

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Size (mm)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S66	1.624	1500	Type C	37.424	35.969	0.855	386472.697	156944.783
HW15	0.000	---	Type C	37.200	35.925	0.675	386473.854	156953.492
S67	0.450	1350	Type C	37.286	36.027	0.884	386515.238	157001.743
HW14	0.000	---	Type C	37.200	35.925	0.900	386496.663	156992.717
HW16	0.000	0	Unknown	37.200	35.700	1.200	386471.506	157004.878
S68	0.000	2700	Type C	37.461	35.665	1.496	386466.327	157007.804
HW17	0.000	---	Type C	37.000	35.629	1.071	386460.947	157010.856

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (mm)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	S66	35.969	HW15	35.925	Circ	600	8.785	200	0.600	0.855	0.675
1.001	HW15	35.925	HW16	35.700	Rect	1000x750	51.439	229	0.600	0.525	0.750
2.000	S67	36.027	HW14	35.925	Circ	375	20.653	202	0.600	0.884	0.900
2.001	HW14	35.925	HW16	35.700	Circ	375	27.942	124	0.600	0.900	1.125
1.002	HW16	35.700	S68	35.665	Circ	300	5.949	170	0.600	1.200	1.496
1.003	S68	35.665	HW17	35.629	Circ	300	6.185	170	0.600	1.496	1.071

Outfall Details

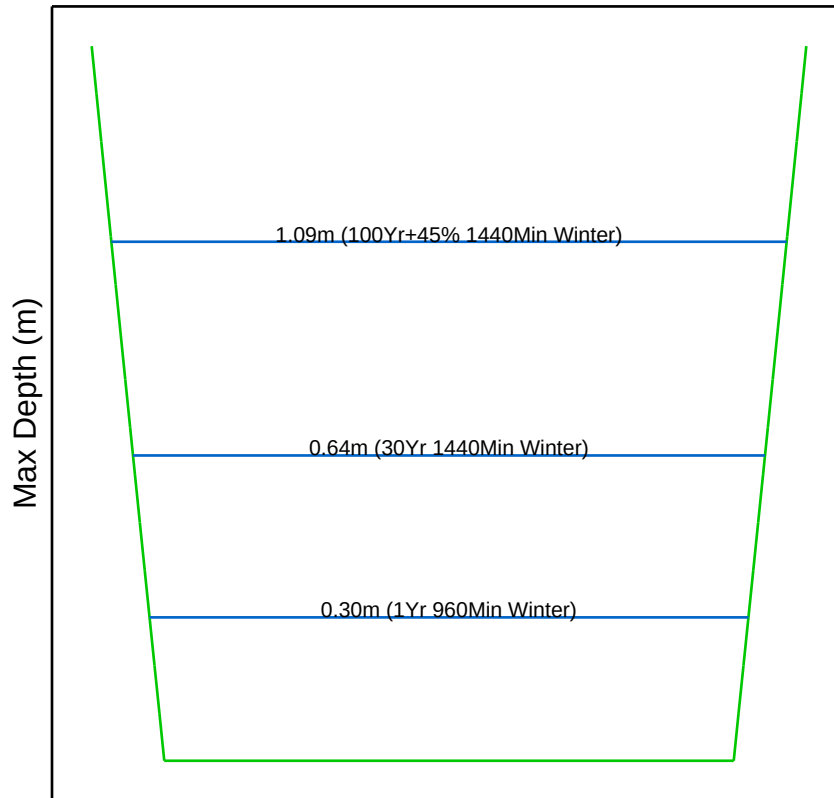
Outfall Manhole HW17 : Free Discharge

Flow Control Details

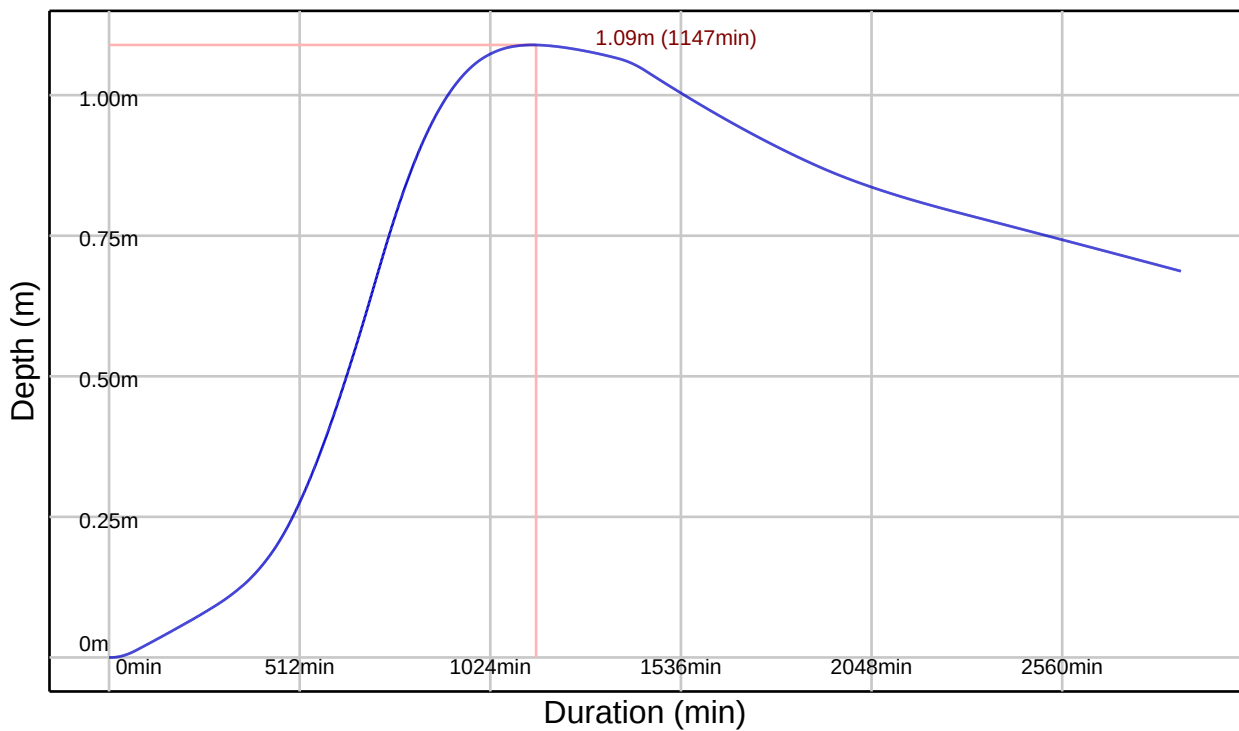
Pond Structure at Manhole HW16

Pond Invert (m)	Max Depth (m)	Volume To Water Level (m3)	Water Level (m)	Freeboard (m)	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
35.700	1.500	1706.813	36.900	0.300	0.00000000	0.00000000	2.00

Pond Depth/Area Diagram at HW16



Basin G at HW16 (100Yr+45% 1440Min Winter)

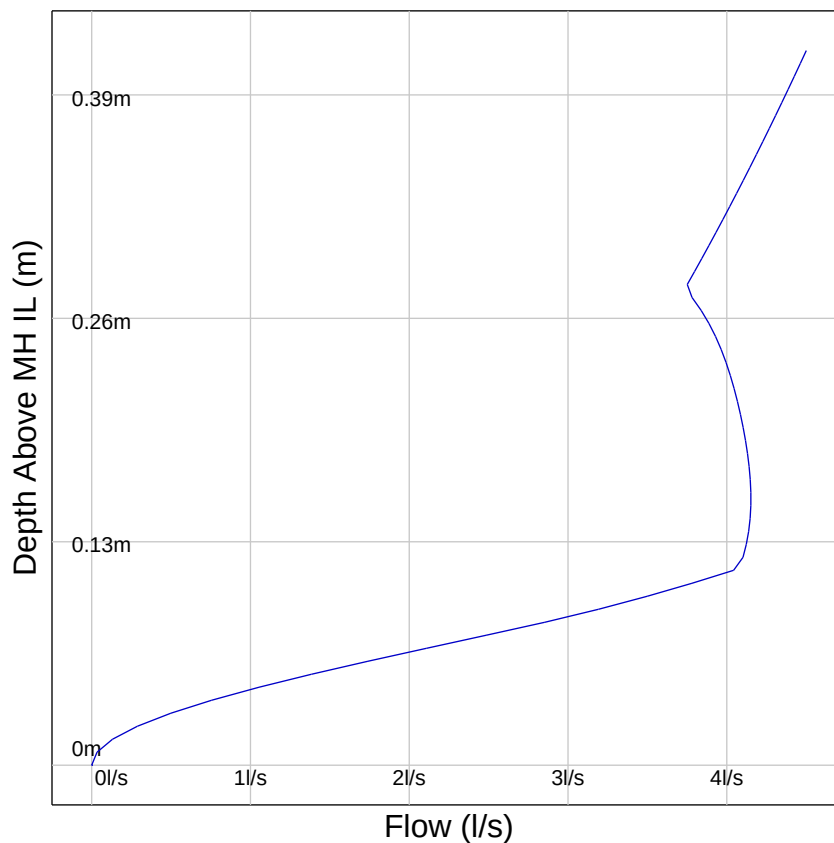


Controls within Manhole S68

Hydro-Brake® Optimum Control

Model Ref	Design Depth (m)	Design Flow (l/s)	Invert Offset (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0105-4150-0350-4150	0.350	4.150	0.000	0.155	4.152	0.277	3.735

Hydro-Brake® Optimum Control from S68 to HW17



Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.820	0.088	0.600

Simulation Settings

FSR: M5-60=20.10, R=0.39, Locale=England and Wales

Summer (Cv: 0.75), Winter (Cv: 0.84)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 600, 720, 960, 1440, 2160

Return Periods (yrs) + Climate Change: (1, +0%), (30, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	36.298	0.00	0.00	30Yr 720Min Winter	4.777	0.00	0.06
1Yr 15Min Summer	36.298	0.00	0.00	30Yr 960Min Summer	3.821	0.00	0.03
1Yr 30Min Winter	23.156	0.00	0.00	30Yr 960Min Winter	3.821	0.00	0.05
1Yr 30Min Summer	23.156	0.00	0.00	30Yr 1440Min Summer	2.786	0.00	0.01
1Yr 600Min Winter	2.705	0.00	-0.01	30Yr 1440Min Winter	2.786	0.00	0.02
1Yr 600Min Summer	2.705	0.00	0.00	30Yr 2160Min Summer	2.029	0.00	0.00
1Yr 720Min Winter	2.368	0.00	0.00	30Yr 2160Min Winter	2.029	0.00	0.00
1Yr 720Min Summer	2.368	0.00	0.00	100Yr+45% 15Min Summer	142.604	0.00	0.14
1Yr 960Min Summer	1.919	0.00	0.00	100Yr+45% 15Min Winter	142.604	0.00	0.16
1Yr 960Min Winter	1.919	0.00	0.00	100Yr+45% 30Min Summer	94.023	0.00	0.13
1Yr 1440Min Summer	1.428	0.00	0.01	100Yr+45% 30Min Winter	94.023	0.00	0.10
1Yr 1440Min Winter	1.428	0.00	0.01	100Yr+45% 600Min Summer	10.257	0.00	0.23
1Yr 2160Min Winter	1.063	0.00	0.01	100Yr+45% 600Min Winter	10.257	0.00	0.29
1Yr 2160Min Summer	1.063	0.00	0.01	100Yr+45% 720Min Summer	8.881	0.00	0.18
30Yr 15Min Summer	75.787	0.00	0.00	100Yr+45% 720Min Winter	8.881	0.00	0.24
30Yr 15Min Winter	75.787	0.00	-0.01	100Yr+45% 960Min Summer	7.069	0.00	0.11
30Yr 30Min Summer	49.539	0.00	0.00	100Yr+45% 960Min Winter	7.069	0.00	0.15
30Yr 30Min Winter	49.539	0.00	0.02	100Yr+45% 1440Min Summer	5.117	0.00	0.07
30Yr 600Min Winter	5.502	0.00	0.07	100Yr+45% 1440Min Winter	5.117	0.00	0.07
30Yr 600Min Summer	5.502	0.00	0.05	100Yr+45% 2160Min Winter	3.698	0.00	0.03
30Yr 720Min Summer	4.777	0.00	0.04	100Yr+45% 2160Min Summer	3.698	0.00	0.03

Simulation Results

Return Period (yrs) + Climate Change (%):
1yr+0%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S66	15 min Winter	8	36.272	0.303	272.231		OK
HW15	15 min Winter	8	36.117	0.192	271.517		OK
S67	15 min Winter	8	36.229	0.202	75.430		OK
HW14	15 min Summer	7	36.123	0.198	67.434		OK
HW16	960 min Winter	805	36.001	0.301	6.183		Surcharged
S68	960 min Winter	805	36.001	0.336	3.849		Surcharged
HW17	30 min Summer	23	35.671	0.042	4.179		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	8	S66	HW15	0.247	2.476	271.517	0.560	OK
1.001	960 min Winter	812	HW15	HW16	0.188	0.334	18.181		OK
2.000	15 min Winter	8	S67	HW14	0.198	1.303	75.067	0.536	OK
2.001	960 min Winter	788	HW14	HW16	0.192	0.646	5.978	0.033	OK
1.002	960 min Winter	758	HW16	S68	0.300	0.541	20.761	0.244	Surcharged
1.003	30 min Winter	20	S68	HW17	0.043	0.673	4.173	0.049	OK

Return Period (yrs) + Climate Change (%):

30yr+0%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S66	15 min Winter	8	36.473	0.504	568.566		OK
HW15	1440 min Winter	1318	36.341	0.416	3.537		OK
S67	15 min Winter	8	36.368	0.341	157.538		OK
HW14	1440 min Winter	1320	36.341	0.416	0.976		Surcharged
HW16	1440 min Winter	1320	36.341	0.641	4.501		Surcharged
S68	1440 min Winter	1320	36.341	0.676	4.501		Surcharged
HW17	1440 min Summer	784	35.672	0.043	4.501		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	8	S66	HW15	0.403	2.856	576.394	1.188	OK
1.001	1440 min Winter	1320	HW15	HW16	0.528	0.340	25.897		OK
2.000	1440 min Winter	1320	S67	HW14	0.344	0.714	7.477	0.053	OK
2.001	720 min Winter	557	HW14	HW16	0.375	0.816	14.788	0.082	Surcharged
1.002	600 min Summer	300	HW16	S68	0.300	0.546	21.491	0.253	Surcharged
1.003	1440 min Summer	784	S68	HW17	0.044	0.688	4.501	0.053	OK

Return Period (yrs) + Climate Change (%):

100yr+45%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S66	15 min Winter	8	36.791	0.822	1070.272		Surcharged
HW15	1440 min Winter	1138	36.789	0.864	9.972		Surcharged
S67	15 min Winter	8	37.185	1.158	296.551		Flood Risk
HW14	1440 min Winter	1139	36.789	0.864	2.750		Surcharged
HW16	1440 min Winter	1138	36.789	1.089	12.737		Surcharged
S68	1440 min Winter	1138	36.789	1.124	12.742		Surcharged
HW17	1440 min Winter	1138	35.701	0.073	12.742		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	720 min Summer	446	S66	HW15	0.600	1.879	117.395	0.242	Surcharged
1.001	960 min Summer	815	HW15	HW16	0.750	0.631	91.261		Surcharged
2.000	15 min Winter	8	S67	HW14	0.375	2.621	289.432	2.067	Surcharged
2.001	30 min Summer	18	HW14	HW16	0.375	2.397	247.855	1.383	Surcharged
1.002	30 min Winter	16	HW16	S68	0.300	0.733	30.268	0.356	Surcharged
1.003	1440 min Winter	1138	S68	HW17	0.075	0.920	12.742	0.150	OK