5951

RESIDENTIAL DEVELOPMENT

& OASIS CENTRE

HYDE ROAD, GORTON,

HBL DRAINAGE CALCULATIONS

(5951.50 PROPOSED DRAINAGE PLAN REV.P0)

5951

SURFACE WATER

30 YR RETURN PERIOD

(5951.50 PROPOSED DRAINAGE PLAN REV.P0)

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.356	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	250	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
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 Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.302	4-8	0.088

Total Area Contributing (ha) = 0.390

Total Pipe Volume (m^3) = 87.051

Network Design Table for Storm

« - 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
1.000	34.000	0.076	447.4	0.130	5.00	0.0	0.600	o	1200	Pipe/Conduit	
1.001	26.600	0.053	501.9	0.087	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.002	16.000	0.032	500.0	0.085	0.00	0.0	0.600	o	1200	Pipe/Conduit	
2.000	7.500	0.366	20.5	0.088	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	6.800	0.045	150.0	0.000	0.00	0.0	0.600	o	150	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)
1.000	58.04	5.32	64.200	0.130	0.0	0.0	0.0	1.76	1993.1	20.4
1.001	56.86	5.59	64.124	0.217	0.0	0.0	0.0	1.66	1880.9	33.4
1.002	56.18	5.75	64.071	0.302	0.0	0.0	0.0	1.67	1884.5	45.9
2.000	59.34	5.04	65.360	0.088	0.0	0.0	0.0	2.90	115.5	14.1
1.003	55.60	5.89	64.020	0.390	0.0	0.0	0.0	0.82	14.5«	58.7

©1982-2018 Innovyze

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	68.757	4.557	Open Manhole	2400	1.000	64.200	1200				
S2	67.970	3.846	Open Manhole	3000	1.001	64.124	1200	1.000	64.124	1200	
S3	67.400	3.329	Open Manhole	3000	1.002	64.071	1200	1.001	64.071	1200	
S4	66.400	1.040	Open Manhole	1500	2.000	65.360	225				
S5	66.420	2.400	Open Manhole	3000	1.003	64.020	150	1.002	64.039	1200	1069
								2.000	64.994	225	1049
CW1	66.200	2.225	Open Manhole	1800		OUTFALL		1.003	63.975	150	

©1982-2018 Innovyze

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.130	0.130	0.130
1.001	-	-	100	0.087	0.087	0.087
1.002	-	-	100	0.085	0.085	0.085
2.000	-	-	100	0.088	0.088	0.088
1.003	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.390	0.390	0.390

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.003	CW1	66.200	63.975	63.540	1800	0

Simulation Criteria for Storm

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.356		

©1982-2018 Innovyze

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S5, DS/PN: 1.003, Volume (m³): 31.9

Unit Reference	MD-SHE-0103-6500-2180-6500
Design Head (m)	2.180
Design Flow (l/s)	6.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	103
Invert Level (m)	64.020
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.180	6.5	Kick-Flo®	0.916	4.3
Flush-Flo™	0.448	5.4	Mean Flow over Head Range	-	5.2

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	3.4	1.200	4.9	3.000	7.6	7.000	11.3
0.200	4.9	1.400	5.3	3.500	8.1	7.500	11.7
0.300	5.3	1.600	5.6	4.000	8.7	8.000	12.0
0.400	5.4	1.800	5.9	4.500	9.1	8.500	12.4
0.500	5.4	2.000	6.2	5.000	9.6	9.000	12.7
0.600	5.4	2.200	6.5	5.500	10.1	9.500	13.1
0.800	4.9	2.400	6.8	6.000	10.5		
1.000	4.5	2.600	7.1	6.500	10.9		

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
1.000	S1	60 Winter	1	+0%					64.467	-0.933	0.000
1.001	S2	60 Winter	1	+0%					64.467	-0.857	0.000
1.002	S3	60 Winter	1	+0%					64.467	-0.804	0.000
2.000	S4	15 Winter	1	+0%					65.413	-0.172	0.000
1.003	S5	60 Winter	1	+0%	1/15 Summer				64.466	0.296	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.01		7.2	OK	
1.001	S2	0.01		6.4	OK	
1.002	S3	0.01		4.9	OK	
2.000	S4	0.12		10.5	OK	
1.003	S5	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	S1	120 Winter	30	+0%					65.021	-0.379
1.001	S2	120 Winter	30	+0%					65.021	-0.303
1.002	S3	120 Winter	30	+0%					65.021	-0.250
2.000	S4	15 Winter	30	+0%					65.445	-0.140
1.003	S5	120 Winter	30	+0%	1/15 Summer				65.021	0.851

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.01		11.3	OK	
1.001	S2	0.000	0.01		6.5	OK	
1.002	S3	0.000	0.01		4.7	OK	
2.000	S4	0.000	0.30		25.8	OK	
1.003	S5	0.000	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

5951

SURFACE WATER

30 YR RETURN PERIOD SURCHARGED

(5951.50 PROPOSED DRAINAGE PLAN REV.P0)

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.356	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	250	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
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 Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.302	4-8	0.088

Total Area Contributing (ha) = 0.390

Total Pipe Volume (m^3) = 87.051

Network Design Table for Storm

« - 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
1.000	34.000	0.076	447.4	0.130	5.00	0.0	0.600	o	1200	Pipe/Conduit	
1.001	26.600	0.053	501.9	0.087	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.002	16.000	0.032	500.0	0.085	0.00	0.0	0.600	o	1200	Pipe/Conduit	
2.000	7.500	0.366	20.5	0.088	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	6.800	0.045	150.0	0.000	0.00	0.0	0.600	o	150	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)
1.000	58.04	5.32	64.200	0.130	0.0	0.0	0.0	1.76	1993.1	20.4
1.001	56.86	5.59	64.124	0.217	0.0	0.0	0.0	1.66	1880.9	33.4
1.002	56.18	5.75	64.071	0.302	0.0	0.0	0.0	1.67	1884.5	45.9
2.000	59.34	5.04	65.360	0.088	0.0	0.0	0.0	2.90	115.5	14.1
1.003	55.60	5.89	64.020	0.390	0.0	0.0	0.0	0.82	14.5«	58.7

©1982-2018 Innovyze

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	68.757	4.557	Open Manhole	2400	1.000	64.200	1200				
S2	67.970	3.846	Open Manhole	3000	1.001	64.124	1200	1.000	64.124	1200	
S3	67.400	3.329	Open Manhole	3000	1.002	64.071	1200	1.001	64.071	1200	
S4	66.400	1.040	Open Manhole	1500	2.000	65.360	225				
S5	66.420	2.400	Open Manhole	3000	1.003	64.020	150	1.002	64.039	1200	1069
								2.000	64.994	225	1049
CW1	66.200	2.225	Open Manhole	1800		OUTFALL		1.003	63.975	150	

©1982-2018 Innovyze

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.130	0.130	0.130
1.001	-	-	100	0.087	0.087	0.087
1.002	-	-	100	0.085	0.085	0.085
2.000	-	-	100	0.088	0.088	0.088
1.003	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.390	0.390	0.390

Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.003	CW1	66.200	63.975	63.540	1800	0

Datum (m) 63.540 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.375	36	1.375	71	1.375	106	1.375	141	1.375	176	1.375	211	1.375
2	1.375	37	1.375	72	1.375	107	1.375	142	1.375	177	1.375	212	1.375
3	1.375	38	1.375	73	1.375	108	1.375	143	1.375	178	1.375	213	1.375
4	1.375	39	1.375	74	1.375	109	1.375	144	1.375	179	1.375	214	1.375
5	1.375	40	1.375	75	1.375	110	1.375	145	1.375	180	1.375	215	1.375
6	1.375	41	1.375	76	1.375	111	1.375	146	1.375	181	1.375	216	1.375
7	1.375	42	1.375	77	1.375	112	1.375	147	1.375	182	1.375	217	1.375
8	1.375	43	1.375	78	1.375	113	1.375	148	1.375	183	1.375	218	1.375
9	1.375	44	1.375	79	1.375	114	1.375	149	1.375	184	1.375	219	1.375
10	1.375	45	1.375	80	1.375	115	1.375	150	1.375	185	1.375	220	1.375
11	1.375	46	1.375	81	1.375	116	1.375	151	1.375	186	1.375	221	1.375
12	1.375	47	1.375	82	1.375	117	1.375	152	1.375	187	1.375	222	1.375
13	1.375	48	1.375	83	1.375	118	1.375	153	1.375	188	1.375	223	1.375
14	1.375	49	1.375	84	1.375	119	1.375	154	1.375	189	1.375	224	1.375
15	1.375	50	1.375	85	1.375	120	1.375	155	1.375	190	1.375	225	1.375
16	1.375	51	1.375	86	1.375	121	1.375	156	1.375	191	1.375	226	1.375
17	1.375	52	1.375	87	1.375	122	1.375	157	1.375	192	1.375	227	1.375
18	1.375	53	1.375	88	1.375	123	1.375	158	1.375	193	1.375	228	1.375
19	1.375	54	1.375	89	1.375	124	1.375	159	1.375	194	1.375	229	1.375
20	1.375	55	1.375	90	1.375	125	1.375	160	1.375	195	1.375	230	1.375
21	1.375	56	1.375	91	1.375	126	1.375	161	1.375	196	1.375	231	1.375
22	1.375	57	1.375	92	1.375	127	1.375	162	1.375	197	1.375	232	1.375
23	1.375	58	1.375	93	1.375	128	1.375	163	1.375	198	1.375	233	1.375
24	1.375	59	1.375	94	1.375	129	1.375	164	1.375	199	1.375	234	1.375
25	1.375	60	1.375	95	1.375	130	1.375	165	1.375	200	1.375	235	1.375
26	1.375	61	1.375	96	1.375	131	1.375	166	1.375	201	1.375	236	1.375
27	1.375	62	1.375	97	1.375	132	1.375	167	1.375	202	1.375	237	1.375
28	1.375	63	1.375	98	1.375	133	1.375	168	1.375	203	1.375	238	1.375
29	1.375	64	1.375	99	1.375	134	1.375	169	1.375	204	1.375	239	1.375
30	1.375	65	1.375	100	1.375	135	1.375	170	1.375	205	1.375	240	1.375
31	1.375	66	1.375	101	1.375	136	1.375	171	1.375	206	1.375	241	1.375
32	1.375	67	1.375	102	1.375	137	1.375	172	1.375	207	1.375	242	1.375
33	1.375	68	1.375	103	1.375	138	1.375	173	1.375	208	1.375	243	1.375
34	1.375	69	1.375	104	1.375	139	1.375	174	1.375	209	1.375	244	1.375
35	1.375	70	1.375	105	1.375	140	1.375	175	1.375	210	1.375	245	1.375

©1982-2018 Innovyze

Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
246	1.375	263	1.375	280	1.375	297	1.375	314	1.375	331	1.375	348	1.375
247	1.375	264	1.375	281	1.375	298	1.375	315	1.375	332	1.375	349	1.375
248	1.375	265	1.375	282	1.375	299	1.375	316	1.375	333	1.375	350	1.375
249	1.375	266	1.375	283	1.375	300	1.375	317	1.375	334	1.375	351	1.375
250	1.375	267	1.375	284	1.375	301	1.375	318	1.375	335	1.375	352	1.375
251	1.375	268	1.375	285	1.375	302	1.375	319	1.375	336	1.375	353	1.375
252	1.375	269	1.375	286	1.375	303	1.375	320	1.375	337	1.375	354	1.375
253	1.375	270	1.375	287	1.375	304	1.375	321	1.375	338	1.375	355	1.375
254	1.375	271	1.375	288	1.375	305	1.375	322	1.375	339	1.375	356	1.375
255	1.375	272	1.375	289	1.375	306	1.375	323	1.375	340	1.375	357	1.375
256	1.375	273	1.375	290	1.375	307	1.375	324	1.375	341	1.375	358	1.375
257	1.375	274	1.375	291	1.375	308	1.375	325	1.375	342	1.375	359	1.375
258	1.375	275	1.375	292	1.375	309	1.375	326	1.375	343	1.375	360	1.375
259	1.375	276	1.375	293	1.375	310	1.375	327	1.375	344	1.375		
260	1.375	277	1.375	294	1.375	311	1.375	328	1.375	345	1.375		
261	1.375	278	1.375	295	1.375	312	1.375	329	1.375	346	1.375		
262	1.375	279	1.375	296	1.375	313	1.375	330	1.375	347	1.375		

Simulation Criteria for Storm

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.356		

©1982-2018 Innovyze

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S5, DS/PN: 1.003, Volume (m³): 31.9

Unit Reference	MD-SHE-0103-6500-2180-6500
Design Head (m)	2.180
Design Flow (l/s)	6.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	103
Invert Level (m)	64.020
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.180	6.5	Kick-Flo®	0.916	4.3
Flush-Flo™	0.448	5.4	Mean Flow over Head Range	-	5.2

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	3.4	1.200	4.9	3.000	7.6	7.000	11.3
0.200	4.9	1.400	5.3	3.500	8.1	7.500	11.7
0.300	5.3	1.600	5.6	4.000	8.7	8.000	12.0
0.400	5.4	1.800	5.9	4.500	9.1	8.500	12.4
0.500	5.4	2.000	6.2	5.000	9.6	9.000	12.7
0.600	5.4	2.200	6.5	5.500	10.1	9.500	13.1
0.800	4.9	2.400	6.8	6.000	10.5		
1.000	4.5	2.600	7.1	6.500	10.9		

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	S1	360 Winter	1	+0%					64.903	-0.497
1.001	S2	360 Winter	1	+0%	30/360 Winter				64.903	-0.421
1.002	S3	360 Winter	1	+0%	30/240 Winter				64.903	-0.368
2.000	S4	15 Winter	1	+0%					65.413	-0.172
1.003	S5	360 Winter	1	+0%	1/15 Summer				64.903	0.733

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.00		2.2	OK	
1.001	S2	0.000	0.00		2.5	OK	
1.002	S3	0.000	0.01		4.3	OK	
2.000	S4	0.000	0.12		10.5	OK	
1.003	S5	0.000	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	S1	480 Winter	30	+0%					65.352	-0.048
1.001	S2	480 Winter	30	+0%	30/360 Winter				65.351	0.027
1.002	S3	480 Winter	30	+0%	30/240 Winter				65.351	0.080
2.000	S4	15 Winter	30	+0%					65.445	-0.140
1.003	S5	480 Winter	30	+0%	1/15 Summer				65.351	1.181

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.00		4.2	OK	
1.001	S2	0.000	0.00		4.2	SURCHARGED	
1.002	S3	0.000	0.01		4.7	SURCHARGED	
2.000	S4	0.000	0.30		25.8	OK	
1.003	S5	0.000	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

5951

SURFACE WATER

100 YR RETURN PERIOD + 40cc

(5951.50 PROPOSED DRAINAGE PLAN REV.P0)

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.356	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	250	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
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 Storm

« - 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
1.000	34.000	0.076	447.4	0.130	5.00	0.0	0.600	o	1200	Pipe/Conduit	
1.001	26.600	0.053	501.9	0.087	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.002	16.000	0.032	500.0	0.085	0.00	0.0	0.600	o	1200	Pipe/Conduit	
2.000	7.500	0.366	20.5	0.088	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	6.700	0.405	16.5	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	6.800	0.045	150.0	0.000	0.00	0.0	0.600	o	150	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)
1.000	58.04	5.32	64.200	0.130	0.0	0.0	0.0	1.76	1993.1	20.4
1.001	56.86	5.59	64.124	0.217	0.0	0.0	0.0	1.66	1880.9	33.4
1.002	56.18	5.75	64.071	0.302	0.0	0.0	0.0	1.67	1884.5	45.9
2.000	59.34	5.04	65.360	0.088	0.0	0.0	0.0	2.90	115.5	14.1
3.000	59.38	5.03	65.400	0.000	0.0	0.0	0.0	3.23	128.6	0.0
1.003	55.60	5.89	64.020	0.390	0.0	0.0	0.0	0.82	14.5«	58.7

©1982-2018 Innovyze

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	68.757	4.557	Open Manhole	2400	1.000	64.200	1200				
S2	67.970	3.846	Open Manhole	3000	1.001	64.124	1200	1.000	64.124	1200	
S3	67.400	3.329	Open Manhole	3000	1.002	64.071	1200	1.001	64.071	1200	
S4	66.400	1.040	Open Manhole	1500	2.000	65.360	225				
Tank	67.300	1.900	Open Manhole	1200	3.000	65.400	225				
S5	66.420	2.400	Open Manhole	3000	1.003	64.020	150	1.002	64.039	1200	1069
								2.000	64.994	225	1049
								3.000	64.995	225	1050
CW1	66.200	2.225	Open Manhole	1800		OUTFALL		1.003	63.975	150	

©1982-2018 Innovyze

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.130	0.130	0.130
1.001	-	-	100	0.087	0.087	0.087
1.002	-	-	100	0.085	0.085	0.085
2.000	-	-	100	0.088	0.088	0.088
3.000	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.390	0.390	0.390

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.003	CW1	66.200	63.975	63.540	1800	0

Simulation Criteria for Storm

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 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)	18.000	Storm Duration (mins)	30
Ratio R	0.356		

©1982-2018 Innovyze

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S5, DS/PN: 1.003, Volume (m³): 32.1

Unit Reference	MD-SHE-0103-6500-2180-6500
Design Head (m)	2.180
Design Flow (l/s)	6.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	103
Invert Level (m)	64.020
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.180	6.5	Kick-Flo®	0.916	4.3
Flush-Flo™	0.448	5.4	Mean Flow over Head Range	-	5.2

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	3.4	1.200	4.9	3.000	7.6	7.000	11.3
0.200	4.9	1.400	5.3	3.500	8.1	7.500	11.7
0.300	5.3	1.600	5.6	4.000	8.7	8.000	12.0
0.400	5.4	1.800	5.9	4.500	9.1	8.500	12.4
0.500	5.4	2.000	6.2	5.000	9.6	9.000	12.7
0.600	5.4	2.200	6.5	5.500	10.1	9.500	13.1
0.800	4.9	2.400	6.8	6.000	10.5		
1.000	4.5	2.600	7.1	6.500	10.9		

©1982-2018 Innovyze

Storage Structures for Storm

Cellular Storage Manhole: Tank, DS/PN: 3.000

Invert Level (m) 65.400 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	108.0	108.0	0.900	0.0	141.6
0.800	108.0	141.6			

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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.	Water Level (m)	Surcharged Depth (m)
1.000	S1	60 Winter	1	+0%	100/30 Winter				64.467	-0.933
1.001	S2	60 Winter	1	+0%	100/30 Winter				64.467	-0.857
1.002	S3	60 Winter	1	+0%	100/30 Summer				64.467	-0.804
2.000	S4	15 Winter	1	+0%	100/30 Winter				65.413	-0.172
3.000	Tank	360 Winter	1	+0%	100/60 Winter				65.400	-0.225
1.003	S5	60 Winter	1	+0%	1/15 Summer				64.466	0.296

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.01		7.2	OK	
1.001	S2	0.000	0.01		6.4	OK	
1.002	S3	0.000	0.01		4.9	OK	
2.000	S4	0.000	0.12		10.5	OK	
3.000	Tank	0.000	0.00		0.0	OK	
1.003	S5	0.000	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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.	Water Level (m)	Surcharged Depth (m)
1.000	S1	120 Winter	30	+0%	100/30 Winter				65.021	-0.379
1.001	S2	120 Winter	30	+0%	100/30 Winter				65.021	-0.303
1.002	S3	120 Winter	30	+0%	100/30 Summer				65.021	-0.250
2.000	S4	15 Winter	30	+0%	100/30 Winter				65.445	-0.140
3.000	Tank	360 Winter	30	+0%	100/60 Winter				65.400	-0.225
1.003	S5	120 Winter	30	+0%	1/15 Summer				65.021	0.851

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.01		11.3	OK	
1.001	S2	0.000	0.01		6.5	OK	
1.002	S3	0.000	0.01		4.7	OK	
2.000	S4	0.000	0.30		25.8	OK	
3.000	Tank	0.000	0.00		0.0	OK	
1.003	S5	0.000	0.44		5.4	SURCHARGED	

©1982-2018 Innovyze

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

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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.356 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.	Water Level (m)	Surcharged Depth (m)
1.000	S1	180 Winter	100	+40%	100/30 Winter				65.863	0.463
1.001	S2	180 Winter	100	+40%	100/30 Winter				65.863	0.539
1.002	S3	180 Winter	100	+40%	100/30 Summer				65.863	0.592
2.000	S4	180 Winter	100	+40%	100/30 Winter				65.865	0.280
3.000	Tank	180 Winter	100	+40%	100/60 Winter				65.862	0.237
1.003	S5	180 Winter	100	+40%	1/15 Summer				65.863	1.693

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.000	0.01		15.2	SURCHARGED	
1.001	S2	0.000	0.02		23.3	SURCHARGED	
1.002	S3	0.000	0.04		32.3	SURCHARGED	
2.000	S4	0.000	0.14		12.2	SURCHARGED	
3.000	Tank	0.000	0.05		4.6	SURCHARGED	
1.003	S5	0.000	0.49		6.0	SURCHARGED	

©1982-2018 Innovyze

5951

FOUL WATER

(5951.50 PROPOSED DRAINAGE PLAN REV.P0)

FOUL SEWERAGE DESIGN

Design Criteria for Foul - Main

Pipe Sizes STANDARD Manhole Sizes STANDARD

Industrial Flow (l/s/ha)	0.00	Add Flow / Climate Change (%)	0
Industrial Peak Flow Factor	0.00	Minimum Backdrop Height (m)	0.200
Flow Per Person (l/per/day)	222.00	Maximum Backdrop Height (m)	1.500
Persons per House	3.00	Min Design Depth for Optimisation (m)	1.200
Domestic (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.75
Domestic Peak Flow Factor	6.00	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Foul - Main

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	21.000	0.476	44.1	0.000	9	0.0	1.500	o	150	Pipe/Conduit	
1.001	14.200	0.324	43.8	0.000	5	0.0	1.500	o	150	Pipe/Conduit	
1.002	11.300	0.149	76.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.003	12.000	0.150	80.0	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
1.004	14.200	0.937	15.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
2.000	9.600	0.336	28.6	0.000	0	4.5	1.500	o	150	Pipe/Conduit	
1.005	9.000	0.300	30.0	0.000	8	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	67.150	0.000	0.0	9	0.0	14	0.49	1.32	23.3	0.4
1.001	66.674	0.000	0.0	14	0.0	17	0.56	1.33	23.4	0.6
1.002	66.350	0.000	0.0	14	0.0	20	0.47	1.01	17.8	0.6
1.003	66.201	0.000	0.0	18	0.0	23	0.50	0.98	17.3	0.8
1.004	66.051	0.000	0.0	18	0.0	15	0.88	2.26	39.9	0.8
2.000	65.450	0.000	4.5	0	0.0	40	1.19	1.64	29.0	4.5
1.005	65.114	0.000	4.5	26	0.0	46	1.25	1.60	28.3	5.7

©1982-2018 Innovyze

Manhole Schedules for Foul - Main

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
F1	68.500	1.350	Open Manhole	1350	1.000	67.150	150				
F2	68.025	1.351	Open Manhole	1200	1.001	66.674	150	1.000	66.674	150	
F3	67.700	1.350	Open Manhole	1200	1.002	66.350	150	1.001	66.350	150	
F4	67.560	1.359	Open Manhole	1200	1.003	66.201	150	1.002	66.201	150	
F5	67.435	1.384	Open Manhole	1200	1.004	66.051	150	1.003	66.051	150	
F7	66.500	1.050	Open Manhole	1200	2.000	65.450	150				
F6	66.500	1.386	Open Manhole	1500	1.005	65.114	150	1.004	65.114	150	
								2.000	65.114	150	
CW1	66.200	1.386	Open Manhole	0		OUTFALL		1.005	64.814	150	

©1982-2018 Innovyze

PIPELINE SCHEDULES for Foul - Main

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	F1	68.500	67.150	1.200	Open Manhole	1350
1.001	o	150	F2	68.025	66.674	1.201	Open Manhole	1200
1.002	o	150	F3	67.700	66.350	1.200	Open Manhole	1200
1.003	o	150	F4	67.560	66.201	1.209	Open Manhole	1200
1.004	o	150	F5	67.435	66.051	1.234	Open Manhole	1200
2.000	o	150	F7	66.500	65.450	0.900	Open Manhole	1200
1.005	o	150	F6	66.500	65.114	1.236	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	21.000	44.1	F2	68.025	66.674	1.201	Open Manhole	1200
1.001	14.200	43.8	F3	67.700	66.350	1.200	Open Manhole	1200
1.002	11.300	76.0	F4	67.560	66.201	1.209	Open Manhole	1200
1.003	12.000	80.0	F5	67.435	66.051	1.234	Open Manhole	1200
1.004	14.200	15.2	F6	66.500	65.114	1.236	Open Manhole	1500
2.000	9.600	28.6	F6	66.500	65.114	1.236	Open Manhole	1500
1.005	9.000	30.0	CW1	66.200	64.814	1.236	Open Manhole	0

Free Flowing Outfall Details for Foul - Main

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	CW1	66.200	64.814	63.540	0	0

©1982-2018 Innovyze