14 Bond Street
Wakefield
WF1 2QP
Tel: 01924 361653
Fax: 01924 364631

Project Title: Proposed Residential Development, Royd Moor Farm, Royd Moor Road, Thurlstone

Project No: 186-81-CAL001

Client: Kingsman Homes

CONTENTS:

Proposed Drainage Design:

Prepared by:	Date:	Checked by:	Date:	Approved by:	Date:
ES	Aug 2025	TM	Aug 2025	KGP	Aug 2025

Revisions

Ref	Date	Description	Checked	Approved
A	15/09/25	Updated for latest site plan	TM	KGP

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DESIGN PHILOSOPHY

A) DESCRIPTION

EXISTING SITE AND PROPOSED WORKS

The existing site currently consists of a series of agricultural buildings with no known formal drainage system in place.

The proposals are for 7 residential properties in the form of 7 detached properties, with associated garages, driveways and access road.

SURFACE WATER DRAINAGE

The drainage system is to be designed as a gravity system using 3no soakaways which are to be sized for 1 in 100 year rainfall with an allowance of 30% for Climate Change. The soakaways have been sized based on the BRE Digest 365 testing undertaken by Rogers Geotechnical Services. Test Pit 3 soakaway testing failed due to poor infiltration and it is proposed that soakaways will instead be located near Test Pits 1 and 2 were located. The worst case infiltration results from Test Pits 1 and 2 has been used for the design.

The system is to be designed as an adopted system with pipe cover of 600mm in footpaths/grassed areas and 900mm in roads.

FOUL WATER DRAINAGE

The foul water drainage systems will use sewage treatment plants and discharge into the nearby drainage ditch along the northern boundary of the site at two locations.

B) DESIGN CODES

- The Wallingford Procedure - Design and Analysis of Urban Drainage. Volume 1 Principles, Methods and Practice. Volume 4 - Modified Rational Method.
- BS EN 12056-2:2000 Gravity drainage systems inside buildings – Part 2: Sanitary pipework, layout and calculation

C) CDM

- Construction method statement to be provided by contractor prior to construction
- Designers Risk Assessment has been prepared

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Sheet: F3

Project Title: Royd Moor Farm, Royd Moor Road, Thurlstone

Project No: 186-81	**Prepared By: HA**	**Date: Sep 2025**	**Checked By: TM**	**Date: Sep 2025**

Appliance	DU System I,II,III,IV	Manhole Ref											Total
		F39	F41	F43	F44	F45	F46						
Wash basin, Bidet	0.5	1		1	1	2							5
Shower without plug	0.6												0
Shower with plug	1.3												0
Single urinal with cistern	0.8												0
Urinal with flushing valve	0.5												0
Slab urinal (per person)	0.2												0
Bath	1.3	1		1		1							3
Kitchen Sink	1.3		1				1						2
Fridge	0.2		1				1						2
Dishwasher	0.8		1				1						2
Washing MC up to 6kg	0.8												0
Washing MC up to 12kg	1.5		1				1						2
WC (4L)	1.8												0
WC (6L)	2.0	1		1	1	2							5
WC (7.5L)	2.0												0
Cleaners Sink	1.5												0
Floor gully - store rooms	0.1												0
Industrial Fridges (allow)	5.0												0
Total DU		3.8	3.6	3.8	2.5	6.3	3.6	0	0	0	0	0	23.6
K Usage Factor		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Pipe flow Qww = K√∑DU (l/s)		1.0	0.9	1.0	0.8	1.3	0.9	0.0	0.0	0.0	0.0	0.0	5.9

Calculations based on BS EN 12056:Part 2

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Sheet: F2

Project Title: Royd Moor Farm, Royd Moor Road, Thurlstone

Project No: 186-81	Prepared By: HA	Date: Sep 2025	Checked By: TM	Date: Sep 2025

Appliance	DU System I,II,III,IV	Manhole Ref											Total
		F16	F20	F22	F23	F24	F27	F30	F31	F32	F37	F38	
Wash basin, Bidet	0.5		1	1	2		1	1	2		1	2	11
Shower without plug	0.6												0
Shower with plug	1.3												0
Single urinal with cistern	0.8												0
Urinal with flushing valve	0.5												0
Slab urinal (per person)	0.2												0
Bath	1.3		1		1		1		1			1	5
Kitchen Sink	1.3	1				1				1			3
Fridge	0.2	1				1				1			3
Dishwasher	0.8	1				1				1			3
Washing MC up to 6kg	0.8												0
Washing MC up to 12kg	1.5	1				1				1			3
WC (4L)	1.8												0
WC (6L)	2.0		1	1	2		1	1	2		1	2	11
WC (7.5L)	2.0												0
Cleaners Sink	1.5												0
Floor gully - store rooms	0.1												0
Industrial Fridges (allow)	5.0												0
Total DU		3.6	3.8	2.5	6.3	3.6	3.8	2.5	6.3	3.6	2.5	6.3	44.8
K Usage Factor		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Pipe flow Qww = K√∑DU (l/s)		0.9	1.0	0.8	1.3	0.9	1.0	0.8	1.3	0.9	0.8	1.3	10.9

Calculations based on BS EN 12056:Part 2

beamconsulting

Sheet: F1

Project Title: Royd Moor Farm, Royd Moor Road, Thurlstone

Project No: 186-81	Prepared By: HA	Date: Sep 2025	Checked By: TM	Date: Sep 2025

Appliance	DU System I,II,III,IV	Manhole Ref											Total
		F1	F2	F3	F4	F5	F6	F7	F9	F11	F13	F15	
Wash basin, Bidet	0.5	1	2		1	1	2	1		1	1	2	12
Shower without plug	0.6												0
Shower with plug	1.3												0
Single urinal with cistern	0.8												0
Urinal with flushing valve	0.5												0
Slab urinal (per person)	0.2												0
Bath	1.3		1		1		1	1		1		1	6
Kitchen Sink	1.3			1					1				2
Fridge	0.2			1					1				2
Dishwasher	0.8			1					1				2
Washing MC up to 6kg	0.8												0
Washing MC up to 12kg	1.5			1					1				2
WC (4L)	1.8												0
WC (6L)	2.0	1	2		1	1	2	1		1	1	2	12
WC (7.5L)	2.0												0
Cleaners Sink	1.5												0
Floor gully - store rooms	0.1												0
Industrial Fridges (allow)	5.0												0
Total DU		2.5	6.3	3.6	3.8	2.5	6.3	3.8	3.6	3.8	2.5	6.3	45
K Usage Factor		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Pipe flow Qww = K√∑DU (l/s)		0.8	1.3	0.9	1.0	0.8	1.3	1.0	0.9	1.0	0.8	1.3	11.0

Calculations based on BS EN 12056:Part 2

Design Settings

Frequency of use (kDU)	0.50	Minimum Velocity (m/s)	1.00
Flow per dwelling per day (l/day)	4000	Connection Type	Level Soffits
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.200
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	0.600
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Units	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
F1	2.5	291.850	450	422096.277	404140.159	0.700
F2	6.3	291.651	450	422110.936	404138.737	0.700
F3	3.6	291.700	600	422108.663	404127.424	0.700
F4	3.8	291.850	600	422111.641	404132.356	0.980
F5	2.5	292.245	450	422097.430	404116.844	0.700
F6	6.3	292.245	450	422113.084	404123.135	0.911
F7	3.8	292.245	450	422104.094	404102.734	0.700
F8		291.600	600	422118.887	404108.695	0.700
F9	3.6	292.245	600	422115.565	404120.414	1.498
F10		292.750	450	422109.044	404101.479	0.700
F11	3.8	292.750	450	422117.346	404105.732	0.934
F12		292.750	450	422122.154	404097.216	1.057
F13	2.5	292.750	450	422118.824	404083.705	0.700
F14		292.750	450	422125.844	404087.417	0.800
F15	6.3	292.750	450	422123.755	404094.380	1.098
F16	3.6	291.200	1200	422134.649	404099.719	0.750
F17		290.800	1200	422123.837	404122.850	0.776
F18		290.680	1200	422124.260	404129.579	0.769
F19		289.900	1200	422126.635	404136.979	0.750
F20	3.8	293.300	450	422114.810	404035.997	0.700
F21		293.300	450	422109.522	404045.697	0.839
F22	2.5	293.300	450	422131.026	404054.712	0.700
F23	6.3	293.300	450	422126.845	404052.825	0.758
F24	3.6	293.300	450	422122.415	404050.826	0.819
F25		293.300	600	422117.842	404059.216	1.038
F26		293.300	600	422112.548	404068.929	1.227
F27	3.8	291.350	450	422153.971	404046.535	0.700
F28		291.500	450	422143.948	404041.047	0.993
F29		291.500	600	422132.423	404063.049	1.691
F30	2.5	291.350	450	422168.933	404059.603	0.700
F31	6.3	291.350	450	422165.653	404065.594	0.786
F32	3.6	291.350	600	422149.638	404065.084	0.987
F33		291.350	450	422149.187	404057.832	0.700
F34		291.500	600	422143.958	404069.365	1.526
F35		292.400	600	422125.950	404075.230	2.814
F36		288.080	1200	422168.787	404099.214	0.750
F37	2.5	289.416	450	422154.342	404101.797	0.700
F38	6.3	289.416	450	422160.659	404105.248	0.790
F39	3.8	289.750	450	422147.500	404115.303	0.700
F40		289.750	450	422152.574	404117.861	0.772
F41	3.6	289.420	450	422161.468	404112.726	0.889
F42		287.300	1200	422167.936	404116.104	0.750
F43	3.8	289.880	450	422141.503	404129.780	0.700
F44	2.5	289.880	450	422141.330	404115.604	0.700

Nodes

Name	Units	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
F45	6.3	289.880	450	422146.570	404118.630	0.776
F46	3.6	289.000	450	422154.480	404122.700	0.700
F47		288.900	450	422155.748	404128.781	0.700
F48		286.270	1200	422167.069	404126.710	0.750
Ditch1		288.960	1200	422128.670	404138.340	0.750
Ditch2		284.880	1200	422173.832	404128.116	0.750

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
14.000	F1	F2	14.728	1.500	291.150	290.951	0.199	74.0	100
14.001	F2	F4	6.420	1.500	290.951	290.870	0.081	79.3	100
15.000	F3	F4	5.761	1.500	291.000	290.870	0.130	44.3	100
14.002	F4	F18	12.921	1.500	290.870	289.961	0.909	14.2	100
13.000	F5	F6	16.871	1.500	291.545	291.334	0.211	80.0	100
13.001	F6	F9	3.682	1.500	291.334	291.287	0.047	78.3	100
12.000	F7	F8	15.949	1.500	291.545	290.900	0.645	24.7	100
12.001	F8	F9	12.181	1.500	290.900	290.747	0.153	79.6	100
12.002	F9	F18	12.633	1.500	290.747	289.961	0.786	16.1	100
10.000	F10	F11	9.328	1.500	292.050	291.816	0.234	39.9	100
10.001	F11	F12	9.780	1.500	291.816	291.693	0.123	79.5	100
10.002	F12	F15	3.257	1.500	291.693	291.652	0.041	79.4	100
11.000	F13	F14	7.941	1.500	292.050	291.950	0.100	79.4	100
11.001	F14	F15	7.270	1.500	291.950	291.859	0.091	79.9	100
10.003	F15	F16	12.132	1.500	291.652	290.500	1.152	10.5	100
10.004	F16	F17	25.533	1.500	290.450	290.024	0.426	59.9	150
10.005	F17	F18	6.742	1.500	290.024	289.911	0.113	59.7	150
10.006	F18	F19	7.772	1.500	289.911	289.150	0.761	10.2	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
14.000	0.375	0.774	6.1	0.8	0.600	0.600	0.000	0	2.5	0.0	25	0.528
14.001	0.447	0.747	5.9	1.5	0.600	0.880	0.000	0	8.8	0.0	35	0.624
15.000	0.468	1.001	7.9	0.9	0.600	0.880	0.000	0	3.6	0.0	24	0.671
14.002	0.892	1.772	13.9	2.0	0.880	0.619	0.000	0	16.2	0.0	26	1.258
13.000	0.360	0.744	5.8	0.8	0.600	0.811	0.000	0	2.5	0.0	25	0.518
13.001	0.450	0.752	5.9	1.5	0.811	0.858	0.000	0	8.8	0.0	34	0.620
12.000	0.578	1.342	10.5	1.0	0.600	0.600	0.000	0	3.8	0.0	21	0.825
12.001	0.387	0.746	5.9	1.0	0.600	1.398	0.000	0	3.8	0.0	28	0.547
12.002	0.867	1.666	13.1	2.0	1.398	0.619	0.000	0	16.2	0.0	27	1.204
10.000	0.000	1.056	8.3	0.0	0.600	0.834	0.000	0	0.0	0.0	0	0.000
10.001	0.387	0.746	5.9	1.0	0.834	0.957	0.000	0	3.8	0.0	28	0.547
10.002	0.387	0.746	5.9	1.0	0.957	0.998	0.000	0	3.8	0.0	28	0.548
11.000	0.361	0.747	5.9	0.8	0.600	0.700	0.000	0	2.5	0.0	25	0.520
11.001	0.360	0.744	5.8	0.8	0.700	0.791	0.000	0	2.5	0.0	25	0.518
10.003	0.965	2.059	16.2	1.8	0.998	0.600	0.000	0	12.6	0.0	22	1.325
10.004	0.512	1.133	20.0	2.0	0.600	0.626	0.000	0	16.2	0.0	33	0.723
10.005	0.514	1.135	20.1	2.0	0.626	0.619	0.000	0	16.2	0.0	33	0.724
10.006	1.116	2.751	48.6	3.5	0.619	0.600	0.000	0	48.6	0.0	27	1.576

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
10.007	F19	Ditch1	2.448	1.500	289.150	288.210	0.940	2.6	150
4.000	F20	F21	11.048	1.500	292.600	292.461	0.139	79.5	100
4.001	F21	F25	15.874	1.500	292.461	292.262	0.199	79.8	100
5.000	F22	F23	4.587	1.500	292.600	292.542	0.058	79.1	100
5.001	F23	F24	4.860	1.500	292.542	292.481	0.061	79.7	100
5.002	F24	F25	9.555	1.500	292.481	292.262	0.219	43.6	100
4.002	F25	F26	11.062	1.500	292.262	292.123	0.139	79.6	100
4.003	F26	F35	14.809	1.500	292.073	291.650	0.423	35.0	150
3.000	F27	F28	11.427	1.500	290.650	290.507	0.143	79.9	100
3.001	F28	F29	24.838	1.500	290.507	290.196	0.311	79.9	100
1.004	F29	F35	13.794	1.500	289.809	289.636	0.173	79.7	100
1.000	F30	F31	6.830	1.500	290.650	290.564	0.086	79.4	100
1.001	F31	F32	16.023	1.500	290.564	290.363	0.201	79.7	100
1.002	F32	F34	7.113	1.500	290.363	290.274	0.089	79.9	100
2.000	F33	F34	12.663	1.500	290.650	290.274	0.376	33.7	100
1.003	F34	F29	13.151	1.500	289.974	289.809	0.165	79.7	100
1.005	F35	F36	49.094	1.500	289.586	287.330	2.256	21.8	150
1.006	F36	F42	16.911	1.500	287.330	286.550	0.780	21.7	150
7.000	F37	F38	7.198	1.500	288.716	288.626	0.090	80.0	100
7.001	F38	F41	7.522	1.500	288.626	288.531	0.095	79.2	100
6.000	F39	F40	5.682	1.500	289.050	288.978	0.072	78.9	100
6.001	F40	F41	10.270	1.500	288.978	288.531	0.447	23.0	100
6.002	F41	F42	7.297	1.500	288.531	286.600	1.931	3.8	100
1.007	F42	F48	10.641	1.500	286.550	285.520	1.030	10.3	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
10.007	1.807	5.454	96.4	3.5	0.600	0.600	0.000	0	48.6	0.0	20	2.528
4.000	0.387	0.746	5.9	1.0	0.600	0.739	0.000	0	3.8	0.0	28	0.548
4.001	0.386	0.745	5.9	1.0	0.739	0.938	0.000	0	3.8	0.0	28	0.547
5.000	0.362	0.748	5.9	0.8	0.600	0.658	0.000	0	2.5	0.0	25	0.511
5.001	0.446	0.745	5.9	1.5	0.658	0.719	0.000	0	8.8	0.0	35	0.622
5.002	0.573	1.009	7.9	1.8	0.719	0.938	0.000	0	12.4	0.0	32	0.811
4.002	0.489	0.746	5.9	2.0	0.938	1.077	0.000	0	16.2	0.0	40	0.672
4.003	0.615	1.484	26.2	2.0	1.077	0.600	0.000	0	16.2	0.0	28	0.871
3.000	0.386	0.744	5.8	1.0	0.600	0.893	0.000	0	3.8	0.0	28	0.546
3.001	0.386	0.744	5.8	1.0	0.893	1.204	0.000	0	3.8	0.0	28	0.546
1.004	0.489	0.745	5.9	2.0	1.591	2.664	0.000	0	16.2	0.0	40	0.672
1.000	0.361	0.747	5.9	0.8	0.600	0.686	0.000	0	2.5	0.0	25	0.520
1.001	0.446	0.745	5.9	1.5	0.686	0.887	0.000	0	8.8	0.0	35	0.622
1.002	0.467	0.744	5.8	1.8	0.887	1.126	0.000	0	12.4	0.0	38	0.651
2.000	0.000	1.149	9.0	0.0	0.600	1.126	0.000	0	0.0	0.0	0	0.000
1.003	0.468	0.745	5.9	1.8	1.426	1.591	0.000	0	12.4	0.0	38	0.651
1.005	0.818	1.883	33.3	2.8	2.664	0.600	0.000	0	32.4	0.0	30	1.135
1.006	0.820	1.887	33.3	2.8	0.600	0.600	0.000	0	32.4	0.0	30	1.137
7.000	0.360	0.744	5.8	0.8	0.600	0.690	0.000	0	2.5	0.0	25	0.518
7.001	0.447	0.748	5.9	1.5	0.690	0.789	0.000	0	8.8	0.0	35	0.624
6.000	0.389	0.749	5.9	1.0	0.600	0.672	0.000	0	3.8	0.0	28	0.550
6.001	0.599	1.392	10.9	1.0	0.672	0.789	0.000	0	3.8	0.0	21	0.856
6.002	1.419	3.441	27.0	2.0	0.789	0.600	0.000	0	16.2	0.0	18	1.961
1.007	1.109	2.736	48.3	3.5	0.600	0.600	0.000	0	48.6	0.0	27	1.566

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
9.000	F43	F47	14.280	1.500	289.180	288.200	0.980	14.6	100
8.000	F44	F45	6.051	1.500	289.180	289.104	0.076	79.6	100
8.001	F45	F46	8.896	1.500	289.104	288.300	0.804	11.1	100
8.002	F46	F47	6.212	1.500	288.300	288.200	0.100	62.1	100
8.003	F47	F48	11.509	1.500	288.200	285.570	2.630	4.4	100
1.008	F48	Ditch2	6.908	1.500	285.520	284.130	1.390	5.0	150

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
9.000	0.685	1.750	13.7	1.0	0.600	0.600	0.000	0	3.8	0.0	18	0.996
8.000	0.361	0.746	5.9	0.8	0.600	0.676	0.000	0	2.5	0.0	25	0.519
8.001	0.866	2.009	15.8	1.5	0.676	0.600	0.000	0	8.8	0.0	21	1.235
8.002	0.518	0.845	6.6	1.8	0.600	0.600	0.000	0	12.4	0.0	36	0.714
8.003	1.318	3.198	25.1	2.0	0.600	0.600	0.000	0	16.2	0.0	19	1.872
1.008	1.521	3.947	69.7	4.0	0.600	0.600	0.000	0	64.8	0.0	25	2.135

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
14.000	14.728	74.0	100	Circular	291.850	291.150	0.600	291.651	290.951	0.600
14.001	6.420	79.3	100	Circular	291.651	290.951	0.600	291.850	290.870	0.880
15.000	5.761	44.3	100	Circular	291.700	291.000	0.600	291.850	290.870	0.880
14.002	12.921	14.2	100	Circular	291.850	290.870	0.880	290.680	289.961	0.619
13.000	16.871	80.0	100	Circular	292.245	291.545	0.600	292.245	291.334	0.811
13.001	3.682	78.3	100	Circular	292.245	291.334	0.811	292.245	291.287	0.858
12.000	15.949	24.7	100	Circular	292.245	291.545	0.600	291.600	290.900	0.600
12.001	12.181	79.6	100	Circular	291.600	290.900	0.600	292.245	290.747	1.398
12.002	12.633	16.1	100	Circular	292.245	290.747	1.398	290.680	289.961	0.619
10.000	9.328	39.9	100	Circular	292.750	292.050	0.600	292.750	291.816	0.834
10.001	9.780	79.5	100	Circular	292.750	291.816	0.834	292.750	291.693	0.957
10.002	3.257	79.4	100	Circular	292.750	291.693	0.957	292.750	291.652	0.998
11.000	7.941	79.4	100	Circular	292.750	292.050	0.600	292.750	291.950	0.700
11.001	7.270	79.9	100	Circular	292.750	291.950	0.700	292.750	291.859	0.791

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
14.000	F1	450	Manhole	Adoptable	F2	450	Manhole	Adoptable
14.001	F2	450	Manhole	Adoptable	F4	600	Manhole	Adoptable
15.000	F3	600	Manhole	Adoptable	F4	600	Manhole	Adoptable
14.002	F4	600	Manhole	Adoptable	F18	1200	Manhole	Adoptable
13.000	F5	450	Manhole	Adoptable	F6	450	Manhole	Adoptable
13.001	F6	450	Manhole	Adoptable	F9	600	Manhole	Adoptable
12.000	F7	450	Manhole	Adoptable	F8	600	Manhole	Adoptable
12.001	F8	600	Manhole	Adoptable	F9	600	Manhole	Adoptable
12.002	F9	600	Manhole	Adoptable	F18	1200	Manhole	Adoptable
10.000	F10	450	Manhole	Adoptable	F11	450	Manhole	Adoptable
10.001	F11	450	Manhole	Adoptable	F12	450	Manhole	Adoptable
10.002	F12	450	Manhole	Adoptable	F15	450	Manhole	Adoptable
11.000	F13	450	Manhole	Adoptable	F14	450	Manhole	Adoptable
11.001	F14	450	Manhole	Adoptable	F15	450	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
10.003	12.132	10.5	100	Circular	292.750	291.652	0.998	291.200	290.500	0.600
10.004	25.533	59.9	150	Circular	291.200	290.450	0.600	290.800	290.024	0.626
10.005	6.742	59.7	150	Circular	290.800	290.024	0.626	290.680	289.911	0.619
10.006	7.772	10.2	150	Circular	290.680	289.911	0.619	289.900	289.150	0.600
10.007	2.448	2.6	150	Circular	289.900	289.150	0.600	288.960	288.210	0.600
4.000	11.048	79.5	100	Circular	293.300	292.600	0.600	293.300	292.461	0.739
4.001	15.874	79.8	100	Circular	293.300	292.461	0.739	293.300	292.262	0.938
5.000	4.587	79.1	100	Circular	293.300	292.600	0.600	293.300	292.542	0.658
5.001	4.860	79.7	100	Circular	293.300	292.542	0.658	293.300	292.481	0.719
5.002	9.555	43.6	100	Circular	293.300	292.481	0.719	293.300	292.262	0.938
4.002	11.062	79.6	100	Circular	293.300	292.262	0.938	293.300	292.123	1.077
4.003	14.809	35.0	150	Circular	293.300	292.073	1.077	292.400	291.650	0.600
3.000	11.427	79.9	100	Circular	291.350	290.650	0.600	291.500	290.507	0.893
3.001	24.838	79.9	100	Circular	291.500	290.507	0.893	291.500	290.196	1.204
1.004	13.794	79.7	100	Circular	291.500	289.809	1.591	292.400	289.636	2.664
1.000	6.830	79.4	100	Circular	291.350	290.650	0.600	291.350	290.564	0.686
1.001	16.023	79.7	100	Circular	291.350	290.564	0.686	291.350	290.363	0.887
1.002	7.113	79.9	100	Circular	291.350	290.363	0.887	291.500	290.274	1.126
2.000	12.663	33.7	100	Circular	291.350	290.650	0.600	291.500	290.274	1.126
1.003	13.151	79.7	100	Circular	291.500	289.974	1.426	291.500	289.809	1.591
1.005	49.094	21.8	150	Circular	292.400	289.586	2.664	288.080	287.330	0.600
1.006	16.911	21.7	150	Circular	288.080	287.330	0.600	287.300	286.550	0.600
7.000	7.198	80.0	100	Circular	289.416	288.716	0.600	289.416	288.626	0.690
7.001	7.522	79.2	100	Circular	289.416	288.626	0.690	289.420	288.531	0.789
6.000	5.682	78.9	100	Circular	289.750	289.050	0.600	289.750	288.978	0.672

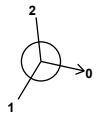
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
10.003	F15	450	Manhole	Adoptable	F16	1200	Manhole	Adoptable
10.004	F16	1200	Manhole	Adoptable	F17	1200	Manhole	Adoptable
10.005	F17	1200	Manhole	Adoptable	F18	1200	Manhole	Adoptable
10.006	F18	1200	Manhole	Adoptable	F19	1200	Manhole	Adoptable
10.007	F19	1200	Manhole	Adoptable	Ditch1	1200	Manhole	Adoptable
4.000	F20	450	Manhole	Adoptable	F21	450	Manhole	Adoptable
4.001	F21	450	Manhole	Adoptable	F25	600	Manhole	Adoptable
5.000	F22	450	Manhole	Adoptable	F23	450	Manhole	Adoptable
5.001	F23	450	Manhole	Adoptable	F24	450	Manhole	Adoptable
5.002	F24	450	Manhole	Adoptable	F25	600	Manhole	Adoptable
4.002	F25	600	Manhole	Adoptable	F26	600	Manhole	Adoptable
4.003	F26	600	Manhole	Adoptable	F35	600	Manhole	Adoptable
3.000	F27	450	Manhole	Adoptable	F28	450	Manhole	Adoptable
3.001	F28	450	Manhole	Adoptable	F29	600	Manhole	Adoptable
1.004	F29	600	Manhole	Adoptable	F35	600	Manhole	Adoptable
1.000	F30	450	Manhole	Adoptable	F31	450	Manhole	Adoptable
1.001	F31	450	Manhole	Adoptable	F32	600	Manhole	Adoptable
1.002	F32	600	Manhole	Adoptable	F34	600	Manhole	Adoptable
2.000	F33	450	Manhole	Adoptable	F34	600	Manhole	Adoptable
1.003	F34	600	Manhole	Adoptable	F29	600	Manhole	Adoptable
1.005	F35	600	Manhole	Adoptable	F36	1200	Manhole	Adoptable
1.006	F36	1200	Manhole	Adoptable	F42	1200	Manhole	Adoptable
7.000	F37	450	Manhole	Adoptable	F38	450	Manhole	Adoptable
7.001	F38	450	Manhole	Adoptable	F41	450	Manhole	Adoptable
6.000	F39	450	Manhole	Adoptable	F40	450	Manhole	Adoptable

Pipeline Schedule

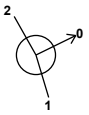
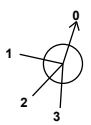
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
6.001	10.270	23.0	100	Circular	289.750	288.978	0.672	289.420	288.531	0.789
6.002	7.297	3.8	100	Circular	289.420	288.531	0.789	287.300	286.600	0.600
1.007	10.641	10.3	150	Circular	287.300	286.550	0.600	286.270	285.520	0.600
9.000	14.280	14.6	100	Circular	289.880	289.180	0.600	288.900	288.200	0.600
8.000	6.051	79.6	100	Circular	289.880	289.180	0.600	289.880	289.104	0.676
8.001	8.896	11.1	100	Circular	289.880	289.104	0.676	289.000	288.300	0.600
8.002	6.212	62.1	100	Circular	289.000	288.300	0.600	288.900	288.200	0.600
8.003	11.509	4.4	100	Circular	288.900	288.200	0.600	286.270	285.570	0.600
1.008	6.908	5.0	150	Circular	286.270	285.520	0.600	284.880	284.130	0.600

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6.001	F40	450	Manhole	Adoptable	F41	450	Manhole	Adoptable
6.002	F41	450	Manhole	Adoptable	F42	1200	Manhole	Adoptable
1.007	F42	1200	Manhole	Adoptable	F48	1200	Manhole	Adoptable
9.000	F43	450	Manhole	Adoptable	F47	450	Manhole	Adoptable
8.000	F44	450	Manhole	Adoptable	F45	450	Manhole	Adoptable
8.001	F45	450	Manhole	Adoptable	F46	450	Manhole	Adoptable
8.002	F46	450	Manhole	Adoptable	F47	450	Manhole	Adoptable
8.003	F47	450	Manhole	Adoptable	F48	1200	Manhole	Adoptable
1.008	F48	1200	Manhole	Adoptable	Ditch2	1200	Manhole	Adoptable

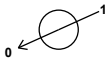
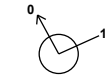
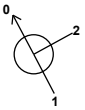
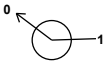
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F1	422096.277	404140.159	291.850	0.700	450				
						0	14.000	291.150	100
F2	422110.936	404138.737	291.651	0.700	450	1	14.000	290.951	100
									
						0	14.001	290.951	100
F3	422108.663	404127.424	291.700	0.700	600				
						0	15.000	291.000	100
F4	422111.641	404132.356	291.850	0.980	600		1	15.000	290.870	100
							2	14.001	290.870	100
							0	14.002	290.870	100
F5	422097.430	404116.844	292.245	0.700	450				
						0	13.000	291.545	100
F6	422113.084	404123.135	292.245	0.911	450	1	13.000	291.334	100
									
						0	13.001	291.334	100

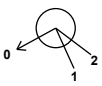
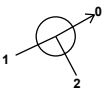
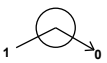
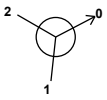
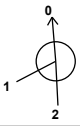
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F7	422104.094	404102.734	292.245	0.700	450		0	12.000	291.545	100
F8	422118.887	404108.695	291.600	0.700	600		1	12.000	290.900	100
							0	12.001	290.900	100
F9	422115.565	404120.414	292.245	1.498	600		1	13.001	291.287	100
							2	12.001	290.747	100
							0	12.002	290.747	100
F10	422109.044	404101.479	292.750	0.700	450		0	10.000	292.050	100
F11	422117.346	404105.732	292.750	0.934	450		1	10.000	291.816	100
							0	10.001	291.816	100
F12	422122.154	404097.216	292.750	1.057	450		1	10.001	291.693	100
							0	10.002	291.693	100
F13	422118.824	404083.705	292.750	0.700	450		0	11.000	292.050	100
F14	422125.844	404087.417	292.750	0.800	450		1	11.000	291.950	100
							0	11.001	291.950	100
F15	422123.755	404094.380	292.750	1.098	450		1	11.001	291.859	100
							2	10.002	291.652	100
							0	10.003	291.652	100
F16	422134.649	404099.719	291.200	0.750	1200		1	10.003	290.500	100
							0	10.004	290.450	150
F17	422123.837	404122.850	290.800	0.776	1200		1	10.004	290.024	150
							0	10.005	290.024	150
F18	422124.260	404129.579	290.680	0.769	1200		1	14.002	289.961	100
							2	12.002	289.961	100
							3	10.005	289.911	150
							0	10.006	289.911	150
F19	422126.635	404136.979	289.900	0.750	1200		1	10.006	289.150	150
							0	10.007	289.150	150

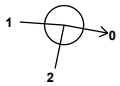
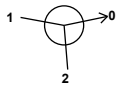
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F20	422114.810	404035.997	293.300	0.700	450				
						0	4.000	292.600	100
F21	422109.522	404045.697	293.300	0.839	450		1	4.000	292.461	100
						0	4.001	292.461	100
F22	422131.026	404054.712	293.300	0.700	450				
						0	5.000	292.600	100
F23	422126.845	404052.825	293.300	0.758	450		1	5.000	292.542	100
						0	5.001	292.542	100
F24	422122.415	404050.826	293.300	0.819	450		1	5.001	292.481	100
						0	5.002	292.481	100
F25	422117.842	404059.216	293.300	1.038	600		1	5.002	292.262	100
							2	4.001	292.262	100
						0	4.002	292.262	100
F26	422112.548	404068.929	293.300	1.227	600		1	4.002	292.123	100
						0	4.003	292.073	150
F27	422153.971	404046.535	291.350	0.700	450				
						0	3.000	290.650	100
F28	422143.948	404041.047	291.500	0.993	450		1	3.000	290.507	100
						0	3.001	290.507	100
F29	422132.423	404063.049	291.500	1.691	600		1	3.001	290.196	100
							2	1.003	289.809	100
						0	1.004	289.809	100
F30	422168.933	404059.603	291.350	0.700	450				
						0	1.000	290.650	100
F31	422165.653	404065.594	291.350	0.786	450		1	1.000	290.564	100
						0	1.001	290.564	100
F32	422149.638	404065.084	291.350	0.987	600		1	1.001	290.363	100
						0	1.002	290.363	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F33	422149.187	404057.832	291.350	0.700	450		0	2.000	290.650	100
F34	422143.958	404069.365	291.500	1.526	600		1	2.000	290.274	100
							2	1.002	290.274	100
							0	1.003	289.974	100
F35	422125.950	404075.230	292.400	2.814	600		1	4.003	291.650	150
							2	1.004	289.636	100
							0	1.005	289.586	150
F36	422168.787	404099.214	288.080	0.750	1200		1	1.005	287.330	150
							0	1.006	287.330	150
F37	422154.342	404101.797	289.416	0.700	450		0	7.000	288.716	100
F38	422160.659	404105.248	289.416	0.790	450		1	7.000	288.626	100
							0	7.001	288.626	100
F39	422147.500	404115.303	289.750	0.700	450		0	6.000	289.050	100
F40	422152.574	404117.861	289.750	0.772	450		1	6.000	288.978	100
							0	6.001	288.978	100
F41	422161.468	404112.726	289.420	0.889	450		1	7.001	288.531	100
							2	6.001	288.531	100
							0	6.002	288.531	100
F42	422167.936	404116.104	287.300	0.750	1200		1	6.002	286.600	100
							2	1.006	286.550	150
							0	1.007	286.550	150
F43	422141.503	404129.780	289.880	0.700	450		0	9.000	289.180	100
F44	422141.330	404115.604	289.880	0.700	450		0	8.000	289.180	100
F45	422146.570	404118.630	289.880	0.776	450		1	8.000	289.104	100
							0	8.001	289.104	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
F46	422154.480	404122.700	289.000	0.700	450	 1	8.001	288.300	100
						0	8.002	288.300	100
F47	422155.748	404128.781	288.900	0.700	450	 1	9.000	288.200	100
						2	8.002	288.200	100
						0	8.003	288.200	100
F48	422167.069	404126.710	286.270	0.750	1200	 1	8.003	285.570	100
						2	1.007	285.520	150
						0	1.008	285.520	150
Ditch1	422128.670	404138.340	288.960	0.750	1200	 1	10.007	288.210	150
Ditch2	422173.832	404128.116	284.880	0.750	1200	 1	1.008	284.130	150

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.250	Preferred Cover Depth (m)	0.900
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.006	4.00	291.651	450	422109.747	404139.505	1.050
S2	0.005	4.00	292.370	450	422091.539	404122.386	1.050
S3	0.005	4.00	291.700	600	422102.888	404121.285	1.050
S4	0.019	4.00	291.850	600	422108.933	404131.115	1.333
S5	0.008	4.00	290.780	1200	422120.086	404127.093	1.050
S6	0.005	4.00	293.000	450	422093.173	404108.214	1.050
S7	0.003	4.00	292.200	450	422101.077	404102.605	1.050
S8	0.005	4.00	292.200	600	422110.576	404106.432	1.152
S9	0.019	4.00	291.915	600	422116.290	404112.495	1.350
S10	0.006	4.00	291.400	1200	422122.913	404120.466	1.742
S11			291.400	1200	422125.333	404115.130	1.801
S12	0.019	4.00	292.750	600	422110.767	404079.134	1.050
S13	0.017	4.00	292.750	600	422126.804	404087.346	1.529
S14	0.006	4.00	292.750	600	422123.921	404096.512	1.625
S15	0.008	4.00	291.400	1200	422130.642	404099.327	2.042
S16	0.007	4.00	293.300	450	422125.229	404030.066	1.050
S17	0.006	4.00	293.100	450	422137.973	404037.013	1.050
S18	0.003	4.00	293.300	600	422138.829	404046.287	1.343
S19	0.005	4.00	293.300	600	422133.208	404056.515	1.459
S20	0.030	4.00	293.300	600	422123.968	404052.563	1.559
S21	0.026	4.00	292.880	600	422116.166	404066.877	1.301
S22			292.600	600	422131.650	404075.830	1.199
S23	0.005	4.00	291.350	450	422156.264	404042.158	1.050
S24	0.010	4.00	291.350	600	422173.974	404051.855	1.251
S25	0.007	4.00	291.350	600	422166.814	404064.931	1.399
S26	0.014	4.00	291.300	600	422147.870	404064.328	1.537
S27	0.008	4.00	291.600	450	422131.553	404062.984	1.050
S28	0.034	4.00	291.600	600	422145.113	404070.409	1.904
S29	0.006	4.00	290.360	600	422140.661	404080.228	1.050
S30	0.012	4.00	290.360	600	422131.178	404127.419	1.050
S31	0.010	4.00	289.880	450	422140.441	404132.069	1.050
S32	0.008	4.00	290.407	450	422132.071	404110.273	1.050
S33			288.310	450	422159.033	404124.597	1.050
S34	0.026	4.00	289.416	450	422160.270	404104.671	1.050
S35	0.015	4.00	289.817	600	422153.139	404118.367	1.605
Soak1			291.400		422137.925	404087.323	2.125
Soak2			290.360		422133.272	404076.200	1.209
Soak3			288.330		422161.300	404119.650	1.124
D2			290.360		422133.272	404076.200	1.215

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
D3			288.330		422161.300	404119.650	1.134

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.000	S1	S4	8.429	0.600	290.601	290.517	0.084	100.3	150	4.14	50.0
4.000	S2	S3	11.402	0.600	291.320	290.650	0.670	17.0	150	4.08	50.0
4.001	S3	S4	11.540	0.600	290.650	290.517	0.133	86.8	150	4.26	50.0
4.002	S4	S5	11.856	0.600	290.517	289.730	0.787	15.1	150	4.33	50.0
4.003	S5	S10	7.205	0.600	289.730	289.658	0.072	100.1	150	4.45	50.0
6.000	S6	S7	9.692	0.600	291.950	291.150	0.800	12.1	150	4.06	50.0
6.001	S7	S8	10.241	0.600	291.150	291.048	0.102	100.4	150	4.23	50.0
6.002	S8	S9	8.331	0.600	291.048	290.565	0.483	17.2	150	4.28	50.0
6.003	S9	S11	9.419	0.600	290.565	289.830	0.735	12.8	150	4.34	50.0
4.004	S10	S11	5.859	0.600	289.658	289.599	0.059	99.3	150	4.55	50.0
4.005	S11	S15	16.671	0.600	289.599	289.433	0.166	100.4	150	4.83	50.0
7.000	S12	S13	18.017	0.600	291.700	291.221	0.479	37.6	150	4.18	50.0
7.001	S13	S14	9.609	0.600	291.221	291.125	0.096	100.1	150	4.34	50.0
7.002	S14	S15	7.287	0.600	291.125	290.350	0.775	9.4	150	4.38	50.0
4.006	S15	Soak1	14.041	0.600	289.358	289.275	0.083	169.2	225	5.06	50.0
1.000	S16	S17	14.514	0.600	292.250	292.050	0.200	72.6	150	4.20	50.0
1.001	S17	S18	9.313	0.600	292.050	291.957	0.093	100.1	150	4.36	50.0
1.002	S18	S19	11.671	0.600	291.957	291.841	0.116	100.6	150	4.55	50.0
1.003	S19	S20	10.050	0.600	291.841	291.741	0.100	100.5	150	4.72	50.0
1.004	S20	S21	16.302	0.600	291.741	291.579	0.162	100.6	150	4.99	50.0
1.005	S21	S22	17.886	0.600	291.579	291.401	0.178	100.5	150	5.29	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.000	1.003	17.7	0.8	0.900	1.183	0.006	0.0	22	0.509
4.000	2.453	43.4	0.7	0.900	0.900	0.005	0.0	13	0.901
4.001	1.079	19.1	1.4	0.900	1.183	0.010	0.0	27	0.627
4.002	2.608	46.1	4.7	1.183	0.900	0.035	0.0	33	1.692
4.003	1.004	17.7	5.8	0.900	1.592	0.043	0.0	59	0.899
6.000	2.910	51.4	0.7	0.900	0.900	0.005	0.0	12	1.005
6.001	1.003	17.7	1.1	0.900	1.002	0.008	0.0	25	0.551
6.002	2.437	43.1	1.8	1.002	1.200	0.013	0.0	21	1.203
6.003	2.829	50.0	4.3	1.200	1.420	0.032	0.0	30	1.736
4.004	1.008	17.8	6.6	1.592	1.651	0.049	0.0	64	0.937
4.005	1.002	17.7	11.0	1.651	1.817	0.081	0.0	85	1.054
7.000	1.646	29.1	2.6	0.900	1.379	0.019	0.0	30	1.020
7.001	1.004	17.7	4.9	1.379	1.475	0.036	0.0	54	0.858
7.002	3.305	58.4	5.7	1.475	0.900	0.042	0.0	31	2.099
4.006	1.002	39.8	17.8	1.817	1.900	0.131	0.0	105	0.973
1.000	1.181	20.9	0.9	0.900	0.900	0.007	0.0	22	0.601
1.001	1.004	17.7	1.8	0.900	1.193	0.013	0.0	32	0.642
1.002	1.002	17.7	2.2	1.193	1.309	0.016	0.0	35	0.681
1.003	1.002	17.7	2.8	1.309	1.409	0.021	0.0	41	0.738
1.004	1.001	17.7	6.9	1.409	1.151	0.051	0.0	65	0.942
1.005	1.002	17.7	10.4	1.151	1.049	0.077	0.0	83	1.043

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.006	S22	Soak2	1.664	0.600	291.401	289.226	2.175	0.8	150	5.29	50.0
2.000	S23	S24	20.191	0.600	290.300	290.099	0.201	100.5	150	4.34	50.0
2.001	S24	S25	14.908	0.600	290.099	289.951	0.148	100.7	150	4.58	50.0
2.002	S25	S26	18.954	0.600	289.951	289.763	0.188	100.8	150	4.90	50.0
2.003	S26	S28	6.677	0.600	289.763	289.696	0.067	99.7	150	5.01	50.0
3.000	S27	S28	15.460	0.600	290.550	290.396	0.154	100.4	150	4.26	50.0
2.004	S28	S29	10.781	0.600	289.696	289.310	0.386	27.9	150	5.10	50.0
2.005	S29	Soak2	8.416	0.600	289.310	289.226	0.084	100.2	150	5.24	50.0
9.000	S30	S31	10.365	0.600	289.310	288.830	0.480	21.6	150	4.08	50.0
9.001	S31	S33	20.037	0.600	288.830	287.260	1.570	12.8	150	4.20	50.0
8.000	S32	S33	30.531	0.600	289.357	287.260	2.097	14.6	150	4.19	50.0
8.001	S33	Soak3	5.442	0.600	287.260	287.206	0.054	100.8	150	4.29	50.0
10.000	S34	S35	15.441	0.600	288.366	288.212	0.154	100.3	150	4.26	50.0
10.001	S35	Soak3	8.261	0.600	288.212	287.206	1.006	8.2	150	4.30	50.0
1.007	Soak2	D2	1.000	0.600	289.151	289.145	0.006	166.7	225	5.31	50.0
8.002	Soak3	D3	1.000	0.600	287.206	287.196	0.010	100.0	150	4.31	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.006	11.621	205.4	10.4	1.049	0.984	0.077	0.0	23	6.156
2.000	1.002	17.7	0.7	0.900	1.101	0.005	0.0	20	0.482
2.001	1.001	17.7	2.0	1.101	1.249	0.015	0.0	34	0.667
2.002	1.000	17.7	3.0	1.249	1.387	0.022	0.0	42	0.748
2.003	1.006	17.8	4.9	1.387	1.754	0.036	0.0	54	0.859
3.000	1.003	17.7	1.1	0.900	1.054	0.008	0.0	25	0.551
2.004	1.912	33.8	10.6	1.754	0.900	0.078	0.0	58	1.696
2.005	1.004	17.7	11.4	0.900	0.984	0.084	0.0	88	1.065
9.000	2.176	38.5	1.6	0.900	0.900	0.012	0.0	21	1.074
9.001	2.835	50.1	3.0	0.900	0.900	0.022	0.0	25	1.567
8.000	2.653	46.9	1.1	0.900	0.900	0.008	0.0	16	1.086
8.001	1.001	17.7	4.1	0.900	0.974	0.030	0.0	49	0.815
10.000	1.003	17.7	3.5	0.900	1.455	0.026	0.0	45	0.785
10.001	3.537	62.5	5.6	1.455	0.974	0.041	0.0	30	2.197
1.007	1.010	40.1	21.8	0.984	0.990	0.161	0.0	118	1.030
8.002	1.005	17.8	9.6	0.974	0.984	0.071	0.0	79	1.025

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
5.000	8.429	100.3	150	Circular	291.651	290.601	0.900	291.850	290.517	1.183
4.000	11.402	17.0	150	Circular	292.370	291.320	0.900	291.700	290.650	0.900
4.001	11.540	86.8	150	Circular	291.700	290.650	0.900	291.850	290.517	1.183
4.002	11.856	15.1	150	Circular	291.850	290.517	1.183	290.780	289.730	0.900
4.003	7.205	100.1	150	Circular	290.780	289.730	0.900	291.400	289.658	1.592
6.000	9.692	12.1	150	Circular	293.000	291.950	0.900	292.200	291.150	0.900
6.001	10.241	100.4	150	Circular	292.200	291.150	0.900	292.200	291.048	1.002
6.002	8.331	17.2	150	Circular	292.200	291.048	1.002	291.915	290.565	1.200
6.003	9.419	12.8	150	Circular	291.915	290.565	1.200	291.400	289.830	1.420
4.004	5.859	99.3	150	Circular	291.400	289.658	1.592	291.400	289.599	1.651
4.005	16.671	100.4	150	Circular	291.400	289.599	1.651	291.400	289.433	1.817
7.000	18.017	37.6	150	Circular	292.750	291.700	0.900	292.750	291.221	1.379
7.001	9.609	100.1	150	Circular	292.750	291.221	1.379	292.750	291.125	1.475
7.002	7.287	9.4	150	Circular	292.750	291.125	1.475	291.400	290.350	0.900
4.006	14.041	169.2	225	Circular	291.400	289.358	1.817	291.400	289.275	1.900
1.000	14.514	72.6	150	Circular	293.300	292.250	0.900	293.100	292.050	0.900
1.001	9.313	100.1	150	Circular	293.100	292.050	0.900	293.300	291.957	1.193
1.002	11.671	100.6	150	Circular	293.300	291.957	1.193	293.300	291.841	1.309
1.003	10.050	100.5	150	Circular	293.300	291.841	1.309	293.300	291.741	1.409
1.004	16.302	100.6	150	Circular	293.300	291.741	1.409	292.880	291.579	1.151
1.005	17.886	100.5	150	Circular	292.880	291.579	1.151	292.600	291.401	1.049
1.006	1.664	0.8	150	Circular	292.600	291.401	1.049	290.360	289.226	0.984
2.000	20.191	100.5	150	Circular	291.350	290.300	0.900	291.350	290.099	1.101
2.001	14.908	100.7	150	Circular	291.350	290.099	1.101	291.350	289.951	1.249
2.002	18.954	100.8	150	Circular	291.350	289.951	1.249	291.300	289.763	1.387

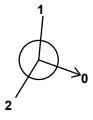
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.000	S1	450	Manhole	Adoptable	S4	600	Manhole	Adoptable
4.000	S2	450	Manhole	Adoptable	S3	600	Manhole	Adoptable
4.001	S3	600	Manhole	Adoptable	S4	600	Manhole	Adoptable
4.002	S4	600	Manhole	Adoptable	S5	1200	Manhole	Adoptable
4.003	S5	1200	Manhole	Adoptable	S10	1200	Manhole	Adoptable
6.000	S6	450	Manhole	Adoptable	S7	450	Manhole	Adoptable
6.001	S7	450	Manhole	Adoptable	S8	600	Manhole	Adoptable
6.002	S8	600	Manhole	Adoptable	S9	600	Manhole	Adoptable
6.003	S9	600	Manhole	Adoptable	S11	1200	Manhole	Adoptable
4.004	S10	1200	Manhole	Adoptable	S11	1200	Manhole	Adoptable
4.005	S11	1200	Manhole	Adoptable	S15	1200	Manhole	Adoptable
7.000	S12	600	Manhole	Adoptable	S13	600	Manhole	Adoptable
7.001	S13	600	Manhole	Adoptable	S14	600	Manhole	Adoptable
7.002	S14	600	Manhole	Adoptable	S15	1200	Manhole	Adoptable
4.006	S15	1200	Manhole	Adoptable	Soak1		Junction	
1.000	S16	450	Manhole	Adoptable	S17	450	Manhole	Adoptable
1.001	S17	450	Manhole	Adoptable	S18	600	Manhole	Adoptable
1.002	S18	600	Manhole	Adoptable	S19	600	Manhole	Adoptable
1.003	S19	600	Manhole	Adoptable	S20	600	Manhole	Adoptable
1.004	S20	600	Manhole	Adoptable	S21	600	Manhole	Adoptable
1.005	S21	600	Manhole	Adoptable	S22	600	Manhole	Adoptable
1.006	S22	600	Manhole	Adoptable	Soak2		Junction	
2.000	S23	450	Manhole	Adoptable	S24	600	Manhole	Adoptable
2.001	S24	600	Manhole	Adoptable	S25	600	Manhole	Adoptable
2.002	S25	600	Manhole	Adoptable	S26	600	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.003	6.677	99.7	150	Circular	291.300	289.763	1.387	291.600	289.696	1.754
3.000	15.460	100.4	150	Circular	291.600	290.550	0.900	291.600	290.396	1.054
2.004	10.781	27.9	150	Circular	291.600	289.696	1.754	290.360	289.310	0.900
2.005	8.416	100.2	150	Circular	290.360	289.310	0.900	290.360	289.226	0.984
9.000	10.365	21.6	150	Circular	290.360	289.310	0.900	289.880	288.830	0.900
9.001	20.037	12.8	150	Circular	289.880	288.830	0.900	288.310	287.260	0.900
8.000	30.531	14.6	150	Circular	290.407	289.357	0.900	288.310	287.260	0.900
8.001	5.442	100.8	150	Circular	288.310	287.260	0.900	288.330	287.206	0.974
10.000	15.441	100.3	150	Circular	289.416	288.366	0.900	289.817	288.212	1.455
10.001	8.261	8.2	150	Circular	289.817	288.212	1.455	288.330	287.206	0.974
1.007	1.000	166.7	225	Circular	290.360	289.151	0.984	290.360	289.145	0.990
8.002	1.000	100.0	150	Circular	288.330	287.206	0.974	288.330	287.196	0.984

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.003	S26	600	Manhole	Adoptable	S28	600	Manhole	Adoptable
3.000	S27	450	Manhole	Adoptable	S28	600	Manhole	Adoptable
2.004	S28	600	Manhole	Adoptable	S29	600	Manhole	Adoptable
2.005	S29	600	Manhole	Adoptable	Soak2		Junction	
9.000	S30	600	Manhole	Adoptable	S31	450	Manhole	Adoptable
9.001	S31	450	Manhole	Adoptable	S33	450	Manhole	Adoptable
8.000	S32	450	Manhole	Adoptable	S33	450	Manhole	Adoptable
8.001	S33	450	Manhole	Adoptable	Soak3		Junction	
10.000	S34	450	Manhole	Adoptable	S35	600	Manhole	Adoptable
10.001	S35	600	Manhole	Adoptable	Soak3		Junction	
1.007	Soak2		Junction		D2		Junction	
8.002	Soak3		Junction		D3		Junction	

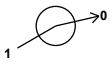
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	422109.747	404139.505	291.651	1.050	450	 0	5.000	290.601	150
S2	422091.539	404122.386	292.370	1.050	450	 0	4.000	291.320	150
S3	422102.888	404121.285	291.700	1.050	600	 1	4.000	290.650	150
						0	4.001	290.650	150
S4	422108.933	404131.115	291.850	1.333	600	 1	5.000	290.517	150
						2	4.001	290.517	150
						0	4.002	290.517	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S5	422120.086	404127.093	290.780	1.050	1200	1	4.002	289.730	150
						0	4.003	289.730	150
S6	422093.173	404108.214	293.000	1.050	450	0	6.000	291.950	150
S7	422101.077	404102.605	292.200	1.050	450	1	6.000	291.150	150
						0	6.001	291.150	150
S8	422110.576	404106.432	292.200	1.152	600	1	6.001	291.048	150
						0	6.002	291.048	150
S9	422116.290	404112.495	291.915	1.350	600	1	6.002	290.565	150
						0	6.003	290.565	150
S10	422122.913	404120.466	291.400	1.742	1200	1	4.003	289.658	150
						0	4.004	289.658	150
S11	422125.333	404115.130	291.400	1.801	1200	1	6.003	289.830	150
						2	4.004	289.599	150
						0	4.005	289.599	150
S12	422110.767	404079.134	292.750	1.050	600	0	7.000	291.700	150
S13	422126.804	404087.346	292.750	1.529	600	1	7.000	291.221	150
						0	7.001	291.221	150
S14	422123.921	404096.512	292.750	1.625	600	1	7.001	291.125	150
						0	7.002	291.125	150
S15	422130.642	404099.327	291.400	2.042	1200	1	7.002	290.350	150
						2	4.005	289.433	150
						0	4.006	289.358	225
S16	422125.229	404030.066	293.300	1.050	450	0	1.000	292.250	150
S17	422137.973	404037.013	293.100	1.050	450	1	1.000	292.050	150
						0	1.001	292.050	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S18	422138.829	404046.287	293.300	1.343	600	1	1.001	291.957	150
									
						0	1.002	291.957	150
S19	422133.208	404056.515	293.300	1.459	600	1	1.002	291.841	150
									
						0	1.003	291.841	150
S20	422123.968	404052.563	293.300	1.559	600	1	1.003	291.741	150
									
						0	1.004	291.741	150
S21	422116.166	404066.877	292.880	1.301	600	1	1.004	291.579	150
									
						0	1.005	291.579	150
S22	422131.650	404075.830	292.600	1.199	600	1	1.005	291.401	150
									
						0	1.006	291.401	150
S23	422156.264	404042.158	291.350	1.050	450				
						0	2.000	290.300	150
S24	422173.974	404051.855	291.350	1.251	600	1	2.000	290.099	150
									
						0	2.001	290.099	150
S25	422166.814	404064.931	291.350	1.399	600	1	2.001	289.951	150
									
						0	2.002	289.951	150
S26	422147.870	404064.328	291.300	1.537	600	1	2.002	289.763	150
									
						0	2.003	289.763	150
S27	422131.553	404062.984	291.600	1.050	450				
						0	3.000	290.550	150
S28	422145.113	404070.409	291.600	1.904	600	1	3.000	290.396	150
						2	2.003	289.696	150
									
						0	2.004	289.696	150
S29	422140.661	404080.228	290.360	1.050	600	1	2.004	289.310	150
									
						0	2.005	289.310	150
S30	422131.178	404127.419	290.360	1.050	600				
						0	9.000	289.310	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S31	422140.441	404132.069	289.880	1.050	450	1	9.000	288.830	150
						0	9.001	288.830	150
S32	422132.071	404110.273	290.407	1.050	450	0	8.000	289.357	150
S33	422159.033	404124.597	288.310	1.050	450	1	9.001	287.260	150
						2	8.000	287.260	150
						0	8.001	287.260	150
S34	422160.270	404104.671	289.416	1.050	450	0	10.000	288.366	150
S35	422153.139	404118.367	289.817	1.605	600	1	10.000	288.212	150
						0	10.001	288.212	150
Soak1	422137.925	404087.323	291.400	2.125		1	4.006	289.275	225
Soak2	422133.272	404076.200	290.360	1.209		1	2.005	289.226	150
						2	1.006	289.226	150
						0	1.007	289.151	225
Soak3	422161.300	404119.650	288.330	1.124		1	10.001	287.206	150
						2	8.001	287.206	150
						0	8.002	287.206	150
D2	422133.272	404076.200	290.360	1.215		1	1.007	289.145	225
D3	422161.300	404119.650	288.330	1.134		1	8.002	287.196	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.250	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	30	0	0
100	30	0	0

Node Soak1 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.22300	Invert Level (m)	288.274	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.22300	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.500	Number Required	1
Porosity	0.95	Pit Length (m)	8.000		

Node D2 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.22300	Invert Level (m)	288.150	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.22300	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	3.500	Number Required	1
Porosity	0.95	Pit Length (m)	20.000		

Node D3 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.22300	Invert Level (m)	286.149	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.22300	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	5.000	Number Required	1
Porosity	0.95	Pit Length (m)	6.000		