

Pickfords Wharf
 Clink Street
 London, SE1 9DG



Date 08/12/2022 12:05
 File 221208_C1_M100_10CC.SRCX

Designed by CSSW
 Checked by

Innovyze Source Control 2019.1

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	7.539	0.299	55.8	107.8	O K
120 min Winter	7.525	0.285	52.8	102.5	O K
180 min Winter	7.502	0.262	47.8	94.2	O K
240 min Winter	7.482	0.242	43.1	87.1	O K
360 min Winter	7.452	0.212	35.2	76.2	O K
480 min Winter	7.431	0.191	29.9	68.8	O K
600 min Winter	7.416	0.176	26.1	63.4	O K
720 min Winter	7.405	0.165	23.3	59.3	O K
960 min Winter	7.388	0.148	19.4	53.3	O K
1440 min Winter	7.367	0.127	14.7	45.9	O K
2160 min Winter	7.350	0.110	11.2	39.5	O K
2880 min Winter	7.339	0.099	9.2	35.5	O K
4320 min Winter	7.325	0.085	7.0	30.6	O K
5760 min Winter	7.317	0.077	5.7	27.6	O K
7200 min Winter	7.311	0.071	4.9	25.4	O K
8640 min Winter	7.306	0.066	4.3	23.8	O K
10080 min Winter	7.303	0.063	3.9	22.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	12.656	0.0	186.6	48
120 min Winter	8.018	0.0	236.6	80
180 min Winter	6.113	0.0	270.7	112
240 min Winter	5.039	0.0	297.6	144
360 min Winter	3.801	0.0	336.8	206
480 min Winter	3.109	0.0	367.3	266
600 min Winter	2.660	0.0	392.9	326
720 min Winter	2.343	0.0	415.2	388
960 min Winter	1.917	0.0	452.9	508
1440 min Winter	1.446	0.0	512.2	752
2160 min Winter	1.089	0.0	579.7	1108
2880 min Winter	0.891	0.0	632.1	1472
4320 min Winter	0.672	0.0	714.4	2196
5760 min Winter	0.550	0.0	781.2	2928
7200 min Winter	0.471	0.0	836.8	3664
8640 min Winter	0.414	0.0	882.3	4400
10080 min Winter	0.371	0.0	922.1	5128

Pickfords Wharf
 Clink Street
 London, SE1 9DG



Date 08/12/2022 11:47
 File 211018_C1.SRCX

Designed by CSSW
 Checked by

Innovyze Source Control 2019.1

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	7.953	0.713	139.6	256.5	O K
30 min Summer	8.103	0.863	157.3	310.7	O K
60 min Summer	8.163	0.923	169.2	332.2	O K
120 min Summer	8.123	0.883	161.2	317.7	O K
180 min Summer	8.041	0.801	146.5	288.3	O K
240 min Summer	7.953	0.713	139.6	256.8	O K
360 min Summer	7.845	0.605	128.1	217.8	O K
480 min Summer	7.785	0.545	109.0	196.2	O K
600 min Summer	7.740	0.500	94.3	179.9	O K
720 min Summer	7.702	0.462	82.9	166.2	O K
960 min Summer	7.637	0.397	67.1	142.9	O K
1440 min Summer	7.532	0.292	54.4	105.2	O K
2160 min Summer	7.475	0.235	41.1	84.6	O K
2880 min Summer	7.444	0.204	33.3	73.5	O K
4320 min Summer	7.409	0.169	24.3	60.8	O K
5760 min Summer	7.388	0.148	19.4	53.3	O K
7200 min Summer	7.374	0.134	16.2	48.3	O K
8640 min Summer	7.364	0.124	14.0	44.5	O K
10080 min Summer	7.356	0.116	12.4	41.6	O K
15 min Winter	8.039	0.799	146.1	287.6	O K
30 min Winter	8.199	0.959	177.0	345.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	103.476	0.0	340.4	21
30 min Summer	69.185	0.0	455.6	30
60 min Summer	44.102	0.0	582.1	46
120 min Summer	27.119	0.0	716.0	78
180 min Summer	20.095	0.0	795.9	110
240 min Summer	16.126	0.0	851.7	140
360 min Summer	11.839	0.0	937.9	200
480 min Summer	9.494	0.0	1002.9	260
600 min Summer	7.994	0.0	1055.5	322
720 min Summer	6.942	0.0	1099.9	384
960 min Summer	5.551	0.0	1172.7	510
1440 min Summer	4.043	0.0	1281.0	744
2160 min Summer	2.939	0.0	1397.7	1104
2880 min Summer	2.341	0.0	1484.2	1472
4320 min Summer	1.696	0.0	1612.0	2204
5760 min Summer	1.347	0.0	1708.8	2936
7200 min Summer	1.126	0.0	1785.7	3672
8640 min Summer	0.974	0.0	1852.9	4400
10080 min Summer	0.862	0.0	1911.5	5136
15 min Winter	103.476	0.0	381.4	21
30 min Winter	69.185	0.0	510.5	30

Pickfords Wharf
 Clink Street
 London, SE1 9DG



Date 08/12/2022 11:47
 File 211018_C1.SRCX

Designed by CSSW
 Checked by

Innovyze Source Control 2019.1

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	8.236	0.996	187.7	358.4	O K
120 min Winter	8.142	0.902	165.1	324.8	O K
180 min Winter	8.016	0.776	143.5	279.2	O K
240 min Winter	7.893	0.653	138.4	235.3	O K
360 min Winter	7.792	0.552	111.1	198.6	O K
480 min Winter	7.729	0.489	90.9	175.9	O K
600 min Winter	7.679	0.439	76.7	158.0	O K
720 min Winter	7.634	0.394	66.5	141.7	O K
960 min Winter	7.540	0.300	55.8	107.9	O K
1440 min Winter	7.476	0.236	41.5	85.1	O K
2160 min Winter	7.433	0.193	30.4	69.5	O K
2880 min Winter	7.409	0.169	24.3	60.8	O K
4320 min Winter	7.381	0.141	17.7	50.6	O K
5760 min Winter	7.364	0.124	14.0	44.5	O K
7200 min Winter	7.352	0.112	11.7	40.3	O K
8640 min Winter	7.344	0.104	10.1	37.3	O K
10080 min Winter	7.337	0.097	9.0	34.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	44.102	0.0	652.0	48
120 min Winter	27.119	0.0	802.0	82
180 min Winter	20.095	0.0	891.5	116
240 min Winter	16.126	0.0	954.0	144
360 min Winter	11.839	0.0	1050.6	204
480 min Winter	9.494	0.0	1123.3	266
600 min Winter	7.994	0.0	1182.2	332
720 min Winter	6.942	0.0	1232.0	398
960 min Winter	5.551	0.0	1313.5	510
1440 min Winter	4.043	0.0	1434.9	746
2160 min Winter	2.939	0.0	1565.5	1104
2880 min Winter	2.341	0.0	1662.4	1472
4320 min Winter	1.696	0.0	1805.7	2196
5760 min Winter	1.347	0.0	1913.9	2936
7200 min Winter	1.126	0.0	2000.0	3672
8640 min Winter	0.974	0.0	2075.4	4400
10080 min Winter	0.862	0.0	2141.1	5040

Pickfords Wharf
 Clink Street
 London, SE1 9DG



Date 08/12/2022 11:47
 File 211018_C1.SRCX

Designed by CSSW
 Checked by

Innovyze Source Control 2019.1

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+10

Time Area Diagram


Total Area (ha) 1.762

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	4 0.587	4	8 0.588	8	12 0.587

Time Area Diagram

Total Area (ha) 0.000

Time (mins)	Area
From: To:	(ha)
0	4 0.000

Waterman Group		Page 4
Pickfords Wharf Clink Street London, SE1 9DG		
Date 08/12/2022 11:47 File 211018_C1.SRCX	Designed by CSSW Checked by	
Innovyze		Source Control 2019.1

Model Details

Storage is Online Cover Level (m) 8.740

Tank or Pond Structure

Invert Level (m) 7.240

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	360.0	1.000	360.0	1.001	0.0

Complex Outflow Control

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0314-5810-1000-5810
Design Head (m)	1.000
Design Flow (l/s)	58.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	314
Invert Level (m)	7.240
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	58.1
Flush-Flo™	0.466	58.1
Kick-Flo®	0.796	52.1
Mean Flow over Head Range	-	46.2

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	9.5	1.200	63.4	3.000	98.9	7.000	149.6
0.200	32.2	1.400	68.3	3.500	106.7	7.500	154.8
0.300	55.8	1.600	72.9	4.000	113.8	8.000	159.8
0.400	57.8	1.800	77.2	4.500	120.6	8.500	164.6
0.500	58.0	2.000	81.2	5.000	126.9	9.000	169.2
0.600	57.1	2.200	85.1	5.500	133.0	9.500	173.8
0.800	52.2	2.400	88.8	6.000	138.8		
1.000	58.1	2.600	92.3	6.500	144.3		

Pickfords Wharf
 Clink Street
 London, SE1 9DG



Date 08/12/2022 11:47
 File 211018_C1.SRCX

Designed by CSSW
 Checked by

Innovyze Source Control 2019.1

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0374-8480-0697-8480
Design Head (m)	0.697
Design Flow (l/s)	84.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	374
Invert Level (m)	7.543
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	2100


Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.697	84.8
Flush-Flo™	0.487	84.8
Kick-Flo®	0.647	81.7
Mean Flow over Head Range	-	58.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.6	1.200	110.3	3.000	172.5	7.000	258.0
0.200	37.3	1.400	118.9	3.500	186.1	7.500	267.3
0.300	70.5	1.600	126.9	4.000	198.7	8.000	276.3
0.400	83.7	1.800	134.4	4.500	210.5	8.500	285.0
0.500	84.7	2.000	141.5	5.000	221.6	9.000	293.4
0.600	83.2	2.200	148.3	5.500	232.2	9.500	301.7
0.800	90.6	2.400	154.7	6.000	242.4		
1.000	101.0	2.600	160.9	6.500	252.1		

Orifice


Diameter (m) 0.220 Discharge Coefficient 0.600 Invert Level (m) 7.924

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	2.070	0.090	83.9	37.7	O K
30 min Summer	2.089	0.109	83.9	46.0	O K
60 min Summer	2.077	0.097	83.9	40.7	O K
120 min Summer	2.030	0.050	83.9	21.1	O K
180 min Summer	1.999	0.019	83.9	8.1	O K
240 min Summer	1.985	0.005	83.9	2.0	O K
360 min Summer	1.981	0.001	83.9	1.6	O K
480 min Summer	1.981	0.001	62.9	1.6	O K
600 min Summer	1.981	0.001	83.9	1.4	O K
720 min Summer	1.981	0.001	62.9	1.4	O K
960 min Summer	1.980	0.000	33.5	1.4	O K
1440 min Summer	1.980	0.000	25.3	1.5	O K
2160 min Summer	1.980	0.000	19.0	0.0	O K
2880 min Summer	1.980	0.000	15.6	0.0	O K
4320 min Summer	1.980	0.000	11.7	0.0	O K
5760 min Summer	1.980	0.000	9.6	0.0	O K
7200 min Summer	1.980	0.000	8.2	0.0	O K
8640 min Summer	1.980	0.000	7.2	0.0	O K
10080 min Summer	1.980	0.000	6.5	0.0	O K
15 min Winter	2.095	0.115	83.9	48.5	O K
30 min Winter	2.111	0.131	83.9	55.1	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	29.615	0.0	120.8	19
30 min Summer	19.610	0.0	157.5	28
60 min Summer	12.656	0.0	203.6	44
120 min Summer	8.018	0.0	254.4	74
180 min Summer	6.113	0.0	288.7	102
240 min Summer	5.039	0.0	317.3	122
360 min Summer	3.801	0.0	358.4	206
480 min Summer	3.109	0.0	390.4	234
600 min Summer	2.660	0.0	414.6	310
720 min Summer	2.343	0.0	437.0	322
960 min Summer	1.917	0.0	466.9	508
1440 min Summer	1.446	0.0	547.8	708
2160 min Summer	1.089	0.0	628.9	0
2880 min Summer	0.891	0.0	685.8	0
4320 min Summer	0.672	0.0	775.7	0
5760 min Summer	0.550	0.0	847.1	0
7200 min Summer	0.471	0.0	907.4	0
8640 min Summer	0.414	0.0	957.0	0
10080 min Summer	0.371	0.0	1000.7	0
15 min Winter	29.615	0.0	132.4	20
30 min Winter	19.610	0.0	176.6	29

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	2.082	0.102	83.9	42.6	O K
120 min Winter	2.002	0.022	83.9	9.4	O K
180 min Winter	1.984	0.004	83.9	1.8	O K
240 min Winter	1.981	0.001	62.9	1.6	O K
360 min Winter	1.981	0.001	83.9	1.4	O K
480 min Winter	1.981	0.001	62.9	1.4	O K
600 min Winter	1.980	0.000	33.5	1.5	O K
720 min Winter	1.980	0.000	29.5	1.4	O K
960 min Winter	1.980	0.000	24.2	1.5	O K
1440 min Winter	1.980	0.000	18.2	0.0	O K
2160 min Winter	1.980	0.000	13.7	0.0	O K
2880 min Winter	1.980	0.000	11.2	0.0	O K
4320 min Winter	1.980	0.000	8.5	0.0	O K
5760 min Winter	1.980	0.000	6.9	0.0	O K
7200 min Winter	1.980	0.000	6.0	0.0	O K
8640 min Winter	1.980	0.000	5.2	0.0	O K
10080 min Winter	1.980	0.000	4.7	0.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	12.656	0.0	229.6	46
120 min Winter	8.018	0.0	292.1	74
180 min Winter	6.113	0.0	324.1	80
240 min Winter	5.039	0.0	353.3	104
360 min Winter	3.801	0.0	407.8	172
480 min Winter	3.109	0.0	428.2	310
600 min Winter	2.660	0.0	441.3	344
720 min Winter	2.343	0.0	475.7	380
960 min Winter	1.917	0.0	539.5	540
1440 min Winter	1.446	0.0	623.4	0
2160 min Winter	1.089	0.0	704.4	0
2880 min Winter	0.891	0.0	768.1	0
4320 min Winter	0.672	0.0	868.7	0
5760 min Winter	0.550	0.0	948.7	0
7200 min Winter	0.471	0.0	1016.3	0
8640 min Winter	0.414	0.0	1071.8	0
10080 min Winter	0.371	0.0	1120.8	0

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	2.534	0.554	206.3	232.9	O K
30 min Summer	2.635	0.655	270.2	275.1	O K
60 min Summer	2.623	0.643	270.2	270.1	O K
120 min Summer	2.530	0.550	206.3	230.9	O K
180 min Summer	2.401	0.421	206.3	176.8	O K
240 min Summer	2.291	0.311	206.3	130.8	O K
360 min Summer	2.192	0.212	206.3	89.2	O K
480 min Summer	2.185	0.205	206.3	85.9	O K
600 min Summer	2.181	0.201	175.7	85.9	O K
720 min Summer	2.169	0.189	83.9	79.5	O K
960 min Summer	2.032	0.052	83.9	21.9	O K
1440 min Summer	1.983	0.003	83.9	1.7	O K
2160 min Summer	1.981	0.001	62.9	2.9	O K
2880 min Summer	1.981	0.001	62.9	2.5	O K
4320 min Summer	1.980	0.000	29.6	2.6	O K
5760 min Summer	1.980	0.000	23.5	4.5	O K
7200 min Summer	1.980	0.000	19.7	0.0	O K
8640 min Summer	1.980	0.000	17.0	0.0	O K
10080 min Summer	1.980	0.000	15.1	0.0	O K
15 min Winter	2.612	0.632	270.2	265.5	O K
30 min Winter	2.721	0.741	270.2	311.1	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	103.476	0.0	413.1	20
30 min Summer	69.185	0.0	556.8	28
60 min Summer	44.102	0.0	710.8	44
120 min Summer	27.119	0.0	869.0	78
180 min Summer	20.095	0.0	957.2	108
240 min Summer	16.126	0.0	1014.5	136
360 min Summer	11.839	0.0	1121.6	182
480 min Summer	9.494	0.0	1202.2	266
600 min Summer	7.994	0.0	1266.9	322
720 min Summer	6.942	0.0	1322.7	400
960 min Summer	5.551	0.0	1412.7	506
1440 min Summer	4.043	0.0	1530.2	724
2160 min Summer	2.939	0.0	1665.0	1140
2880 min Summer	2.341	0.0	1746.2	1308
4320 min Summer	1.696	0.0	1892.2	2332
5760 min Summer	1.347	0.0	2060.1	2848
7200 min Summer	1.126	0.0	2168.3	0
8640 min Summer	0.974	0.0	2250.2	0
10080 min Summer	0.862	0.0	2322.0	0
15 min Winter	103.476	0.0	465.8	20
30 min Winter	69.185	0.0	623.2	29

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	2.685	0.705	270.2	296.1	O K
120 min Winter	2.520	0.540	206.3	226.7	O K
180 min Winter	2.293	0.313	206.3	131.3	O K
240 min Winter	2.187	0.207	206.3	86.9	O K
360 min Winter	2.181	0.201	206.3	86.0	O K
480 min Winter	2.180	0.200	114.5	85.2	O K
600 min Winter	2.111	0.131	83.9	55.1	O K
720 min Winter	1.999	0.019	83.9	8.2	O K
960 min Winter	1.982	0.002	83.9	1.6	O K
1440 min Winter	1.981	0.001	83.9	1.6	O K
2160 min Winter	1.981	0.001	62.9	2.7	O K
2880 min Winter	1.980	0.000	29.5	2.7	O K
4320 min Winter	1.980	0.000	21.1	2.7	O K
5760 min Winter	1.980	0.000	17.0	0.0	O K
7200 min Winter	1.980	0.000	14.2	0.0	O K
8640 min Winter	1.980	0.000	12.3	0.0	O K
10080 min Winter	1.980	0.000	10.9	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	44.102	0.0	795.3	46
120 min Winter	27.119	0.0	976.3	82
180 min Winter	20.095	0.0	1083.8	110
240 min Winter	16.126	0.0	1161.9	132
360 min Winter	11.839	0.0	1249.5	186
480 min Winter	9.494	0.0	1349.2	260
600 min Winter	7.994	0.0	1426.8	348
720 min Winter	6.942	0.0	1479.2	386
960 min Winter	5.551	0.0	1575.1	510
1440 min Winter	4.043	0.0	1708.3	818
2160 min Winter	2.939	0.0	1835.7	1360
2880 min Winter	2.341	0.0	1907.2	1236
4320 min Winter	1.696	0.0	2190.9	2228
5760 min Winter	1.347	0.0	2323.8	0
7200 min Winter	1.126	0.0	2428.5	0
8640 min Winter	0.974	0.0	2520.2	0
10080 min Winter	0.862	0.0	2600.6	0

Waterman Group		Page 3
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1


Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+10

Time Area Diagram

Total Area (ha) 2.139

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	4 0.713	4	8 0.713	8	12 0.713

Waterman Group		Page 4
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 2 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C2_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Model Details

Storage is Online Cover Level (m) 3.980

Tank or Pond Structure


Invert Level (m) 1.980

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	420.0	1.000	420.0	1.001	0.0

Pump Outflow Control

Invert Level (m) 1.980


Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	83.9000	0.201	206.3000	0.601	270.2000
0.200	83.9000	0.600	206.3000	1.000	270.2000

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
Date 01/10/2021 File 221208_C3_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	2.264	0.114	31.8	18.3	O K
30 min Summer	2.285	0.135	31.8	21.7	O K
60 min Summer	2.275	0.125	31.8	20.0	O K
120 min Summer	2.225	0.075	31.8	12.0	O K
180 min Summer	2.187	0.037	31.8	6.0	O K
240 min Summer	2.162	0.012	31.8	2.0	O K
360 min Summer	2.153	0.003	31.8	0.6	O K
480 min Summer	2.151	0.001	31.8	0.6	O K
600 min Summer	2.152	0.002	31.8	0.5	O K
720 min Summer	2.151	0.001	31.8	0.6	O K
960 min Summer	2.151	0.001	23.9	0.5	O K
1440 min Summer	2.150	0.000	10.6	0.5	O K
2160 min Summer	2.150	0.000	8.0	0.0	O K
2880 min Summer	2.150	0.000	6.5	0.0	O K
4320 min Summer	2.150	0.000	4.9	0.0	O K
5760 min Summer	2.150	0.000	4.0	0.0	O K
7200 min Summer	2.150	0.000	3.4	0.0	O K
8640 min Summer	2.150	0.000	3.0	0.0	O K
10080 min Summer	2.150	0.000	2.7	0.0	O K
15 min Winter	2.291	0.141	31.8	22.6	O K
30 min Winter	2.315	0.165	31.8	26.3	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	29.615	0.0	49.7	20
30 min Summer	19.610	0.0	66.2	28
60 min Summer	12.656	0.0	84.6	44
120 min Summer	8.018	0.0	107.2	76
180 min Summer	6.113	0.0	121.1	104
240 min Summer	5.039	0.0	134.3	132
360 min Summer	3.801	0.0	149.7	190
480 min Summer	3.109	0.0	162.0	232
600 min Summer	2.660	0.0	176.0	318
720 min Summer	2.343	0.0	184.3	372
960 min Summer	1.917	0.0	199.1	456
1440 min Summer	1.446	0.0	226.2	764
2160 min Summer	1.089	0.0	262.8	1100
2880 min Summer	0.891	0.0	286.6	0
4320 min Summer	0.672	0.0	324.2	0
5760 min Summer	0.550	0.0	354.0	0
7200 min Summer	0.471	0.0	379.3	0
8640 min Summer	0.414	0.0	400.0	0
10080 min Summer	0.371	0.0	418.2	0
15 min Winter	29.615	0.0	56.0	20
30 min Winter	19.610	0.0	73.9	29

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
Date 01/10/2021 File 221208_C3_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	2.286	0.136	31.8	21.8	O K
120 min Winter	2.199	0.049	31.8	7.9	O K
180 min Winter	2.155	0.005	31.8	0.8	O K
240 min Winter	2.152	0.002	31.8	0.6	O K
360 min Winter	2.151	0.001	31.8	0.5	O K
480 min Winter	2.151	0.001	23.9	0.5	O K
600 min Winter	2.151	0.001	23.9	0.5	O K
720 min Winter	2.150	0.000	12.3	0.5	O K
960 min Winter	2.150	0.000	10.1	0.6	O K
1440 min Winter	2.150	0.000	7.6	0.0	O K
2160 min Winter	2.150	0.000	5.7	0.0	O K
2880 min Winter	2.150	0.000	4.7	0.0	O K
4320 min Winter	2.150	0.000	3.5	0.0	O K
5760 min Winter	2.150	0.000	2.9	0.0	O K
7200 min Winter	2.150	0.000	2.5	0.0	O K
8640 min Winter	2.150	0.000	2.2	0.0	O K
10080 min Winter	2.150	0.000	2.0	0.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	12.656	0.0	96.4	46
120 min Winter	8.018	0.0	118.3	76
180 min Winter	6.113	0.0	136.7	92
240 min Winter	5.039	0.0	148.4	122
360 min Winter	3.801	0.0	167.5	128
480 min Winter	3.109	0.0	180.2	258
600 min Winter	2.660	0.0	191.8	236
720 min Winter	2.343	0.0	195.9	428
960 min Winter	1.917	0.0	221.1	512
1440 min Winter	1.446	0.0	260.5	0
2160 min Winter	1.089	0.0	294.4	0
2880 min Winter	0.891	0.0	321.0	0
4320 min Winter	0.672	0.0	363.1	0
5760 min Winter	0.550	0.0	396.5	0
7200 min Winter	0.471	0.0	424.8	0
8640 min Winter	0.414	0.0	448.0	0
10080 min Winter	0.371	0.0	468.4	0

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
Date 01/10/2021 File 211018_C3.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	2.789	0.639	78.2	102.3	O K
30 min Summer	2.894	0.744	102.5	119.0	O K
60 min Summer	2.900	0.750	102.5	120.0	O K
120 min Summer	2.809	0.659	102.5	105.4	O K
180 min Summer	2.667	0.517	78.2	82.8	O K
240 min Summer	2.547	0.397	78.2	63.5	O K
360 min Summer	2.387	0.237	78.2	37.9	O K
480 min Summer	2.372	0.222	78.2	35.7	O K
600 min Summer	2.370	0.220	66.6	35.8	O K
720 min Summer	2.369	0.219	43.4	35.6	O K
960 min Summer	2.264	0.114	31.8	18.3	O K
1440 min Summer	2.155	0.005	31.8	0.8	O K
2160 min Summer	2.151	0.001	31.8	1.0	O K
2880 min Summer	2.151	0.001	23.9	1.0	O K
4320 min Summer	2.150	0.000	12.4	1.0	O K
5760 min Summer	2.150	0.000	9.8	1.9	O K
7200 min Summer	2.150	0.000	8.2	1.9	O K
8640 min Summer	2.150	0.000	7.1	0.0	O K
10080 min Summer	2.150	0.000	6.3	0.0	O K
15 min Winter	2.877	0.727	102.5	116.3	O K
30 min Winter	3.006	0.856	102.5	137.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	103.476	0.0	173.2	20
30 min Summer	69.185	0.0	232.4	29
60 min Summer	44.102	0.0	297.4	44
120 min Summer	27.119	0.0	362.8	76
180 min Summer	20.095	0.0	403.4	110
240 min Summer	16.126	0.0	424.9	138
360 min Summer	11.839	0.0	468.3	192
480 min Summer	9.494	0.0	501.7	274
600 min Summer	7.994	0.0	529.7	320
720 min Summer	6.942	0.0	550.7	382
960 min Summer	5.551	0.0	588.7	518
1440 min Summer	4.043	0.0	643.7	734
2160 min Summer	2.939	0.0	698.2	1156
2880 min Summer	2.341	0.0	728.1	1616
4320 min Summer	1.696	0.0	781.0	2344
5760 min Summer	1.347	0.0	851.9	2952
7200 min Summer	1.126	0.0	904.2	3656
8640 min Summer	0.974	0.0	940.5	0
10080 min Summer	0.862	0.0	970.5	0
15 min Winter	103.476	0.0	193.8	20
30 min Winter	69.185	0.0	259.1	30

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
Date 01/10/2021 File 211018_C3.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	2.975	0.825	102.5	132.1	O K
120 min Winter	2.803	0.653	96.4	104.5	O K
180 min Winter	2.587	0.437	78.2	69.9	O K
240 min Winter	2.403	0.253	78.2	40.4	O K
360 min Winter	2.374	0.224	78.2	35.8	O K
480 min Winter	2.370	0.220	66.6	35.6	O K
600 min Winter	2.369	0.219	43.4	35.0	O K
720 min Winter	2.252	0.102	31.8	16.2	O K
960 min Winter	2.155	0.005	31.8	0.7	O K
1440 min Winter	2.151	0.001	31.8	0.6	O K
2160 min Winter	2.151	0.001	23.9	1.0	O K
2880 min Winter	2.150	0.000	12.3	1.0	O K
4320 min Winter	2.150	0.000	8.9	1.0	O K
5760 min Winter	2.150	0.000	7.1	0.0	O K
7200 min Winter	2.150	0.000	5.9	0.0	O K
8640 min Winter	2.150	0.000	5.1	0.0	O K
10080 min Winter	2.150	0.000	4.5	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	44.102	0.0	329.8	48
120 min Winter	27.119	0.0	408.0	80
180 min Winter	20.095	0.0	453.9	114
240 min Winter	16.126	0.0	483.2	136
360 min Winter	11.839	0.0	522.4	182
480 min Winter	9.494	0.0	560.8	264
600 min Winter	7.994	0.0	595.1	350
720 min Winter	6.942	0.0	620.0	410
960 min Winter	5.551	0.0	663.3	496
1440 min Winter	4.043	0.0	714.4	608
2160 min Winter	2.939	0.0	764.6	788
2880 min Winter	2.341	0.0	783.1	1212
4320 min Winter	1.696	0.0	902.6	2348
5760 min Winter	1.347	0.0	971.2	0
7200 min Winter	1.126	0.0	1015.0	0
8640 min Winter	0.974	0.0	1053.3	0
10080 min Winter	0.862	0.0	1086.9	0

Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
--	---	---

Date 01/10/2021 File 211018_C3.SRCX	Designed by CT Checked by BM	
--	---------------------------------	--

Innovyze	Source Control 2019.1
----------	-----------------------


Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+10

Time Area Diagram

Total Area (ha) 0.894

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0	4 0.298	4	8 0.298	8	12 0.298

Waterman Group		Page 4
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 3 1 in 1 yr	
Date 01/10/2021 File 211018_C3.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Model Details

Storage is Online Cover Level (m) 4.150

Tank or Pond Structure


Invert Level (m) 2.150

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	160.0	1.000	160.0	1.001	0.0

Pump Outflow Control

Invert Level (m) 2.150


Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	31.8000	0.220	78.2000	0.653	102.5000
0.219	31.8000	0.652	78.2000	1.000	102.5000

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	4.040	0.190	20.5	30.4	O K
30 min Summer	4.071	0.221	24.2	35.3	O K
60 min Summer	4.086	0.236	24.7	37.8	O K
120 min Summer	4.078	0.228	24.6	36.5	O K
180 min Summer	4.061	0.211	23.2	33.8	O K
240 min Summer	4.047	0.197	21.4	31.4	O K
360 min Summer	4.023	0.173	18.2	27.7	O K
480 min Summer	4.008	0.158	15.9	25.2	O K
600 min Summer	3.996	0.146	14.1	23.4	O K
720 min Summer	3.987	0.137	12.7	21.9	O K
960 min Summer	3.974	0.124	10.8	19.8	O K
1440 min Summer	3.957	0.107	8.4	17.1	O K
2160 min Summer	3.942	0.092	6.4	14.8	O K
2880 min Summer	3.933	0.083	5.3	13.3	O K
4320 min Summer	3.922	0.072	4.1	11.5	O K
5760 min Summer	3.915	0.065	3.3	10.3	O K
7200 min Summer	3.910	0.060	2.9	9.5	O K
8640 min Summer	3.906	0.056	2.5	8.9	O K
10080 min Summer	3.903	0.053	2.3	8.4	O K
15 min Winter	4.059	0.209	22.9	33.4	O K
30 min Winter	4.094	0.244	24.8	39.0	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	29.615	0.0	40.9	20
30 min Summer	19.610	0.0	54.2	29
60 min Summer	12.656	0.0	70.3	44
120 min Summer	8.018	0.0	89.1	76
180 min Summer	6.113	0.0	101.9	106
240 min Summer	5.039	0.0	112.0	136
360 min Summer	3.801	0.0	126.7	198
480 min Summer	3.109	0.0	138.2	258
600 min Summer	2.660	0.0	147.9	318
720 min Summer	2.343	0.0	156.2	378
960 min Summer	1.917	0.0	170.4	500
1440 min Summer	1.446	0.0	192.8	740
2160 min Summer	1.089	0.0	218.0	1104
2880 min Summer	0.891	0.0	237.8	1472
4320 min Summer	0.672	0.0	268.8	2204
5760 min Summer	0.550	0.0	293.8	2928
7200 min Summer	0.471	0.0	314.7	3632
8640 min Summer	0.414	0.0	331.8	4368
10080 min Summer	0.371	0.0	346.8	5056
15 min Winter	29.615	0.0	45.8	20
30 min Winter	19.610	0.0	60.8	30

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	4.103	0.253	24.9	40.5	O K
120 min Winter	4.075	0.225	24.5	35.9	O K
180 min Winter	4.049	0.199	21.7	31.9	O K
240 min Winter	4.030	0.180	19.2	28.9	O K
360 min Winter	4.005	0.155	15.4	24.7	O K
480 min Winter	3.988	0.138	12.9	22.1	O K
600 min Winter	3.977	0.127	11.2	20.3	O K
720 min Winter	3.968	0.118	10.0	18.9	O K
960 min Winter	3.956	0.106	8.3	17.0	O K
1440 min Winter	3.941	0.091	6.2	14.6	O K
2160 min Winter	3.928	0.078	4.8	12.5	O K
2880 min Winter	3.920	0.070	3.9	11.2	O K
4320 min Winter	3.911	0.061	3.0	9.7	O K
5760 min Winter	3.905	0.055	2.4	8.7	O K
7200 min Winter	3.900	0.050	2.1	8.0	O K
8640 min Winter	3.897	0.047	1.8	7.5	O K
10080 min Winter	3.895	0.045	1.7	7.1	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	12.656	0.0	78.7	46
120 min Winter	8.018	0.0	99.8	78
180 min Winter	6.113	0.0	114.1	110
240 min Winter	5.039	0.0	125.5	140
360 min Winter	3.801	0.0	142.0	200
480 min Winter	3.109	0.0	154.8	262
600 min Winter	2.660	0.0	165.6	322
720 min Winter	2.343	0.0	175.0	382
960 min Winter	1.917	0.0	190.9	502
1440 min Winter	1.446	0.0	215.9	748
2160 min Winter	1.089	0.0	244.2	1104
2880 min Winter	0.891	0.0	266.3	1468
4320 min Winter	0.672	0.0	301.1	2208
5760 min Winter	0.550	0.0	329.0	2912
7200 min Winter	0.471	0.0	352.5	3560
8640 min Winter	0.414	0.0	371.7	4328
10080 min Winter	0.371	0.0	388.5	5128

Waterman Group		Page 1
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Summer	4.501	0.651	61.3	104.2	O K
30 min Summer	4.643	0.793	66.6	126.9	O K
60 min Summer	4.691	0.841	71.1	134.6	O K
120 min Summer	4.640	0.790	66.3	126.4	O K
180 min Summer	4.548	0.698	61.3	111.7	O K
240 min Summer	4.454	0.604	61.3	96.7	O K
360 min Summer	4.356	0.506	56.4	80.9	O K
480 min Summer	4.307	0.457	47.3	73.1	O K
600 min Summer	4.270	0.420	40.3	67.1	O K
720 min Summer	4.237	0.387	34.7	62.0	O K
960 min Summer	4.174	0.324	27.0	51.8	O K
1440 min Summer	4.063	0.213	23.3	34.1	O K
2160 min Summer	4.019	0.169	17.6	27.0	O K
2880 min Summer	3.996	0.146	14.1	23.4	O K
4320 min Summer	3.970	0.120	10.2	19.2	O K
5760 min Summer	3.956	0.106	8.2	16.9	O K
7200 min Summer	3.945	0.095	6.8	15.3	O K
8640 min Summer	3.938	0.088	5.9	14.1	O K
10080 min Summer	3.932	0.082	5.2	13.2	O K
15 min Winter	4.586	0.736	61.8	117.7	O K
30 min Winter	4.735	0.885	74.3	141.6	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	103.476	0.0	143.6	21
30 min Summer	69.185	0.0	192.2	30
60 min Summer	44.102	0.0	245.3	46
120 min Summer	27.119	0.0	301.7	78
180 min Summer	20.095	0.0	335.3	110
240 min Summer	16.126	0.0	358.8	140
360 min Summer	11.839	0.0	395.1	198
480 min Summer	9.494	0.0	422.5	260
600 min Summer	7.994	0.0	444.6	322
720 min Summer	6.942	0.0	463.3	386
960 min Summer	5.551	0.0	494.0	514
1440 min Summer	4.043	0.0	539.7	742
2160 min Summer	2.939	0.0	588.7	1104
2880 min Summer	2.341	0.0	625.1	1468
4320 min Summer	1.696	0.0	679.1	2200
5760 min Summer	1.347	0.0	719.7	2920
7200 min Summer	1.126	0.0	752.1	3672
8640 min Summer	0.974	0.0	780.4	4400
10080 min Summer	0.862	0.0	805.2	5136
15 min Winter	103.476	0.0	160.9	21
30 min Winter	69.185	0.0	215.3	30

Waterman Group		Page 2
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Summary of Results for 100 year Return Period (+10%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
60 min Winter	4.762	0.912	76.8	146.0	O K
120 min Winter	4.658	0.808	68.0	129.2	O K
180 min Winter	4.511	0.661	61.3	105.8	O K
240 min Winter	4.391	0.541	60.8	86.6	O K
360 min Winter	4.310	0.460	47.9	73.6	O K
480 min Winter	4.261	0.411	38.6	65.7	O K
600 min Winter	4.219	0.369	32.0	59.1	O K
720 min Winter	4.173	0.323	27.0	51.7	O K
960 min Winter	4.067	0.217	23.8	34.6	O K
1440 min Winter	4.019	0.169	17.6	27.0	O K
2160 min Winter	3.988	0.138	12.9	22.0	O K
2880 min Winter	3.970	0.120	10.2	19.2	O K
4320 min Winter	3.950	0.100	7.5	16.0	O K
5760 min Winter	3.938	0.088	5.9	14.1	O K
7200 min Winter	3.930	0.080	4.9	12.7	O K
8640 min Winter	3.924	0.074	4.3	11.8	O K
10080 min Winter	3.919	0.069	3.8	11.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
60 min Winter	44.102	0.0	274.7	48
120 min Winter	27.119	0.0	337.9	82
180 min Winter	20.095	0.0	375.6	116
240 min Winter	16.126	0.0	401.9	140
360 min Winter	11.839	0.0	442.6	202
480 min Winter	9.494	0.0	473.2	266
600 min Winter	7.994	0.0	498.0	334
720 min Winter	6.942	0.0	519.0	406
960 min Winter	5.551	0.0	553.3	504
1440 min Winter	4.043	0.0	604.5	742
2160 min Winter	2.939	0.0	659.3	1104
2880 min Winter	2.341	0.0	700.2	1468
4320 min Winter	1.696	0.0	760.6	2204
5760 min Winter	1.347	0.0	806.0	2880
7200 min Winter	1.126	0.0	842.3	3672
8640 min Winter	0.974	0.0	874.1	4424
10080 min Winter	0.862	0.0	901.9	5136

Waterman Group		Page 3
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1


Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.800	Shortest Storm (mins)	15
Ratio R	0.360	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+10

Time Area Diagram

Total Area (ha) 0.742

Time (mins) Area			Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)	From:	To:	(ha)
0	4	0.247	4	8	0.248	8	12	0.247

Waterman Group		Page 4
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze	Source Control 2019.1	

Model Details

Storage is Online Cover Level (m) 5.600

Tank or Pond Structure

Invert Level (m) 3.850

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	160.0	1.000	160.0	1.001	0.0

Complex Outflow Control


Hydro-Brake® Optimum

Unit Reference	MD-SHE-0221-2560-1000-2560
Design Head (m)	1.000
Design Flow (l/s)	25.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	221
Invert Level (m)	3.850
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	25.6
Flush-Flo™	0.363	25.5
Kick-Flo®	0.733	22.1
Mean Flow over Head Range	-	21.2

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	7.4	1.200	27.9	3.000	43.4	7.000	65.4
0.200	21.8	1.400	30.1	3.500	46.7	7.500	67.6
0.300	25.3	1.600	32.1	4.000	49.9	8.000	69.8
0.400	25.4	1.800	33.9	4.500	52.8	8.500	71.9
0.500	25.0	2.000	35.7	5.000	55.5	9.000	73.9
0.600	24.4	2.200	37.4	5.500	58.2	9.500	75.9
0.800	23.0	2.400	39.0	6.000	60.7		
1.000	25.6	2.600	40.5	6.500	63.1		

Waterman Group		Page 5
Pickfords Wharf Clink Street London, SE1 9DG	Jersey Waterfront Catchment 4 1 in 100 + 10% CC	
Date 01/10/2021 File 221208_C4_M100_10CC.SRCX	Designed by CT Checked by BM	
Innovyze		Source Control 2019.1

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0263-3730-0718-3730
Design Head (m)	0.718
Design Flow (l/s)	37.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	263
Invert Level (m)	4.132
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.718	37.3
Flush-Flo™	0.376	37.2
Kick-Flo®	0.596	34.1
Mean Flow over Head Range	-	28.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.4	1.200	47.7	3.000	74.4	7.000	112.4
0.200	27.0	1.400	51.4	3.500	80.1	7.500	115.3
0.300	36.7	1.600	54.8	4.000	85.5	8.000	119.1
0.400	37.1	1.800	58.0	4.500	90.6	8.500	122.9
0.500	36.3	2.000	61.1	5.000	95.4	9.000	126.5
0.600	34.2	2.200	64.0	5.500	99.9	9.500	130.0
0.800	39.3	2.400	66.7	6.000	104.2		
1.000	43.7	2.600	69.4	6.500	108.4		

Orifice

Diameter (m) 0.140 Discharge Coefficient 0.600 Invert Level (m) 4.514



F. Sewer Diversion and Build Over Proposals

Appendices

SWSH Visioning Framework
Project Number: WIE17128

Document Reference: WIE17128-104-R-2-4-2-Drainage

195 bed hotel

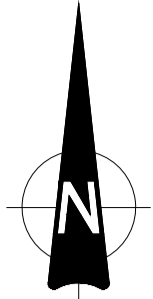
Horizon Scheme
280 residential units
190m² office
890m² restaurant
715m² retail

3275m² plan area
7 stories
22925m² ~GEA
100m² per flat
229 flats

2525m² plan area
6 stories
15150m² ~GEA
100m² per flat
151 flats

1300m² plan area
6 stories
7800m² ~GEA
100m² per flat
78 flats



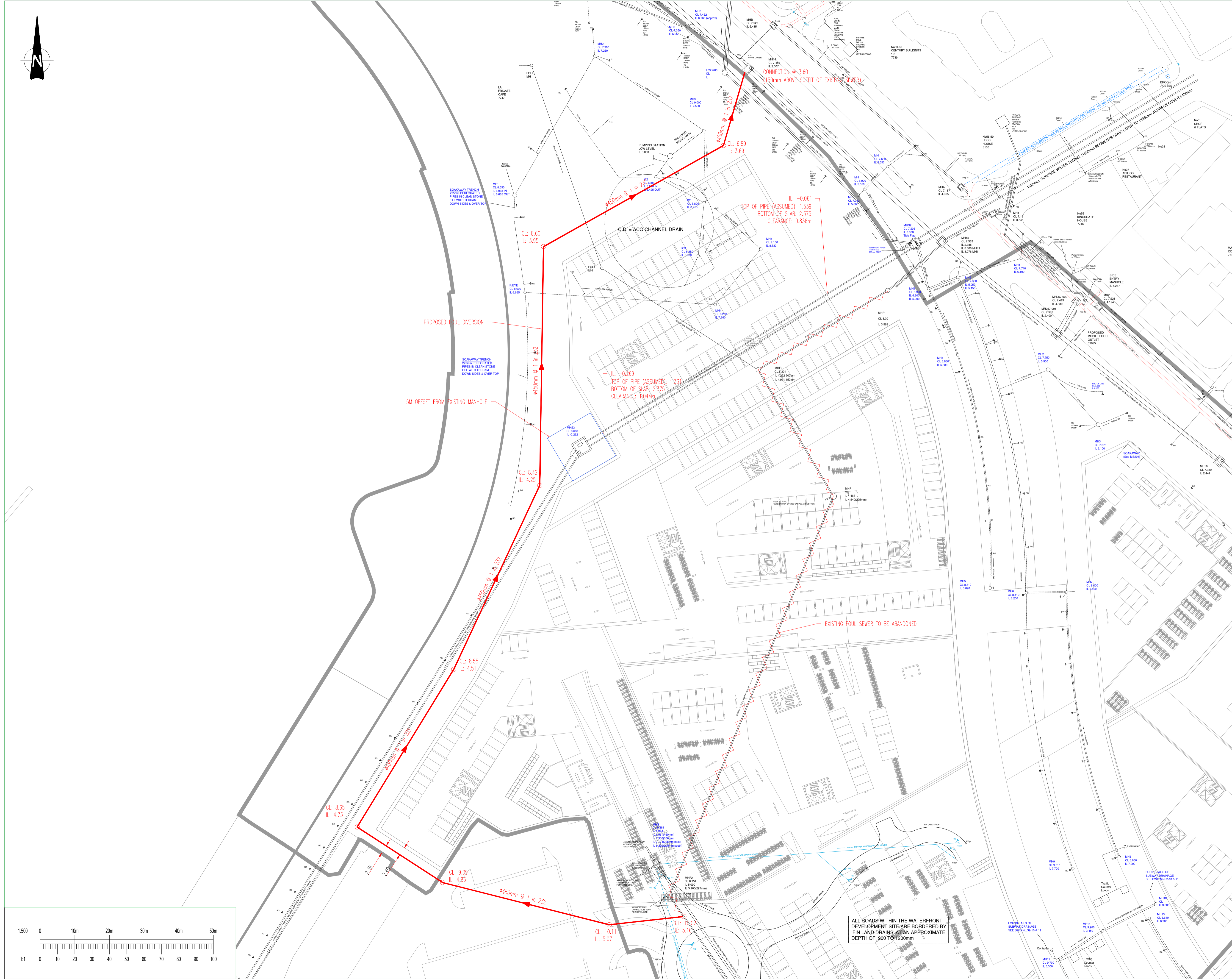


This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.
 This drawing is the property of Waterman Infrastructure & Environment Limited, and the drawing is issued on the condition that it is not copied, reproduced, related or disclosed to any unauthorised person, either wholly or in part without the consent in writing of Waterman Infrastructure & Environment Limited
 Pickfords Wharf, Clink Street, London SE1 9DG 1 020 7928 7888 1 03333 444 501

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

NOTE: PROPOSED DRAINAGE MARKED IN RED



P05	30.11.21	TITLE UPDATED	DO	BM
P04	19.11.21	COVER AND INVERT LEVELS ADDED	DO	BM
P03	08.11.21	UPDATED COLOURS	DO	BM
P02	27.10.21	NEW LAYOUT	DO	BM
P01	19.07.21	ISSUED	KT	DO

Amendments

Project
JERSEY WATERFRONT, SOUTH WEST ST. HELIER

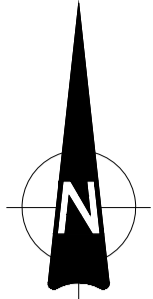
Title
PROPOSED FOUL SEWER DIVERSION AND SURFACE WATER BUILD OVER

Client
JERSEY DEVELOPMENT COMPANY



Pickfords Wharf Clink Street London SE1 9DG
 1 020 7928 7888
 mail@watermangroup.com www.watermangroup.com

PRELIMINARY			
Designed By	DO	Director	Waterman Ref
Drawn By	DO	Date	BM
		JULY 2021	WIE17128
Project - Originator - Volume - Level - Type - Role - Number			Revision
17128-WIE-ZZ-XX-DR-92001			P05

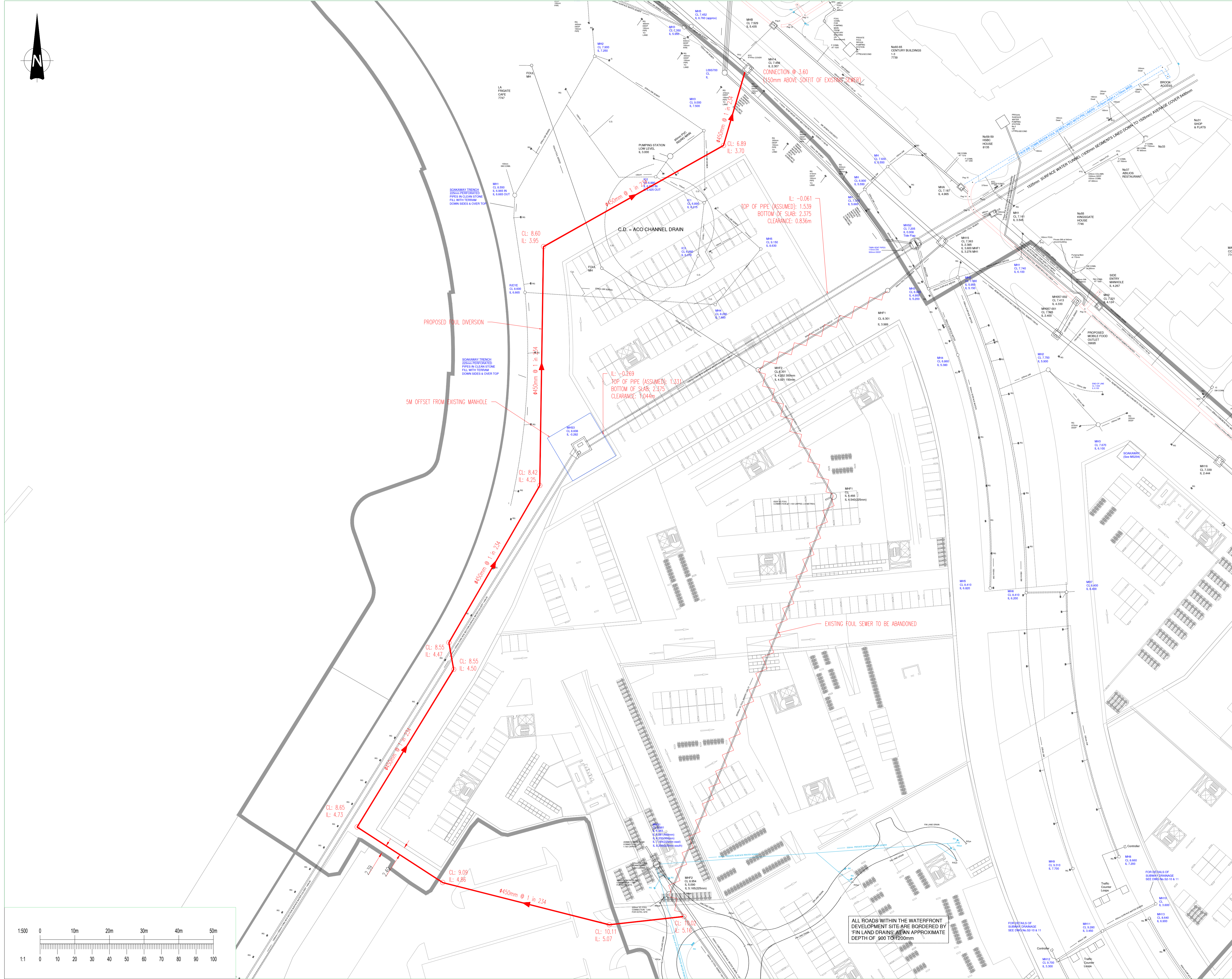


This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.
 This drawing is the property of Waterman Infrastructure & Environment Limited, and the drawing is issued on the condition that it is not copied, reproduced, related or disclosed to any unauthorised person, either wholly or in part without the consent in writing of Waterman Infrastructure & Environment Limited
 Pickfords Wharf, Clink Street, London SE1 9DG 1 020 7928 7888 103333 444 501

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

NOTE: PROPOSED DRAINAGE MARKED IN RED



Status	Date	Description	By	CHK
P06	02.12.21	ROUTE AMENDED		DO
P05	30.11.21	TITLE UPDATED		DO BM
P04	19.11.21	COVER AND INVERT LEVELS ADDED		DO BM
P03	08.11.21	UPDATED COLOURS		DO BM
P02	27.10.21	NEW LAYOUT		DO BM
P01	19.07.21	ISSUED		KT DO

Amendments

Project: **JERSEY WATERFRONT, SOUTH WEST ST. HELIER**

Title: **PROPOSED FOUL SEWER DIVERSION AND SURFACE WATER BUILD OVER**

Client: **JERSEY DEVELOPMENT COMPANY**



PRELIMINARY			
Designed By	DO	Director	Waterman Ref
Drawn By	DO	Date	BM Scales @ A1
Project - Originator - Volume - Level - Type - Role - Number			Revision
17128-WIE-ZZ-XX-DR-92001			P06



Project Title: Waterfront Jersey
 Calculations Title: Existing Foul Flows from Offsite

Sheet No: 1 of 1 Project No: WIE17128
 By: D O'Donovan Date: 02/12/2021
 Checked: B McCarthy Date: 02/12/2021

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential				2.12	24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	732 existing units			6.735
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 proposed units			0.000
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms	3	24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	195 beds	3	24	1.354
Offices	750.0 litres per 100m ²	Jones (1992)	190 m ²	3	10	0.049
Retail	400.0 litres per 100m ²	Jones (1992)	715 m ²	3	3 DWF Flat	0.099
Cinema	10.0 litres per seat	Jones (1992)	0 seats*	3	8	0.000
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	0 customers**	3	16	0.000
Day School	90.0 litres per pupil	British Water (2013)	0 pupils	3	10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils	3	24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds	3	3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds	3	24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	90 covers	3	8	0.094
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	0 customers***	3	12	0.000
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
SUB TOTAL						8.3
Infiltration percentage	10%					0.8
TOTAL					Existing:	9.2

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m² 4 m² per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person



Project Title: Waterfront Jersey
 Calculations Title: Existing Foul Flow Estimate

Sheet No: 1 of 2 Project No: WIE17128
 By: D O'Donovan Date: 18/10/2021
 Checked: B McCarthy Date: 18/10/2021

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential				2.12	24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 existing units			0.000
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 proposed units			0.000
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms	3	24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	0 beds	3	24	0.000
Offices	750.0 litres per 100m ²	Jones (1992)	0 m ²	3	10	0.000
Retail	400.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Cinema	10.0 litres per seat	Jones (1992)	300 seats*	3	8	0.104
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	300 customers**	3	16	0.521
Day School	90.0 litres per pupil	British Water (2013)	0 pupils	3	10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils	3	24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds	3	3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds	3	24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	150 covers	3	8	0.156
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	500 customers***	3	12	0.260
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
SUB TOTAL						1.0
Infiltration percentage	10%					0.1
TOTAL					Existing:	1.1

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$



Project Title: Waterfront Jersey
 Calculations Title: Proposed Foul Flow Estimate

Sheet No: 2 of 2 Project No: WIE17128
 By: D O'Donovan Date: 18/10/2021
 Checked: B McCarthy Date: 18/10/2021

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential				2.12	24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 existing units			0.000
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	1001 proposed units			9.211
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms	3	24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	0 beds	3	24	0.000
Offices	750.0 litres per 100m ²	Jones (1992)	20217 m ²	3	10	5.265
Retail	400.0 litres per 100m ²	Jones (1992)	1346 m ²	3	3 DWF Flat	0.187
Cinema	10.0 litres per seat	Jones (1992)	0 seats*	3	8	0.000
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	850 customers**	3	16	1.476
Day School	90.0 litres per pupil	British Water (2013)	0 pupils	3	10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils	3	24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds	3	3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds	3	24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	850 covers	3	8	0.885
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	0 customers***	3	12	0.000
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²	3	3 DWF Flat	0.000
SUB TOTAL						17.0
Infiltration percentage	10%					1.7
TOTAL					Proposed:	18.7

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m² 4 m² per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

Existing Sewer Details

Diameter 300 mm
 Upstream Invert 5.09 m AOD
 Downstream Invert 4.46 m AOD
 Fall 0.63 m
 Length 123 m
 Gradient (1 in X)* 195
 Capacity 70.1 l/s
 Existing Base Flow (assumed) 9.2 l/s
 Velocity @ 1/3 flow 0.5 m/s

*Using worst case gradient/section of pipe

Pipe Number	Pipe Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	Pipe Rough. (mm)	US/L (m)	US/C/L (m)	Pipe DIA (mm)	Auto Design
1.000	123.000	0.631	194.8	0.000	0	9.2	1.500	0.000	0.000	300	🟢

Pipe Number	US/L (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Houses	Add Flow (l/s)	Pro. Vel (m/s)	Pro. Depth (mm)	Pro Vel at 1/3 Flow (m/s)	Velocity (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.031	0.000	9.2	0	0.0	0.09	73	0.50	0.59	70.1	8.2

Proposed Diversion

Diameter 450 mm
 Upstream Invert 5.16 m AOD
 Downstream Invert 3.6 m AOD
 Fall 1.56 m
 Length 364.3 m
 Gradient (1 in X)* 234
 Proposed Flow 18.7 l/s
 Existing Base Flow 9.2 l/s
 TOTAL Flow 27.9 l/s
 Velocity @ 1/3 flow 0.62 m/s

Pipe Number	Pipe Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	Pipe Rough. (mm)	US/L (m)	US/C/L (m)	Pipe DIA (mm)	Auto Design
1.000	364.300	1.560	233.5	0.000	0	27.9	1.500	0.000	0.000	450	🟢

Pipe Number	US/L (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Houses	Add Flow (l/s)	Pro. Vel (m/s)	Pro. Depth (mm)	Pro Vel at 1/3 Flow (m/s)	Velocity (m/s)	Cap (l/s)	Flow (l/s)
1.000	1.560	0.000	27.9	0	0.0	0.85	117	0.62	1.10	107.5	27.9



G. Surface Water Sewer Build Over

Appendices

SWSH Visioning Framework
Project Number: WIE17128

Document Reference: WIE17128-104-R-2-4-2-Drainage

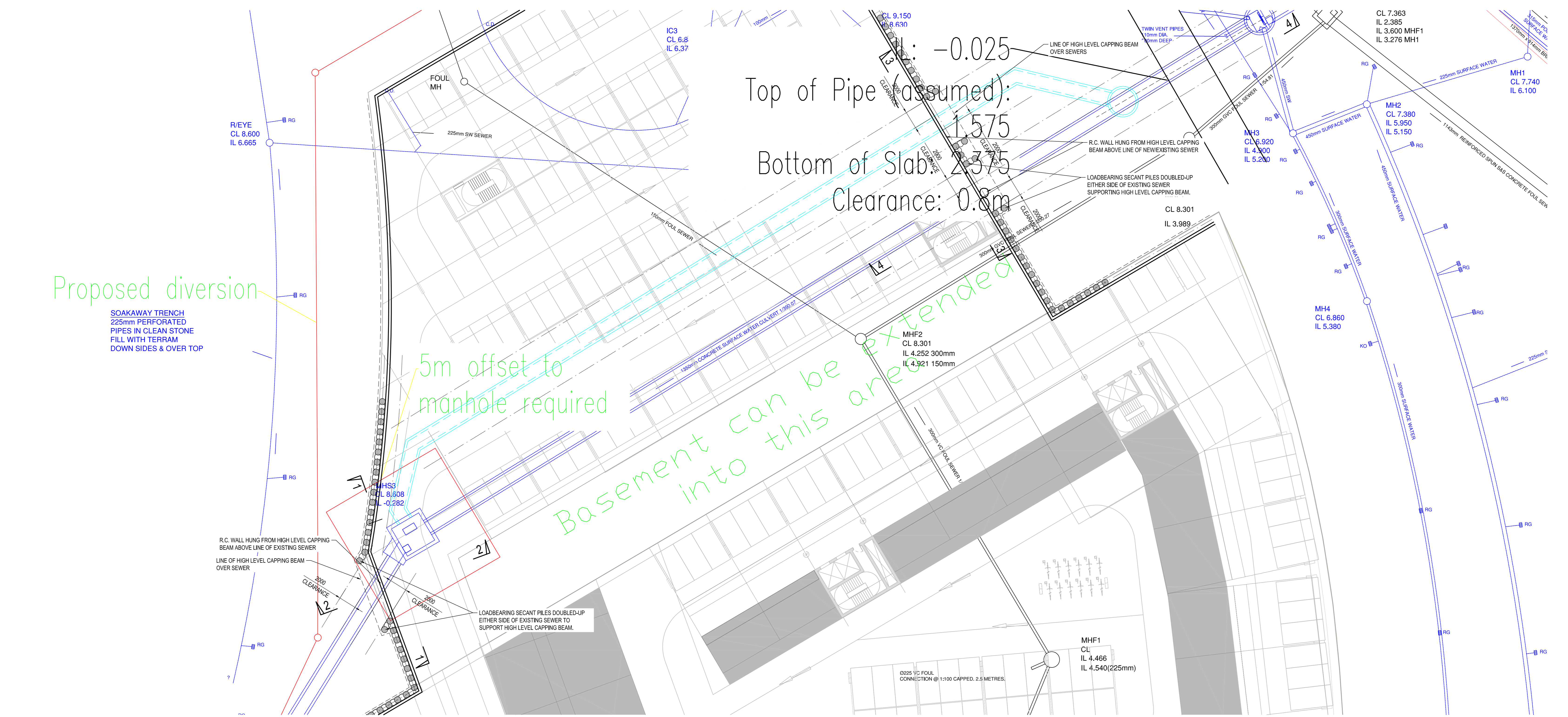
Proposed diversion

SOAKAWAY TRENCH
225mm PERFORATED
PIPES IN CLEAN STONE
FILL WITH TERRAM
DOWN SIDES & OVER TOP

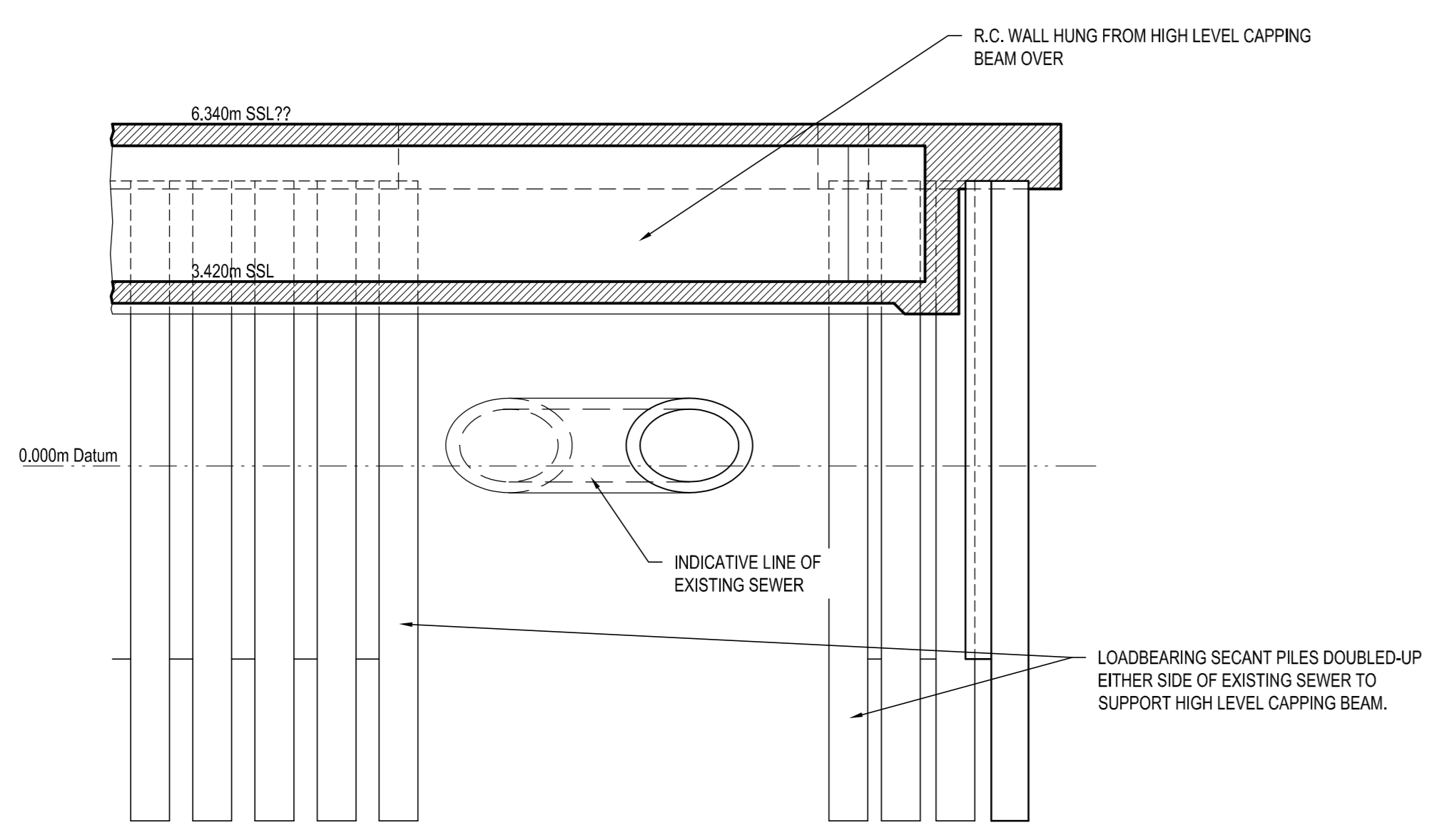
5m offset to
manhole required

Basement can be extended
into this area

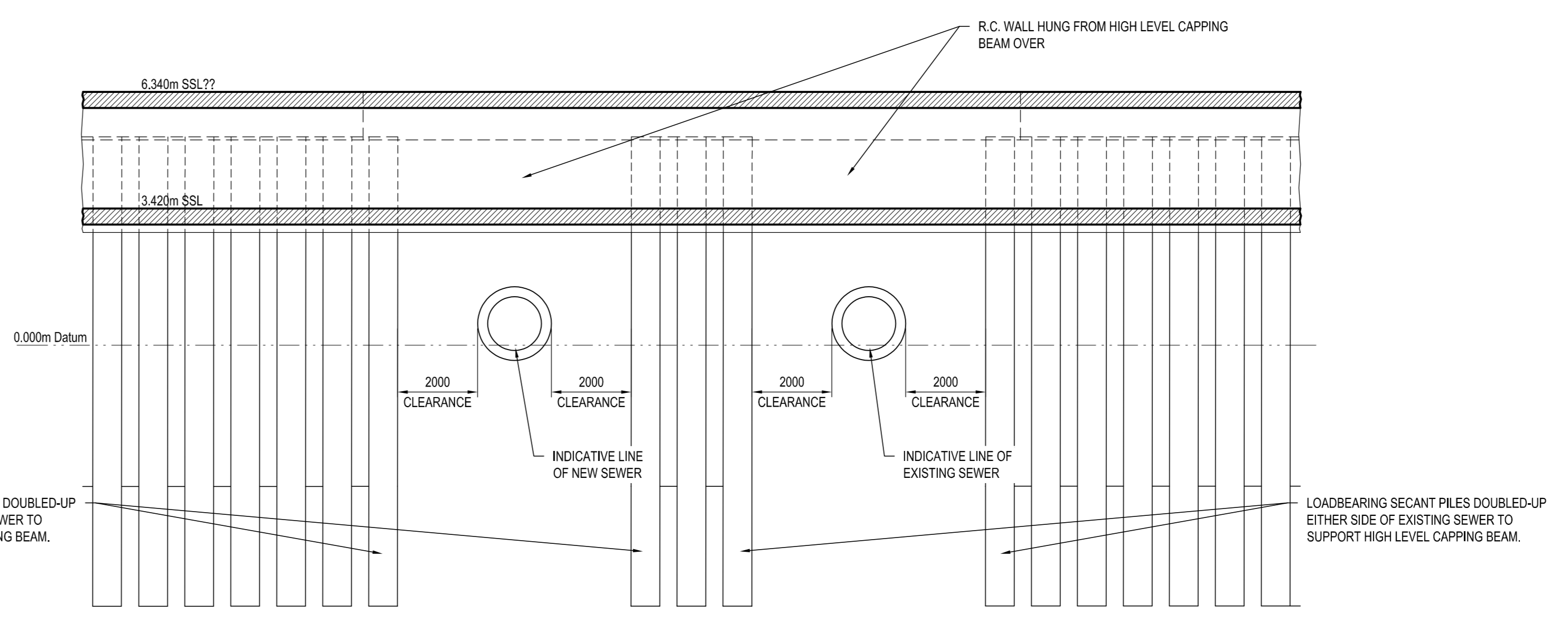
Top of Pipe (assumed):
1.575
Bottom of Slab: 2.375
Clearance: 0.8m



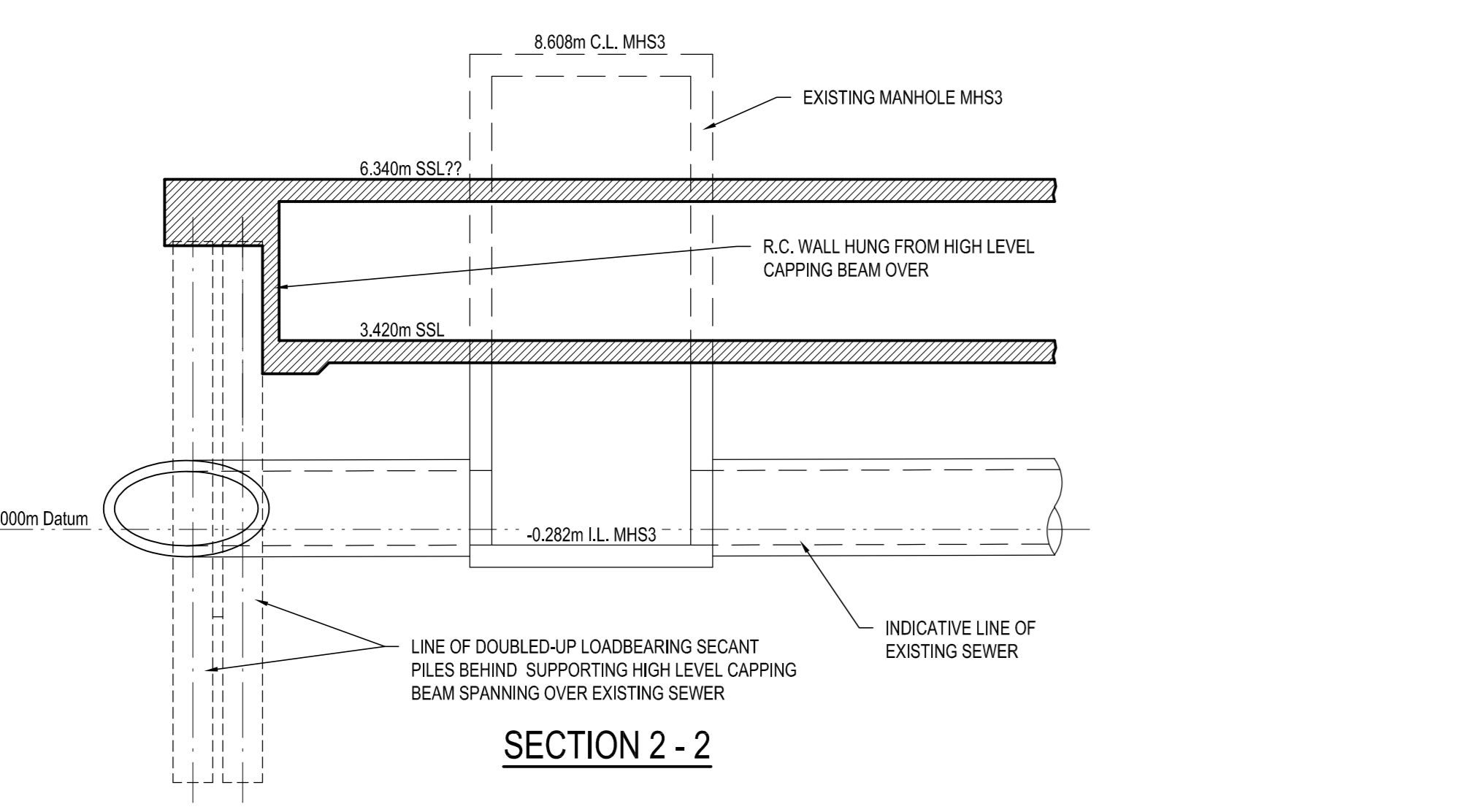
PLAN SHOWING INDICATIVE SECANT WALL ARRANGEMENT AROUND NEW/EXISTING SEWER



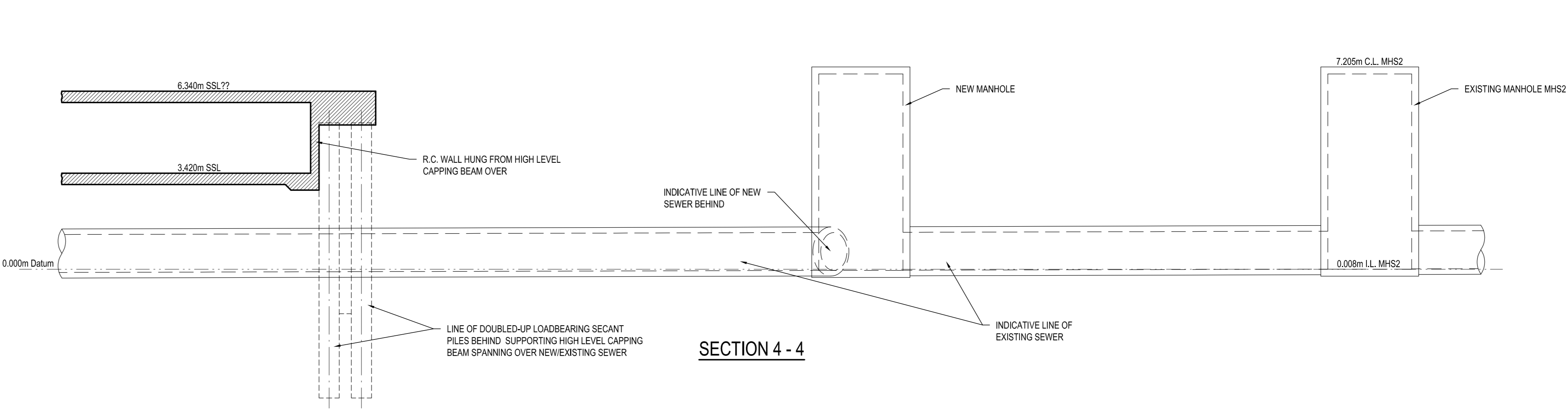
SECTION 1-1



SECTION 3-3



SECTION 2-2



SECTION 4-4

25 October 2022
-- DRAFT --
Keith Mead

Rev	Date	Description	By
P01	25/10/22	ISSUED FOR INFORMATION	RW/KM

ST. HELIER WATERSIDE

INDICATIVE STRUCTURAL PROPOSALS FOR BRIDGING OVER EXISTING/NEW SEWER

JDC

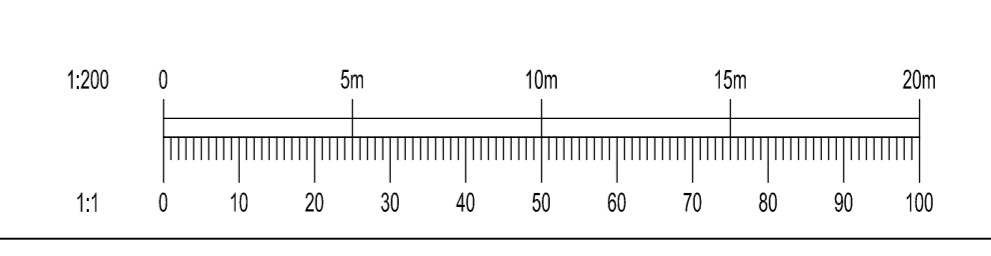


Pickfords Wharf, Clark Street, London SE1 9DG
020 7603 7888
enquiries@watermangroup.com www.watermangroup.com

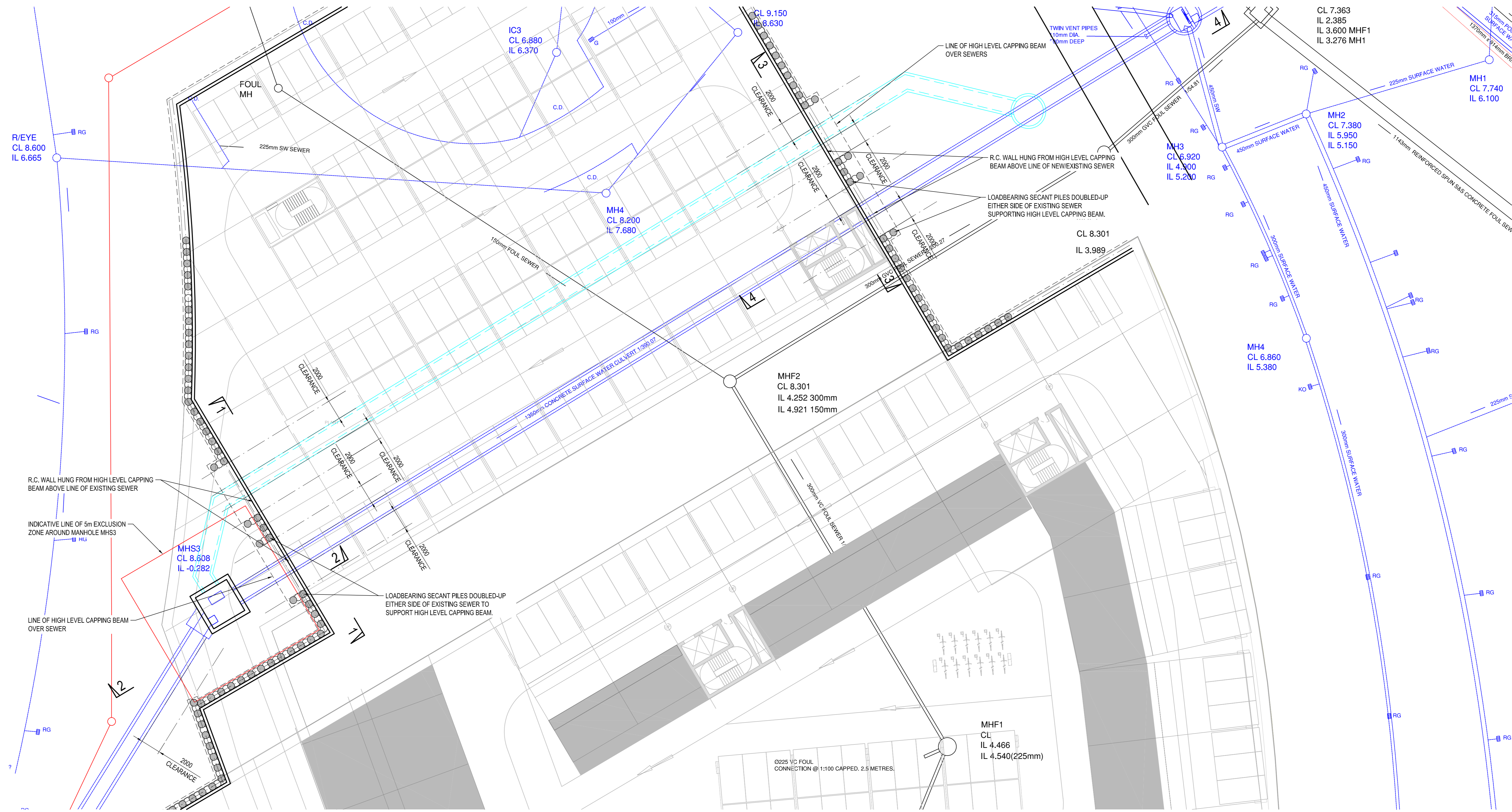
Project: INITIAL STATUS (WIP) S0

Drawn By: RW
Checked By: RW
Date: OCT. 2022
Scale: 1:200, 1:100

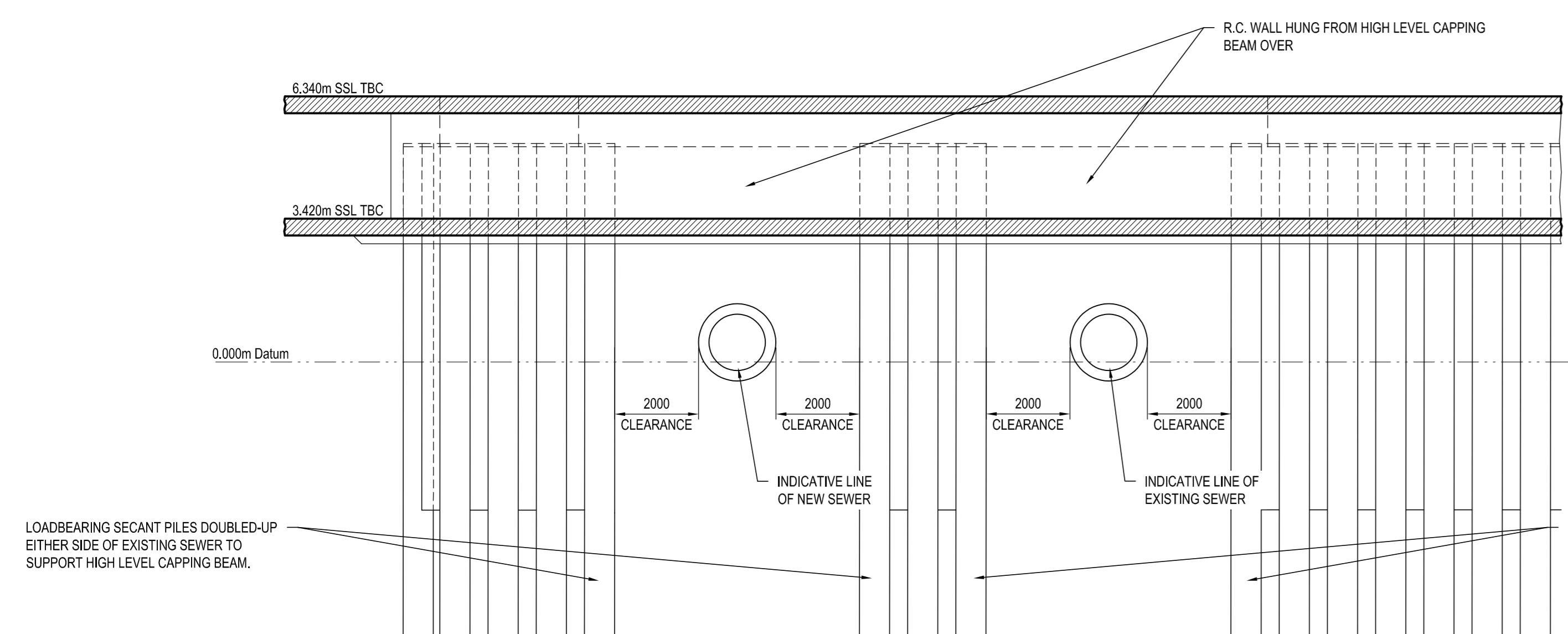
STR16626-WSL-ZZ-DR-S-SK0001 P01



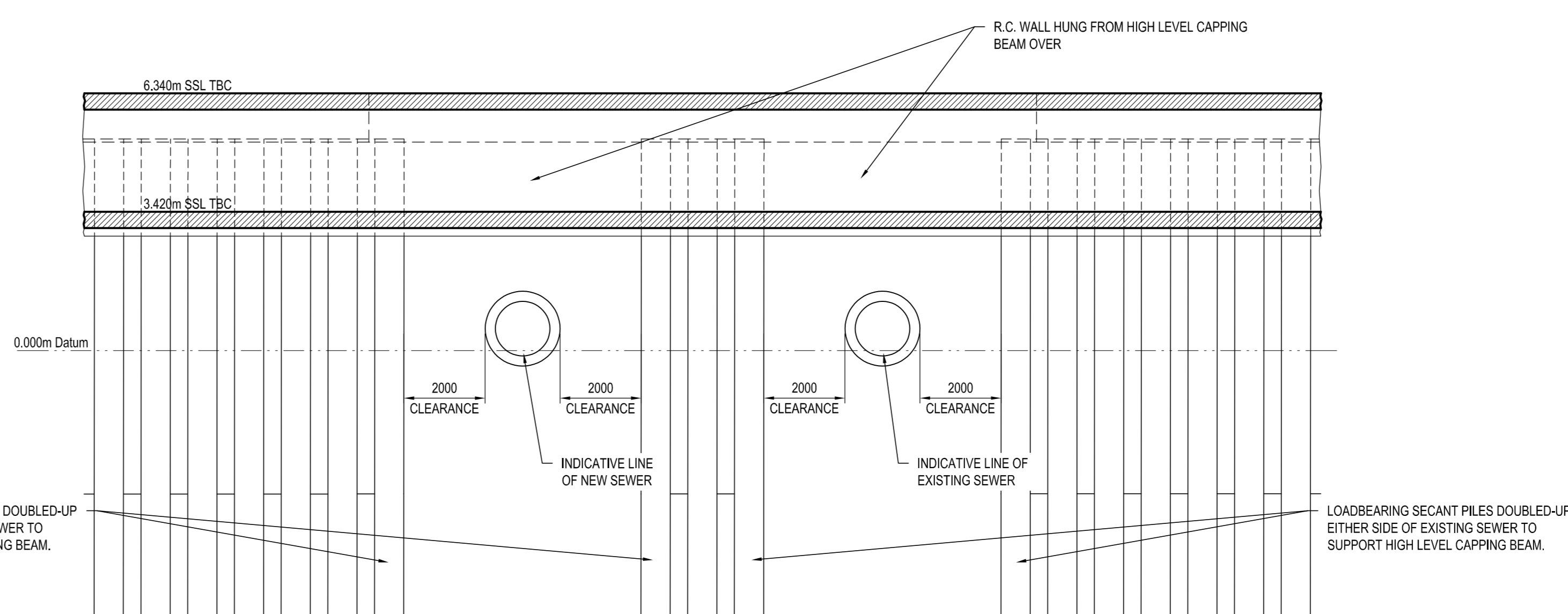
SOAKAWAY TRENCH
225mm PERFORATED
PIPES IN CLEAN STONE
FILL WITH TERRAM
DOWN SIDES & OVER TOP



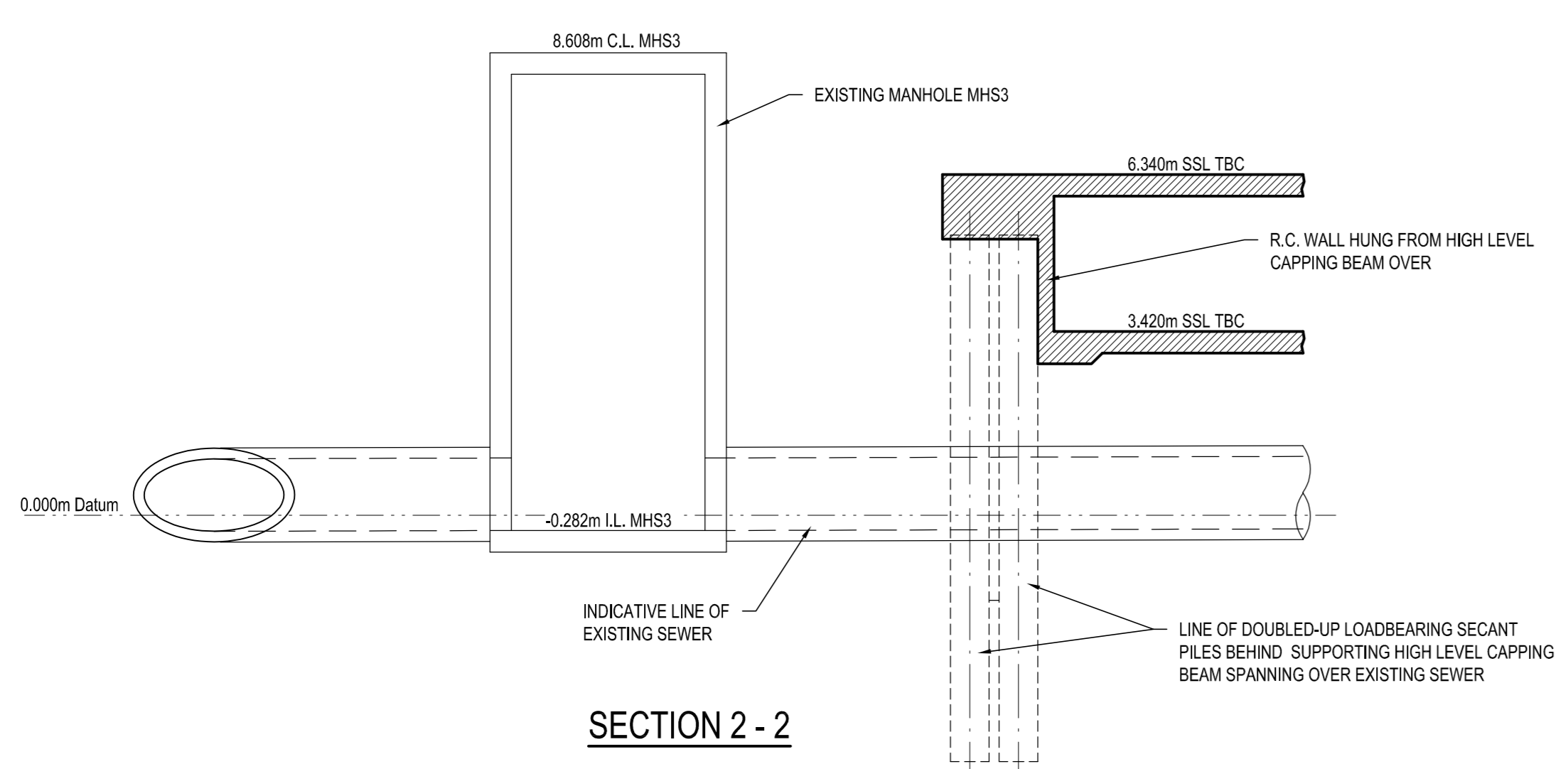
PLAN SHOWING INDICATIVE SECANT WALL
ARRANGEMENT AROUND NEW/EXISTING SEWER



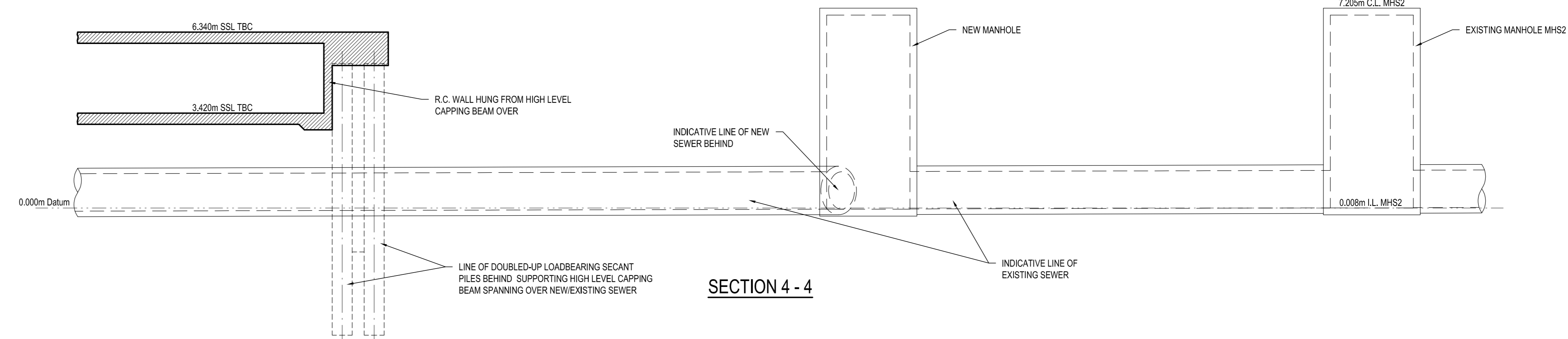
SECTION 1-1



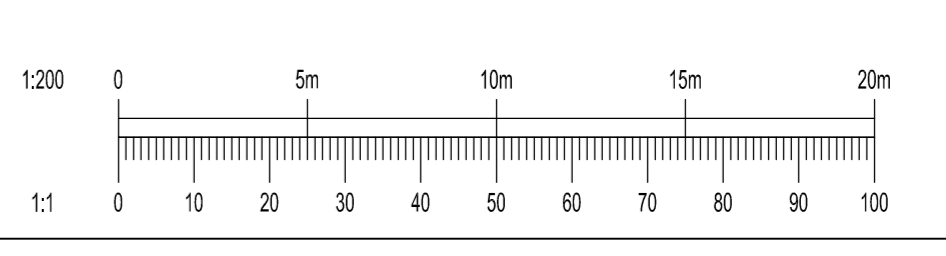
SECTION 3-3



SECTION 2-2



SECTION 4-4



Project	ST. HELIER WATERSIDE
Task	INDICATIVE STRUCTURAL PROPOSALS FOR BRIDGING OVER EXISTING/NEW SEWER
Client	JDC
Logo	
Address	Pickfords Wharf, Clerk Street, London, SE1 1QG
Phone	020 760 1888
Email	enq@watermangroup.com www.watermangroup.com
Project No.	STR16626
Revision	S2
Drawn By	KRM
Date	OCT. 2022
Scale	1:200, 1:100
Project	STR16626-WSL-ZZ-DR-S-SK0001
Revision	P01

H. Alternative Foul Calculations

Appendices

SWSH Visioning Framework
Project Number: WIE17128

Document Reference: WIE17128-104-R-2-4-2-Drainage



Project Title: Waterfront Jersey
 Calculations Title: Existing Foul Flows from Offsite

Sheet No: 1 of 1 Project No: WIE17128
 By: S Whelan Date: 12/12/2022
 Checked: B McCarthy Date: 12/12/2022

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential					6 24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	732 existing units			19.063
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 proposed units			0.000
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms		3 24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	195 beds		3 24	1.354
Offices	750.0 litres per 100m ²	Jones (1992)	190 m ²		3 10	0.049
Retail	400.0 litres per 100m ²	Jones (1992)	715 m ²		3 3 DWF Flat	0.099
Cinema	10.0 litres per seat	Jones (1992)	0 seats*		3 8	0.000
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	0 customers**		3 16	0.000
Day School	90.0 litres per pupil	British Water (2013)	0 pupils		3 10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils		3 24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds		3 3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds		3 24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	90 covers		3 8	0.094
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	0 customers***		3 12	0.000
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
SUB TOTAL						20.7
Infiltration percentage	10%					2.1
TOTAL					Existing:	22.7

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m² 4 m² per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person



Project Title: Waterfront Jersey
 Calculations Title: Existing Foul Flow Estimate from the Site

Sheet No: 1 of 2 Project No: WIE17128
 By: S Whelan Date: 12/12/2022
 Checked: B McCarthy Date: 12/12/2022

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential					6 24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 existing units			0.000
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 proposed units			0.000
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms		3 24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	0 beds		3 24	0.000
Offices	750.0 litres per 100m ²	Jones (1992)	0 m ²		3 10	0.000
Retail	400.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Cinema	10.0 litres per seat	Jones (1992)	300 seats*		3 8	0.104
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	300 customers**		3 16	0.521
Day School	90.0 litres per pupil	British Water (2013)	0 pupils		3 10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils		3 24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds		3 3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds		3 24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	150 covers		3 8	0.156
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	500 customers***		3 12	0.260
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
SUB TOTAL						1.0
Infiltration percentage	10%					0.1
TOTAL					Existing:	1.1

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

$$\text{Floor area} = \text{m}^2 \quad 4 \text{ m}^2 \text{ per person}$$



Project Title: Waterfront Jersey
 Calculations Title: Proposed Foul Flow Estimate from the Site

Sheet No: 2 of 2 Project No: WIE17128
 By: S Whelan Date: 12/12/2022
 Checked: B McCarthy Date: 12/12/2022

	Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential					6 24	
Existing property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	0 existing units			0.000
New property = 150 litres/person/day	375.0 litres per unit	SoJ Recommendation	984 proposed units			25.625
Occupancy = 2.5 persons						
Hotel	500.0 litres per room	British Water (2013)	0 rooms		3 24	0.000
Student Accommodation	200.0 litres per bed	Thames Water Guidelines (2016)	0 beds		3 24	0.000
Offices	750.0 litres per 100m ²	Jones (1992)	20217 m ²		3 10	5.265
Retail	400.0 litres per 100m ²	Jones (1992)	1346 m ²		3 3 DWF Flat	0.187
Cinema	10.0 litres per seat	Jones (1992)	0 seats*		3 8	0.000
Health Club/Sports Centre	50.0 litres per customer	British Water (2013)	850 customers**		3 16	1.476
Day School	90.0 litres per pupil	British Water (2013)	0 pupils		3 10	0.000
Boarding School	175.0 litres per pupil	British Water (2013)	0 pupils		3 24	0.000
Hospital	750.0 litres per bed	Jones (1992)	0 beds		3 3 DWF Flat	0.000
Nursing Home	350.0 litres per bed	British Water (2013)	0 beds		3 24	0.000
Restaurant	30.0 litres per cover	British Water (2013)	850 covers		3 8	0.885
Pub/Club	15.0 litres per customer	Butler and Davies (2004)	0 customers***		3 12	0.000
Warehouse	150.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Manufacturing	550.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
Commercial	300.0 litres per 100m ²	Jones (1992)	0 m ²		3 3 DWF Flat	0.000
SUB TOTAL						33.4
Infiltration percentage	10%					3.3
TOTAL					Proposed:	36.8

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m² 4 m² per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m² 4 m² per person

Existing Sewer Details

Diameter	300 mm
Upstream Invert	5.09 m AOD
Downstream Invert	4.46 m AOD
Fall	0.63 m
Length	123 m
Gradient (1 in X)*	195
Capacity	70.1 l/s
Existing offsite flow (assumed)	22.7 l/s
Existing flow from site	1.1 l/s
TOTAL Flow	23.8 l/s
Velocity @ 1/3 flow	0.66 m/s

*Using worst case gradient/section of pipe

Pipe Number	Pipe Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	Pipe Rough (mm)	US/L (m)	US/CL (m)	Pipe DIA (mm)	Auto Design
1.000	123.000	0.630	195.2	0.000	0	23.8	1.500	5.090	0.000	300	👍

Pipe Number	DS/L (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Houses	Add Flow (l/s)	Pro. Vel (m/s)	Pro. Depth (mm)	Pro Vel at 1/3 Flow (m/s)	Velocity (m/s)	Cap (l/s)	Flow (l/s)
1.000	4.460	0.000	23.8	0	0.0	0.90	121	0.66	0.69	70.1	23.8

Proposed Diversion

Diameter	450 mm
Upstream Invert	5.16 m AOD
Downstream Invert	3.6 m AOD
Fall	1.56 m
Length	364.3 m
Gradient (1 in X)*	234
Proposed Flow	36.8 l/s
Existing Base Flow	22.7 l/s
TOTAL Flow	59.5 l/s
Velocity @ 1/3 flow	0.77 m/s

Pipe Number	Pipe Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	Pipe Rough (mm)	US/L (m)	US/CL (m)	Pipe DIA (mm)	Auto Design
1.000	364.300	1.560	233.5	0.000	0	55.5	1.500	0.000	0.000	450	👍

Pipe Number	DS/L (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Houses	Add Flow (l/s)	Pro. Vel (m/s)	Pro. Depth (mm)	Pro Vel at 1/3 Flow (m/s)	Velocity (m/s)	Cap (l/s)	Flow (l/s)
1.000	-1.550	0.000	55.5	0	0.0	1.05	174	0.77	1.18	157.5	56.5

UK and Ireland Office Locations

