	19.9	0.9
S17.001	50.00	3.60	68.236	0.022	0.0	0.0	0.0	1.31	52.0	3.0
S17.002	50.00	3.97	67.864	0.108	0.0	0.0	0.0	1.28	90.5	14.6
S16.003	49.27	4.34	67.239	0.364	0.0	0.0	0.0	1.48	163.2	48.5
S16.004	48.98	4.40	67.098	0.364	0.0	0.0	0.0	1.47	162.1	48.5

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Network Design Table for 9762 - SW

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S18.000	29.448	0.196	150.2	0.023	3.00	0.0	0.600	o	150	Pipe/Conduit	
S16.005	36.465	0.623	58.5	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.003	13.328	0.167	79.8	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.011	50.678	0.169	299.9	0.035	0.00	0.0	0.600	o	675	Pipe/Conduit	
S19.000	9.581	0.144	66.5	0.062	3.00	0.0	0.600	o	375	Pipe/Conduit	
S20.000	7.555	0.094	80.4	0.035	3.00	0.0	0.600	o	300	Pipe/Conduit	
S3.012	11.530	0.412	28.0	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.013	5.278	0.053	99.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S18.000	50.00	3.60	68.500	0.023	0.0	0.0	0.0	0.82	14.4	3.1
S16.005	47.73	4.70	67.060	0.425	0.0	0.0	0.0	2.06	145.5	54.9
S15.003	47.22	4.82	66.437	0.568	0.0	0.0	0.0	1.76	124.5	72.6
S3.011	36.97	8.24	65.358	3.354	0.0	0.0	0.0	1.51	539.7	335.8
S19.000	50.00	3.07	65.500	0.062	0.0	0.0	0.0	2.22	245.7	8.4
S20.000	50.00	3.07	65.500	0.035	0.0	0.0	0.0	1.76	124.1	4.8
S3.012	36.84	8.29	64.756	3.537	0.0	0.0	0.0	3.44	379.6	353.0
S3.013	36.74	8.34	64.343	3.537	0.0	0.0	0.0	1.82	200.5«	353.0

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.000	User	-	100	0.069	0.069	0.069
3.001	User	-	100	0.061	0.061	0.061
3.002	User	-	100	0.052	0.052	0.052
3.003	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.053	0.053	0.053
4.001	User	-	100	0.021	0.021	0.021
5.000	-	-	100	0.000	0.000	0.000
3.004	User	-	100	0.045	0.045	0.045
6.000	User	-	100	0.036	0.036	0.036
3.005	User	-	100	0.420	0.420	0.420
3.006	User	-	100	0.409	0.409	0.409
7.000	User	-	100	0.069	0.069	0.069
7.001	User	-	100	0.073	0.073	0.073
8.000	User	-	100	0.046	0.046	0.046
7.002	User	-	100	0.051	0.051	0.051
9.000	User	-	100	0.066	0.066	0.066
9.001	User	-	100	0.062	0.062	0.062
9.002	User	-	100	0.049	0.049	0.049
7.003	User	-	100	0.056	0.056	0.056
10.000	User	-	100	0.058	0.058	0.058
10.001	User	-	100	0.079	0.079	0.079
10.002	User	-	100	0.086	0.086	0.086
10.003	User	-	100	0.009	0.009	0.009
10.004	User	-	100	0.004	0.004	0.004
11.000	User	-	100	0.073	0.073	0.073
11.001	User	-	100	0.043	0.043	0.043
10.005	User	-	100	0.067	0.067	0.067
10.006	-	-	100	0.000	0.000	0.000
10.007	-	-	100	0.000	0.000	0.000
3.007	User	-	100	0.098	0.098	0.098
12.000	User	-	100	0.047	0.047	0.047
12.001	User	-	100	0.039	0.039	0.039
12.002	User	-	100	0.053	0.053	0.053
12.003	-	-	100	0.000	0.000	0.000
3.008	User	-	100	0.132	0.132	0.132
13.000	User	-	100	0.042	0.042	0.042
3.009	-	-	100	0.000	0.000	0.000
14.000	User	-	100	0.046	0.046	0.046
14.001	User	-	100	0.050	0.050	0.050
14.002	User	-	100	0.056	0.056	0.056
3.010	User	-	100	0.131	0.131	0.131
15.000	User	-	100	0.030	0.030	0.030
15.001	User	-	100	0.052	0.052	0.052
15.002	User	-	100	0.028	0.028	0.028
16.000	User	-	100	0.019	0.019	0.019
16.001	User	-	100	0.032	0.032	0.032
16.002	User	-	100	0.118	0.118	0.118
17.000	User	-	100	0.007	0.007	0.007
17.001	User	-	100	0.015	0.015	0.015
17.002	User	-	100	0.086	0.086	0.086
16.003	User	-	100	0.086	0.086	0.086

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Area Summary for 9762 - SW

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
16.004	-	-	100	0.000	0.000	0.000
18.000	User	-	100	0.023	0.023	0.023
16.005	User	-	100	0.038	0.038	0.038
15.003	User	-	100	0.032	0.032	0.032
3.011	User	-	100	0.035	0.035	0.035
19.000	User	-	100	0.062	0.062	0.062
20.000	User	-	100	0.035	0.035	0.035
3.012	User	-	100	0.086	0.086	0.086
3.013	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				3.537	3.537	3.537

Free Flowing Outfall Details for 9762 - SW

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.013	S	66.500	64.290	0.000	0	0

Simulation Criteria for 9762 - SW

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	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)	18.200	Storm Duration (mins)	30
Ratio R	0.350		

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Online Controls for 9762 - SW

Hydro-Brake® Optimum Manhole: S61 Flow Control 25.5 l/s, DS/PN: S3.010, Volume (m³): 16.0

Unit Reference	MD-SHE-0181-2550-3750-2550
Design Head (m)	3.750
Design Flow (l/s)	25.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	181
Invert Level (m)	65.771
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.750	25.5
Flush-Flo™	0.791	21.8
Kick-Flo®	1.623	17.1
Mean Flow over Head Range	-	20.4

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)
0.100	6.4	1.200	20.9	3.000	22.9	7.000	34.4
0.200	16.3	1.400	19.7	3.500	24.6	7.500	35.6
0.300	18.7	1.600	17.5	4.000	26.3	8.000	36.7
0.400	20.1	1.800	17.9	4.500	27.8	8.500	37.8
0.500	21.0	2.000	18.9	5.000	29.3	9.000	38.8
0.600	21.5	2.200	19.7	5.500	30.6	9.500	39.9
0.800	21.8	2.400	20.6	6.000	31.9		
1.000	21.5	2.600	21.4	6.500	33.2		

Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S15.003, Volume (m³): 6.7

Unit Reference	MD-SHE-0087-5000-2500-5000
Design Head (m)	2.500
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	87
Invert Level (m)	66.437
Minimum Outlet Pipe Diameter (mm)	100

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Hydro-Brake® Optimum Manhole: S75 Flow Control 5 l/s, DS/PN: S15.003, Volume (m³): 6.7

Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.500	5.0
Flush-Flo™	0.379	3.6
Kick-Flo®	0.777	2.9
Mean Flow over Head Range	-	3.8

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)
0.100	2.6	1.200	3.6	3.000	5.4	7.000	8.1
0.200	3.4	1.400	3.8	3.500	5.8	7.500	8.4
0.300	3.6	1.600	4.1	4.000	6.2	8.000	8.6
0.400	3.6	1.800	4.3	4.500	6.6	8.500	8.9
0.500	3.6	2.000	4.5	5.000	6.9	9.000	9.1
0.600	3.5	2.200	4.7	5.500	7.2	9.500	9.4
0.800	2.9	2.400	4.9	6.000	7.5		
1.000	3.3	2.600	5.1	6.500	7.8		

Hydro-Brake® Optimum Manhole: S79 Flow Control 42.8 l/s, DS/PN: S3.012, Volume (m³): 25.6

Unit Reference	MD-SHE-0263-4280-1985-4280
Design Head (m)	1.985
Design Flow (l/s)	42.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	263
Invert Level (m)	64.756
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	2100

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.985	42.8
Flush-Flo™	0.601	42.8
Kick-Flo®	1.306	35.0
Mean Flow over Head Range	-	37.0

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

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Hydro-Brake® Optimum Manhole: S79 Flow Control 42.8 l/s, DS/PN: S3.012, Volume (m³): 25.6

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.4	1.200	38.1	3.000	52.2	7.000	78.8
0.200	27.0	1.400	36.2	3.500	56.3	7.500	81.5
0.300	39.6	1.600	38.6	4.000	60.0	8.000	84.1
0.400	41.6	1.800	40.8	4.500	63.6	8.500	86.6
0.500	42.6	2.000	43.0	5.000	66.9	9.000	89.0
0.600	42.8	2.200	45.0	5.500	70.1	9.500	91.4
0.800	42.2	2.400	46.9	6.000	73.1		
1.000	40.9	2.600	48.7	6.500	76.0		

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Storage Structures for 9762 - SW

Cellular Storage Manhole: S30 Tank 1, DS/PN: S3.005

Invert Level (m) 67.500 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)
0.000	900.0	0.0	1.501	0.0	0.0
1.500	900.0	0.0	2.000	0.0	0.0

Cellular Storage Manhole: S72 Tank 2, DS/PN: S16.004

Invert Level (m) 67.500 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)
0.000	300.0	0.0	1.001	0.0	0.0
1.000	300.0	0.0	2.000	0.0	0.0

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 2
Number of Online Controls 3 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	1	+0%				
S3.001	S25	15 Summer	1	+0%				
S3.002	S26	15 Summer	1	+0%	100/360 Winter			
S3.003	S27	15 Winter	1	+0%	100/240 Winter			
S4.000	S18	15 Summer	1	+0%	100/15 Summer			
S4.001	S19	15 Summer	1	+0%	100/60 Winter			
S5.000	S20	15 Summer	1	+0%				
S3.004	S28	15 Summer	1	+0%	100/30 Summer			
S6.000	S29	15 Winter	1	+0%				
S3.005	S30 Tank 1	120 Winter	1	+0%	30/30 Summer			
S3.006	S31	15 Winter	1	+0%	1/15 Summer			
S7.000	S32	15 Summer	1	+0%	30/15 Summer			
S7.001	S33	15 Winter	1	+0%	1/15 Summer			
S8.000	S34	15 Summer	1	+0%	100/15 Summer			
S7.002	S35	15 Winter	1	+0%	1/15 Summer			
S9.000	S36	15 Summer	1	+0%	100/15 Summer			
S9.001	S37	15 Summer	1	+0%	30/15 Summer			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.305	-0.245	0.000	0.07			9.8	OK
S3.001	S25	69.610	-0.377	0.000	0.06			15.8	OK
S3.002	S26	69.416	-0.366	0.000	0.08			20.9	OK
S3.003	S27	69.159	-0.353	0.000	0.11			20.9	OK
S4.000	S18	70.567	-0.083	0.000	0.39			7.7	OK
S4.001	S19	68.040	-0.533	0.000	0.03			10.0	OK
S5.000	S20	70.200	-0.300	0.000	0.00			0.0	OK
S3.004	S28	67.799	-0.475	0.000	0.10			34.7	OK
S6.000	S29	69.788	-0.337	0.000	0.02			4.2	OK
S3.005	S30 Tank 1	67.669	-0.213	0.000	0.07		79	23.7	OK
S3.006	S31	68.211	0.676	0.000	0.31			86.7	SURCHARGED
S7.000	S32	68.462	-0.160	0.000	0.17			9.6	OK
S7.001	S33	68.183	0.134	0.000	0.65			20.5	SURCHARGED
S8.000	S34	70.056	-0.169	0.000	0.13			6.5	OK
S7.002	S35	68.147	0.149	0.000	0.32			27.0	SURCHARGED
S9.000	S36	68.770	-0.320	0.000	0.05			9.4	OK
S9.001	S37	68.461	-0.301	0.000	0.09			15.3	OK

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S5.000	S20	
S3.004	S28	
S6.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S7.000	S32	
S7.001	S33	
S8.000	S34	
S7.002	S35	
S9.000	S36	
S9.001	S37	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S9.002	S38	15 Winter	1	+0%	30/15 Summer	
S7.003	S39	15 Winter	1	+0%	1/15 Summer	
S10.000	S40	15 Summer	1	+0%	100/15 Summer	
S10.001	S41	15 Summer	1	+0%	100/15 Summer	
S10.002	S42	15 Winter	1	+0%	100/15 Summer	
S10.003	S43	15 Winter	1	+0%	100/15 Summer	
S10.004	S44	15 Winter	1	+0%	100/15 Summer	
S11.000	S45	15 Summer	1	+0%	100/15 Summer	
S11.001	S46	15 Summer	1	+0%		
S10.005	S47	15 Winter	1	+0%	30/15 Summer	
S10.006	S48	15 Winter	1	+0%	30/15 Summer	
S10.007	S49	15 Winter	1	+0%	30/15 Summer	
S3.007	S50	15 Winter	1	+0%	1/15 Summer	
S12.000	S51	15 Summer	1	+0%	100/15 Summer	
S12.001	S52	15 Summer	1	+0%	100/15 Summer	
S12.002	S53	15 Winter	1	+0%	100/15 Summer	
S12.003	S54	15 Winter	1	+0%	100/15 Summer	
S3.008	S55	15 Winter	1	+0%	1/15 Summer	
S13.000	S56	15 Winter	1	+0%	100/15 Summer	
S3.009	S57	15 Winter	1	+0%	1/15 Summer	
S14.000	S58	15 Summer	1	+0%	100/15 Summer	
S14.001	S59	15 Summer	1	+0%	100/15 Summer	
S14.002	S60	15 Winter	1	+0%	100/15 Summer	
S3.010	S61 Flow Control 25.5 l/s	15 Winter	1	+0%	1/15 Summer	
S15.000	S62	15 Summer	1	+0%	100/15 Summer	
S15.001	S63	15 Summer	1	+0%	100/15 Summer	
S15.002	S64	15 Winter	1	+0%	30/120 Winter	
S16.000	S65	15 Summer	1	+0%	100/360 Winter	
S16.001	S66	15 Summer	1	+0%	100/120 Winter	
S16.002	S67	15 Winter	1	+0%	100/15 Summer	
S17.000	S68	15 Summer	1	+0%	100/360 Winter	
S17.001	S69	15 Summer	1	+0%	100/240 Winter	
S17.002	S70	15 Winter	1	+0%	100/60 Summer	
S16.003	S71	30 Winter	1	+0%	1/15 Winter	
S16.004	S72 Tank 2	120 Winter	1	+0%	1/15 Summer	
S18.000	S73	15 Summer	1	+0%	100/15 Summer	
S16.005	S74	180 Winter	1	+0%	1/15 Summer	
S15.003	S75 Flow Control 5 l/s	240 Winter	1	+0%	1/15 Summer	
S3.011	S76	15 Summer	1	+0%	100/15 Summer	
S19.000	S77	15 Summer	1	+0%	100/15 Summer	
S20.000	S78	15 Summer	1	+0%	100/15 Summer	
S3.012	S79 Flow Control 42.8 l/s	15 Winter	1	+0%	1/15 Summer	
S3.013	S80	15 Winter	1	+0%		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S9.002	S38			68.168	-0.266	0.000	0.11
S7.003	S39			68.207	0.514	0.000	0.29
S10.000	S40			70.559	-0.166	0.000	0.15
S10.001	S41			69.943	-0.220	0.000	0.16
S10.002	S42			69.625	-0.203	0.000	0.22
S10.003	S43			69.262	-0.251	0.000	0.24
S10.004	S44			69.163	-0.276	0.000	0.16
S11.000	S45			70.776	-0.149	0.000	0.24
S11.001	S46			70.521	-0.252	0.000	0.06
S10.005	S47			68.612	-0.203	0.000	0.43
S10.006	S48			68.445	-0.302	0.000	0.24
S10.007	S49			68.298	-0.329	0.000	0.04
S3.007	S50			68.275	1.477	0.000	0.40
S12.000	S51			70.268	-0.082	0.000	0.39
S12.001	S52			69.973	-0.151	0.000	0.23
S12.002	S53			69.841	-0.134	0.000	0.35
S12.003	S54			69.576	-0.187	0.000	0.07
S3.008	S55			68.373	1.730	0.000	0.22
S13.000	S56			69.299	-0.176	0.000	0.11
S3.009	S57			68.406	1.822	0.000	0.13
S14.000	S58			70.267	-0.083	0.000	0.39
S14.001	S59			69.929	-0.151	0.000	0.23
S14.002	S60			69.439	-0.215	0.000	0.18
S3.010	S61 Flow Control 25.5 l/s			68.425	2.054	0.000	0.07
S15.000	S62			68.549	-0.101	0.000	0.22
S15.001	S63			68.041	-0.158	0.000	0.19
S15.002	S64			67.761	-0.139	0.000	0.31
S16.000	S65			68.539	-0.111	0.000	0.14
S16.001	S66			68.157	-0.173	0.000	0.12
S16.002	S67			67.759	-0.220	0.000	0.16
S17.000	S68			68.523	-0.127	0.000	0.06
S17.001	S69			68.269	-0.192	0.000	0.05
S17.002	S70			67.938	-0.226	0.000	0.14
S16.003	S71			67.642	0.028	0.000	0.22
S16.004	S72 Tank 2			67.626	0.153	0.000	0.07
S18.000	S73			68.550	-0.100	0.000	0.24
S16.005	S74			67.638	0.278	0.000	0.04
S15.003	S75 Flow Control 5 l/s			67.646	0.909	0.000	0.04
S3.011	S76			65.466	-0.567	0.000	0.06
S19.000	S77			65.561	-0.314	0.000	0.06
S20.000	S78			65.552	-0.248	0.000	0.06
S3.012	S79 Flow Control 42.8 l/s			65.274	0.143	0.000	0.17
S3.013	S80			64.507	-0.211	0.000	0.40

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S9.002	S38			19.9	OK	
S7.003	S39			65.3	SURCHARGED	
S10.000	S40			8.2	OK	
S10.001	S41			16.0	OK	
S10.002	S42			24.4	OK	
S10.003	S43			25.5	OK	
S10.004	S44			26.0	OK	
S11.000	S45			10.4	OK	
S11.001	S46			14.5	OK	
S10.005	S47			45.9	OK	
S10.006	S48			46.1	OK	
S10.007	S49			46.1	OK	
S3.007	S50			137.6	SURCHARGED	
S12.000	S51			6.6	OK	
S12.001	S52			10.6	OK	
S12.002	S53			15.7	OK	
S12.003	S54			15.6	OK	
S3.008	S55			65.4	SURCHARGED	
S13.000	S56			5.1	OK	2
S3.009	S57			37.2	SURCHARGED	
S14.000	S58			6.6	OK	
S14.001	S59			11.6	OK	
S14.002	S60			17.2	OK	
S3.010	S61 Flow Control 25.5 l/s			21.6	SURCHARGED	
S15.000	S62			4.3	OK	
S15.001	S63			9.4	OK	
S15.002	S64			12.2	OK	
S16.000	S65			2.7	OK	
S16.001	S66			6.0	OK	
S16.002	S67			17.7	OK	
S17.000	S68			1.0	OK	
S17.001	S69			2.5	OK	
S17.002	S70			11.2	OK	
S16.003	S71			30.0	SURCHARGED	
S16.004	S72 Tank 2		102	7.6	SURCHARGED	
S18.000	S73			3.3	OK	
S16.005	S74			6.0	SURCHARGED	
S15.003	S75 Flow Control 5 l/s			3.6	SURCHARGED	
S3.011	S76			27.9	OK	
S19.000	S77			8.9	OK	
S20.000	S78			5.0	OK	
S3.012	S79 Flow Control 42.8 l/s			42.6	SURCHARGED	
S3.013	S80			42.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 2
Number of Online Controls 3 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	30	+0%				
S3.001	S25	15 Summer	30	+0%				
S3.002	S26	15 Summer	30	+0%	100/360 Winter			
S3.003	S27	15 Summer	30	+0%	100/240 Winter			
S4.000	S18	15 Summer	30	+0%	100/15 Summer			
S4.001	S19	240 Winter	30	+0%	100/60 Winter			
S5.000	S20	15 Summer	30	+0%				
S3.004	S28	240 Winter	30	+0%	100/30 Summer			
S6.000	S29	15 Winter	30	+0%				
S3.005	S30 Tank 1	240 Winter	30	+0%	30/30 Summer			
S3.006	S31	60 Winter	30	+0%	1/15 Summer			
S7.000	S32	15 Winter	30	+0%	30/15 Summer			
S7.001	S33	15 Summer	30	+0%	1/15 Summer			
S8.000	S34	15 Summer	30	+0%	100/15 Summer			
S7.002	S35	15 Summer	30	+0%	1/15 Summer			
S9.000	S36	15 Summer	30	+0%	100/15 Summer			
S9.001	S37	15 Summer	30	+0%	30/15 Summer			

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.337	-0.213	0.000	0.18			24.2	OK
S3.001	S25	69.663	-0.324	0.000	0.17			43.0	OK
S3.002	S26	69.478	-0.304	0.000	0.23			60.3	OK
S3.003	S27	69.231	-0.281	0.000	0.30			58.8	OK
S4.000	S18	70.626	-0.024	0.000	0.95			18.8	OK
S4.001	S19	68.199	-0.374	0.000	0.01			4.7	OK
S5.000	S20	70.200	-0.300	0.000	0.00			0.0	OK
S3.004	S28	68.199	-0.075	0.000	0.05			18.7	OK
S6.000	S29	69.806	-0.319	0.000	0.05			10.3	OK
S3.005	S30 Tank 1	68.198	0.316	0.000	0.08		281	29.8	SURCHARGED
S3.006	S31	68.691	1.156	0.000	0.13			36.9	SURCHARGED
S7.000	S32	69.218	0.596	0.000	0.41			22.6	SURCHARGED
S7.001	S33	69.141	1.092	0.000	1.48			47.2	SURCHARGED
S8.000	S34	70.092	-0.133	0.000	0.33			15.9	OK
S7.002	S35	69.071	1.073	0.000	0.84			71.4	SURCHARGED
S9.000	S36	68.980	-0.110	0.000	0.12			23.0	OK
S9.001	S37	68.963	0.201	0.000	0.29			51.9	SURCHARGED

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S5.000	S20	
S3.004	S28	
S6.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S7.000	S32	
S7.001	S33	
S8.000	S34	
S7.002	S35	
S9.000	S36	
S9.001	S37	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S9.002	S38	15 Summer	30	+0%	30/15 Summer	
S7.003	S39	15 Summer	30	+0%	1/15 Summer	
S10.000	S40	15 Summer	30	+0%	100/15 Summer	
S10.001	S41	15 Summer	30	+0%	100/15 Summer	
S10.002	S42	15 Summer	30	+0%	100/15 Summer	
S10.003	S43	15 Summer	30	+0%	100/15 Summer	
S10.004	S44	15 Summer	30	+0%	100/15 Summer	
S11.000	S45	15 Summer	30	+0%	100/15 Summer	
S11.001	S46	15 Summer	30	+0%		
S10.005	S47	15 Winter	30	+0%	30/15 Summer	
S10.006	S48	15 Summer	30	+0%	30/15 Summer	
S10.007	S49	15 Summer	30	+0%	30/15 Summer	
S3.007	S50	60 Winter	30	+0%	1/15 Summer	
S12.000	S51	15 Summer	30	+0%	100/15 Summer	
S12.001	S52	15 Summer	30	+0%	100/15 Summer	
S12.002	S53	15 Summer	30	+0%	100/15 Summer	
S12.003	S54	15 Summer	30	+0%	100/15 Summer	
S3.008	S55	60 Summer	30	+0%	1/15 Summer	
S13.000	S56	15 Winter	30	+0%	100/15 Summer	
S3.009	S57	60 Summer	30	+0%	1/15 Summer	
S14.000	S58	15 Summer	30	+0%	100/15 Summer	
S14.001	S59	15 Summer	30	+0%	100/15 Summer	
S14.002	S60	15 Summer	30	+0%	100/15 Summer	
S3.010	S61 Flow Control 25.5 l/s	60 Summer	30	+0%	1/15 Summer	
S15.000	S62	15 Summer	30	+0%	100/15 Summer	
S15.001	S63	15 Summer	30	+0%	100/15 Summer	
S15.002	S64	360 Winter	30	+0%	30/120 Winter	
S16.000	S65	15 Summer	30	+0%	100/360 Winter	
S16.001	S66	15 Summer	30	+0%	100/120 Winter	
S16.002	S67	240 Winter	30	+0%	100/15 Summer	
S17.000	S68	15 Summer	30	+0%	100/360 Winter	
S17.001	S69	15 Summer	30	+0%	100/240 Winter	
S17.002	S70	15 Summer	30	+0%	100/60 Summer	
S16.003	S71	240 Winter	30	+0%	1/15 Winter	
S16.004	S72 Tank 2	240 Winter	30	+0%	1/15 Summer	
S18.000	S73	15 Summer	30	+0%	100/15 Summer	
S16.005	S74	240 Winter	30	+0%	1/15 Summer	
S15.003	S75 Flow Control 5 l/s	240 Winter	30	+0%	1/15 Summer	
S3.011	S76	15 Winter	30	+0%	100/15 Summer	
S19.000	S77	15 Winter	30	+0%	100/15 Summer	
S20.000	S78	15 Winter	30	+0%	100/15 Summer	
S3.012	S79 Flow Control 42.8 l/s	15 Winter	30	+0%	1/15 Summer	
S3.013	S80	180 Summer	30	+0%		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S9.002	S38			68.929	0.495	0.000	0.41
S7.003	S39			68.923	1.230	0.000	0.66
S10.000	S40			70.597	-0.128	0.000	0.35
S10.001	S41			70.003	-0.160	0.000	0.44
S10.002	S42			69.706	-0.122	0.000	0.65
S10.003	S43			69.369	-0.144	0.000	0.67
S10.004	S44			69.243	-0.196	0.000	0.45
S11.000	S45			70.827	-0.098	0.000	0.58
S11.001	S46			70.555	-0.218	0.000	0.16
S10.005	S47			69.154	0.339	0.000	1.26
S10.006	S48			69.100	0.353	0.000	0.80
S10.007	S49			68.992	0.365	0.000	0.19
S3.007	S50			68.891	2.093	0.000	0.51
S12.000	S51			70.334	-0.016	0.000	0.96
S12.001	S52			70.029	-0.095	0.000	0.63
S12.002	S53			69.937	-0.038	0.000	0.99
S12.003	S54			69.604	-0.159	0.000	0.19
S3.008	S55			69.047	2.403	0.000	0.47
S13.000	S56			69.329	-0.146	0.000	0.26
S3.009	S57			69.089	2.505	0.000	0.27
S14.000	S58			70.323	-0.027	0.000	0.93
S14.001	S59			69.988	-0.092	0.000	0.63
S14.002	S60			69.504	-0.150	0.000	0.48
S3.010	S61 Flow Control 25.5 l/s			69.100	2.729	0.000	0.07
S15.000	S62			68.582	-0.068	0.000	0.53
S15.001	S63			68.095	-0.104	0.000	0.55
S15.002	S64			67.975	0.075	0.000	0.13
S16.000	S65			68.563	-0.087	0.000	0.35
S16.001	S66			68.197	-0.133	0.000	0.34
S16.002	S67			67.969	-0.010	0.000	0.09
S17.000	S68			68.537	-0.113	0.000	0.14
S17.001	S69			68.294	-0.167	0.000	0.15
S17.002	S70			67.999	-0.165	0.000	0.42
S16.003	S71			67.968	0.354	0.000	0.16
S16.004	S72 Tank 2			67.966	0.493	0.000	0.07
S18.000	S73			68.584	-0.066	0.000	0.57
S16.005	S74			67.998	0.638	0.000	0.04
S15.003	S75 Flow Control 5 l/s			68.012	1.275	0.000	0.04
S3.011	S76			65.711	-0.322	0.000	0.07
S19.000	S77			65.679	-0.196	0.000	0.14
S20.000	S78			65.678	-0.122	0.000	0.15
S3.012	S79 Flow Control 42.8 l/s			65.677	0.546	0.000	0.17
S3.013	S80			64.507	-0.211	0.000	0.40

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S9.002	S38			72.4	SURCHARGED	
S7.003	S39			148.8	SURCHARGED	
S10.000	S40			19.6	OK	
S10.001	S41			44.7	OK	
S10.002	S42			71.0	OK	
S10.003	S43			72.2	OK	
S10.004	S44			74.8	OK	
S11.000	S45			25.7	OK	
S11.001	S46			38.6	OK	
S10.005	S47			134.7	SURCHARGED	
S10.006	S48			156.2	SURCHARGED	
S10.007	S49			198.3	SURCHARGED	
S3.007	S50			174.1	SURCHARGED	
S12.000	S51			16.1	OK	
S12.001	S52			28.7	OK	
S12.002	S53			44.6	OK	
S12.003	S54			44.3	OK	
S3.008	S55			136.4	SURCHARGED	
S13.000	S56			12.4	OK	2
S3.009	S57			80.0	SURCHARGED	
S14.000	S58			15.8	OK	
S14.001	S59			31.2	OK	
S14.002	S60			47.4	OK	
S3.010	S61 Flow Control 25.5 l/s			23.9	SURCHARGED	
S15.000	S62			10.3	OK	
S15.001	S63			26.8	OK	
S15.002	S64			5.1	SURCHARGED	
S16.000	S65			6.6	OK	
S16.001	S66			16.8	OK	
S16.002	S67			10.4	OK	
S17.000	S68			2.5	OK	
S17.001	S69			7.2	OK	
S17.002	S70			34.2	OK	
S16.003	S71			21.7	SURCHARGED	
S16.004	S72 Tank 2		329	7.1	SURCHARGED	
S18.000	S73			7.9	OK	
S16.005	S74			5.8	SURCHARGED	
S15.003	S75 Flow Control 5 l/s			4.0	SURCHARGED	
S3.011	S76			34.0	OK	
S19.000	S77			20.7	OK	
S20.000	S78			11.8	OK	
S3.012	S79 Flow Control 42.8 l/s			42.7	SURCHARGED	
S3.013	S80			42.7	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Storage Structures 2
Number of Online Controls 3 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 0.346
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.200 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S3.000	S24	15 Summer	100	+40%				
S3.001	S25	360 Winter	100	+40%				
S3.002	S26	360 Winter	100	+40%	100/360 Winter			
S3.003	S27	360 Winter	100	+40%	100/240 Winter			
S4.000	S18	15 Summer	100	+40%	100/15 Summer			
S4.001	S19	360 Winter	100	+40%	100/60 Winter			
S5.000	S20	15 Summer	100	+40%				
S3.004	S28	360 Winter	100	+40%	100/30 Summer			
S6.000	S29	360 Winter	100	+40%				
S3.005	S30 Tank 1	360 Winter	100	+40%	30/30 Summer			
S3.006	S31	360 Winter	100	+40%	1/15 Summer			
S7.000	S32	15 Winter	100	+40%	30/15 Summer			
S7.001	S33	15 Winter	100	+40%	1/15 Summer			
S8.000	S34	15 Winter	100	+40%	100/15 Summer			
S7.002	S35	15 Winter	100	+40%	1/15 Summer			
S9.000	S36	15 Winter	100	+40%	100/15 Summer			
S9.001	S37	15 Winter	100	+40%	30/15 Summer			

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S3.000	S24	70.370	-0.180	0.000	0.32			43.8	OK
S3.001	S25	69.968	-0.019	0.000	0.04			10.9	OK
S3.002	S26	69.968	0.186	0.000	0.06			15.3	SURCHARGED
S3.003	S27	69.967	0.455	0.000	0.08			15.3	SURCHARGED
S4.000	S18	71.026	0.376	0.000	1.67			32.9	SURCHARGED
S4.001	S19	69.966	1.393	0.000	0.02			6.3	SURCHARGED
S5.000	S20	70.200	-0.300	0.000	0.00			0.0	OK
S3.004	S28	69.966	1.692	0.000	0.07			25.6	SURCHARGED
S6.000	S29	69.966	-0.159	0.000	0.02			3.0	OK
S3.005	S30 Tank 1	69.966	2.084	0.000	0.15		583	53.3	SURCHARGED
S3.006	S31	69.964	2.429	0.000	0.11			32.1	SURCHARGED
S7.000	S32	70.657	2.035	0.000	0.52			28.6	SURCHARGED
S7.001	S33	70.522	2.473	0.000	1.89			60.1	SURCHARGED
S8.000	S34	70.387	0.162	0.000	0.57			27.6	SURCHARGED
S7.002	S35	70.342	2.344	0.000	1.17			99.1	SURCHARGED
S9.000	S36	70.238	1.148	0.000	0.14			27.2	SURCHARGED
S9.001	S37	70.221	1.459	0.000	0.30			53.7	SURCHARGED

PN	US/MH Name	Level Exceeded
S3.000	S24	
S3.001	S25	
S3.002	S26	
S3.003	S27	
S4.000	S18	
S4.001	S19	
S5.000	S20	
S3.004	S28	
S6.000	S29	
S3.005	S30 Tank 1	
S3.006	S31	
S7.000	S32	
S7.001	S33	
S8.000	S34	
S7.002	S35	
S9.000	S36	
S9.001	S37	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood
S9.002	S38	15 Winter	100	+40%	30/15 Summer	
S7.003	S39	360 Winter	100	+40%	1/15 Summer	
S10.000	S40	15 Winter	100	+40%	100/15 Summer	
S10.001	S41	15 Winter	100	+40%	100/15 Summer	
S10.002	S42	15 Winter	100	+40%	100/15 Summer	
S10.003	S43	15 Winter	100	+40%	100/15 Summer	
S10.004	S44	15 Winter	100	+40%	100/15 Summer	
S11.000	S45	15 Summer	100	+40%	100/15 Summer	
S11.001	S46	15 Summer	100	+40%		
S10.005	S47	15 Winter	100	+40%	30/15 Summer	
S10.006	S48	15 Winter	100	+40%	30/15 Summer	
S10.007	S49	360 Winter	100	+40%	30/15 Summer	
S3.007	S50	360 Winter	100	+40%	1/15 Summer	
S12.000	S51	15 Summer	100	+40%	100/15 Summer	
S12.001	S52	15 Summer	100	+40%	100/15 Summer	
S12.002	S53	15 Winter	100	+40%	100/15 Summer	
S12.003	S54	120 Summer	100	+40%	100/15 Summer	
S3.008	S55	120 Summer	100	+40%	1/15 Summer	
S13.000	S56	60 Winter	100	+40%	100/15 Summer	
S3.009	S57	120 Summer	100	+40%	1/15 Summer	
S14.000	S58	15 Summer	100	+40%	100/15 Summer	
S14.001	S59	15 Winter	100	+40%	100/15 Summer	
S14.002	S60	120 Summer	100	+40%	100/15 Summer	
S3.010	S61 Flow Control 25.5 l/s	120 Summer	100	+40%	1/15 Summer	
S15.000	S62	480 Winter	100	+40%	100/15 Summer	
S15.001	S63	480 Winter	100	+40%	100/15 Summer	
S15.002	S64	480 Winter	100	+40%	30/120 Winter	
S16.000	S65	480 Winter	100	+40%	100/360 Winter	
S16.001	S66	480 Winter	100	+40%	100/120 Winter	
S16.002	S67	480 Winter	100	+40%	100/15 Summer	
S17.000	S68	480 Winter	100	+40%	100/360 Winter	
S17.001	S69	480 Winter	100	+40%	100/240 Winter	
S17.002	S70	480 Winter	100	+40%	100/60 Summer	
S16.003	S71	480 Winter	100	+40%	1/15 Winter	
S16.004	S72 Tank 2	480 Winter	100	+40%	1/15 Summer	
S18.000	S73	480 Winter	100	+40%	100/15 Summer	
S16.005	S74	480 Winter	100	+40%	1/15 Summer	
S15.003	S75 Flow Control 5 l/s	480 Winter	100	+40%	1/15 Summer	
S3.011	S76	60 Winter	100	+40%	100/15 Summer	
S19.000	S77	60 Winter	100	+40%	100/15 Summer	
S20.000	S78	60 Winter	100	+40%	100/15 Summer	
S3.012	S79 Flow Control 42.8 l/s	60 Winter	100	+40%	1/15 Summer	
S3.013	S80	240 Summer	100	+40%		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
S9.002	S38			70.066	1.632	0.000	0.48
S7.003	S39			69.966	2.273	0.000	0.58
S10.000	S40			71.057	0.332	0.000	0.61
S10.001	S41			70.963	0.800	0.000	0.67
S10.002	S42			70.828	1.000	0.000	0.84
S10.003	S43			70.580	1.067	0.000	0.92
S10.004	S44			70.474	1.035	0.000	0.66
S11.000	S45			70.946	0.021	0.000	1.03
S11.001	S46			70.584	-0.189	0.000	0.29
S10.005	S47			70.304	1.489	0.000	1.67
S10.006	S48			70.090	1.343	0.000	0.93
S10.007	S49			69.963	1.336	0.000	0.10
S3.007	S50			69.962	3.164	0.000	0.44
S12.000	S51			70.956	0.606	0.000	1.44
S12.001	S52			70.480	0.356	0.000	0.96
S12.002	S53			70.356	0.381	0.000	1.56
S12.003	S54			70.272	0.509	0.000	0.16
S3.008	S55			70.101	3.457	0.000	0.52
S13.000	S56			70.044	0.569	0.000	0.44
S3.009	S57			70.177	3.593	0.000	0.33
S14.000	S58			70.792	0.442	0.000	1.54
S14.001	S59			70.247	0.167	0.000	1.00
S14.002	S60			70.151	0.497	0.000	0.60
S3.010	S61 Flow Control 25.5 l/s			70.209	3.838	0.000	0.08
S15.000	S62			69.022	0.372	0.000	0.11
S15.001	S63			69.020	0.821	0.000	0.12
S15.002	S64			69.018	1.118	0.000	0.18
S16.000	S65			69.027	0.377	0.000	0.07
S16.001	S66			69.026	0.696	0.000	0.07
S16.002	S67			69.025	1.046	0.000	0.10
S17.000	S68			69.024	0.374	0.000	0.03
S17.001	S69			69.024	0.563	0.000	0.03
S17.002	S70			69.024	0.860	0.000	0.09
S16.003	S71			69.023	1.409	0.000	0.17
S16.004	S72 Tank 2			69.021	1.548	0.000	0.07
S18.000	S73			69.022	0.372	0.000	0.11
S16.005	S74			69.020	1.660	0.000	0.04
S15.003	S75 Flow Control 5 l/s			69.015	2.278	0.000	0.05
S3.011	S76			66.703	0.670	0.000	0.07
S19.000	S77			66.699	0.824	0.000	0.10
S20.000	S78			66.699	0.899	0.000	0.11
S3.012	S79 Flow Control 42.8 l/s			66.698	1.567	0.000	0.17
S3.013	S80			64.507	-0.211	0.000	0.40

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 9762 - SW

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S9.002	S38			83.9	SURCHARGED	
S7.003	S39			129.6	SURCHARGED	
S10.000	S40			33.7	SURCHARGED	
S10.001	S41			68.5	FLOOD RISK	
S10.002	S42			91.4	SURCHARGED	
S10.003	S43			99.0	SURCHARGED	
S10.004	S44			108.3	SURCHARGED	
S11.000	S45			45.2	SURCHARGED	
S11.001	S46			70.0	OK	
S10.005	S47			179.2	SURCHARGED	
S10.006	S48			181.8	SURCHARGED	
S10.007	S49			106.0	SURCHARGED	
S3.007	S50			151.0	SURCHARGED	
S12.000	S51			24.1	FLOOD RISK	
S12.001	S52			43.9	SURCHARGED	
S12.002	S53			70.3	SURCHARGED	
S12.003	S54			37.0	SURCHARGED	
S3.008	S55			150.2	SURCHARGED	
S13.000	S56			20.7	FLOOD RISK*	2
S3.009	S57			98.1	FLOOD RISK	
S14.000	S58			26.2	FLOOD RISK	
S14.001	S59			49.4	SURCHARGED	
S14.002	S60			58.6	SURCHARGED	
S3.010	S61 Flow Control 25.5 l/s			25.7	FLOOD RISK	
S15.000	S62			2.0	SURCHARGED	
S15.001	S63			5.8	SURCHARGED	
S15.002	S64			7.2	SURCHARGED	
S16.000	S65			1.3	SURCHARGED	
S16.001	S66			3.5	SURCHARGED	
S16.002	S67			11.0	SURCHARGED	
S17.000	S68			0.5	SURCHARGED	
S17.001	S69			1.5	SURCHARGED	
S17.002	S70			7.0	FLOOD RISK	
S16.003	S71			23.0	SURCHARGED	
S16.004	S72 Tank 2		652	6.7	SURCHARGED	
S18.000	S73			1.5	SURCHARGED	
S16.005	S74			5.4	SURCHARGED	
S15.003	S75 Flow Control 5 l/s			5.1	FLOOD RISK	
S3.011	S76			32.5	SURCHARGED	
S19.000	S77			15.0	FLOOD RISK	
S20.000	S78			8.5	FLOOD RISK	
S3.012	S79 Flow Control 42.8 l/s			42.7	FLOOD RISK	
S3.013	S80			42.7	OK	

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Planning Consent dated 24th September 2021, Application Ref. 129444/FO/2021

MANCHESTER CITY COUNCIL

Important – Planning permission & notices of consent

Compliance with conditions

- Your planning approval or consent is attached. It will contain conditions that you must comply with.
- Please read the conditions and understand their requirements and restrictions, for example submission and approval of details or measures to protect trees.
- Some conditions will require action before you start development and it is imperative that you seek to have these discharged before any work commences.
- Whilst every effort has been made to group conditions logically, it is your responsibility to ensure that you are aware of the requirements and/or restrictions of all conditions.
- If you fail to comply with the conditions this may result in a breach of planning control and this may lead to enforcement action.
- Failure to comply with conditions may also result in the development not being lawful.
- It is in your interests to demonstrate that conditions have been complied with. Failure to do so may cause difficulties if the property is sold or transferred.
- A fee is payable for each request to discharge conditions.
- For advice on any of these matters, please contact Planning, Manchester City Council, PO Box 532, Town Hall, Manchester M60 2LA or email planning@manchester.gov.uk

MANCHESTER CITY COUNCIL

Town & Country Planning Act 1990 (as amended)

Planning Permission

Applicant

Mr Simon Lanyon
Canmoor (Manchester) Limited
34 Dover Street
London
W1S 4NG

Agent (if used)

Mr Roland Lee
Hale Architecture Limited
22c Leathermarket Street
London
SE1 3HP

Part 1 – Particulars of the application/development

Proposal: Erection of 12 No. industrial units with Use Class E(g), B2 and B8 uses with ancillary offices (42782 sqm) together with service areas, car parking, landscaping and boundary treatment following demolition of existing building

Location: Former Mather & Platt Foundry , Grimshaw Lane, Manchester, M40 2BA

Date of application: 8 March 2021

Application number: 129444/FO/2021

Part 2 – Particulars of decision

Manchester City Council gives notice that the development referred to in Part 1 has been **Approved** in accordance with the application and plans submitted subject to the condition(s) listed below (if any).

Article 35 Declaration

Officers have worked with the applicant in a positive and proactive manner based on seeking solutions to problems arising in relation to dealing with the planning application. Officers have sought to resolve a number of significant issues which have arisen as a result of the consultation process relating to the density and appearance of the development and the impact on the environment to minimise the impact on the climate change. The proposal is considered to be acceptable and therefore determined within a timely manner.

Condition(s) attached to this decision

1) The development must be begun not later than the expiration of three years beginning with the date of this permission.

Reason - Required to be imposed pursuant to Section 91 of the Town and Country Planning Act 1990.

2) The development hereby approved shall be carried out in accordance with the following drawings and documents:

Drawings

PL-1005 Rev E, PL-1003 Rev J and PL-1004 Rev D stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021

20-93-05H stamped as received by the City Council, as Local Planning Authority, on the 25 August 2021

PL1081C, PL1083A, PL1084B, PL1085B, PL1101C, PL1103A, PL1104B, PL1105B, PL1111C, PL1113A, PL1114A, PL1115B, PL1122C -A1, PL1123A, PL1124C and PL1125C D stamped as received by the City Council, as Local Planning Authority, on the 13 August 2021

PL1202, PL1203, PL1011B, PL1012A, PL1013, PL1051B, PL1052A, PL1071C, PL1073, PL1075A, PL1201, PL1205, PL1206, PL1207 and PL1053 stamped as received by the City Council, as Local Planning Authority, on the 17 February 2021

PL1014A, PL1054A and PL1074B stamped as received by the City Council, as Local Planning Authority, on the 7 June 2021

Supporting information

- Design and Access statement
- Geo Env Assessment by Curtins, ref 070588-CUR-00-XX-RP-GE-001, dated 03/02/20
- Plot 2 Ground Investigation Report by Wyg Environment, dated May 2014
- Plot 3 Ground Investigation Report by Wyg Environment, dated January 2014
- Demolition Method Statement by Kings Heath Demolition, dated 06/11/20
- Notice of Consent for Demolition by Manchester City Council, ref DM/20/00398 dated 19/11/20
- Flood Risk Assessment & Drainage Strategy by PTA ref. 9762-PTA-XX-XX-RP-C-9071 Rev03 dated 12/02/21
(Parts 1 to 4)
- Ecology Assessment by TEP, ref 8035.01.002 v2, dated 12/02/21
- BNG calculations by TEP, ref 8035_01_001 v2, dated 12/02/21
- Soft Landscape proposals by BEA Landscape drawing ref 20-93-05C
- Tree Survey Report By BEA Landscape RevA ref 2093/EH/TR001A dated 06/02/21
- Tree survey plan by BEA Landscape ref 20-93-01C
- Tree Constraints Plan 20-93-02B
- Tree retention plan by BEA Landscape ref 20-93-03C
- Tree protection plan by BEA Landscape ref 20-93-04A
- Arboricultural Impact Assessment by BEA Landscape RevA ref 2093/EH/AIA001A dated 11/02/21
- Arboricultural Method Statement by BEA Landscape RevA ref 2093/EH/1MS001A dated 11/02/21
- Acoustic Assessment by Hoare Lea, rev 02, dated 04/02/21
- Transport Statement by Vectos ref. R01-ES, dated 12.02.21
- Travel Plan by Vectos, ref R02-ES, dated 12.02.21
- - Passive Design Analysis by Hive, ref R.002 RevB
- Archaeology Statement By BSA Heritage, ref BSA 203-2a , dated 08/02/21
- BREEAM Pre-Assessment 2018 by ESC, RevD dated February 2021

The above documents were stamped as received by the City Council, as Local Planning Authority, on the 17 February 2021

TEP's attached email of 20/08/21

Waste management collection, Waste management plan and waste management proforma stamped as received by the City Council, as Local Planning Authority, on the 8 March 2021

Junction modelling results stamped as received by the City Council, as Local Planning Authority, on the 13 July 2021

Response to TfGM comments stamped as received by the City Council, as Local Planning Authority, on the 13 August 2021

Phase 1 Geo-Environmental Site Assessment - Grimshaw Lane Plots 1&2, Manchester. Prepared by TRC Companies Ltd on the behalf of Canmoor (Manchester) Limited. Report Ref: 423207.0000.0000. Issue Dare; April 2021 and Phase II Geo-Environmental Site Assessment - Grimshaw Lane Plots 1&2, Manchester. Prepared by TRC Companies Ltd on the behalf of Canmoor (Manchester) Limited. Report Ref: 423207.0000.0001. Issue Date: April 2021 stamped as received by the City Council, as Local Planning Authority, on the 22 April 2021

Air Quality Assessment by Hoare Lea, ref. 10/11979 Rev02 stamped as received by the City Council, as Local Planning Authority, on the 27 July 2021

Energy Strategy by Hive, ref 20006.R.001 RevD stamped as received by the City Council, as Local Planning Authority, on the 28 June 2021

Crime Impact Statement prepared by The Greater Manchester Police stamped as received by the City Council, as Local Planning Authority, on the 5 May 2021

Note from Hoare Lea and Response to flood risk comments stamped as received by the City Council, as Local Planning Authority, on the 30 April 2021

Reason - To ensure that the development is carried out in accordance with the approved plans. Pursuant to policies SP1 and DM1 of the Core Strategy.

3) No development works shall take place until the applicant or their agents or their successors in title has secured the implementation of a programme of archaeological works in accordance with a Written Scheme of Investigation (WSI) which has been submitted for approval in writing by the City Council, as Local Planning Authority. The WSI shall cover the following:

1. A phased programme and methodology to include:

- further research to establish which elements of Park Works occupied the site;
- informed by the above, targeted archaeological evaluation through trial trenching;
- informed by the above, more detailed targeted excavation (subject of a new WSI).

2. A programme for post-investigation assessment to include:
- analysis of the site investigation records and finds;
- production of a final report on the significance of the heritage interest recorded.

3. Deposition of the final report with the Greater Manchester Historic Environment Record.

4. Dissemination of the results of the site investigations commensurate with their significance, including the installation of an information panel, coupled with the production of a popular and/or academic publication.

5. Provision for archive deposition of the report, finds and records of the site investigation.

6. Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.

Reason - To record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) and to make this evidence (and any archive generated) publicly accessible pursuant to policy EN3 of the Manchester Core Strategy and saved policy DC20 of the Unitary Development Plan for the City of Manchester (1995).

4) No vegetation clearance or demolition shall take place during the optimum period for bird nesting (March - September inclusive) unless nesting birds have been shown to be absent by a suitably qualified ecologist, or, a method statement for the demolition and vegetation clearance works including for the protection of any nesting birds is agreed in writing by the City Council, Local Planning Authority. Any method statement shall then be implemented for the duration of the demolition and vegetation clearance works.

Reason - In order to protect wildlife from works that may impact on their habitats pursuant to policy EN15 of the Manchester Core Strategy (2012).

5) a) The development shall not commence until, details of a Local Benefit Proposal, in order to demonstrate commitment to recruit local labour for the duration of the construction of the development, shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved document shall be implemented as part of the construction of the development.

In this condition a Local Benefit Proposal means a document which includes:

i) the measures proposed to recruit local people including apprenticeships
ii) mechanisms for the implementation and delivery of the Local Benefit Proposal
iii) measures to monitor and review the effectiveness of the Local Benefit Proposal in achieving the objective of recruiting and supporting local labour objectives

(b) Within one month prior to construction work being completed, a detailed report which takes into account the information and outcomes about local labour recruitment pursuant to items (i) and (ii) above shall be submitted for approval in writing by the City Council as Local Planning Authority.

Reason - The applicant has demonstrated a commitment to recruiting local labour pursuant to policies SP1, EC1 and DM1 of the Manchester Core Strategy (2012).

6) Notwithstanding the Flood Risk and drainage strategy prepared by Ridge stamped as received by the City Council, as Local Planning Authority, 1 June 2021, (a) the development shall not commence until a scheme for the drainage of surface water for

the development has been submitted for approval in writing by the City Council as the Local Planning Authority. This shall include:

- It is suggested within the FRA that permeable paving is potentially feasible if not discharging via infiltration. Permeable paving or other non-infiltrating SuDS features should be maximised wherever possible, to assist in storm water attenuation and to provide betterment to the water quality.
- The existing run-off rates should not include an additional 40% allowance for climate change, this offsets the 50% betterment. It is not permisable for any area of the site draining freely into the public combined sewer, even if this is as existing. Therefore, the proposed discharge rates should be recalculated.
- Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area;
- Runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonable practicable to the greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment;
- Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for 40% climate change in any part of a building;
- Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site. There will be no free flowing of surface water from the site into Grimshaw Lane, all surface water flows should be controlled on site.
- Details of the build-up of the proposed mound located within the South Eastern corner of the site should be submitted and an assessment of the overland flows should be produced, run-off from this area of the site should be prevented from entering the surrounding developments and highways.
- Where surface water is connected to the public sewer, agreement in principle from United Utilities is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice.
- A justification on why bypass separators have been used on site and not full retention separators, as this site is considered to have a high contamination risk.
- Hydraulic calculation of the proposed drainage system;
- Construction details of flow control and SuDS elements.

(b) The development shall then be constructed in accordance with the approved details, within an agreed timescale.

Reason - To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012).

7)) Notwithstanding the following documents:

- Mathers Foundry, Park Works, Newton Heath - Due Diligence Geo-Environmental Site Assessment. Prepared by Curtins on the behalf of Mathers Foundry Ltd. Report Reference: 070588-CUR-00-XX-RP-GE-001, Revision 001. Issue Date: 03 February 2020;
- Flood Risk Assessment & Drainage Strategy - Grimshaw Lane, Manchester. Prepared by Powell Tolner and Associates on the behalf of Canmoor Developments Ltd. Report Ref: 9762-PTA-XX-XX-RP-C-9071. Revision P03. Issue Date: February 2021.
- Phase 1 Geo-Environmental Site Assessment - Grimshaw Lane Plots 1&2, Manchester. Prepared by TRC Companies Ltd on the behalf of Canmoor (Manchester) Limited. Report Ref: 423207.0000.0000. Issue Dare; April 2021.
- Phase II Geo-Environmental Site Assessment - Grimshaw Lane Plots 1&2, Manchester. Prepared by TRC Companies Ltd on the behalf of Canmoor (Manchester) Limited. Report Ref: 423207.0000.0001. Issue Date: April 2021.

a) Before the development hereby approved commences, a report (the Preliminary Risk Assessment) to identify and evaluate all potential sources and impacts of any ground contamination, groundwater contamination and/or ground gas relevant to the site shall be submitted to and approved in writing by the City Council as local planning authority. The Preliminary Risk Assessment shall conform to City Council's current guidance document (Planning Guidance in Relation to Ground Contamination).

In the event of the Preliminary Risk Assessment identifying risks which in the written opinion of the Local Planning Authority require further investigation, the development shall not commence until a scheme for the investigation of the site and the identification of remediation measures (the Site Investigation Proposal) has been submitted to and approved in writing by the City Council as local planning authority.

The measures for investigating the site identified in the Site Investigation Proposal shall be carried out, before the development commences and a report prepared outlining what measures, if any, are required to remediate the land (the Site Investigation Report and/or Remediation Strategy) which shall be submitted to and approved in writing by the City Council as local planning authority.

b) When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and a Completion/Verification Report shall be submitted to and approved in writing by the City Council as local planning authority before the first use of the site.

In the event that ground contamination, groundwater contamination and/or ground gas, not previously identified, are found to be present on the site at any time before the development is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the Revised Remediation Strategy) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.

Reason - To ensure that the presence of or the potential for any contaminated land and/or groundwater is detected and appropriate remedial action is taken in the interests of public safety, pursuant to policies DM1 and EN18 of the Core Strategy.

8) Prior to the commencement of the development, a detailed construction management plan outlining working practices during construction shall be submitted for

approval in writing by the City Council, as local planning authority, which for the avoidance of doubt should include;

o Display of an emergency contact number;
o Details of Wheel Washing;
o Compound locations where relevant;
o Consultation with local residents and businesses including ensuring that operations of existing businesses remain unaffected by construction activities;
0 Measures to minimise the impact on the Rochdale Canal include spillages, seepage, dust and debris;
o Location, removal and recycling of waste;
o Routing strategy and swept path analysis;
o Parking of construction vehicles and staff; and
o Sheeting over of construction vehicles.

The development shall be carried out in accordance with the approved construction management plan.

Reason - To safeguard the amenities of nearby residents and businesses, highway safety and air quality, pursuant to policies SP1, EN16, EN19 and DM1 of the Manchester Core Strategy (July 2012).

9) Prior to the commencement of the development (excluding site clearance, site investigations, remediation and ground works) samples and specifications of all material to be used on all external elevations and boundary treatments of the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The specification shall include the agreement of a materials panel which shall include samples and specifications of all materials to be used on all external elevations of the development along with window reveals, soffits, jointing and fixing details, details of the drips to be used to prevent staining, ventilation/louvre details, air bricks and a strategy for quality control management.

The approved materials used shall then be implemented as part of the development.

Reason - To ensure that the appearance of the development is acceptable to the City Council as local planning authority in the interests of the visual amenity of the area within which the site is located, as specified in policies SP1 and DM1 of the Core Strategy.

10) The boundary treatment shall be implemented in accordance with drawing PL-1005 Rev E stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021. The approved details shall be implemented as part of the development and be in place prior to the first occupation of development.

The boundary treatment shall be retained and maintained in situ thereafter and notwithstanding the provisions of the Town and Country Planning (General Permitted Development) Order 2015 (or any order revoking or re-enacting that Order with or without modification) no boundary treatment shall be erected on site, other than that shown on the approved plans.

Reason - In the interest of visual amenity and security of the site pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

11) The development hereby approved shall be carried out in accordance with the Energy Strategy by Hive, ref 20006.R.001 RevD stamped as received by the City Council, as Local Planning Authority, on the 28 June 2021 and Breeam pre-assessment 2018. The development shall achieve an overall a site wide reduction in CO2 equivalent to Part L (2010) of the Building Regulations of a minimum of 31.49% and a 'Very Good' BREEAM target.

A post construction review certificate/statement shall be submitted for approval, within a timescale that has been previously agreed in writing, to the City Council as Local Planning Authority.

Reason - In order to minimise the environmental impact of the development pursuant to policies SP1, T1-T3, EN4-EN7 and DM1 of the Core Strategy and the principles contained within The Guide to Development in Manchester SPD (2007) and the National Planning Policy Framework.

12) Prior to the first use of the development, details of the solar panels to units 4 and 5 as outlined in the Energy Strategy by Hive, ref 20006.R.001 RevD stamped as received by the City Council, as Local Planning Authority, on the 28 June 2021 shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include the siting and appearance of the panels including sections. The approved details shall be implemented prior to the first use of the development and thereafter retained and maintained in situ.

Reason - In order to minimise the environmental impact of the development pursuant to policies SP1, T1-T3, EN4-EN7 and DM1 of the Core Strategy and the principles contained within The Guide to Development in Manchester SPD (2007) and the National Planning Policy Framework.

13) Prior to the first occupation of the development, details of the implementation, maintenance and management of the sustainable drainage scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include:

- Verification reporting providing photographic evidence of constriction;
- Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.
- Timescale for implementation

The implementation of the management and maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.

Reason - To manage flooding and pollution and to ensure that a managing body is in place for the sustainable drainage system and there is funding and maintenance mechanism for the lifetime of the development pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012).

14) (a) Notwithstanding drawing 20-93-05H stamped as received by the City Council, as Local Planning Authority, on the 25 August 2021, prior to the first use of this development, details of hard and soft landscaping treatments (including appropriate

samples of materials and specification and number and size of trees) shall be submitted to and approved in writing by the City Council as local planning authority.

(b) The approved scheme shall be implemented prior to the first use of the development. If within a period of 5 years from the date of the planting of any tree or shrub, that tree or shrub or any tree or shrub planted in replacement for it, is removed, uprooted or destroyed or dies, or becomes, in the opinion of the local planning authority, seriously damaged or defective, another tree or shrub of the same species and size as that originally planted shall be planted at the same place.

Reason - To ensure that a satisfactory landscaping scheme for the development is carried out that respects the character and visual amenities of the area, in accordance with policies SP1, EN9 and DM1 of the Core Strategy.

15) (a) Prior to the first use of the development, details of any externally mounted ancillary plant, equipment and servicing shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt, externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 db (Laeq) below the typical background (La90) level at the nearest noise sensitive location.

(b) Prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority. Any measures shall thereafter retained and maintained in situ.

Reason - To minimise the impact of plant on the occupants of the development pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

16) (a) The buildings hereby approved, as indicated on drawings PL-1003 Rev J and PL-1004 Rev D stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021 shall be acoustically insulated in accordance with the Noise Impact report prepared by Hoare Lea (Rev 2) stamped as received by the City Council, as Local Planning Authority 17 February 2021 and note from Hoare Lea stamped as received by the City Council, as Local Planning Authority, on 30 April 2021.

The approved scheme shall be implemented prior to the first use of the buildings hereby approved.

(b)Prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be

agreed until such a time as the development complies with part (a) of this planning condition.

Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.

Reason: To ensure that there is no unacceptable noise outbreak from the development pursuant to policies SP1, H1 andDM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

17) Prior to any above ground works, a Noise Management Plan (NMP), to assess noise from all activities associated with the use of the loading bays, service yards and loading dock area, shall be submitted for approval in writing by the City Council as local planning authority. The approved plan, including any agreed mitigation measures, shall be implemented prior to the first use of the development and thereafter retained and maintained for as long as the development is in use.

Reason - To minimise the impact of the deliveries on nearby residential properties pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

18) Prior to the first use of the development hereby approved, details of the opening and delivery hours for each building hereby approved, as indicated on drawings PL-1003 Rev J and PL-1004 Rev D stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021, shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved opening and delivery hours for each building shall thereafter be implemented and maintained for as long as the buildings remain in use.

Reason - In interests of residential amenity in order to reduce noise and general disturbance in accordance with saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Core Strategy.

19) Prior to any above ground works, details the waste management arrangements for the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved details shall be implemented prior to the first use of the development and thereafter retained and maintained.

Reason - To ensure adequate refuse arrangement are put in place for the residential element of the development pursuant to policies EN19 and DM1 of the Manchester Core Strategy.

20) The development hereby approved shall include a building and site lighting scheme and a scheme for the illumination of external areas during the period between dusk and dawn. Full details of such a scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority before the first occupation of the development hereby approved. The approved details shall be implemented in full prior to the first occupation of the development and shall remain in operation for so long as the development is occupied.

Reason - In the interests of amenity, crime reduction and the personal safety and to minimise the impact on the Rochdale Canal of those using the proposed development in order to comply with the requirements of policies SP1 and DM1 of the Core Strategy.

21) If any lighting at the development hereby approved, when illuminated, causes glare or light spillage which in the opinion of the Council as local planning authority causes detriment to adjoining and nearby existing residential properties, within 14 days of a written request, a scheme for the elimination of such glare or light spillage shall be submitted to the Council as local planning authority and once approved shall thereafter be retained in accordance with details which have received prior written approval of the City Council as Local Planning Authority.

Reason - In order to minimise the impact of the illumination of the lights on the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.

22) The development hereby approved shall be carried out in accordance with the Crime Impact Statement (version A) prepared by Design for Security at Greater Manchester Police stamped as received by the City Council, as Local Planning Authority, on the 5 May 2021. The development shall only be carried out in accordance with these approved details. The development hereby approved shall not be occupied or used until the Council as local planning authority has acknowledged in writing that it has received written confirmation of a Secured by Design accreditation.

Reason - To reduce the risk of crime pursuant to policies SP1 and DM1 of the Core Strategy and to reflect the guidance contained in the National Planning Policy Framework.

23) The development hereby approved shall be carried out in accordance with the Travel Plan prepared by Vectos stamped as received by the City Council, as Local Planning Authority, on the 17 February 2021.

In this condition a Travel Plan means a document which includes:

i) the measures proposed to be taken to reduce dependency on the private car by those working and visiting the development;
ii) a commitment to surveying the travel patterns of staff during the first three months of the first use of the building and thereafter from time to time
iii) mechanisms for the implementation of the measures to reduce dependency on the private car
iv) measures for the delivery of specified travel plan services
v) measures to monitor and review the effectiveness of the Travel Plan in achieving the objective of reducing dependency on the private car

Within six months of the first occupation of the development, a Travel Plan which takes into account the information about travel patterns gathered pursuant to item (ii) above shall be submitted for approval in writing by the City Council as Local Planning Authority. Any Travel Plan which has been approved by the City Council as Local Planning Authority shall be implemented in full at all times when the development hereby approved is in use.

Reason - To assist promoting the use of sustainable forms of travel for staff and visitors, pursuant to policies T1, T2 and DM1 of the Manchester Core Strategy (2012).

24) Prior to the first occupation of the development hereby approved the car parking layout as indicated on drawings PL-1003 Rev J and PL-1004 Rev D stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021,

shall be surfaced, demarcated and made available. The approved car parking layout shall be implemented and thereafter retained and maintained.

Reason - To ensure sufficient car parking is available for the development pursuant to policies SP1, T1, and DM1 of the Manchester Core Strategy (2012).

25) Prior to the first occupation of the development hereby approved, details of 86 cycle spaces for the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include details of the location and specification of stands including provision of locker and wash facilities.

Prior to the first use of the development, the cycle spaces shall be implemented and made available for as long as the development remains in use.

Reason - To ensure there is sufficient cycles provision at the development and the residents in order to support modal shift measures pursuant to policies SP1,T1, T2 and DM1 of the Manchester Core Strategy (2012).

26) Prior to the first use of the development hereby approved, a scheme of highway works shall be submitted for approval in writing by the City Council, as Local Planning Authority.

This shall include the following:

- Tactile paving and junction road markings to be installed;
- The Grimshaw Lane footway adjacent to the development is re-kerbed and re-paved;
- Re-validation of the SCTOO at the junctions of Monsall Road/Oldham Road and The Gateway/Oldham Road; and
- Improvements to street lighting along Grimshaw Lane.

The approved scheme shall be implemented and be in place prior to the first use of the development hereby approved and thereafter retained and maintained in situ for as long as the development remains in use.

Reason - To ensure safe access to the development site in the interest of pedestrian and highway safety pursuant to policies SP1, EN1 and DM1 of the Manchester Core Strategy (2012).

27) The development hereby approved shall can be occupied as Use Class E (g), B2 and B8 uses with ancillary offices (42782 sqm) only and for no other purpose of The Town and Country Planning (Use Classes) Order 1987 (or any order revoking and re-enacting that Order with or without modification). The first use of each building to be implemented shall thereafter be the permitted use of that unit

Reason - For the avoidance of doubt and in order to secure a satisfactory form of development due to the particular circumstance of the application site, ensuring the vitality of the units and in the interest of residential amenity, pursuant policy DM1 of the Core Strategy for Manchester.

28) Prior to the first occupation of the development a signage strategy development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The signage strategy will include timescales for implementation. The

approved strategy shall then be implemented for the development and used to inform any future advertisement applications for the building.

Reason - In the interest of visual amenity pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

29) Prior to the first occupation of the development hereby approved, details of the number, siting and appearance bird and bat boxes at the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved details shall be implemented and be in place prior to the first occupation of the development hereby approved and shall thereafter be retained and maintained in situ.

Reason - In the interest of providing habitats for birds to improve the ecological value of the application site pursuant to policies SP1 and EN15 of the Manchester Core Strategy (2012).

30) (a) Prior to the first use of the development, details, location and specification of 7 kw electric car charging points for 32% of the car parking spaces at the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved details shall then be implemented and be in place prior to the first use of the development and thereafter retained and maintained in situ.

(b) The number of fast charging electric car charging points for the development shall be reviewed annually as part of the travel plan requirements of condition 23 of this planning permission (commencing from the date of this permission). The survey shall be completed within 7 days of each annual review date and the results of the survey provided to the City Council within 7 days thereafter. Any additional charging points identified as part of this review shall be implemented within two months of approval of the annual agreement.

Reason - In the interest of air quality pursuant to policies SP1 and EN16 of the Manchester Core Strategy (2012).

31) (a) The development hereby approved shall be carried out in accordance with the Air Quality report Rev 2 prepared by Hoare Lea stamped as received by the City Council, as Local Planning Authority, on the 27 July 2021. Prior to the first use of the development hereby approved, details of measure to ensure that vehicle fleet associated with the development is compliant with the latest emissions standards together with details of the proportion of the vehicle fleet which are electric vehicle vehicles shall be submitted for approval in writing by the City Council, as Local Planning Authority.

The approved details shall be implemented as part of the development and thereafter retained and maintained as part of the development.

(b) The measures agreed in part (a) of this planning condition shall be reviewed annually as part of the travel plan requirements of condition 23 of this planning permission (commencing from the date of this permission). The survey shall be completed within 7 days of each annual review date and the results of the survey provided to the City Council within 7 days thereafter. Any additional measures identified as part of this review shall be implemented within two months of approval of the annual agreement.

Reason - In the interest of air quality pursuant to policies SP1 and EN16 of the Manchester Core Strategy (2012).

32) All tree work should be carried out by a competent contractor in accordance with British Standard BS 3998 "Recommendations for Tree Work".

Reason - In order avoid damage to trees/shrubs adjacent to and within the site which are of important amenity value to the area and in order to protect the character of the area, in accordance with policies EN9 and EN15 of the Core Strategy.

33) In this condition "retained tree" means an existing tree, shrub or hedge which is to be retained within the Tree Survey Report By BEA Landscape RevA ref 2093/EH/TR001A dated 06/02/21, Tree survey plan by BEA Landscape ref 20-93-01C, Tree Constraints Plan 20-93-02B, Tree retention plan by BEA Landscape ref 20-93-03C, Tree protection plan by BEA Landscape ref 20-93-04A, Arboricultural Impact Assessment by BEA Landscape RevA ref 2093/EH/AIA001A dated 11/02/21, Arboricultural Method Statement by BEA Landscape RevA ref 2093/EH/1MS001A dated 11/02/21 stamped as received by the City Council, as Local Planning Authority, on the 17 February 2021; and paragraphs (a) and (b) below shall have effect until the expiration of 5 years from the date of the occupation of the building for its permitted use.

(a) No retained tree shall be cut down, uprooted or destroyed, nor shall any retained tree be topped or lopped other than in accordance with the approved plans and particulars, without the written approval of the local planning authority. Any topping or lopping approved shall be carried out in accordance with British Standard 5387 (Trees in relation to construction)
(b) If any retained tree is removed, uprooted or destroyed or dies, another tree shall be planted at the same place and that tree shall be of such size and species, and shall be planted at such time, as may be specified in writing by the local planning authority.
(c) The erection of fencing for the protection of any retained tree shall be undertaken in accordance with the approved plans and particulars before any equipment, machinery or materials are brought on to the site for the purposes of the development, and shall be maintained until all equipment, machinery and surplus materials have been removed from the site. Nothing shall be stored or placed in any area fenced in accordance with this condition and the ground levels within those areas shall not be altered, nor shall any excavation be made, without the written consent of the local planning authority.

Reason - In order avoid damage to trees/shrubs adjacent to and within the site which are of important amenity value to the area and in order to protect the character of the area, in accordance with policies EN9 and EN15 of the Core Strategy.

34) The buildings unit as shown on drawings PL-1003 Rev J and PL-1004 Rev D stamped as received by the City Council, as Local Planning Authority, on the 20 September 2021, shall remain as one unit and shall not be sub divided or amalgamated without the benefit of planning permission being secured.

Reason- In the interests of residential amenity and air quality pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies DM1, EN14 and SP1 of the Manchester Core Strategy.

35)) (a) Three months prior to the first occupation of the development, a Local Benefit Proposal Framework that outlines the approach to local recruitment for the end use(s), shall be submitted for approval in writing by the City Council, as Local Planning

Authority. The approved document shall be implemented as part of the occupation of the development.

In this condition a Local Benefit Proposal means a document which includes:

i) the measures proposed to recruit local people including apprenticeships
ii) mechanisms for the implementation and delivery of the Local Benefit Proposal
iii) measures to monitor and review the effectiveness of the Local Benefit Proposal in achieving the objective of recruiting and supporting local labour objectives

(b) Within 6 months of the first occupation of the development, a Local Benefit Proposal which takes into account the information and outcomes about local labour recruitment pursuant to items (i) and (ii) above shall be submitted for approval in writing by the City Council, as Local Planning Authority. Any Local Benefit Proposal approved by the City Council, as Local Planning Authority, shall be implemented in full at all times whilst the use is operation.

Reason - The applicant has demonstrated a commitment to recruiting local labour pursuant to policies SP1, EC1 and DM1 of the Manchester Core Strategy (2012).

36) Prior to the commencement of development (including demolition, ground works, vegetation clearance), an invasive non-native species protocol shall be submitted for approval by the City Council, as Local Planning Authority. This shall detail the containment, control and removal of Japanese Knotweed and Montbretia at the site. The development shall be carried out in accordance with the approved protocol.

Reason - In order to deal with the invasive non-native species at the application site pursuant to policy EN15 of the Manchester Core Strategy (2012).

37) Prior to any above ground works, details of an interpretation board to be installed adjacent to the Rochdale Canal shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include the siting, scale and appearance of the board together with details to be shown on the board to setting out the history of the canal and Park Engineering Works. The approved board shall be implemented prior to the first use of the development and thereafter retained and maintained in situ.

Reason - In the interest of providing a information about the historical use of the site and the connecting to the canal network pursuant to policies SP1, EN3 and DM1 of the Manchester Core Strategy (2012) and saved policy DC20 of the Unitary Development Plan for the City of Manchester (1995).

38) Prior to the commencement of the development, full details of earthworks, the construction of foundations and any new retaining structures on site shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include details and cross sections showing the relationship of such works to the Rochdale Canal. The development shall thereafter be carried out in accordance with the approved details.

Reason: In the interests of minimising the risk of creating land instability pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012) and the NPPF.

Informatives

Building Regulations 2010
This permission does not grant approval under Building Regulations.

Street Naming & Numbering Requirements
Manchester City Council is responsible for allocating street naming and numbering within Manchester for new developments or property conversions. Individuals or businesses are not permitted to allocate their own property numbers, building or street names.

If your development includes the creation of new dwellings (either new build or conversion of existing buildings), creation of new commercial properties or the subdivision of existing properties you must ensure that you request new or changes to addresses through us so they can be officially allocated and registered in accordance with the Public Health Act 1925 Sections 17-19 & Greater Manchester Act 1981 Section 22.

Failure to do this may result in difficulties for the developer/occupier when requiring services such as connections to utilities, phone lines and postal services and may delay your development.

You can apply online at the following address:
http://www.manchester.gov.uk/info/100011/roads_parking_and_transport/1988/naming_and_numbering_of_houses_buildings_streets_and_roads/2

Mining Information
The proposed development lies within an area which could be subject to current coal mining or hazards resulting from past coal mining. Please read the Standing Advice from the Coal Authority in Appendix A.
Mining Information
The proposed development lies within an area which could be subject to current coal mining or hazards resulting from past coal mining. Please read the Standing Advice from the Coal Authority in Appendix A.

0) - Any signage, wayfinding, banners or any other advertisements to be installed in and around the application site for the purpose of the promotion of the developments and routes to it may require consent under the Town and Country Planning (Control of Advertisements) (England) Regulations 2007.

As the proposal involves development over 11m in height (or alterations to increase the height of a building above 11m), developers are required to notify the Greater Manchester Fire & Rescue Service of the commencement of development via email to construction-started@manchesterfire.gov.uk

A S278 agreement is required for works to the adopted highway - a deposit is required to begin the S278 application, additional costs will be payable and are to be agreed with S278 team. The minimum standard S278 technical approval timescale is between 4-6 months, TRO's can take 10-12 months. An independent 'Stage 2' Road Safety Audit will be required; this may necessitate design changes with all costs attributable to the Developer. The S278 will include, but is not limited to: TROs, relocation of the pedestrian refuge and bus stop, footway works etc.

Note: A 'Stage 1' Road Safety Audit should be completed and a copy of the report (with Designer's Response) is to be made available to the Statutory Approvals Team upon request.

If adoption is required the highway will need to be carried out under a S38 Agreement (Highways Act 1980) to ensure that all elements of new highway infrastructure are constructed to acceptable and adoptable standards. This includes; materials, layout, drainage, street-lighting, surfacing, stats etc.

It should be noted that any non-standard materials, street trees will attract commuted sums for on-going maintenance.

- A small population of slow worms has been recorded within 1km of the application site, and the site has somepotential to support hedgehogs. initial site clearance works are overseen by a suitably qualified person to ensure that no harm is caused to reptiles or hedgehogs. Contractors should be briefed about the possible presence of slow worms on the site and of the need to stop work if slow worms are encountered at any time and seek advice.

Date: 24 September 2021

Signed:

Julie Roscoe
Director of Planning, Building Control & Licensing

Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Notes

1. This permission refers only to that required under the Town and Country Planning Act 1990 does not include any consent or approval under any other enactment, byelaw, order or regulation.

2 If the applicant is aggrieved by the decision of the local planning authority to refuse permission or approval for the proposed development, or to grant permission or approval subject to conditions, they may appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990 within six months of the date of the notice of the decision.

The Planning Inspectorate have introduced an online appeals service that can be used to make appeals online. This service is available through the gov.uk website – www.gov.uk/planning-inspectorate. The Inspectorate will publish details of your appeal on the internet. Alternatively If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on tel: 0303 444 5000.

The Secretary of State has power to allow a longer period for the giving of a notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances that excuse the delay in giving notice of appeal.

If you intend to submit an appeal that you would like examined by inquiry then you must notify the City Council (planning@manchester.gov.uk) and the Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are on GOV.UK.

3. The statutory requirements are those set out in Section 79(6) of the Town and Country Planning Act 1990, namely Sections 70(1) and 72(1) of the Act.

4. If either the local planning authority of the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that they can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990

5. In certain circumstances, a claim may be made against the local planning authority for compensation, where permission is refused or granted subject to conditions by the Secretary of State on appeal or on a reference of the application to them. The circumstances in which such compensation is payable are set out in Section 114 of the Town and Country Planning Act 1990.

Appendix A

The Coal Authority

Any Planning Enquiries should be directed to:

Planning and Local Authority Liaison

Telephone: 01623 637 119
Email: planningconsultation@coal.gov.uk
Website: www.gov.uk/government/organisations/the-coal-authority

INFORMATIVE NOTE

The proposed development lies within an area that has been defined by the Coal Authority as containing potential hazards arising from former coal mining activity at the surface or shallow depth. These hazards can include: mine entries (shafts and adits); shallow coal workings; geological features (fissures and break lines); mine gas and former surface mining sites. Although such hazards are seldom readily visible, they can often be present and problems can occur in the future, particularly as a result of new development taking place.

It is recommended that information outlining how former mining activities may affect the proposed development, along with any mitigation measures required (for example the need for gas protection measures within the foundations), is submitted alongside any subsequent application for Building Regulations approval (if relevant).

Any form of development over or within the influencing distance of a mine entry can be dangerous and raises significant land stability and public safety risks. As a general precautionary principle, the Coal Authority considers that the building over or within the influencing distance of a mine entry should be avoided. In exceptional circumstance where this is unavoidable, expert advice must be sought to ensure that a suitable engineering design which takes into account all the relevant safety and environmental risk factors, including mine gas and mine-water. Your attention is drawn to the Coal Authority Policy in relation to new development and mine entries available at: www.gov.uk/government/publications/building-on-or-within-the-influencing-distance-of-mine-entries

Any intrusive activities which disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits) requires a Coal Authority Permit. Such activities could include site investigation boreholes, excavations for foundations, piling activities, other ground works and any subsequent treatment of coal mine workings and coal mine entries for ground stability purposes. Failure to obtain a Coal Authority Permit for such activities is trespass, with the potential for court action.

If any coal mining features are unexpectedly encountered during development, this should be reported immediately to the Coal Authority on 0345 762 6848. Further information is available on the Coal Authority website at: www.gov.uk/government/organisations/the-coal-authority

Informative Note valid from 1st January 2021 until 31st December 2022

Appendix A

The Coal Authority

Any Planning Enquiries should be directed to:

Planning and Local Authority Liaison

Telephone: 01623 637 119
Email: planningconsultation@coal.gov.uk
Website: www.gov.uk/government/organisations/the-coal-authority

STANDING ADVICE - DEVELOPMENT LOW RISK AREA

The proposed development lies within a coal mining area which may contain unrecorded coal mining related hazards. If any coal mining feature is encountered during development, this should be reported immediately to the Coal Authority on 0345 762 6848.

Further information is also available on the Coal Authority website at:
www.gov.uk/government/organisations/the-coal-authority

This Standing Advice is valid from 1st January 2021 until 31st December 2022

Pre-commencement Planning Condition 6 Discharge dated 16th of June 2022, Ref. CDN/21/0850

MANCHESTER CITY COUNCIL

Town & Country Planning Act 1990 (as amended)
Planning (Listed Building & Conservation Area) Act 1990 (as amended)

Approval of details reserved by condition

Applicant

Mr Ian Murray
Canmoor (Manchester) Ltd
43 Dover Street
London
W1S 4NG

Agent (if used)

Mr Roland Lee
Hale Architecture Limited
22c Leathermarket Street
London
SE1 3HP

Part 1 – Particulars of the application/development

Proposal: Discharge of condition 6 (drainage) and 17 (noise management plan) attached to planning permission referenced 129444/FO/2021

Location: Former Mather & Platt Foundry, Grimshaw Lane, Manchester, M40 2BA

Date of application: 11 November 2021

Application number: CDN/21/0850

Part 2 – Particulars of decision

Manchester City Council gives notice that the detail(s) referred to in Part 1 are **Approved** in accordance with the information set out below.

Condition 6 Drainage
The following information has been submitted in respect of this planning condition:

- Information stamped as received by the City Council, as Local Planning Authority, on the 11 November 2021, 13 April and 7 June 2022

The above details have been considered and are acceptable. The development must now be carried out in accordance with the above details.

Condition 6 is now formally discharged on this basis.

Condition 17 Noise Management Plan
The following information has been submitted in respect of this planning condition:

- Information stamped as received by the City Council, as Local Planning Authority, on the 11 November 2021, 12 January and 11 May 2022

The above information has been considered and is acceptable. The details shall be implemented prior to the first use of the development and thereafter retained and maintained for as long as the development is in use.

Condition 17 is now formally discharged on this basis.

Date: 16 June 2022

Signed:

Julie Roscoe
Director of Planning, Building Control & Licensing

Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Notes

1. This permission refers only to that required under the Town and Country Planning Act 1990 (as amended) or Planning (Listed Building & Conservation Area) Act 1990 (as amended) does not include any consent or approval under any other enactment, byelaw, order or regulation.

2 If the applicant is aggrieved by the decision of the local planning authority to refuse permission or approval for the proposed development, or to grant permission or approval subject to conditions, they may appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990 or sections 20 and 21 of the Planning (Listed Building & Conservation Area) Act 1990 within six months of the date of the notice of the decision.

The Planning Inspectorate have introduced an online appeals service that can be used to make appeals online. This service is available through the gov.uk website – www.gov.uk/appeal-planning-inspectorate. The Inspectorate will publish details of your appeal on the internet.

Alternatively, appeals can be made on a form which is obtainable from Planning Inspectorate, Customer Support Unit, Room 3/15, Eagle Wing, Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 or by telephone 0117 372 6372.

The Secretary of State has power to allow a longer period for the giving of a notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances that excuse the delay in giving notice of appeal.

3. The statutory requirements are those set out in Section 79(6) of the Town and Country Planning Act 1990, namely Sections 70(1) and 72(1) of the Act.

4. If either the local planning authority of the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that they can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990

5. In certain circumstances, a claim may be made against the local planning authority for compensation, where permission is refused or granted subject to conditions by the Secretary of State on appeal or on a reference of the application to them. The circumstances in which such compensation is payable are set out in Section 114 of the Town and Country Planning Act 1990.