

Memo

Subject	Bexhill Pump Station WPS01 Catchment	From	Aimee Day/Bava Sathan
To	Sea Change Sussex/Southern Water	Date	8 September 2023
File Ref	13623-R03-Bexhill Catchments-WPS01 Summary.docx	Pages	1

SUMMARY

From the review of the calculations that supported the original approved (and implemented) scheme, it was confirmed that the WPS01 pumping station catchment was not accounted for as part the original design's catchment area. Thus, we have updated the MicroDrainage model to reflect the contribution from the additional surface area and identify whether the extra 0.046 ha of catchment area introduced as a direct result of the Pumping Station (WPS01) would impact of the existing drainage system. The models was re-rain using FSR rainfall (as per the approved scheme) for the 2-, 30-, and 100-year+20% CC storms. Below are the main observations from the model re-run with the additional catchment contribution area:

- For the 2-year storm, the original model indicated two surcharged pipes and one with potential flood risk. Running the model with the additional 0.046 ha did not change the number of surcharged/flood risk pipes, but there was a slight increase in maximum volumes (as expected). No flooding.
- For the 30-year storm, the original model showed two surcharged pipes and one with potential flood risk. Running the new model increased the maximum volumes (as expected) and surcharged two further pipes. No flooding.
- For the 100-year storm+20%CC, the original model showed multiple surcharged pipes, one with potential flood risk at the pond outfall, and one that had very minorly flooded by approximately 0.15m³ in the 100yr+20%CC.
- Running the new model with the additional area in 100-year +0% CC made no difference to the previous results.
- However, when the 20% CC is applied, the results showed that the pipe with previous flood risk at pond outfall has the potential to flood by approximately 30m³. The other pipe that was previously flooding had a slight increase from 0.15m³ to 1.26m³ flooding.
- The 20% climate change factor was relevant to the 1 in 100 year storm for the site when the design was completed in 2015, but since then the climate change factor has increased to 45% for this area. To account for this, the 45% was applied to a separate source control model to calculate the maximum volume of water produced by the site. This was found to be approximately 32 m³.

It is considered that the extra 32m³ of water generated by the Pumping Station site is not insignificant and we suggest that some minor improvement works could be made to the existing network. Our preferred option is to increase the bund height of Pond 1 by 100 mm. This will account for the approximately 25 mm (providing 32m³ of additional volume over the area of the pond) that the water level in the pond is expected to increase in the 1 in 100-year storm including the 45% uplift on climate change for the additional area. The earthworks to increase the bund height by 100 mm, would requires about 40 m³ of fill material.

15 Bermondsey Square
London
SE1 3UN

- ◆ T: +44 (0)20 7340 1700
- ◆ E: london@campbellreith.com
- ◆ W: www.campbellreith.com

Bexhill

Design Calculations

13623- Proposed Surface Water Network,
Original
Rev P7

Date: 06/09/23

Project No: 13623

Engineer: A. Day

Checked: A. Higgins

CampbellReith		Page 0
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 11873 CATCHMENT 1 REV05.SWS

Pipe Sizes 11873 CATCHMENT 1 REV04 Manhole Sizes 11873 CATCHMENT 1 REV04

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
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)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 11873 CATCHMENT 1 REV05.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.297	8-12	0.642	12-16	0.039

Total Area Contributing (ha) = 0.978

Total Pipe Volume (m³) = 55.931

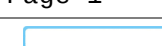
Network Design Table for 11873 CATCHMENT 1 REV05.SWS

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	46.000	0.418	110.0	0.087	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	35.000	0.343	102.0	0.042	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	41.000	1.348	30.4	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.003	50.000	1.271	39.3	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.004	63.000	3.346	18.8	0.053	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.005	54.985	1.368	40.2	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.006	61.607	1.781	34.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.007	29.000	0.190	152.6	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.008	29.000	0.250	116.0	0.040	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.62	21.030	0.087	0.0	0.0	0.0	1.25	49.5	11.8
S1.001	50.00	5.99	20.537	0.129	0.0	0.0	0.0	1.56	110.0	17.5
S1.002	50.00	6.23	20.169	0.161	0.0	0.0	0.0	2.86	202.3	21.8
S1.003	50.00	6.56	18.796	0.211	0.0	0.0	0.0	2.51	177.7	28.6
S1.004	50.00	6.85	17.500	0.264	0.0	0.0	0.0	3.64	257.3	35.7
S1.005	50.00	7.17	14.079	0.350	0.0	0.0	0.0	2.87	316.5	47.4
S1.006	50.00	7.50	12.686	0.417	0.0	0.0	0.0	3.09	341.3	56.5
S1.007	50.00	7.80	10.830	0.467	0.0	0.0	0.0	1.64	261.3	63.2
S1.008	50.00	8.05	10.615	0.507	0.0	0.0	0.0	1.89	300.1	68.7

CampbellReith		Page 1
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Network Design Table for 11873 CATCHMENT 1 REV05.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.009	26.000	0.166	156.6	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S2.000	28.143	0.364	77.3	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	68.942	1.098	62.8	0.065	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	24.982	0.231	108.1	0.054	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	20.999	0.699	30.0	0.136	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	12.000	0.105	114.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	15.999	0.146	109.6	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.010	17.001	0.600	28.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.000	15.001	1.087	13.8	0.091	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.011	14.000	0.247	56.7	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.012	44.741	0.010	4474.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.013	4.411	0.040	110.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.014	26.801	1.443	18.6	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)
S1.009	50.00	8.32	10.340	0.559	0.0	0.0	0.0	1.62	258.0	75.7
S2.000	50.00	5.32	12.585	0.036	0.0	0.0	0.0	1.49	59.2	4.9
S2.001	50.00	6.01	12.221	0.101	0.0	0.0	0.0	1.65	65.7	13.7
S3.000	50.00	5.33	11.400	0.054	0.0	0.0	0.0	1.26	50.0	7.3
S2.002	50.00	6.13	11.047	0.291	0.0	0.0	0.0	2.88	203.5	39.4
S4.000	50.00	5.21	10.700	0.020	0.0	0.0	0.0	0.94	16.6	2.7
S4.001	50.00	5.49	10.595	0.037	0.0	0.0	0.0	0.96	17.0	5.0
S1.010	50.00	8.39	10.149	0.887	0.0	0.0	0.0	3.83	609.3	120.1
S5.000	50.00	5.07	10.788	0.091	0.0	0.0	0.0	3.54	140.8	12.3
S1.011	50.00	8.47	9.449	0.978	0.0	0.0	0.0	2.98	645.0	132.4
S1.012	50.00	13.74	9.200	0.978	0.0	0.0	0.0	0.14	2.5<	132.4
S1.013	50.00	13.81	9.190	0.978	0.0	0.0	0.0	0.96	16.9<	132.4
S1.014	50.00	14.00	9.150	0.978	0.0	0.0	0.0	2.35	41.5<	132.4

CampbellReith		Page 2
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Area Summary for 11873 CATCHMENT 1 REV05.SWS

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.087	0.087	0.087
1.001	-	-	100	0.042	0.042	0.042
1.002	-	-	100	0.032	0.032	0.032
1.003	-	-	100	0.050	0.050	0.050
1.004	-	-	100	0.053	0.053	0.053
1.005	-	-	100	0.086	0.086	0.086
1.006	-	-	100	0.067	0.067	0.067
1.007	-	-	100	0.050	0.050	0.050
1.008	-	-	100	0.040	0.040	0.040
1.009	-	-	100	0.052	0.052	0.052
2.000	-	-	100	0.036	0.036	0.036
2.001	-	-	100	0.065	0.065	0.065
3.000	-	-	100	0.054	0.054	0.054
2.002	-	-	100	0.136	0.136	0.136
4.000	-	-	100	0.020	0.020	0.020
4.001	-	-	100	0.017	0.017	0.017
1.010	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.091	0.091	0.091
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.978	0.978	0.978

CampbellReith			Page 3		
Raven House 29 Linkfield Lane Surrey RH1 1SS			Bexhill WPS01 Catchment Original		
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx			Designed by AD Checked by AH		
XP Solutions			Network 2020.1		



Network Classifications for 11873 CATCHMENT 1 REV05.SWS

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1.01	225	2.393	4.995	Unclassified	1200	0	2.393	Unclassified
S1.001	S1.02	300	4.635	4.995	Unclassified	1200	0	4.995	Unclassified
S1.002	S1.03	300	4.503	4.955	Unclassified	1200	0	4.955	Unclassified
S1.003	S1.04	300	2.083	4.528	Unclassified	1200	0	4.528	Unclassified
S1.004	S1.05	300	1.194	2.108	Unclassified	1200	0	2.108	Unclassified
S1.005	S1.06	375	0.995	1.402	Unclassified	1200	0	1.275	Unclassified
S1.006	S1.07	375	1.427	2.578	Unclassified	1200	0	1.427	Unclassified
S1.007	S1.08	450	2.150	2.578	Unclassified	1350	0	2.578	Unclassified
S1.008	S1.09	450	1.768	2.175	Unclassified	1350	0	2.175	Unclassified
S1.009	S1.10	450	1.722	2.104	Unclassified	1350	0	1.793	Unclassified
S2.000	S1.17	225	1.200	2.089	Unclassified	1200	0	1.200	Unclassified
S2.001	S1.18	225	1.617	2.052	Unclassified	1200	0	1.884	Unclassified
S3.000	S1.20	225	1.320	2.020	Unclassified	1200	0	1.320	Unclassified
S2.002	S1.19	300	1.690	2.080	Unclassified	1200	0	2.053	Unclassified
S4.000	S1.21	150	1.201	1.732	Unclassified	1200	0	1.201	Unclassified
S4.001	S1.22	150	1.732	2.142	Unclassified	1200	0	1.732	Unclassified
S1.010	S1.11	450	1.036	2.129	Unclassified	1350	0	2.129	Unclassified
S5.000	S1.23	225	0.844	1.620	Unclassified	1200	0	1.620	Unclassified
S1.011	S1.12	525	0.973	1.061	Unclassified	1500	0	1.061	Unclassified
S1.012	SP1INLET	150	0.324	1.350	Unclassified	1500	0	1.350	Unclassified
S1.013	SP10UTLET	150	0.502	1.504	Unclassified	1200	0	0.502	Unclassified
S1.014	S1.13	150	0.643	1.504	Unclassified	1200	0	1.504	Unclassified

Free Flowing Outfall Details for 11873 CATCHMENT 1 REV05.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.014	S10UTFALL	8.500	7.707	0.000	1200	0

Simulation Criteria for 11873 CATCHMENT 1 REV05.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Storage Structures	1
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Rainfall Profile Details

Event Name Duration (mins) 0 Timestep (mins) 1 Profiles 1

CampbellReith		Page 4
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Online Controls for 11873 CATCHMENT 1 REV05.SWS

Hydro-Brake® Optimum Manhole: S1.13, DS/PN: S1.014, Volume (m³): 1.9

Unit Reference	MD-SHE-0104-5500-1400-5500
Design Head (m)	1.400
Design Flow (l/s)	5.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	104
Invert Level (m)	9.150
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)	1.400	5.5	Kick-Flo®	0.861	4.4
Flush-Flo™	0.419	5.5	Mean Flow over Head Range	-	4.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.5	0.800	4.8	2.000	6.5	4.000	9.0	7.000	11.7
0.200	5.0	1.000	4.7	2.200	6.8	4.500	9.5	7.500	12.1
0.300	5.4	1.200	5.1	2.400	7.1	5.000	10.0	8.000	12.5
0.400	5.5	1.400	5.5	2.600	7.3	5.500	10.5	8.500	12.9
0.500	5.5	1.600	5.9	3.000	7.9	6.000	10.9	9.000	13.2
0.600	5.4	1.800	6.2	3.500	8.4	6.500	11.3	9.500	13.6

CampbellReith		Page 5
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Storage Structures for 11873 CATCHMENT 1 REV05.SWS

Tank or Pond Manhole: SP1INLET, DS/PN: S1.012

Invert Level (m) 9.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	826.4	1.200	826.4

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	2	+0%					21.115	-0.140
S1.001	S1.02	15 Winter	2	+0%					20.628	-0.209
S1.002	S1.03	15 Winter	2	+0%					20.240	-0.229
S1.003	S1.04	15 Winter	2	+0%					18.883	-0.213
S1.004	S1.05	15 Winter	2	+0%					17.579	-0.221
S1.005	S1.06	15 Winter	2	+0%					14.182	-0.272
S1.006	S1.07	15 Winter	2	+0%					12.793	-0.268
S1.007	S1.08	15 Winter	2	+0%					10.994	-0.286
S1.008	S1.09	15 Winter	2	+0%					10.772	-0.293
S1.009	S1.10	15 Winter	2	+0%	100/15 Summer				10.522	-0.268
S2.000	S1.17	15 Winter	2	+0%					12.634	-0.176
S2.001	S1.18	15 Winter	2	+0%					12.295	-0.151
S3.000	S1.20	15 Winter	2	+0%					11.467	-0.158
S2.002	S1.19	15 Winter	2	+0%					11.147	-0.200
S4.000	S1.21	15 Winter	2	+0%					10.747	-0.103
S4.001	S1.22	15 Winter	2	+0%	100/15 Summer				10.657	-0.088
S1.010	S1.11	15 Winter	2	+0%					10.308	-0.291
S5.000	S1.23	15 Winter	2	+0%					10.840	-0.173
S1.011	S1.12	15 Winter	2	+0%	100/15 Summer				9.662	-0.312
S1.012	SP1INLET	600 Winter	2	+0%	2/120 Winter				9.398	0.048
S1.013	SP10UTLET	1440 Winter	2	+0%	2/180 Winter	100/2880 Winter			9.608	0.268
S1.014	S1.13	1440 Winter	2	+0%	2/60 Winter	2/2160 Summer			9.485	0.185

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.30		14.2	OK	
S1.001	S1.02	0.000	0.20		19.9	OK	

CampbellReith		Page 7
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.13		24.2	OK	
S1.003	S1.04	0.000	0.18		30.7	OK	
S1.004	S1.05	0.000	0.15		37.5	OK	
S1.005	S1.06	0.000	0.17		48.7	OK	
S1.006	S1.07	0.000	0.18		57.5	OK	
S1.007	S1.08	0.000	0.29		63.8	OK	
S1.008	S1.09	0.000	0.27		68.3	OK	
S1.009	S1.10	0.000	0.34		74.2	OK	
S2.000	S1.17	0.000	0.11		5.8	OK	
S2.001	S1.18	0.000	0.23		14.9	OK	
S3.000	S1.20	0.000	0.19		8.7	OK	
S2.002	S1.19	0.000	0.24		42.2	OK	
S4.000	S1.21	0.000	0.22		3.3	OK	
S4.001	S1.22	0.000	0.36		5.6	OK	
S1.010	S1.11	0.000	0.27		118.4	OK	
S5.000	S1.23	0.000	0.12		14.9	OK	
S1.011	S1.12	0.000	0.34		130.9	OK	
S1.012	SP1INLET	0.000	0.97		5.2	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.40		5.0	FLOOD RISK	
S1.014	S1.13	0.000	0.12		4.8	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	30	+0%					21.153	-0.102
S1.001	S1.02	15 Winter	30	+0%					20.669	-0.168
S1.002	S1.03	15 Winter	30	+0%					20.274	-0.195
S1.003	S1.04	15 Winter	30	+0%					18.927	-0.169
S1.004	S1.05	15 Winter	30	+0%					17.620	-0.180
S1.005	S1.06	15 Winter	30	+0%					14.237	-0.217
S1.006	S1.07	15 Winter	30	+0%					12.852	-0.209
S1.007	S1.08	15 Winter	30	+0%					11.091	-0.189
S1.008	S1.09	15 Winter	30	+0%					10.864	-0.201
S1.009	S1.10	15 Winter	30	+0%	100/15 Summer				10.635	-0.155
S2.000	S1.17	15 Winter	30	+0%					12.654	-0.156
S2.001	S1.18	15 Winter	30	+0%					12.335	-0.111
S3.000	S1.20	15 Winter	30	+0%					11.494	-0.131
S2.002	S1.19	15 Winter	30	+0%					11.202	-0.145
S4.000	S1.21	15 Winter	30	+0%					10.767	-0.083
S4.001	S1.22	15 Winter	30	+0%	100/15 Summer				10.693	-0.052
S1.010	S1.11	15 Winter	30	+0%					10.399	-0.200
S5.000	S1.23	15 Winter	30	+0%					10.861	-0.152
S1.011	S1.12	15 Winter	30	+0%	100/15 Summer				9.788	-0.186
S1.012	SP1INLET	480 Winter	30	+0%	2/120 Winter				9.591	0.241
S1.013	SP1OUTLET	600 Summer	30	+0%	2/180 Winter	100/2880 Winter			9.642	0.302
S1.014	S1.13	1440 Winter	30	+0%	2/60 Winter	2/2160 Summer			9.621	0.321

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.56		26.3	OK	
S1.001	S1.02	0.000	0.39		39.1	OK	

CampbellReith		Page 9
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.26			48.6	OK	
S1.003	S1.04	0.000	0.38			63.9	OK	
S1.004	S1.05	0.000	0.33			80.0	OK	
S1.005	S1.06	0.000	0.36			106.0	OK	
S1.006	S1.07	0.000	0.39			126.2	OK	
S1.007	S1.08	0.000	0.63			140.4	OK	
S1.008	S1.09	0.000	0.58			149.3	OK	
S1.009	S1.10	0.000	0.75			162.6	OK	
S2.000	S1.17	0.000	0.20			11.0	OK	
S2.001	S1.18	0.000	0.49			31.1	OK	
S3.000	S1.20	0.000	0.36			16.4	OK	
S2.002	S1.19	0.000	0.51			91.6	OK	
S4.000	S1.21	0.000	0.41			6.2	OK	
S4.001	S1.22	0.000	0.74			11.6	OK	
S1.010	S1.11	0.000	0.58			255.2	OK	
S5.000	S1.23	0.000	0.23			28.2	OK	
S1.011	S1.12	0.000	0.73			280.1	OK	
S1.012	SP1INLET	0.000	1.22			6.5	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.46			5.7	FLOOD RISK	
S1.014	S1.13	0.000	0.14			5.4	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	100	+20%					21.196	-0.059
S1.001	S1.02	15 Winter	100	+20%					20.708	-0.129
S1.002	S1.03	15 Winter	100	+20%					20.303	-0.166
S1.003	S1.04	15 Winter	100	+20%					18.966	-0.130
S1.004	S1.05	15 Winter	100	+20%					17.654	-0.146
S1.005	S1.06	15 Winter	100	+20%					14.283	-0.171
S1.006	S1.07	15 Winter	100	+20%					12.901	-0.160
S1.007	S1.08	15 Winter	100	+20%					11.186	-0.094
S1.008	S1.09	15 Winter	100	+20%					11.006	-0.059
S1.009	S1.10	15 Winter	100	+20%	100/15 Summer				10.809	0.019
S2.000	S1.17	15 Winter	100	+20%					12.672	-0.138
S2.001	S1.18	15 Winter	100	+20%					12.373	-0.073
S3.000	S1.20	15 Winter	100	+20%					11.522	-0.103
S2.002	S1.19	15 Winter	100	+20%					11.254	-0.093
S4.000	S1.21	15 Winter	100	+20%					10.811	-0.039
S4.001	S1.22	15 Winter	100	+20%	100/15 Summer				10.770	0.025
S1.010	S1.11	15 Winter	100	+20%					10.478	-0.121
S5.000	S1.23	15 Winter	100	+20%					10.881	-0.132
S1.011	S1.12	15 Winter	100	+20%	100/15 Summer				10.002	0.028
S1.012	SP1INLET	720 Winter	100	+20%	2/120 Winter				9.874	0.524
S1.013	SP10OUTLET	600 Summer	100	+20%	2/180 Winter	100/2880 Winter			9.840	0.500
S1.014	S1.13	720 Winter	100	+20%	2/60 Winter	2/2160 Summer			9.866	0.566

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.86		40.8	OK	
S1.001	S1.02	0.000	0.60		60.6	OK	

CampbellReith		Page 11
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Original	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.40			75.5	OK	
S1.003	S1.04	0.000	0.59			99.2	OK	
S1.004	S1.05	0.000	0.51			124.0	OK	
S1.005	S1.06	0.000	0.56			164.1	OK	
S1.006	S1.07	0.000	0.61			195.4	OK	
S1.007	S1.08	0.000	0.97			217.2	OK	
S1.008	S1.09	0.000	0.88			225.9	OK	
S1.009	S1.10	0.000	1.11			241.9	SURCHARGED	
S2.000	S1.17	0.000	0.31			17.1	OK	
S2.001	S1.18	0.000	0.76			48.3	OK	
S3.000	S1.20	0.000	0.55			25.5	OK	
S2.002	S1.19	0.000	0.80			142.0	OK	
S4.000	S1.21	0.000	0.62			9.4	OK	
S4.001	S1.22	0.000	1.09			17.2	SURCHARGED	
S1.010	S1.11	0.000	0.87			378.5	OK	
S5.000	S1.23	0.000	0.35			43.7	OK	
S1.011	S1.12	0.000	1.10			419.1	SURCHARGED	
S1.012	SP1INLET	0.000	1.15			6.1	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.49			6.1	FLOOD RISK	
S1.014	S1.13	0.000	0.14			5.5	SURCHARGED	

15 Bermondsey Square
London
SE1 3UN

- ◆ T: +44 (0)20 7340 1700
- ◆ E: london@campbellreith.com
- ◆ W: www.campbellreith.com

Bexhill

Design Calculations

13623- Proposed Surface Water Network,
Updated with Climate Change
Rev P7

Date: 06/09/23

Project No: 13623

Engineer: A. Day

Checked: A. Higgins

CampbellReith		Page 0
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 11873 CATCHMENT 1 REV05.SWS

Pipe Sizes 11873 CATCHMENT 1 REV04 Manhole Sizes 11873 CATCHMENT 1 REV04

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
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)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 11873 CATCHMENT 1 REV05.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.314	8-12	0.671	12-16	0.039

Total Area Contributing (ha) = 1.024

Total Pipe Volume (m³) = 55.931

Network Design Table for 11873 CATCHMENT 1 REV05.SWS

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	46.000	0.418	110.0	0.087	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	35.000	0.343	102.0	0.042	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	41.000	1.348	30.4	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.003	50.000	1.271	39.3	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.004	63.000	3.346	18.8	0.053	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.005	54.985	1.368	40.2	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.006	61.607	1.781	34.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.007	29.000	0.190	152.6	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.008	29.000	0.250	116.0	0.040	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.62	21.030	0.087	0.0	0.0	0.0	1.25	49.5	11.8
S1.001	50.00	5.99	20.537	0.129	0.0	0.0	0.0	1.56	110.0	17.5
S1.002	50.00	6.23	20.169	0.161	0.0	0.0	0.0	2.86	202.3	21.8
S1.003	50.00	6.56	18.796	0.211	0.0	0.0	0.0	2.51	177.7	28.6
S1.004	50.00	6.85	17.500	0.264	0.0	0.0	0.0	3.64	257.3	35.7
S1.005	50.00	7.17	14.079	0.350	0.0	0.0	0.0	2.87	316.5	47.4
S1.006	50.00	7.50	12.686	0.417	0.0	0.0	0.0	3.09	341.3	56.5
S1.007	50.00	7.80	10.830	0.467	0.0	0.0	0.0	1.64	261.3	63.2
S1.008	50.00	8.05	10.615	0.507	0.0	0.0	0.0	1.89	300.1	68.7

CampbellReith				Page 1			
Raven House 29 Linkfield Lane Surrey RH1 1SS				Bexhill WPS01 Catchment Updated			
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx				Designed by AD Checked by AH			
XP Solutions				Network 2020.1			



Network Design Table for 11873 CATCHMENT 1 REV05.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.009	26.000	0.166	156.6	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S2.000	28.143	0.364	77.3	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	68.942	1.098	62.8	0.065	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	24.982	0.231	108.1	0.054	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	20.999	0.699	30.0	0.136	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	12.000	0.105	114.3	0.066	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	15.999	0.146	109.6	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.010	17.001	0.600	28.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.000	15.001	1.087	13.8	0.091	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.011	14.000	0.247	56.7	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.012	44.741	0.010	4474.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.013	4.411	0.040	110.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.014	26.801	1.443	18.6	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)
S1.009	50.00	8.32	10.340	0.559	0.0	0.0	0.0	1.62	258.0	75.7
S2.000	50.00	5.32	12.585	0.036	0.0	0.0	0.0	1.49	59.2	4.9
S2.001	50.00	6.01	12.221	0.101	0.0	0.0	0.0	1.65	65.7	13.7
S3.000	50.00	5.33	11.400	0.054	0.0	0.0	0.0	1.26	50.0	7.3
S2.002	50.00	6.13	11.047	0.291	0.0	0.0	0.0	2.88	203.5	39.4
S4.000	50.00	5.21	10.700	0.066	0.0	0.0	0.0	0.94	16.6	8.9
S4.001	50.00	5.49	10.595	0.083	0.0	0.0	0.0	0.96	17.0	11.2
S1.010	50.00	8.39	10.149	0.933	0.0	0.0	0.0	3.83	609.3	126.3
S5.000	50.00	5.07	10.788	0.091	0.0	0.0	0.0	3.54	140.8	12.3
S1.011	50.00	8.47	9.449	1.024	0.0	0.0	0.0	2.98	645.0	138.7
S1.012	50.00	13.74	9.200	1.024	0.0	0.0	0.0	0.14	2.5<	138.7
S1.013	50.00	13.81	9.190	1.024	0.0	0.0	0.0	0.96	16.9<	138.7
S1.014	50.00	14.00	9.150	1.024	0.0	0.0	0.0	2.35	41.5<	138.7

CampbellReith		Page 2
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Area Summary for 11873 CATCHMENT 1 REV05.SWS

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.087	0.087	0.087
1.001	-	-	100	0.042	0.042	0.042
1.002	-	-	100	0.032	0.032	0.032
1.003	-	-	100	0.050	0.050	0.050
1.004	-	-	100	0.053	0.053	0.053
1.005	-	-	100	0.086	0.086	0.086
1.006	-	-	100	0.067	0.067	0.067
1.007	-	-	100	0.050	0.050	0.050
1.008	-	-	100	0.040	0.040	0.040
1.009	-	-	100	0.052	0.052	0.052
2.000	-	-	100	0.036	0.036	0.036
2.001	-	-	100	0.065	0.065	0.065
3.000	-	-	100	0.054	0.054	0.054
2.002	-	-	100	0.136	0.136	0.136
4.000	-	-	100	0.066	0.066	0.066
4.001	-	-	100	0.017	0.017	0.017
1.010	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.091	0.091	0.091
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.024	1.024	1.024

CampbellReith			Page 3		
Raven House 29 Linkfield Lane Surrey RH1 1SS			Bexhill WPS01 Catchment Updated		
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx			Designed by AD Checked by AH		
XP Solutions			Network 2020.1		



Network Classifications for 11873 CATCHMENT 1 REV05.SWS

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1.01	225	2.393	4.995	Unclassified	1200	0	2.393	Unclassified
S1.001	S1.02	300	4.635	4.995	Unclassified	1200	0	4.995	Unclassified
S1.002	S1.03	300	4.503	4.955	Unclassified	1200	0	4.955	Unclassified
S1.003	S1.04	300	2.083	4.528	Unclassified	1200	0	4.528	Unclassified
S1.004	S1.05	300	1.194	2.108	Unclassified	1200	0	2.108	Unclassified
S1.005	S1.06	375	0.995	1.402	Unclassified	1200	0	1.275	Unclassified
S1.006	S1.07	375	1.427	2.578	Unclassified	1200	0	1.427	Unclassified
S1.007	S1.08	450	2.150	2.578	Unclassified	1350	0	2.578	Unclassified
S1.008	S1.09	450	1.768	2.175	Unclassified	1350	0	2.175	Unclassified
S1.009	S1.10	450	1.722	2.104	Unclassified	1350	0	1.793	Unclassified
S2.000	S1.17	225	1.200	2.089	Unclassified	1200	0	1.200	Unclassified
S2.001	S1.18	225	1.617	2.052	Unclassified	1200	0	1.884	Unclassified
S3.000	S1.20	225	1.320	2.020	Unclassified	1200	0	1.320	Unclassified
S2.002	S1.19	300	1.690	2.080	Unclassified	1200	0	2.053	Unclassified
S4.000	S1.21	150	1.201	1.732	Unclassified	1200	0	1.201	Unclassified
S4.001	S1.22	150	1.732	2.142	Unclassified	1200	0	1.732	Unclassified
S1.010	S1.11	450	1.036	2.129	Unclassified	1350	0	2.129	Unclassified
S5.000	S1.23	225	0.844	1.620	Unclassified	1200	0	1.620	Unclassified
S1.011	S1.12	525	0.973	1.061	Unclassified	1500	0	1.061	Unclassified
S1.012	SP1INLET	150	0.324	1.350	Unclassified	1500	0	1.350	Unclassified
S1.013	SP10UTLET	150	0.502	1.504	Unclassified	1200	0	0.502	Unclassified
S1.014	S1.13	150	0.643	1.504	Unclassified	1200	0	1.504	Unclassified

Free Flowing Outfall Details for 11873 CATCHMENT 1 REV05.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.014	S10UTFALL	8.500	7.707	0.000	1200	0

Simulation Criteria for 11873 CATCHMENT 1 REV05.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
		Number of Storage Structures	1
		Number of Real Time Controls	0

Rainfall Profile Details

Event Name Duration (mins) 0 Timestep (mins) 1 Profiles 1

CampbellReith		Page 4
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Online Controls for 11873 CATCHMENT 1 REV05.SWS

Hydro-Brake® Optimum Manhole: S1.13, DS/PN: S1.014, Volume (m³): 1.9

Unit Reference	MD-SHE-0104-5500-1400-5500
Design Head (m)	1.400
Design Flow (l/s)	5.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	104
Invert Level (m)	9.150
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)	1.400	5.5	Kick-Flo®	0.861	4.4
Flush-Flo™	0.419	5.5	Mean Flow over Head Range	-	4.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.5	0.800	4.8	2.000	6.5	4.000	9.0	7.000	11.7
0.200	5.0	1.000	4.7	2.200	6.8	4.500	9.5	7.500	12.1
0.300	5.4	1.200	5.1	2.400	7.1	5.000	10.0	8.000	12.5
0.400	5.5	1.400	5.5	2.600	7.3	5.500	10.5	8.500	12.9
0.500	5.5	1.600	5.9	3.000	7.9	6.000	10.9	9.000	13.2
0.600	5.4	1.800	6.2	3.500	8.4	6.500	11.3	9.500	13.6

CampbellReith		Page 5
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Storage Structures for 11873 CATCHMENT 1 REV05.SWS

Tank or Pond Manhole: SP1INLET, DS/PN: S1.012

Invert Level (m) 9.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	826.4	1.200	826.4

Bexhill
WPS01
Catchment Updated

Designed by AD
Checked by AH



Network 2020.1

CATCHMENT 1 REV05.SWS

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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

Rainfall Model	FSR M5-60 (mm)	19.000	Cv (Summer)	0.750	
Region	England and Wales	Ratio R	0.350	Cv (Winter)	0.840

```
Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF
      Analysis Timestep   Fine Inertia Status OFF
      DTS 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)	2, 30, 100
Climate Change (%)	0, 0, 20

									Water	Surcharged
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)
S1.000	S1.01	15 Winter	2	+0%					21.115	-0.140
S1.001	S1.02	15 Winter	2	+0%					20.628	-0.209
S1.002	S1.03	15 Winter	2	+0%					20.240	-0.229
S1.003	S1.04	15 Winter	2	+0%					18.883	-0.213
S1.004	S1.05	15 Winter	2	+0%					17.579	-0.221
S1.005	S1.06	15 Winter	2	+0%					14.182	-0.272
S1.006	S1.07	15 Winter	2	+0%					12.793	-0.268
S1.007	S1.08	15 Winter	2	+0%					10.994	-0.286
S1.008	S1.09	15 Winter	2	+0%					10.772	-0.293
S1.009	S1.10	15 Winter	2	+0%	100/15 Summer				10.522	-0.268
S2.000	S1.17	15 Winter	2	+0%					12.634	-0.176
S2.001	S1.18	15 Winter	2	+0%					12.295	-0.151
S3.000	S1.20	15 Winter	2	+0%					11.467	-0.158
S2.002	S1.19	15 Winter	2	+0%					11.147	-0.200
S4.000	S1.21	15 Winter	2	+0%	30/15 Summer				10.795	-0.055
S4.001	S1.22	15 Winter	2	+0%	30/15 Summer				10.701	-0.044
S1.010	S1.11	15 Winter	2	+0%					10.313	-0.286
S5.000	S1.23	15 Winter	2	+0%					10.840	-0.173
S1.011	S1.12	15 Winter	2	+0%	100/15 Summer				9.668	-0.306
S1.012	SP1INLET	720 Winter	2	+0%	2/120 Summer				9.409	0.059
S1.013	SP10UTLET	1440 Winter	2	+0%	2/180 Winter	30/2880 Winter			9.527	0.187
S1.014	S1.13	1440 Winter	2	+0%	2/120 Summer	2/2160 Summer			9.602	0.302

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.30			14.2	OK	
S1.001	S1.02	0.000	0.20			19.9	OK	

CampbellReith		Page 7
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.13			24.2	OK	
S1.003	S1.04	0.000	0.18			30.7	OK	
S1.004	S1.05	0.000	0.15			37.5	OK	
S1.005	S1.06	0.000	0.17			48.7	OK	
S1.006	S1.07	0.000	0.18			57.5	OK	
S1.007	S1.08	0.000	0.29			63.8	OK	
S1.008	S1.09	0.000	0.27			68.3	OK	
S1.009	S1.10	0.000	0.34			74.2	OK	
S2.000	S1.17	0.000	0.11			5.8	OK	
S2.001	S1.18	0.000	0.23			14.9	OK	
S3.000	S1.20	0.000	0.19			8.7	OK	
S2.002	S1.19	0.000	0.24			42.2	OK	
S4.000	S1.21	0.000	0.71			10.7	OK	
S4.001	S1.22	0.000	0.83			13.1	OK	
S1.010	S1.11	0.000	0.29			125.6	OK	
S5.000	S1.23	0.000	0.12			14.9	OK	
S1.011	S1.12	0.000	0.36			138.2	OK	
S1.012	SP1INLET	0.000	0.96			5.1	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.40			5.1	SURCHARGED	4
S1.014	S1.13	0.000	0.12			4.8	SURCHARGED	

CampbellReith		Page 8
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS 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) 2, 30, 100
 Climate Change (%) 0, 0, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	30	+0%					21.153	-0.102
S1.001	S1.02	15 Winter	30	+0%					20.669	-0.168
S1.002	S1.03	15 Winter	30	+0%					20.274	-0.195
S1.003	S1.04	15 Winter	30	+0%					18.927	-0.169
S1.004	S1.05	15 Winter	30	+0%					17.620	-0.180
S1.005	S1.06	15 Winter	30	+0%					14.237	-0.217
S1.006	S1.07	15 Winter	30	+0%					12.852	-0.209
S1.007	S1.08	15 Winter	30	+0%					11.091	-0.189
S1.008	S1.09	15 Winter	30	+0%					10.864	-0.201
S1.009	S1.10	15 Winter	30	+0%	100/15 Summer				10.635	-0.155
S2.000	S1.17	15 Winter	30	+0%					12.654	-0.156
S2.001	S1.18	15 Winter	30	+0%					12.335	-0.111
S3.000	S1.20	15 Winter	30	+0%					11.494	-0.131
S2.002	S1.19	15 Winter	30	+0%					11.202	-0.145
S4.000	S1.21	15 Winter	30	+0%	30/15 Summer				11.068	0.218
S4.001	S1.22	15 Winter	30	+0%	30/15 Summer				10.906	0.161
S1.010	S1.11	15 Winter	30	+0%					10.406	-0.193
S5.000	S1.23	15 Winter	30	+0%					10.861	-0.152
S1.011	S1.12	15 Winter	30	+0%	100/15 Summer				9.798	-0.176
S1.012	SP1INLET	600 Winter	30	+0%	2/120 Summer				9.615	0.265
S1.013	SP10OUTLET	360 Winter	30	+0%	2/180 Winter	30/2880 Winter			9.613	0.273
S1.014	S1.13	2880 Winter	30	+0%	2/120 Summer	2/2160 Summer			9.710	0.410

PN	US/MH Name	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.56		26.3	OK	
S1.001	S1.02	0.000	0.39		39.1	OK	

CampbellReith		Page 9
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.26			48.6	OK	
S1.003	S1.04	0.000	0.38			63.9	OK	
S1.004	S1.05	0.000	0.33			80.0	OK	
S1.005	S1.06	0.000	0.36			106.0	OK	
S1.006	S1.07	0.000	0.39			126.2	OK	
S1.007	S1.08	0.000	0.63			140.4	OK	
S1.008	S1.09	0.000	0.58			149.3	OK	
S1.009	S1.10	0.000	0.75			162.6	OK	
S2.000	S1.17	0.000	0.20			11.0	OK	
S2.001	S1.18	0.000	0.49			31.1	OK	
S3.000	S1.20	0.000	0.36			16.4	OK	
S2.002	S1.19	0.000	0.51			91.6	OK	
S4.000	S1.21	0.000	1.22			18.4	SURCHARGED	
S4.001	S1.22	0.000	1.45			22.8	SURCHARGED	
S1.010	S1.11	0.000	0.61			265.7	OK	
S5.000	S1.23	0.000	0.23			28.2	OK	
S1.011	S1.12	0.000	0.76			291.3	OK	
S1.012	SP1INLET	0.000	1.28			6.8	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.46			5.7	FLOOD RISK	4
S1.014	S1.13	0.058	0.13			5.3	FLOOD	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	100	+20%					21.196	-0.059
S1.001	S1.02	15 Winter	100	+20%					20.708	-0.129
S1.002	S1.03	15 Winter	100	+20%					20.303	-0.166
S1.003	S1.04	15 Winter	100	+20%					18.966	-0.130
S1.004	S1.05	15 Winter	100	+20%					17.654	-0.146
S1.005	S1.06	15 Winter	100	+20%					14.283	-0.171
S1.006	S1.07	15 Winter	100	+20%					12.901	-0.160
S1.007	S1.08	15 Winter	100	+20%					11.186	-0.094
S1.008	S1.09	15 Winter	100	+20%					11.006	-0.059
S1.009	S1.10	15 Winter	100	+20%	100/15 Summer				10.809	0.019
S2.000	S1.17	15 Winter	100	+20%					12.672	-0.138
S2.001	S1.18	15 Winter	100	+20%					12.373	-0.073
S3.000	S1.20	15 Winter	100	+20%					11.522	-0.103
S2.002	S1.19	15 Winter	100	+20%					11.254	-0.093
S4.000	S1.21	15 Winter	100	+20%	30/15 Summer				11.597	0.747
S4.001	S1.22	15 Winter	100	+20%	30/15 Summer				11.250	0.505
S1.010	S1.11	15 Winter	100	+20%					10.509	-0.090
S5.000	S1.23	15 Winter	100	+20%					10.881	-0.132
S1.011	S1.12	15 Winter	100	+20%	100/15 Summer				10.019	0.045
S1.012	SP1INLET	720 Winter	100	+20%	2/120 Summer				9.906	0.556
S1.013	SP10OUTLET	1440 Winter	100	+20%	2/180 Winter	30/2880 Winter			9.862	0.522
S1.014	S1.13	480 Winter	100	+20%	2/120 Summer	2/2160 Summer			10.136	0.836

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.86		40.8	OK	
S1.001	S1.02	0.000	0.60		60.6	OK	

CampbellReith		Page 11
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.40		75.5	OK	
S1.003	S1.04	0.000	0.59		99.2	OK	
S1.004	S1.05	0.000	0.51		124.0	OK	
S1.005	S1.06	0.000	0.56		164.1	OK	
S1.006	S1.07	0.000	0.61		195.4	OK	
S1.007	S1.08	0.000	0.97		217.2	OK	
S1.008	S1.09	0.000	0.88		225.9	OK	
S1.009	S1.10	0.000	1.11		241.9	SURCHARGED	
S2.000	S1.17	0.000	0.31		17.1	OK	
S2.001	S1.18	0.000	0.76		48.3	OK	
S3.000	S1.20	0.000	0.55		25.5	OK	
S2.002	S1.19	0.000	0.80		142.0	OK	
S4.000	S1.21	0.000	1.80		27.0	SURCHARGED	
S4.001	S1.22	0.000	2.11		33.1	SURCHARGED	
S1.010	S1.11	0.000	0.90		394.5	OK	
S5.000	S1.23	0.000	0.35		43.7	OK	
S1.011	S1.12	0.000	1.13		431.7	SURCHARGED	
S1.012	SP1INLET	0.000	1.16		6.2	SURCHARGED	
S1.013	SP1OUTLET	21.522	0.45		5.6	FLOOD	4
S1.014	S1.13	0.000	0.14		5.5	SURCHARGED	

15 Bermondsey Square
London
SE1 3UN

- ◆ T: +44 (0)20 7340 1700
- ◆ E: london@campbellreith.com
- ◆ W: www.campbellreith.com

Bexhill

Design Calculations

13623- Proposed Surface Water Network,
Updated without Climate Change
Rev P7

Date: 06/09/23

Project No: 13623

Engineer: A. Day

Checked: A. Higgins

CampbellReith		Page 0
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 11873 CATCHMENT 1 REV05.SWS

Pipe Sizes 11873 CATCHMENT 1 REV04 Manhole Sizes 11873 CATCHMENT 1 REV04

FSR Rainfall Model - England and Wales			
Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
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)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for 11873 CATCHMENT 1 REV05.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.314	8-12	0.671	12-16	0.039

Total Area Contributing (ha) = 1.024

Total Pipe Volume (m³) = 55.931

Network Design Table for 11873 CATCHMENT 1 REV05.SWS

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	46.000	0.418	110.0	0.087	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	35.000	0.343	102.0	0.042	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	41.000	1.348	30.4	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.003	50.000	1.271	39.3	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.004	63.000	3.346	18.8	0.053	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.005	54.985	1.368	40.2	0.086	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.006	61.607	1.781	34.6	0.067	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.007	29.000	0.190	152.6	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.008	29.000	0.250	116.0	0.040	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.62	21.030	0.087	0.0	0.0	0.0	1.25	49.5	11.8
S1.001	50.00	5.99	20.537	0.129	0.0	0.0	0.0	1.56	110.0	17.5
S1.002	50.00	6.23	20.169	0.161	0.0	0.0	0.0	2.86	202.3	21.8
S1.003	50.00	6.56	18.796	0.211	0.0	0.0	0.0	2.51	177.7	28.6
S1.004	50.00	6.85	17.500	0.264	0.0	0.0	0.0	3.64	257.3	35.7
S1.005	50.00	7.17	14.079	0.350	0.0	0.0	0.0	2.87	316.5	47.4
S1.006	50.00	7.50	12.686	0.417	0.0	0.0	0.0	3.09	341.3	56.5
S1.007	50.00	7.80	10.830	0.467	0.0	0.0	0.0	1.64	261.3	63.2
S1.008	50.00	8.05	10.615	0.507	0.0	0.0	0.0	1.89	300.1	68.7

CampbellReith		Page 1
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Network Design Table for 11873 CATCHMENT 1 REV05.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.009	26.000	0.166	156.6	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit	
S2.000	28.143	0.364	77.3	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	68.942	1.098	62.8	0.065	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	24.982	0.231	108.1	0.054	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	20.999	0.699	30.0	0.136	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.000	12.000	0.105	114.3	0.066	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.001	15.999	0.146	109.6	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.010	17.001	0.600	28.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.000	15.001	1.087	13.8	0.091	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.011	14.000	0.247	56.7	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.012	44.741	0.010	4474.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.013	4.411	0.040	110.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.014	26.801	1.443	18.6	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)
S1.009	50.00	8.32	10.340	0.559	0.0	0.0	0.0	1.62	258.0	75.7
S2.000	50.00	5.32	12.585	0.036	0.0	0.0	0.0	1.49	59.2	4.9
S2.001	50.00	6.01	12.221	0.101	0.0	0.0	0.0	1.65	65.7	13.7
S3.000	50.00	5.33	11.400	0.054	0.0	0.0	0.0	1.26	50.0	7.3
S2.002	50.00	6.13	11.047	0.291	0.0	0.0	0.0	2.88	203.5	39.4
S4.000	50.00	5.21	10.700	0.066	0.0	0.0	0.0	0.94	16.6	8.9
S4.001	50.00	5.49	10.595	0.083	0.0	0.0	0.0	0.96	17.0	11.2
S1.010	50.00	8.39	10.149	0.933	0.0	0.0	0.0	3.83	609.3	126.3
S5.000	50.00	5.07	10.788	0.091	0.0	0.0	0.0	3.54	140.8	12.3
S1.011	50.00	8.47	9.449	1.024	0.0	0.0	0.0	2.98	645.0	138.7
S1.012	50.00	13.74	9.200	1.024	0.0	0.0	0.0	0.14	2.5<	138.7
S1.013	50.00	13.81	9.190	1.024	0.0	0.0	0.0	0.96	16.9<	138.7
S1.014	50.00	14.00	9.150	1.024	0.0	0.0	0.0	2.35	41.5<	138.7

CampbellReith		Page 2
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Area Summary for 11873 CATCHMENT 1 REV05.SWS

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.087	0.087	0.087
1.001	-	-	100	0.042	0.042	0.042
1.002	-	-	100	0.032	0.032	0.032
1.003	-	-	100	0.050	0.050	0.050
1.004	-	-	100	0.053	0.053	0.053
1.005	-	-	100	0.086	0.086	0.086
1.006	-	-	100	0.067	0.067	0.067
1.007	-	-	100	0.050	0.050	0.050
1.008	-	-	100	0.040	0.040	0.040
1.009	-	-	100	0.052	0.052	0.052
2.000	-	-	100	0.036	0.036	0.036
2.001	-	-	100	0.065	0.065	0.065
3.000	-	-	100	0.054	0.054	0.054
2.002	-	-	100	0.136	0.136	0.136
4.000	-	-	100	0.066	0.066	0.066
4.001	-	-	100	0.017	0.017	0.017
1.010	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.091	0.091	0.091
1.011	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.000	0.000	0.000
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.024	1.024	1.024

CampbellReith		Page 3
Raven House 29 Linkfield Lane Surrey RH1 1SS		Bexhill WPS01 Catchment Updated
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx		Designed by AD Checked by AH
XP Solutions		Network 2020.1



Network Classifications for 11873 CATCHMENT 1 REV05.SWS

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1.01	225	2.393	4.995	Unclassified	1200	0	2.393	Unclassified
S1.001	S1.02	300	4.635	4.995	Unclassified	1200	0	4.995	Unclassified
S1.002	S1.03	300	4.503	4.955	Unclassified	1200	0	4.955	Unclassified
S1.003	S1.04	300	2.083	4.528	Unclassified	1200	0	4.528	Unclassified
S1.004	S1.05	300	1.194	2.108	Unclassified	1200	0	2.108	Unclassified
S1.005	S1.06	375	0.995	1.402	Unclassified	1200	0	1.275	Unclassified
S1.006	S1.07	375	1.427	2.578	Unclassified	1200	0	1.427	Unclassified
S1.007	S1.08	450	2.150	2.578	Unclassified	1350	0	2.578	Unclassified
S1.008	S1.09	450	1.768	2.175	Unclassified	1350	0	2.175	Unclassified
S1.009	S1.10	450	1.722	2.104	Unclassified	1350	0	1.793	Unclassified
S2.000	S1.17	225	1.200	2.089	Unclassified	1200	0	1.200	Unclassified
S2.001	S1.18	225	1.617	2.052	Unclassified	1200	0	1.884	Unclassified
S3.000	S1.20	225	1.320	2.020	Unclassified	1200	0	1.320	Unclassified
S2.002	S1.19	300	1.690	2.080	Unclassified	1200	0	2.053	Unclassified
S4.000	S1.21	150	1.201	1.732	Unclassified	1200	0	1.201	Unclassified
S4.001	S1.22	150	1.732	2.142	Unclassified	1200	0	1.732	Unclassified
S1.010	S1.11	450	1.036	2.129	Unclassified	1350	0	2.129	Unclassified
S5.000	S1.23	225	0.844	1.620	Unclassified	1200	0	1.620	Unclassified
S1.011	S1.12	525	0.973	1.061	Unclassified	1500	0	1.061	Unclassified
S1.012	SP1INLET	150	0.324	1.350	Unclassified	1500	0	1.350	Unclassified
S1.013	SP10UTLET	150	0.502	1.504	Unclassified	1200	0	0.502	Unclassified
S1.014	S1.13	150	0.643	1.504	Unclassified	1200	0	1.504	Unclassified

Free Flowing Outfall Details for 11873 CATCHMENT 1 REV05.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.014	S10UTFALL	8.500	7.707	0.000	1200	0

Simulation Criteria for 11873 CATCHMENT 1 REV05.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
		Number of Storage Structures	1
		Number of Real Time Controls	0

Rainfall Profile Details

Event Name Duration (mins) 0 Timestep (mins) 1 Profiles 1

CampbellReith		Page 4
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Online Controls for 11873 CATCHMENT 1 REV05.SWS

Hydro-Brake® Optimum Manhole: S1.13, DS/PN: S1.014, Volume (m³): 1.9

Unit Reference	MD-SHE-0104-5500-1400-5500
Design Head (m)	1.400
Design Flow (l/s)	5.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	104
Invert Level (m)	9.150
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)	1.400	5.5	Kick-Flo®	0.861	4.4
Flush-Flo™	0.419	5.5	Mean Flow over Head Range	-	4.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.5	0.800	4.8	2.000	6.5	4.000	9.0	7.000	11.7
0.200	5.0	1.000	4.7	2.200	6.8	4.500	9.5	7.500	12.1
0.300	5.4	1.200	5.1	2.400	7.1	5.000	10.0	8.000	12.5
0.400	5.5	1.400	5.5	2.600	7.3	5.500	10.5	8.500	12.9
0.500	5.5	1.600	5.9	3.000	7.9	6.000	10.9	9.000	13.2
0.600	5.4	1.800	6.2	3.500	8.4	6.500	11.3	9.500	13.6

CampbellReith		Page 5
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

Storage Structures for 11873 CATCHMENT 1 REV05.SWS

Tank or Pond Manhole: SP1INLET, DS/PN: S1.012

Invert Level (m) 9.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	826.4	1.200	826.4

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	2	+0%					21.115	-0.140
S1.001	S1.02	15 Winter	2	+0%					20.628	-0.209
S1.002	S1.03	15 Winter	2	+0%					20.240	-0.229
S1.003	S1.04	15 Winter	2	+0%					18.883	-0.213
S1.004	S1.05	15 Winter	2	+0%					17.579	-0.221
S1.005	S1.06	15 Winter	2	+0%					14.182	-0.272
S1.006	S1.07	15 Winter	2	+0%					12.793	-0.268
S1.007	S1.08	15 Winter	2	+0%					10.994	-0.286
S1.008	S1.09	15 Winter	2	+0%					10.772	-0.293
S1.009	S1.10	15 Winter	2	+0%					10.522	-0.268
S2.000	S1.17	15 Winter	2	+0%					12.634	-0.176
S2.001	S1.18	15 Winter	2	+0%					12.295	-0.151
S3.000	S1.20	15 Winter	2	+0%					11.467	-0.158
S2.002	S1.19	15 Winter	2	+0%					11.147	-0.200
S4.000	S1.21	15 Winter	2	+0%	30/15 Summer				10.795	-0.055
S4.001	S1.22	15 Winter	2	+0%	30/15 Summer				10.701	-0.044
S1.010	S1.11	15 Winter	2	+0%					10.313	-0.286
S5.000	S1.23	15 Winter	2	+0%					10.840	-0.173
S1.011	S1.12	15 Winter	2	+0%					9.668	-0.306
S1.012	SP1INLET	720 Winter	2	+0%	2/120 Summer				9.409	0.059
S1.013	SP1OUTLET	1440 Winter	2	+0%	2/180 Winter	30/2880 Winter			9.527	0.187
S1.014	S1.13	1440 Winter	2	+0%	2/120 Summer	2/2160 Summer			9.602	0.302

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.30		14.2	OK	
S1.001	S1.02	0.000	0.20		19.9	OK	

CampbellReith		Page 7
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873 CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.13			24.2	OK	
S1.003	S1.04	0.000	0.18			30.7	OK	
S1.004	S1.05	0.000	0.15			37.5	OK	
S1.005	S1.06	0.000	0.17			48.7	OK	
S1.006	S1.07	0.000	0.18			57.5	OK	
S1.007	S1.08	0.000	0.29			63.8	OK	
S1.008	S1.09	0.000	0.27			68.3	OK	
S1.009	S1.10	0.000	0.34			74.2	OK	
S2.000	S1.17	0.000	0.11			5.8	OK	
S2.001	S1.18	0.000	0.23			14.9	OK	
S3.000	S1.20	0.000	0.19			8.7	OK	
S2.002	S1.19	0.000	0.24			42.2	OK	
S4.000	S1.21	0.000	0.71			10.7	OK	
S4.001	S1.22	0.000	0.83			13.1	OK	
S1.010	S1.11	0.000	0.29			125.6	OK	
S5.000	S1.23	0.000	0.12			14.9	OK	
S1.011	S1.12	0.000	0.36			138.2	OK	
S1.012	SP1INLET	0.000	0.96			5.1	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.40			5.1	SURCHARGED	
S1.014	S1.13	0.000	0.12			4.8	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	30	+0%					21.153	-0.102
S1.001	S1.02	15 Winter	30	+0%					20.669	-0.168
S1.002	S1.03	15 Winter	30	+0%					20.274	-0.195
S1.003	S1.04	15 Winter	30	+0%					18.927	-0.169
S1.004	S1.05	15 Winter	30	+0%					17.620	-0.180
S1.005	S1.06	15 Winter	30	+0%					14.237	-0.217
S1.006	S1.07	15 Winter	30	+0%					12.852	-0.209
S1.007	S1.08	15 Winter	30	+0%					11.091	-0.189
S1.008	S1.09	15 Winter	30	+0%					10.864	-0.201
S1.009	S1.10	15 Winter	30	+0%					10.635	-0.155
S2.000	S1.17	15 Winter	30	+0%					12.654	-0.156
S2.001	S1.18	15 Winter	30	+0%					12.335	-0.111
S3.000	S1.20	15 Winter	30	+0%					11.494	-0.131
S2.002	S1.19	15 Winter	30	+0%					11.202	-0.145
S4.000	S1.21	15 Winter	30	+0%	30/15 Summer				11.068	0.218
S4.001	S1.22	15 Winter	30	+0%	30/15 Summer				10.906	0.161
S1.010	S1.11	15 Winter	30	+0%					10.406	-0.193
S5.000	S1.23	15 Winter	30	+0%					10.861	-0.152
S1.011	S1.12	15 Winter	30	+0%					9.798	-0.176
S1.012	SP1INLET	600 Winter	30	+0%	2/120 Summer				9.615	0.265
S1.013	SP1OUTLET	360 Winter	30	+0%	2/180 Winter	30/2880 Winter			9.613	0.273
S1.014	S1.13	2880 Winter	30	+0%	2/120 Summer	2/2160 Summer			9.710	0.410

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.56		26.3	OK	
S1.001	S1.02	0.000	0.39		39.1	OK	

CampbellReith		Page 9
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.26		48.6	OK	
S1.003	S1.04	0.000	0.38		63.9	OK	
S1.004	S1.05	0.000	0.33		80.0	OK	
S1.005	S1.06	0.000	0.36		106.0	OK	
S1.006	S1.07	0.000	0.39		126.2	OK	
S1.007	S1.08	0.000	0.63		140.4	OK	
S1.008	S1.09	0.000	0.58		149.3	OK	
S1.009	S1.10	0.000	0.75		162.6	OK	
S2.000	S1.17	0.000	0.20		11.0	OK	
S2.001	S1.18	0.000	0.49		31.1	OK	
S3.000	S1.20	0.000	0.36		16.4	OK	
S2.002	S1.19	0.000	0.51		91.6	OK	
S4.000	S1.21	0.000	1.22		18.4	SURCHARGED	
S4.001	S1.22	0.000	1.45		22.8	SURCHARGED	
S1.010	S1.11	0.000	0.61		265.7	OK	
S5.000	S1.23	0.000	0.23		28.2	OK	
S1.011	S1.12	0.000	0.76		291.3	OK	
S1.012	SP1INLET	0.000	1.28		6.8	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.46		5.7	FLOOD RISK	
S1.014	S1.13	0.058	0.13		5.3	FLOOD	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

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 Coefficient 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) 19.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.350 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1.01	15 Winter	100	+0%					21.175	-0.080
S1.001	S1.02	15 Winter	100	+0%					20.690	-0.147
S1.002	S1.03	15 Winter	100	+0%					20.291	-0.178
S1.003	S1.04	15 Winter	100	+0%					18.948	-0.148
S1.004	S1.05	15 Winter	100	+0%					17.638	-0.162
S1.005	S1.06	15 Winter	100	+0%					14.262	-0.192
S1.006	S1.07	15 Winter	100	+0%					12.879	-0.182
S1.007	S1.08	15 Winter	100	+0%					11.141	-0.139
S1.008	S1.09	15 Winter	100	+0%					10.910	-0.155
S1.009	S1.10	15 Winter	100	+0%					10.695	-0.095
S2.000	S1.17	15 Winter	100	+0%					12.663	-0.147
S2.001	S1.18	15 Winter	100	+0%					12.355	-0.091
S3.000	S1.20	15 Winter	100	+0%					11.509	-0.116
S2.002	S1.19	15 Winter	100	+0%					11.229	-0.118
S4.000	S1.21	15 Winter	100	+0%	30/15 Summer				11.335	0.485
S4.001	S1.22	15 Winter	100	+0%	30/15 Summer				11.080	0.335
S1.010	S1.11	15 Winter	100	+0%					10.454	-0.145
S5.000	S1.23	15 Winter	100	+0%					10.872	-0.141
S1.011	S1.12	15 Winter	100	+0%					9.868	-0.106
S1.012	SP1INLET	600 Winter	100	+0%	2/120 Summer				9.767	0.417
S1.013	SP1OUTLET	960 Winter	100	+0%	2/180 Winter	30/2880 Winter			9.840	0.500
S1.014	S1.13	960 Winter	100	+0%	2/120 Summer	2/2160 Summer			9.849	0.549

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.72		34.0	OK	
S1.001	S1.02	0.000	0.50		50.5	OK	

CampbellReith		Page 11
Raven House 29 Linkfield Lane Surrey RH1 1SS	Bexhill WPS01 Catchment Updated	
Date 06/09/2023 File 11873 CATCHMENT 1 REV07.mdx	Designed by AD Checked by AH	
XP Solutions	Network 2020.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 11873
CATCHMENT 1 REV05.SWS

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S1.03	0.000	0.33		63.0	OK	
S1.003	S1.04	0.000	0.49		82.7	OK	
S1.004	S1.05	0.000	0.42		103.4	OK	
S1.005	S1.06	0.000	0.46		136.8	OK	
S1.006	S1.07	0.000	0.51		162.8	OK	
S1.007	S1.08	0.000	0.81		181.1	OK	
S1.008	S1.09	0.000	0.75		192.4	OK	
S1.009	S1.10	0.000	0.97		209.9	OK	
S2.000	S1.17	0.000	0.26		14.2	OK	
S2.001	S1.18	0.000	0.63		40.2	OK	
S3.000	S1.20	0.000	0.46		21.2	OK	
S2.002	S1.19	0.000	0.66		118.4	OK	
S4.000	S1.21	0.000	1.53		23.1	SURCHARGED	
S4.001	S1.22	0.000	1.81		28.5	SURCHARGED	
S1.010	S1.11	0.000	0.78		340.6	OK	
S5.000	S1.23	0.000	0.29		36.4	OK	
S1.011	S1.12	0.000	0.98		374.5	OK	
S1.012	SP1INLET	0.000	1.25		6.7	SURCHARGED	
S1.013	SP10OUTLET	0.000	0.44		5.5	FLOOD RISK	
S1.014	S1.13	0.000	0.14		5.5	SURCHARGED	