

The alternative drainage design software

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Seawinds, Carpenters Lane,  
Brook, Newport,  
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Job No.	1234/2010		
Sheet no.	1		
Date	25/09/10		
By	Checked	Approved	

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Free flowing outlet

PEAK hydrograph values printed

Mean rain intens. 86.00 mm/hr

Peak rain intens. 337.12 mm/hr

Return period = 50 yrs

Storm duration = 15 mins

Storm profile = Summer 50%

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE DIAM mm	CHAMBER DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE fract.	Depth	OVERFLOW l/s	FLOODED VOL m³	UPSTRM VOL m³	STATUS
1	I	1.01 SW1.01	16.2	6.1	150	1200	10.65	10.71	12.00	0.38	0.061	0.00	0.00	0.00	OK
2	I	1.02 SW1.02	16.2	18.3	150	1200	10.48	10.65	12.00	1.14	0.165	2.19	0.00	0.35	Surcharged
3	B	2.01 SW2.01	35.7	12.2	150	1200	10.65	10.71	12.00	0.34	0.057	0.00	0.00	0.00	OK
4	I	1.03 SW1.03	38.6	48.9	225	1200	9.98	10.28	12.00	1.27	0.294	10.38	0.00	1.36	Surcharged
5	B	3.01 SW3.01	16.2	6.1	150	1200	10.65	10.71	12.00	0.38	0.061	0.00	0.00	0.00	OK
6	B	3.02 SW3.02	19.5	21.4	150	1200	10.48	10.65	12.00	1.10	0.163	1.93	0.00	0.35	Surcharged
7	B	4.01 SW4.01	16.2	24.5	150	1200	10.65	10.86	12.00	1.51	0.205	8.31	0.00	0.00	Surcharged
8	S1	5.01 SW5.01	18.3	19.1	150	1200	10.65	10.81	12.00	1.04	0.155	0.82	0.00	0.00	Surcharged
9	B	4.02 SW4.02	16.2	43.6	150	1200	10.38	10.71	12.00	2.70	0.332	27.42	0.00	1.01	Surcharged
10	B	4.03 SW4.03	25.4	68.0	150	1200	10.01	10.44	12.10	2.68	0.433	42.62	0.00	0.80	Surcharged
11	I	1.04 SW1.04	82.5	138.4	300	1200	9.76	10.43	12.00	1.68	0.671	55.90	0.00	2.86	Surcharged
12	B	6.01 SW6.01	57.7	146.8	225	1200	10.57	11.39	12.00	2.54	0.816	89.05	0.00	0.00	Surcharged
13	I	1.05 SW1.05	114.8	285.2	375	1500	9.65	10.75	12.00	2.48	1.098	170.41	0.00	4.40	Surcharged
14	B	7.01 SW7.01	64.0	122.3	225	1200	10.57	11.19	12.00	1.91	0.612	58.29	0.00	0.00	Surcharged
15	B	8.01 SW8.01	64.0	140.7	225	1200	10.57	11.31	12.00	2.20	0.733	76.64	0.00	0.00	Surcharged
16	I	1.06 SW1.06	360.7	548.2	600	1800	9.43	10.59	12.00	1.52	1.153	187.45	0.00	13.14	Surcharged
17	B	9.01 SW9.01	207.7	458.7	450	1200	10.50	12.61	12.00	2.21	2.115	250.99	41.73	0.00	Flooded
18	B	9.02 SW9.02	207.7	477.8	450	1200	10.44	12.68	12.00	2.30	2.242	270.11	46.21	2.39	Flooded
19	B	9.03 SW9.03	207.7	477.8	450	1200	10.31	12.55	12.00	2.30	2.242	270.11	37.53	4.77	Flooded
20	S1	10.01 SW10.01	23.0	19.1	150	1200	10.65	10.77	12.00	0.83	0.116	0.00	0.00	0.00	OK
21	B	9.04 SW9.04	33.7	0.0	150	1200	10.23	10.23	12.00	0.00	0.000	0.00	0.00	3.62	OK
22	I	1.07 SW1.07	360.7	1045.1	600	1800	9.32	11.94	12.00	2.90	2.618	684.40	0.00	11.75	Warning



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Job No. <b>1234/2010</b>		
Sheet no. <b>2</b>		
Date <b>25/09/10</b>		
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Project <b>Crown Estates</b>
Title <b>Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.</b>

## Notes

### Printout headings

- |   |   |   |
|---|---|---|
| 1) Entry no - position in file                | 2) Section no - pipe identifier                                   | 3) Manhole ref - Manhole identifier                       |
| 4) Pipe cap - full bore capacity of that pipe | 5) Rate of flow - calculated flow rate (l/s) ‡ = flow restrictor. | 6) Pipe diam - outlet pipe diameter (mm)                  |
| 7) Chamber diam - chamber diam. at base of MH | 8) Invert level - invert level of manhole                         | 9) Water level - calculated peak water level.             |
| 10) Grnd level - ground / cover level         | 11) Surch. fract - calc.flow/pipe capacity                        | 12) Surch. depth - surcharge level above soffit           |
| 13) Overflow - surcharged flow rate (l/s)     | 14) Flooded vol - volume of water above cover                     | 15) Upstrm Vol - upstream pipe vol to previous manhole(s) |
| 16) Status - OK - outlet not surcharged       | 17) Status - Surcharged - outlet surcharged                       | 18) Status - Warning - water level at/above warning       |
| 19) Status - Flooded - cover over-topped      |   |   |

### Title box

#### Hydrograph data

- |   |                                      |  |
|---|--------------------------------------|--|
| 1) Ret. period - that used to calculate profile | 2) Duration - length of storm (mins) | 3) Profile - either Winter (75%) or Summer (50%) |
|---|--------------------------------------|--|

### Flood volumes

Manhole reference - SW9.01	Flooded volume - 111.1644 m <sup>3</sup>	Flooded time - 0.50 mins
Manhole reference - SW9.02	Flooded volume - 226.9994 m <sup>3</sup>	Flooded time - 0.50 mins
Manhole reference - SW9.03	Flooded volume - 333.176 m <sup>3</sup>	Flooded time - 0.38 mins

Check that the upstream storage of the manhole is adequate to take the flood volume - see Upstrm Vol above.



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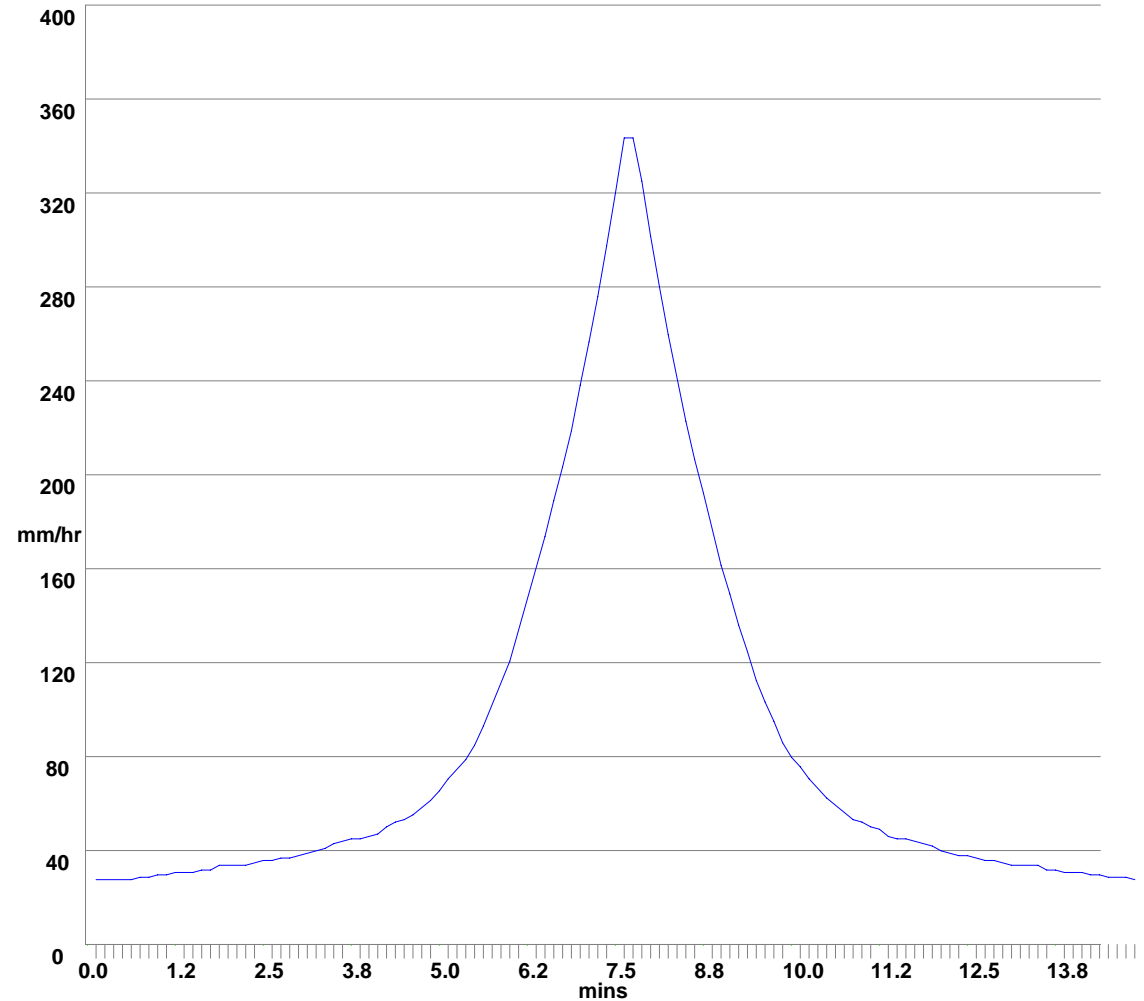
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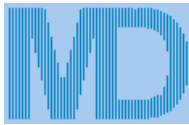
Project  
**Crown Estates**

Title  
**Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:08	27.00	5:08	69.00	10:08	74.00
0:15	27.00	5:15	73.00	10:15	69.00
0:22	27.00	5:22	77.00	10:22	65.00
0:30	27.00	5:30	83.00	10:30	61.00
0:38	27.00	5:38	91.00	10:38	58.00
0:45	28.00	5:45	100.00	10:45	55.00
0:52	28.00	5:52	109.00	10:52	52.00
1:00	29.00	6:00	118.00	11:00	51.00
1:08	29.00	6:08	131.00	11:08	49.00
1:15	30.00	6:15	144.00	11:15	48.00
1:22	30.00	6:22	157.00	11:22	45.00
1:30	30.00	6:30	170.00	11:30	44.00
1:38	31.00	6:38	185.00	11:38	44.00
1:45	31.00	6:45	199.00	11:45	43.00
1:52	33.00	6:52	214.00	11:52	42.00
2:00	33.00	7:00	233.00	12:00	41.00
2:08	33.00	7:08	251.00	12:08	39.00
2:15	33.00	7:15	270.00	12:15	38.00
2:22	34.00	7:22	291.00	12:22	37.00
2:30	35.00	7:30	313.00	12:30	37.00
2:38	35.00	7:38	336.00	12:38	36.00
2:45	36.00	7:45	336.00	12:45	35.00
2:52	36.00	7:52	318.00	12:52	35.00
3:00	37.00	8:00	295.00	13:00	34.00
3:08	38.00	8:08	274.00	13:08	33.00
3:15	39.00	8:15	254.00	13:15	33.00
3:22	40.00	8:22	236.00	13:22	33.00
3:30	42.00	8:30	218.00	13:30	33.00
3:38	43.00	8:38	202.00	13:38	31.00
3:45	44.00	8:45	188.00	13:45	31.00
3:52	44.00	8:52	173.00	13:52	30.00
4:00	45.00	9:00	158.00	14:00	30.00
4:08	46.00	9:08	146.00	14:08	30.00
4:15	49.00	9:15	133.00	14:15	29.00
4:22	51.00	9:22	122.00	14:22	29.00
4:30	52.00	9:30	110.00	14:30	28.00
4:38	54.00	9:38	101.00	14:38	28.00
4:45	57.00	9:45	93.00	14:45	28.00
4:52	60.00	9:52	84.00	14:52	27.00
5:00	64.00	10:00	78.00	15:00	27.00

Hydrograph profile derived from data in the Flood Studies Report





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MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW1.01 with free flowing final outlet*

1	10.661 OK	21	10.662 OK	41	10.670 OK	61	10.711 OK	81	10.671 OK	101	10.663 OK
2	10.661 OK	22	10.663 OK	42	10.671 OK	62	10.711 OK	82	10.670 OK	102	10.662 OK
3	10.661 OK	23	10.663 OK	43	10.672 OK	63	10.709 OK	83	10.669 OK	103	10.662 OK
4	10.661 OK	24	10.663 OK	44	10.672 OK	64	10.706 OK	84	10.668 OK	104	10.662 OK
5	10.661 OK	25	10.663 OK	45	10.674 OK	65	10.702 OK	85	10.668 OK	105	10.662 OK
6	10.661 OK	26	10.664 OK	46	10.676 OK	66	10.699 OK	86	10.667 OK	106	10.662 OK
7	10.661 OK	27	10.664 OK	47	10.677 OK	67	10.697 OK	87	10.666 OK	107	10.662 OK
8	10.661 OK	28	10.664 OK	48	10.679 OK	68	10.694 OK	88	10.666 OK	108	10.662 OK
9	10.661 OK	29	10.664 OK	49	10.681 OK	69	10.692 OK	89	10.666 OK	109	10.662 OK
10	10.661 OK	30	10.665 OK	50	10.683 OK	70	10.690 OK	90	10.665 OK	110	10.662 OK
11	10.661 OK	31	10.665 OK	51	10.685 OK	71	10.688 OK	91	10.665 OK	111	10.661 OK
12	10.661 OK	32	10.665 OK	52	10.688 OK	72	10.685 OK	92	10.665 OK	112	10.661 OK
13	10.662 OK	33	10.665 OK	53	10.690 OK	73	10.684 OK	93	10.665 OK	113	10.661 OK
14	10.662 OK	34	10.666 OK	54	10.692 OK	74	10.681 OK	94	10.664 OK	114	10.661 OK
15	10.662 OK	35	10.666 OK	55	10.694 OK	75	10.679 OK	95	10.664 OK	115	10.661 OK
16	10.662 OK	36	10.666 OK	56	10.696 OK	76	10.677 OK	96	10.664 OK	116	10.661 OK
17	10.662 OK	37	10.667 OK	57	10.699 OK	77	10.676 OK	97	10.664 OK	117	10.661 OK
18	10.662 OK	38	10.668 OK	58	10.702 OK	78	10.674 OK	98	10.663 OK	118	10.661 OK
19	10.662 OK	39	10.668 OK	59	10.705 OK	79	10.673 OK	99	10.663 OK	119	10.661 OK
20	10.662 OK	40	10.669 OK	60	10.707 OK	80	10.672 OK	100	10.663 OK	120	10.661 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

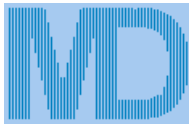
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW1.02 with free flowing final outlet*

1	10.505 OK	21	10.510 OK	41	10.526 OK	61	10.648 Surch.	81	10.528 OK	101	10.510 OK
2	10.505 OK	22	10.510 OK	42	10.527 OK	62	10.648 Surch.	82	10.526 OK	102	10.510 OK
3	10.505 OK	23	10.510 OK	43	10.529 OK	63	10.641 Surch.	83	10.524 OK	103	10.510 OK
4	10.505 OK	24	10.511 OK	44	10.532 OK	64	10.631 OK	84	10.522 OK	104	10.509 OK
5	10.505 OK	25	10.511 OK	45	10.535 OK	65	10.614 OK	85	10.521 OK	105	10.509 OK
6	10.506 OK	26	10.512 OK	46	10.539 OK	66	10.603 OK	86	10.519 OK	106	10.509 OK
7	10.506 OK	27	10.512 OK	47	10.542 OK	67	10.595 OK	87	10.518 OK	107	10.509 OK
8	10.506 OK	28	10.513 OK	48	10.546 OK	68	10.587 OK	88	10.518 OK	108	10.509 OK
9	10.506 OK	29	10.514 OK	49	10.551 OK	69	10.580 OK	89	10.517 OK	109	10.507 OK
10	10.507 OK	30	10.514 OK	50	10.557 OK	70	10.574 OK	90	10.516 OK	110	10.507 OK
11	10.507 OK	31	10.514 OK	51	10.562 OK	71	10.568 OK	91	10.514 OK	111	10.507 OK
12	10.507 OK	32	10.514 OK	52	10.567 OK	72	10.563 OK	92	10.514 OK	112	10.507 OK
13	10.507 OK	33	10.515 OK	53	10.573 OK	73	10.558 OK	93	10.514 OK	113	10.507 OK
14	10.507 OK	34	10.517 OK	54	10.579 OK	74	10.552 OK	94	10.514 OK	114	10.506 OK
15	10.509 OK	35	10.518 OK	55	10.585 OK	75	10.548 OK	95	10.513 OK	115	10.506 OK
16	10.509 OK	36	10.518 OK	56	10.593 OK	76	10.543 OK	96	10.513 OK	116	10.506 OK
17	10.509 OK	37	10.519 OK	57	10.602 OK	77	10.539 OK	97	10.512 OK	117	10.506 OK
18	10.509 OK	38	10.521 OK	58	10.612 OK	78	10.536 OK	98	10.511 OK	118	10.506 OK
19	10.509 OK	39	10.522 OK	59	10.626 OK	79	10.532 OK	99	10.511 OK	119	10.505 OK
20	10.510 OK	40	10.523 OK	60	10.639 Surch.	80	10.530 OK	100	10.511 OK	120	10.505 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.483 m

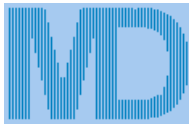
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.517 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW2.01 with free flowing final outlet*

1	10.660 OK	21	10.662 OK	41	10.669 OK	61	10.707 OK	81	10.670 OK	101	10.662 OK
2	10.660 OK	22	10.662 OK	42	10.669 OK	62	10.707 OK	82	10.669 OK	102	10.662 OK
3	10.660 OK	23	10.662 OK	43	10.670 OK	63	10.704 OK	83	10.668 OK	103	10.662 OK
4	10.660 OK	24	10.662 OK	44	10.671 OK	64	10.701 OK	84	10.667 OK	104	10.661 OK
5	10.660 OK	25	10.662 OK	45	10.672 OK	65	10.699 OK	85	10.667 OK	105	10.661 OK
6	10.660 OK	26	10.663 OK	46	10.674 OK	66	10.696 OK	86	10.666 OK	106	10.661 OK
7	10.660 OK	27	10.663 OK	47	10.675 OK	67	10.694 OK	87	10.665 OK	107	10.661 OK
8	10.660 OK	28	10.663 OK	48	10.677 OK	68	10.692 OK	88	10.665 OK	108	10.661 OK
9	10.660 OK	29	10.664 OK	49	10.679 OK	69	10.689 OK	89	10.665 OK	109	10.661 OK
10	10.661 OK	30	10.664 OK	50	10.681 OK	70	10.688 OK	90	10.665 OK	110	10.661 OK
11	10.661 OK	31	10.664 OK	51	10.683 OK	71	10.685 OK	91	10.664 OK	111	10.661 OK
12	10.661 OK	32	10.664 OK	52	10.685 OK	72	10.683 OK	92	10.664 OK	112	10.661 OK
13	10.661 OK	33	10.664 OK	53	10.687 OK	73	10.681 OK	93	10.664 OK	113	10.661 OK
14	10.661 OK	34	10.665 OK	54	10.689 OK	74	10.679 OK	94	10.664 OK	114	10.660 OK
15	10.661 OK	35	10.665 OK	55	10.691 OK	75	10.678 OK	95	10.663 OK	115	10.660 OK
16	10.661 OK	36	10.665 OK	56	10.693 OK	76	10.676 OK	96	10.663 OK	116	10.660 OK
17	10.661 OK	37	10.666 OK	57	10.696 OK	77	10.674 OK	97	10.663 OK	117	10.660 OK
18	10.661 OK	38	10.666 OK	58	10.698 OK	78	10.673 OK	98	10.662 OK	118	10.660 OK
19	10.661 OK	39	10.667 OK	59	10.701 OK	79	10.672 OK	99	10.662 OK	119	10.660 OK
20	10.662 OK	40	10.668 OK	60	10.704 OK	80	10.670 OK	100	10.662 OK	120	10.660 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

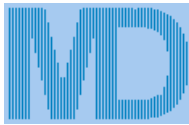
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Hydrograph table for manhole SW1.03 with free flowing final outlet

1	10.019 OK	21	10.026 OK	41	10.052 OK	61	10.277 Surch.	81	10.056 OK	101	10.027 OK
2	10.019 OK	22	10.027 OK	42	10.055 OK	62	10.277 Surch.	82	10.052 OK	102	10.026 OK
3	10.019 OK	23	10.027 OK	43	10.058 OK	63	10.259 Surch.	83	10.050 OK	103	10.026 OK
4	10.019 OK	24	10.028 OK	44	10.063 OK	64	10.237 Surch.	84	10.047 OK	104	10.025 OK
5	10.019 OK	25	10.029 OK	45	10.068 OK	65	10.217 Surch.	85	10.044 OK	105	10.025 OK
6	10.020 OK	26	10.029 OK	46	10.074 OK	66	10.189 OK	86	10.042 OK	106	10.025 OK
7	10.020 OK	27	10.030 OK	47	10.081 OK	67	10.171 OK	87	10.040 OK	107	10.025 OK
8	10.021 OK	28	10.032 OK	48	10.087 OK	68	10.156 OK	88	10.039 OK	108	10.025 OK
9	10.021 OK	29	10.033 OK	49	10.096 OK	69	10.144 OK	89	10.038 OK	109	10.022 OK
10	10.022 OK	30	10.033 OK	50	10.103 OK	70	10.134 OK	90	10.037 OK	110	10.022 OK
11	10.022 OK	31	10.033 OK	51	10.112 OK	71	10.124 OK	91	10.034 OK	111	10.022 OK
12	10.022 OK	32	10.034 OK	52	10.122 OK	72	10.113 OK	92	10.033 OK	112	10.022 OK
13	10.022 OK	33	10.035 OK	53	10.132 OK	73	10.105 OK	93	10.033 OK	113	10.022 OK
14	10.022 OK	34	10.038 OK	54	10.142 OK	74	10.096 OK	94	10.033 OK	114	10.021 OK
15	10.025 OK	35	10.039 OK	55	10.153 OK	75	10.089 OK	95	10.032 OK	115	10.021 OK
16	10.025 OK	36	10.040 OK	56	10.169 OK	76	10.081 OK	96	10.031 OK	116	10.020 OK
17	10.025 OK	37	10.042 OK	57	10.186 OK	77	10.075 OK	97	10.029 OK	117	10.020 OK
18	10.025 OK	38	10.044 OK	58	10.213 Surch.	78	10.069 OK	98	10.029 OK	118	10.020 OK
19	10.025 OK	39	10.046 OK	59	10.233 Surch.	79	10.064 OK	99	10.028 OK	119	10.019 OK
20	10.026 OK	40	10.049 OK	60	10.255 Surch.	80	10.059 OK	100	10.028 OK	120	10.019 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

Manhole data

Invert level = 9.983 m

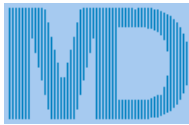
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 2.017 m

Pipe diam. = 225 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>8</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW3.01 with free flowing final outlet*

1	10.661 OK	21	10.662 OK	41	10.670 OK	61	10.711 OK	81	10.671 OK	101	10.663 OK
2	10.661 OK	22	10.663 OK	42	10.671 OK	62	10.711 OK	82	10.670 OK	102	10.662 OK
3	10.661 OK	23	10.663 OK	43	10.672 OK	63	10.709 OK	83	10.669 OK	103	10.662 OK
4	10.661 OK	24	10.663 OK	44	10.672 OK	64	10.706 OK	84	10.668 OK	104	10.662 OK
5	10.661 OK	25	10.663 OK	45	10.674 OK	65	10.702 OK	85	10.668 OK	105	10.662 OK
6	10.661 OK	26	10.664 OK	46	10.676 OK	66	10.699 OK	86	10.667 OK	106	10.662 OK
7	10.661 OK	27	10.664 OK	47	10.677 OK	67	10.697 OK	87	10.666 OK	107	10.662 OK
8	10.661 OK	28	10.664 OK	48	10.679 OK	68	10.694 OK	88	10.666 OK	108	10.662 OK
9	10.661 OK	29	10.664 OK	49	10.681 OK	69	10.692 OK	89	10.666 OK	109	10.662 OK
10	10.661 OK	30	10.665 OK	50	10.683 OK	70	10.690 OK	90	10.665 OK	110	10.662 OK
11	10.661 OK	31	10.665 OK	51	10.685 OK	71	10.688 OK	91	10.665 OK	111	10.661 OK
12	10.661 OK	32	10.665 OK	52	10.688 OK	72	10.685 OK	92	10.665 OK	112	10.661 OK
13	10.662 OK	33	10.665 OK	53	10.690 OK	73	10.684 OK	93	10.665 OK	113	10.661 OK
14	10.662 OK	34	10.666 OK	54	10.692 OK	74	10.681 OK	94	10.664 OK	114	10.661 OK
15	10.662 OK	35	10.666 OK	55	10.694 OK	75	10.679 OK	95	10.664 OK	115	10.661 OK
16	10.662 OK	36	10.666 OK	56	10.696 OK	76	10.677 OK	96	10.664 OK	116	10.661 OK
17	10.662 OK	37	10.667 OK	57	10.699 OK	77	10.676 OK	97	10.664 OK	117	10.661 OK
18	10.662 OK	38	10.668 OK	58	10.702 OK	78	10.674 OK	98	10.663 OK	118	10.661 OK
19	10.662 OK	39	10.668 OK	59	10.705 OK	79	10.673 OK	99	10.663 OK	119	10.661 OK
20	10.662 OK	40	10.669 OK	60	10.707 OK	80	10.672 OK	100	10.663 OK	120	10.661 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

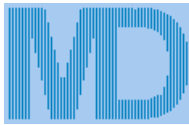
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>9</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW3.02 with free flowing final outlet*

1	10.505 OK	21	10.509 OK	41	10.525 OK	61	10.646 Surch.	81	10.527 OK	101	10.509 OK
2	10.505 OK	22	10.509 OK	42	10.526 OK	62	10.646 Surch.	82	10.525 OK	102	10.509 OK
3	10.505 OK	23	10.509 OK	43	10.528 OK	63	10.638 Surch.	83	10.523 OK	103	10.509 OK
4	10.505 OK	24	10.510 OK	44	10.531 OK	64	10.622 OK	84	10.521 OK	104	10.508 OK
5	10.505 OK	25	10.510 OK	45	10.534 OK	65	10.609 OK	85	10.520 OK	105	10.508 OK
6	10.505 OK	26	10.511 OK	46	10.538 OK	66	10.599 OK	86	10.519 OK	106	10.508 OK
7	10.505 OK	27	10.511 OK	47	10.541 OK	67	10.591 OK	87	10.517 OK	107	10.508 OK
8	10.506 OK	28	10.512 OK	48	10.545 OK	68	10.584 OK	88	10.517 OK	108	10.508 OK
9	10.506 OK	29	10.513 OK	49	10.550 OK	69	10.577 OK	89	10.516 OK	109	10.507 OK
10	10.506 OK	30	10.513 OK	50	10.555 OK	70	10.572 OK	90	10.516 OK	110	10.507 OK
11	10.506 OK	31	10.513 OK	51	10.560 OK	71	10.566 OK	91	10.514 OK	111	10.506 OK
12	10.506 OK	32	10.514 OK	52	10.565 OK	72	10.561 OK	92	10.513 OK	112	10.506 OK
13	10.507 OK	33	10.514 OK	53	10.571 OK	73	10.555 OK	93	10.513 OK	113	10.506 OK
14	10.507 OK	34	10.516 OK	54	10.576 OK	74	10.551 OK	94	10.513 OK	114	10.506 OK
15	10.508 OK	35	10.517 OK	55	10.582 OK	75	10.546 OK	95	10.512 OK	115	10.506 OK
16	10.508 OK	36	10.517 OK	56	10.590 OK	76	10.542 OK	96	10.512 OK	116	10.505 OK
17	10.508 OK	37	10.518 OK	57	10.598 OK	77	10.538 OK	97	10.511 OK	117	10.505 OK
18	10.508 OK	38	10.519 OK	58	10.607 OK	78	10.535 OK	98	10.510 OK	118	10.505 OK
19	10.508 OK	39	10.521 OK	59	10.619 OK	79	10.531 OK	99	10.510 OK	119	10.505 OK
20	10.509 OK	40	10.523 OK	60	10.636 Surch.	80	10.529 OK	100	10.510 OK	120	10.505 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.483 m

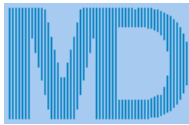
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.517 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No.	1234/2010	
Sheet no.	10	
Date	25/09/10	
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW4.01 with free flowing final outlet*

1	10.677 OK	21	10.683 OK	41	10.702 OK	61	10.855 Surch.	81	10.706 OK	101	10.683 OK
2	10.677 OK	22	10.683 OK	42	10.705 OK	62	10.855 Surch.	82	10.702 OK	102	10.683 OK
3	10.677 OK	23	10.683 OK	43	10.707 OK	63	10.846 Surch.	83	10.701 OK	103	10.683 OK
4	10.677 OK	24	10.684 OK	44	10.711 OK	64	10.835 Surch.	84	10.698 OK	104	10.682 OK
5	10.677 OK	25	10.684 OK	45	10.715 OK	65	10.825 Surch.	85	10.696 OK	105	10.681 OK
6	10.678 OK	26	10.685 OK	46	10.720 OK	66	10.815 Surch.	86	10.694 OK	106	10.681 OK
7	10.678 OK	27	10.686 OK	47	10.725 OK	67	10.807 Surch.	87	10.693 OK	107	10.681 OK
8	10.678 OK	28	10.687 OK	48	10.729 OK	68	10.793 OK	88	10.692 OK	108	10.681 OK
9	10.678 OK	29	10.688 OK	49	10.736 OK	69	10.778 OK	89	10.691 OK	109	10.680 OK
10	10.679 OK	30	10.688 OK	50	10.743 OK	70	10.769 OK	90	10.690 OK	110	10.680 OK
11	10.679 OK	31	10.688 OK	51	10.750 OK	71	10.760 OK	91	10.689 OK	111	10.679 OK
12	10.679 OK	32	10.689 OK	52	10.758 OK	72	10.751 OK	92	10.688 OK	112	10.679 OK
13	10.680 OK	33	10.689 OK	53	10.767 OK	73	10.744 OK	93	10.688 OK	113	10.679 OK
14	10.680 OK	34	10.691 OK	54	10.776 OK	74	10.737 OK	94	10.688 OK	114	10.678 OK
15	10.681 OK	35	10.692 OK	55	10.789 OK	75	10.731 OK	95	10.687 OK	115	10.678 OK
16	10.681 OK	36	10.693 OK	56	10.805 Surch.	76	10.725 OK	96	10.686 OK	116	10.678 OK
17	10.681 OK	37	10.694 OK	57	10.814 Surch.	77	10.720 OK	97	10.685 OK	117	10.678 OK
18	10.681 OK	38	10.696 OK	58	10.823 Surch.	78	10.716 OK	98	10.684 OK	118	10.678 OK
19	10.682 OK	39	10.698 OK	59	10.833 Surch.	79	10.711 OK	99	10.684 OK	119	10.677 OK
20	10.683 OK	40	10.700 OK	60	10.844 Surch.	80	10.707 OK	100	10.684 OK	120	10.677 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

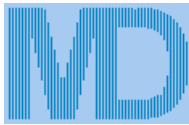
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>11</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW5.01 with free flowing final outlet*

1	10.671 OK	21	10.675 OK	41	10.690 OK	61	10.805 Surch.	81	10.693 OK	101	10.676 OK
2	10.671 OK	22	10.676 OK	42	10.692 OK	62	10.805 Surch.	82	10.690 OK	102	10.675 OK
3	10.671 OK	23	10.676 OK	43	10.694 OK	63	10.795 OK	83	10.689 OK	103	10.675 OK
4	10.671 OK	24	10.676 OK	44	10.696 OK	64	10.780 OK	84	10.687 OK	104	10.675 OK
5	10.671 OK	25	10.677 OK	45	10.699 OK	65	10.770 OK	85	10.686 OK	105	10.674 OK
6	10.672 OK	26	10.677 OK	46	10.702 OK	66	10.761 OK	86	10.684 OK	106	10.674 OK
7	10.672 OK	27	10.678 OK	47	10.706 OK	67	10.754 OK	87	10.683 OK	107	10.674 OK
8	10.672 OK	28	10.678 OK	48	10.709 OK	68	10.746 OK	88	10.683 OK	108	10.674 OK
9	10.672 OK	29	10.679 OK	49	10.715 OK	69	10.741 OK	89	10.682 OK	109	10.673 OK
10	10.672 OK	30	10.679 OK	50	10.719 OK	70	10.735 OK	90	10.681 OK	110	10.673 OK
11	10.672 OK	31	10.679 OK	51	10.724 OK	71	10.730 OK	91	10.680 OK	111	10.672 OK
12	10.672 OK	32	10.680 OK	52	10.729 OK	72	10.725 OK	92	10.679 OK	112	10.672 OK
13	10.673 OK	33	10.680 OK	53	10.734 OK	73	10.720 OK	93	10.679 OK	113	10.672 OK
14	10.673 OK	34	10.682 OK	54	10.739 OK	74	10.715 OK	94	10.679 OK	114	10.672 OK
15	10.674 OK	35	10.683 OK	55	10.745 OK	75	10.711 OK	95	10.678 OK	115	10.672 OK
16	10.674 OK	36	10.683 OK	56	10.752 OK	76	10.706 OK	96	10.678 OK	116	10.672 OK
17	10.674 OK	37	10.684 OK	57	10.760 OK	77	10.703 OK	97	10.677 OK	117	10.672 OK
18	10.674 OK	38	10.685 OK	58	10.767 OK	78	10.700 OK	98	10.677 OK	118	10.672 OK
19	10.675 OK	39	10.686 OK	59	10.778 OK	79	10.696 OK	99	10.676 OK	119	10.671 OK
20	10.675 OK	40	10.688 OK	60	10.791 OK	80	10.694 OK	100	10.676 OK	120	10.671 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>12</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW4.02 with free flowing final outlet*

1	10.423 OK	21	10.432 OK	41	10.465 OK	61	10.715 Surch.	81	10.470 OK	101	10.433 OK
2	10.423 OK	22	10.433 OK	42	10.468 OK	62	10.715 Surch.	82	10.465 OK	102	10.432 OK
3	10.423 OK	23	10.433 OK	43	10.472 OK	63	10.699 Surch.	83	10.461 OK	103	10.432 OK
4	10.423 OK	24	10.434 OK	44	10.478 OK	64	10.680 Surch.	84	10.457 OK	104	10.431 OK
5	10.423 OK	25	10.435 OK	45	10.486 OK	65	10.662 Surch.	85	10.454 OK	105	10.430 OK
6	10.425 OK	26	10.436 OK	46	10.496 OK	66	10.644 Surch.	86	10.451 OK	106	10.430 OK
7	10.425 OK	27	10.437 OK	47	10.506 OK	67	10.629 Surch.	87	10.449 OK	107	10.430 OK
8	10.426 OK	28	10.439 OK	48	10.518 OK	68	10.613 Surch.	88	10.448 OK	108	10.430 OK
9	10.426 OK	29	10.440 OK	49	10.539 Surch.	69	10.600 Surch.	89	10.446 OK	109	10.428 OK
10	10.427 OK	30	10.441 OK	50	10.550 Surch.	70	10.588 Surch.	90	10.445 OK	110	10.428 OK
11	10.427 OK	31	10.441 OK	51	10.561 Surch.	71	10.575 Surch.	91	10.442 OK	111	10.427 OK
12	10.427 OK	32	10.442 OK	52	10.572 Surch.	72	10.562 Surch.	92	10.441 OK	112	10.427 OK
13	10.428 OK	33	10.443 OK	53	10.585 Surch.	73	10.551 Surch.	93	10.441 OK	113	10.427 OK
14	10.428 OK	34	10.446 OK	54	10.597 Surch.	74	10.540 Surch.	94	10.440 OK	114	10.426 OK
15	10.430 OK	35	10.448 OK	55	10.610 Surch.	75	10.525 OK	95	10.439 OK	115	10.426 OK
16	10.430 OK	36	10.449 OK	56	10.626 Surch.	76	10.507 OK	96	10.438 OK	116	10.425 OK
17	10.430 OK	37	10.450 OK	57	10.642 Surch.	77	10.497 OK	97	10.436 OK	117	10.425 OK
18	10.430 OK	38	10.453 OK	58	10.658 Surch.	78	10.488 OK	98	10.435 OK	118	10.425 OK
19	10.431 OK	39	10.456 OK	59	10.676 Surch.	79	10.479 OK	99	10.434 OK	119	10.423 OK
20	10.432 OK	40	10.460 OK	60	10.695 Surch.	80	10.473 OK	100	10.434 OK	120	10.423 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.383 m

Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.617 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>13</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW4.03 with free flowing final outlet*

1	10.048 OK	21	10.057 OK	41	10.089 OK	61	10.441 Surch.	81	10.094 OK	101	10.058 OK
2	10.048 OK	22	10.058 OK	42	10.093 OK	62	10.441 Surch.	82	10.089 OK	102	10.057 OK
3	10.048 OK	23	10.058 OK	43	10.097 OK	63	10.416 Surch.	83	10.086 OK	103	10.057 OK
4	10.048 OK	24	10.059 OK	44	10.102 OK	64	10.386 Surch.	84	10.082 OK	104	10.056 OK
5	10.048 OK	25	10.060 OK	45	10.110 OK	65	10.357 Surch.	85	10.079 OK	105	10.055 OK
6	10.050 OK	26	10.060 OK	46	10.120 OK	66	10.331 Surch.	86	10.076 OK	106	10.055 OK
7	10.050 OK	27	10.062 OK	47	10.130 OK	67	10.306 Surch.	87	10.073 OK	107	10.055 OK
8	10.051 OK	28	10.064 OK	48	10.142 OK	68	10.282 Surch.	88	10.072 OK	108	10.055 OK
9	10.051 OK	29	10.065 OK	49	10.165 Surch.	69	10.261 Surch.	89	10.071 OK	109	10.052 OK
10	10.051 OK	30	10.065 OK	50	10.183 Surch.	70	10.242 Surch.	90	10.069 OK	110	10.052 OK
11	10.051 OK	31	10.065 OK	51	10.200 Surch.	71	10.222 Surch.	91	10.067 OK	111	10.051 OK
12	10.051 OK	32	10.067 OK	52	10.218 Surch.	72	10.202 Surch.	92	10.065 OK	112	10.051 OK
13	10.052 OK	33	10.067 OK	53	10.238 Surch.	73	10.185 Surch.	93	10.065 OK	113	10.051 OK
14	10.052 OK	34	10.071 OK	54	10.257 Surch.	74	10.168 Surch.	94	10.065 OK	114	10.051 OK
15	10.055 OK	35	10.072 OK	55	10.277 Surch.	75	10.148 OK	95	10.064 OK	115	10.051 OK
16	10.055 OK	36	10.073 OK	56	10.302 Surch.	76	10.131 OK	96	10.062 OK	116	10.050 OK
17	10.055 OK	37	10.075 OK	57	10.326 Surch.	77	10.121 OK	97	10.060 OK	117	10.050 OK
18	10.055 OK	38	10.078 OK	58	10.352 Surch.	78	10.112 OK	98	10.060 OK	118	10.050 OK
19	10.056 OK	39	10.081 OK	59	10.380 Surch.	79	10.104 OK	99	10.059 OK	119	10.048 OK
20	10.057 OK	40	10.083 OK	60	10.410 Surch.	80	10.098 OK	100	10.059 OK	120	10.048 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.008 m

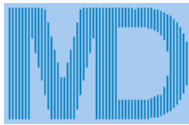
Ground level = 12.100 m

Warning level = 11.800 m

Manhole depth = 2.092 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



The alternative drainage design software

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Job No.	1234/2010	
Sheet no.	14	
Date	25/09/10	
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW1.04 with free flowing final outlet*

1	9.820 OK	21	9.830 OK	41	9.875 OK	61	10.432 Surch.	81	9.881 OK	101	9.833 OK
2	9.820 OK	22	9.833 OK	42	9.880 OK	62	10.432 Surch.	82	9.875 OK	102	9.830 OK
3	9.820 OK	23	9.833 OK	43	9.884 OK	63	10.383 Surch.	83	9.870 OK	103	9.830 OK
4	9.820 OK	24	9.834 OK	44	9.891 OK	64	10.320 Surch.	84	9.865 OK	104	9.829 OK
5	9.820 OK	25	9.835 OK	45	9.901 OK	65	10.262 Surch.	85	9.861 OK	105	9.828 OK
6	9.821 OK	26	9.836 OK	46	9.911 OK	66	10.208 Surch.	86	9.857 OK	106	9.828 OK
7	9.821 OK	27	9.838 OK	47	9.921 OK	67	10.159 Surch.	87	9.854 OK	107	9.828 OK
8	9.822 OK	28	9.841 OK	48	9.933 OK	68	10.109 Surch.	88	9.852 OK	108	9.828 OK
9	9.822 OK	29	9.842 OK	49	9.949 OK	69	10.066 Surch.	89	9.850 OK	109	9.825 OK
10	9.824 OK	30	9.843 OK	50	9.965 OK	70	10.028 OK	90	9.849 OK	110	9.825 OK
11	9.824 OK	31	9.843 OK	51	9.981 OK	71	10.003 OK	91	9.844 OK	111	9.824 OK
12	9.824 OK	32	9.844 OK	52	9.999 OK	72	9.983 OK	92	9.843 OK	112	9.824 OK
13	9.825 OK	33	9.845 OK	53	10.022 OK	73	9.967 OK	93	9.843 OK	113	9.824 OK
14	9.825 OK	34	9.850 OK	54	10.054 OK	74	9.951 OK	94	9.842 OK	114	9.822 OK
15	9.828 OK	35	9.852 OK	55	10.098 Surch.	75	9.937 OK	95	9.841 OK	115	9.822 OK
16	9.828 OK	36	9.854 OK	56	10.150 Surch.	76	9.923 OK	96	9.839 OK	116	9.821 OK
17	9.828 OK	37	9.856 OK	57	10.200 Surch.	77	9.911 OK	97	9.836 OK	117	9.821 OK
18	9.828 OK	38	9.860 OK	58	10.251 Surch.	78	9.903 OK	98	9.835 OK	118	9.821 OK
19	9.829 OK	39	9.863 OK	59	10.309 Surch.	79	9.893 OK	99	9.834 OK	119	9.820 OK
20	9.830 OK	40	9.868 OK	60	10.369 Surch.	80	9.885 OK	100	9.834 OK	120	9.820 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 9.761 m

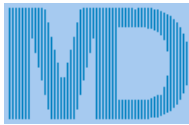
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 2.239 m

Pipe diam. = 300 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>15</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW6.01 with free flowing final outlet*

1	10.634 OK	21	10.645 OK	41	10.691 OK	61	11.391 Surch.	81	10.698 OK	101	10.647 OK
2	10.634 OK	22	10.647 OK	42	10.697 OK	62	11.391 Surch.	82	10.691 OK	102	10.645 OK
3	10.634 OK	23	10.647 OK	43	10.702 OK	63	11.338 Surch.	83	10.688 OK	103	10.645 OK
4	10.634 OK	24	10.648 OK	44	10.711 OK	64	11.272 Surch.	84	10.682 OK	104	10.644 OK
5	10.634 OK	25	10.650 OK	45	10.721 OK	65	11.211 Surch.	85	10.677 OK	105	10.643 OK
6	10.635 OK	26	10.651 OK	46	10.735 OK	66	11.153 Surch.	86	10.673 OK	106	10.643 OK
7	10.635 OK	27	10.653 OK	47	10.748 OK	67	11.101 Surch.	87	10.669 OK	107	10.643 OK
8	10.636 OK	28	10.656 OK	48	10.764 OK	68	11.049 Surch.	88	10.668 OK	108	10.643 OK
9	10.636 OK	29	10.656 OK	49	10.793 OK	69	11.002 Surch.	89	10.665 OK	109	10.639 OK
10	10.638 OK	30	10.658 OK	50	10.834 Surch.	70	10.962 Surch.	90	10.663 OK	110	10.639 OK
11	10.638 OK	31	10.658 OK	51	10.872 Surch.	71	10.918 Surch.	91	10.659 OK	111	10.638 OK
12	10.638 OK	32	10.659 OK	52	10.910 Surch.	72	10.875 Surch.	92	10.658 OK	112	10.638 OK
13	10.639 OK	33	10.661 OK	53	10.953 Surch.	73	10.840 Surch.	93	10.658 OK	113	10.638 OK
14	10.639 OK	34	10.665 OK	54	10.994 Surch.	74	10.802 Surch.	94	10.656 OK	114	10.636 OK
15	10.643 OK	35	10.668 OK	55	11.037 Surch.	75	10.771 OK	95	10.656 OK	115	10.636 OK
16	10.643 OK	36	10.669 OK	56	11.092 Surch.	76	10.750 OK	96	10.654 OK	116	10.635 OK
17	10.643 OK	37	10.672 OK	57	11.144 Surch.	77	10.736 OK	97	10.651 OK	117	10.635 OK
18	10.643 OK	38	10.676 OK	58	11.199 Surch.	78	10.725 OK	98	10.650 OK	118	10.635 OK
19	10.644 OK	39	10.680 OK	59	11.260 Surch.	79	10.712 OK	99	10.648 OK	119	10.634 OK
20	10.645 OK	40	10.686 OK	60	11.324 Surch.	80	10.704 OK	100	10.648 OK	120	10.634 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.575 m

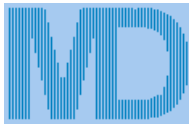
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.425 m

Pipe diam. = 225 mm

Manhole shape = Circular (1200 mm)



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Job No.	1234/2010	
Sheet no.	16	
Date	25/09/10	
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Hydrograph table for manhole SW1.05 with free flowing final outlet

1	9.745 OK	21	9.766 OK	41	9.841 OK	61	10.748 Surch.	81	9.852 OK	101	9.767 OK
2	9.745 OK	22	9.767 OK	42	9.851 OK	62	10.748 Surch.	82	9.841 OK	102	9.766 OK
3	9.745 OK	23	9.767 OK	43	9.859 OK	63	10.684 Surch.	83	9.833 OK	103	9.766 OK
4	9.745 OK	24	9.770 OK	44	9.872 OK	64	10.601 Surch.	84	9.824 OK	104	9.763 OK
5	9.745 OK	25	9.772 OK	45	9.889 OK	65	10.525 Surch.	85	9.818 OK	105	9.761 OK
6	9.748 OK	26	9.775 OK	46	9.911 OK	66	10.453 Surch.	86	9.811 OK	106	9.761 OK
7	9.748 OK	27	9.776 OK	47	9.933 OK	67	10.388 Surch.	87	9.803 OK	107	9.761 OK
8	9.751 OK	28	9.781 OK	48	9.957 OK	68	10.323 Surch.	88	9.802 OK	108	9.761 OK
9	9.751 OK	29	9.784 OK	49	9.999 OK	69	10.266 Surch.	89	9.797 OK	109	9.755 OK
10	9.754 OK	30	9.786 OK	50	10.057 Surch.	70	10.215 Surch.	90	9.795 OK	110	9.755 OK
11	9.754 OK	31	9.786 OK	51	10.103 Surch.	71	10.161 Surch.	91	9.789 OK	111	9.754 OK
12	9.754 OK	32	9.789 OK	52	10.150 Surch.	72	10.107 Surch.	92	9.786 OK	112	9.754 OK
13	9.755 OK	33	9.791 OK	53	10.204 Surch.	73	10.064 Surch.	93	9.786 OK	113	9.754 OK
14	9.755 OK	34	9.797 OK	54	10.255 Surch.	74	10.008 OK	94	9.784 OK	114	9.751 OK
15	9.761 OK	35	9.802 OK	55	10.309 Surch.	75	9.968 OK	95	9.781 OK	115	9.751 OK
16	9.761 OK	36	9.803 OK	56	10.377 Surch.	76	9.935 OK	96	9.780 OK	116	9.748 OK
17	9.761 OK	37	9.808 OK	57	10.442 Surch.	77	9.912 OK	97	9.775 OK	117	9.748 OK
18	9.761 OK	38	9.815 OK	58	10.511 Surch.	78	9.894 OK	98	9.772 OK	118	9.748 OK
19	9.763 OK	39	9.821 OK	59	10.586 Surch.	79	9.875 OK	99	9.770 OK	119	9.745 OK
20	9.766 OK	40	9.831 OK	60	10.666 Surch.	80	9.860 OK	100	9.770 OK	120	9.745 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

Manhole data

Invert level = 9.650 m

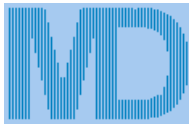
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 2.350 m

Pipe diam. = 375 mm

Manhole shape = Circular (1500 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>17</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project  
**Crown Estates**

Title  
**Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Hydrograph table for manhole SW7.01 with free flowing final outlet

1	10.623 OK	21	10.632 OK	41	10.669 OK	61	11.187 Surch.	81	10.674 OK	101	10.634 OK
2	10.623 OK	22	10.634 OK	42	10.673 OK	62	11.187 Surch.	82	10.669 OK	102	10.632 OK
3	10.623 OK	23	10.634 OK	43	10.677 OK	63	11.143 Surch.	83	10.665 OK	103	10.632 OK
4	10.623 OK	24	10.635 OK	44	10.683 OK	64	11.088 Surch.	84	10.660 OK	104	10.631 OK
5	10.623 OK	25	10.636 OK	45	10.691 OK	65	11.037 Surch.	85	10.657 OK	105	10.630 OK
6	10.624 OK	26	10.637 OK	46	10.700 OK	66	10.989 Surch.	86	10.655 OK	106	10.630 OK
7	10.624 OK	27	10.638 OK	47	10.709 OK	67	10.945 Surch.	87	10.651 OK	107	10.630 OK
8	10.625 OK	28	10.640 OK	48	10.719 OK	68	10.902 Surch.	88	10.650 OK	108	10.630 OK
9	10.625 OK	29	10.642 OK	49	10.732 OK	69	10.863 Surch.	89	10.648 OK	109	10.628 OK
10	10.626 OK	30	10.643 OK	50	10.747 OK	70	10.829 Surch.	90	10.647 OK	110	10.628 OK
11	10.626 OK	31	10.643 OK	51	10.764 OK	71	10.790 OK	91	10.644 OK	111	10.626 OK
12	10.626 OK	32	10.644 OK	52	10.783 OK	72	10.765 OK	92	10.643 OK	112	10.626 OK
13	10.628 OK	33	10.644 OK	53	10.822 Surch.	73	10.750 OK	93	10.643 OK	113	10.626 OK
14	10.628 OK	34	10.648 OK	54	10.856 Surch.	74	10.734 OK	94	10.642 OK	114	10.625 OK
15	10.630 OK	35	10.650 OK	55	10.892 Surch.	75	10.723 OK	95	10.640 OK	115	10.625 OK
16	10.630 OK	36	10.651 OK	56	10.938 Surch.	76	10.710 OK	96	10.639 OK	116	10.624 OK
17	10.630 OK	37	10.654 OK	57	10.981 Surch.	77	10.701 OK	97	10.637 OK	117	10.624 OK
18	10.630 OK	38	10.656 OK	58	11.027 Surch.	78	10.693 OK	98	10.636 OK	118	10.624 OK
19	10.631 OK	39	10.659 OK	59	11.078 Surch.	79	10.684 OK	99	10.635 OK	119	10.623 OK
20	10.632 OK	40	10.664 OK	60	11.131 Surch.	80	10.678 OK	100	10.635 OK	120	10.623 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

Manhole data

Invert level = 10.575 m

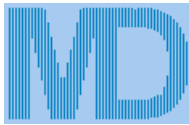
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.425 m

Pipe diam. = 225 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>18</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW8.01 with free flowing final outlet*

1	10.628 OK	21	10.638 OK	41	10.680 OK	61	11.308 Surch.	81	10.686 OK	101	10.640 OK
2	10.628 OK	22	10.640 OK	42	10.684 OK	62	11.308 Surch.	82	10.680 OK	102	10.638 OK
3	10.628 OK	23	10.640 OK	43	10.688 OK	63	11.258 Surch.	83	10.675 OK	103	10.638 OK
4	10.628 OK	24	10.641 OK	44	10.695 OK	64	11.194 Surch.	84	10.670 OK	104	10.637 OK
5	10.628 OK	25	10.643 OK	45	10.705 OK	65	11.136 Surch.	85	10.666 OK	105	10.636 OK
6	10.629 OK	26	10.644 OK	46	10.716 OK	66	11.081 Surch.	86	10.663 OK	106	10.636 OK
7	10.629 OK	27	10.644 OK	47	10.726 OK	67	11.031 Surch.	87	10.659 OK	107	10.636 OK
8	10.630 OK	28	10.647 OK	48	10.738 OK	68	10.981 Surch.	88	10.658 OK	108	10.636 OK
9	10.630 OK	29	10.648 OK	49	10.755 OK	69	10.936 Surch.	89	10.656 OK	109	10.633 OK
10	10.632 OK	30	10.650 OK	50	10.776 OK	70	10.897 Surch.	90	10.655 OK	110	10.633 OK
11	10.632 OK	31	10.650 OK	51	10.811 Surch.	71	10.856 Surch.	91	10.651 OK	111	10.632 OK
12	10.632 OK	32	10.651 OK	52	10.847 Surch.	72	10.814 Surch.	92	10.650 OK	112	10.632 OK
13	10.633 OK	33	10.652 OK	53	10.889 Surch.	73	10.780 OK	93	10.650 OK	113	10.632 OK
14	10.633 OK	34	10.656 OK	54	10.928 Surch.	74	10.758 OK	94	10.648 OK	114	10.630 OK
15	10.636 OK	35	10.658 OK	55	10.970 Surch.	75	10.743 OK	95	10.647 OK	115	10.630 OK
16	10.636 OK	36	10.659 OK	56	11.022 Surch.	76	10.728 OK	96	10.646 OK	116	10.629 OK
17	10.636 OK	37	10.662 OK	57	11.072 Surch.	77	10.717 OK	97	10.644 OK	117	10.629 OK
18	10.636 OK	38	10.665 OK	58	11.125 Surch.	78	10.707 OK	98	10.643 OK	118	10.629 OK
19	10.637 OK	39	10.669 OK	59	11.183 Surch.	79	10.696 OK	99	10.641 OK	119	10.628 OK
20	10.638 OK	40	10.674 OK	60	11.244 Surch.	80	10.689 OK	100	10.641 OK	120	10.628 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.575 m

Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.425 m

Pipe diam. = 225 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>19</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

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SW 12.23

Project  
**Crown Estates**

Title  
**Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Hydrograph table for manhole SW1.06 with free flowing final outlet

1	9.542 OK	21	9.563 OK	41	9.645 OK	61	10.586 Surch.	81	9.655 OK	101	9.565 OK
2	9.542 OK	22	9.565 OK	42	9.653 OK	62	10.586 Surch.	82	9.645 OK	102	9.563 OK
3	9.542 OK	23	9.565 OK	43	9.663 OK	63	10.499 Surch.	83	9.635 OK	103	9.563 OK
4	9.542 OK	24	9.567 OK	44	9.676 OK	64	10.388 Surch.	84	9.625 OK	104	9.561 OK
5	9.542 OK	25	9.572 OK	45	9.691 OK	65	10.287 Surch.	85	9.618 OK	105	9.559 OK
6	9.544 OK	26	9.574 OK	46	9.712 OK	66	10.191 Surch.	86	9.613 OK	106	9.559 OK
7	9.544 OK	27	9.576 OK	47	9.733 OK	67	10.105 Surch.	87	9.606 OK	107	9.559 OK
8	9.548 OK	28	9.581 OK	48	9.751 OK	68	10.009 OK	88	9.604 OK	108	9.559 OK
9	9.548 OK	29	9.583 OK	49	9.777 OK	69	9.949 OK	89	9.599 OK	109	9.552 OK
10	9.550 OK	30	9.585 OK	50	9.806 OK	70	9.909 OK	90	9.597 OK	110	9.552 OK
11	9.550 OK	31	9.585 OK	51	9.836 OK	71	9.872 OK	91	9.588 OK	111	9.550 OK
12	9.550 OK	32	9.588 OK	52	9.865 OK	72	9.838 OK	92	9.585 OK	112	9.550 OK
13	9.552 OK	33	9.590 OK	53	9.903 OK	73	9.811 OK	93	9.585 OK	113	9.550 OK
14	9.552 OK	34	9.599 OK	54	9.940 OK	74	9.783 OK	94	9.583 OK	114	9.548 OK
15	9.559 OK	35	9.604 OK	55	9.990 OK	75	9.759 OK	95	9.581 OK	115	9.548 OK
16	9.559 OK	36	9.606 OK	56	10.090 Surch.	76	9.733 OK	96	9.578 OK	116	9.544 OK
17	9.559 OK	37	9.611 OK	57	10.177 Surch.	77	9.715 OK	97	9.574 OK	117	9.544 OK
18	9.559 OK	38	9.618 OK	58	10.268 Surch.	78	9.696 OK	98	9.572 OK	118	9.544 OK
19	9.561 OK	39	9.623 OK	59	10.369 Surch.	79	9.678 OK	99	9.567 OK	119	9.542 OK
20	9.563 OK	40	9.633 OK	60	10.475 Surch.	80	9.666 OK	100	9.567 OK	120	9.542 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

Manhole data

Invert level = 9.433 m

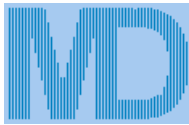
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 2.567 m

Pipe diam. = 600 mm

Manhole shape = Circular (1800 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>20</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW9.01 with free flowing final outlet*

1	10.606 OK	21	10.626 OK	41	10.709 OK	61	12.615 Flood.	81	10.721 OK	101	10.630 OK
2	10.606 OK	22	10.630 OK	42	10.719 OK	62	12.615 Flood.	82	10.709 OK	102	10.626 OK
3	10.606 OK	23	10.630 OK	43	10.725 OK	63	12.452 Flood.	83	10.700 OK	103	10.626 OK
4	10.606 OK	24	10.632 OK	44	10.743 OK	64	12.243 Flood.	84	10.692 OK	104	10.625 OK
5	10.606 OK	25	10.635 OK	45	10.760 OK	65	12.053 Flood.	85	10.684 OK	105	10.623 OK
6	10.609 OK	26	10.637 OK	46	10.781 OK	66	11.872 Warn.	86	10.676 OK	106	10.623 OK
7	10.609 OK	27	10.641 OK	47	10.804 OK	67	11.709 Warn.	87	10.669 OK	107	10.623 OK
8	10.611 OK	28	10.644 OK	48	10.827 OK	68	11.546 Surch.	88	10.667 OK	108	10.623 OK
9	10.611 OK	29	10.648 OK	49	10.862 OK	69	11.401 Surch.	89	10.663 OK	109	10.616 OK
10	10.614 OK	30	10.650 OK	50	10.905 OK	70	11.275 Surch.	90	10.659 OK	110	10.616 OK
11	10.614 OK	31	10.650 OK	51	10.994 Surch.	71	11.139 Surch.	91	10.652 OK	111	10.614 OK
12	10.614 OK	32	10.652 OK	52	11.112 Surch.	72	11.003 Surch.	92	10.650 OK	112	10.614 OK
13	10.616 OK	33	10.655 OK	53	11.247 Surch.	73	10.913 OK	93	10.650 OK	113	10.614 OK
14	10.616 OK	34	10.663 OK	54	11.374 Surch.	74	10.868 OK	94	10.648 OK	114	10.611 OK
15	10.623 OK	35	10.667 OK	55	11.510 Surch.	75	10.837 OK	95	10.644 OK	115	10.611 OK
16	10.623 OK	36	10.669 OK	56	11.682 Surch.	76	10.806 OK	96	10.643 OK	116	10.609 OK
17	10.623 OK	37	10.674 OK	57	11.845 Warn.	77	10.785 OK	97	10.637 OK	117	10.609 OK
18	10.623 OK	38	10.682 OK	58	12.017 Flood.	78	10.766 OK	98	10.635 OK	118	10.609 OK
19	10.625 OK	39	10.688 OK	59	12.207 Flood.	79	10.745 OK	99	10.632 OK	119	10.606 OK
20	10.626 OK	40	10.698 OK	60	12.406 Flood.	80	10.731 OK	100	10.632 OK	120	10.606 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.500 m

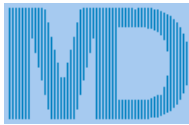
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.500 m

Pipe diam. = 450 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>21</b>		
Date <b>25/09/10</b>		
By	Checked	Approved

MasterDrain  
SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW9.02 with free flowing final outlet*

1	10.547 OK	21	10.570 OK	41	10.655 OK	61	12.680 Flood.	81	10.663 OK	101	10.571 OK
2	10.547 OK	22	10.571 OK	42	10.663 OK	62	12.680 Flood.	82	10.655 OK	102	10.570 OK
3	10.547 OK	23	10.571 OK	43	10.673 OK	63	12.510 Flood.	83	10.645 OK	103	10.570 OK
4	10.547 OK	24	10.575 OK	44	10.688 OK	64	12.293 Flood.	84	10.636 OK	104	10.566 OK
5	10.547 OK	25	10.577 OK	45	10.708 OK	65	12.095 Flood.	85	10.628 OK	105	10.564 OK
6	10.550 OK	26	10.579 OK	46	10.731 OK	66	11.906 Warn.	86	10.620 OK	106	10.564 OK
7	10.550 OK	27	10.582 OK	47	10.753 OK	67	11.736 Warn.	87	10.612 OK	107	10.564 OK
8	10.552 OK	28	10.588 OK	48	10.777 OK	68	11.566 Surch.	88	10.610 OK	108	10.564 OK
9	10.552 OK	29	10.590 OK	49	10.816 OK	69	11.416 Surch.	89	10.605 OK	109	10.557 OK
10	10.556 OK	30	10.592 OK	50	10.869 OK	70	11.283 Surch.	90	10.603 OK	110	10.557 OK
11	10.556 OK	31	10.592 OK	51	10.991 Surch.	71	11.142 Surch.	91	10.595 OK	111	10.556 OK
12	10.556 OK	32	10.595 OK	52	11.114 Surch.	72	11.001 Surch.	92	10.592 OK	112	10.556 OK
13	10.557 OK	33	10.597 OK	53	11.255 Surch.	73	10.886 OK	93	10.592 OK	113	10.556 OK
14	10.557 OK	34	10.605 OK	54	11.387 Surch.	74	10.823 OK	94	10.590 OK	114	10.552 OK
15	10.564 OK	35	10.610 OK	55	11.529 Surch.	75	10.789 OK	95	10.588 OK	115	10.552 OK
16	10.564 OK	36	10.612 OK	56	11.708 Warn.	76	10.756 OK	96	10.584 OK	116	10.550 OK
17	10.564 OK	37	10.618 OK	57	11.878 Warn.	77	10.733 OK	97	10.579 OK	117	10.550 OK
18	10.564 OK	38	10.626 OK	58	12.057 Flood.	78	10.712 OK	98	10.577 OK	118	10.550 OK
19	10.566 OK	39	10.632 OK	59	12.255 Flood.	79	10.690 OK	99	10.575 OK	119	10.547 OK
20	10.570 OK	40	10.641 OK	60	12.463 Flood.	80	10.677 OK	100	10.575 OK	120	10.547 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.438 m

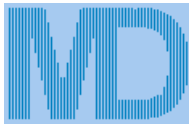
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.562 m

Pipe diam. = 450 mm

Manhole shape = Circular (1200 mm)



The alternative drainage design software

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Job No.	1234/2010	
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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

Hydrograph table for manhole SW9.03 with free flowing final outlet

1	10.422 OK	21	10.445 OK	41	10.530 OK	61	12.555 Flood.	81	10.538 OK	101	10.446 OK
2	10.422 OK	22	10.446 OK	42	10.538 OK	62	12.555 Flood.	82	10.530 OK	102	10.445 OK
3	10.422 OK	23	10.446 OK	43	10.548 OK	63	12.385 Flood.	83	10.520 OK	103	10.445 OK
4	10.422 OK	24	10.450 OK	44	10.563 OK	64	12.168 Flood.	84	10.511 OK	104	10.441 OK
5	10.422 OK	25	10.452 OK	45	10.583 OK	65	11.970 Warn.	85	10.503 OK	105	10.439 OK
6	10.425 OK	26	10.454 OK	46	10.606 OK	66	11.781 Warn.	86	10.495 OK	106	10.439 OK
7	10.425 OK	27	10.457 OK	47	10.628 OK	67	11.611 Surch.	87	10.487 OK	107	10.439 OK
8	10.427 OK	28	10.463 OK	48	10.652 OK	68	11.441 Surch.	88	10.485 OK	108	10.439 OK
9	10.427 OK	29	10.465 OK	49	10.691 OK	69	11.291 Surch.	89	10.480 OK	109	10.432 OK
10	10.431 OK	30	10.467 OK	50	10.744 OK	70	11.158 Surch.	90	10.478 OK	110	10.432 OK
11	10.431 OK	31	10.467 OK	51	10.866 Surch.	71	11.017 Surch.	91	10.470 OK	111	10.431 OK
12	10.431 OK	32	10.470 OK	52	10.989 Surch.	72	10.876 Surch.	92	10.467 OK	112	10.431 OK
13	10.432 OK	33	10.472 OK	53	11.130 Surch.	73	10.761 OK	93	10.467 OK	113	10.431 OK
14	10.432 OK	34	10.480 OK	54	11.262 Surch.	74	10.698 OK	94	10.465 OK	114	10.427 OK
15	10.439 OK	35	10.485 OK	55	11.404 Surch.	75	10.664 OK	95	10.463 OK	115	10.427 OK
16	10.439 OK	36	10.487 OK	56	11.583 Surch.	76	10.631 OK	96	10.459 OK	116	10.425 OK
17	10.439 OK	37	10.493 OK	57	11.753 Warn.	77	10.608 OK	97	10.454 OK	117	10.425 OK
18	10.439 OK	38	10.501 OK	58	11.932 Warn.	78	10.587 OK	98	10.452 OK	118	10.425 OK
19	10.441 OK	39	10.507 OK	59	12.130 Flood.	79	10.565 OK	99	10.450 OK	119	10.422 OK
20	10.445 OK	40	10.516 OK	60	12.338 Flood.	80	10.552 OK	100	10.450 OK	120	10.422 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

Manhole data

Invert level = 10.313 m

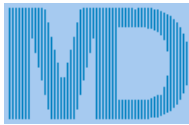
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.687 m

Pipe diam. = 450 mm

Manhole shape = Circular (1200 mm)



The alternative drainage design software

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Job No. <b>1234/2010</b>		
Sheet no. <b>23</b>		
Date <b>25/09/10</b>		
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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW10.01 with free flowing final outlet*

1	10.668 OK	21	10.672 OK	41	10.684 OK	61	10.766 OK	81	10.686 OK	101	10.672 OK
2	10.668 OK	22	10.672 OK	42	10.686 OK	62	10.766 OK	82	10.684 OK	102	10.672 OK
3	10.668 OK	23	10.672 OK	43	10.687 OK	63	10.761 OK	83	10.683 OK	103	10.672 OK
4	10.668 OK	24	10.672 OK	44	10.689 OK	64	10.753 OK	84	10.681 OK	104	10.671 OK
5	10.668 OK	25	10.673 OK	45	10.692 OK	65	10.747 OK	85	10.680 OK	105	10.671 OK
6	10.668 OK	26	10.673 OK	46	10.694 OK	66	10.741 OK	86	10.679 OK	106	10.671 OK
7	10.668 OK	27	10.673 OK	47	10.698 OK	67	10.735 OK	87	10.678 OK	107	10.671 OK
8	10.669 OK	28	10.674 OK	48	10.701 OK	68	10.730 OK	88	10.678 OK	108	10.671 OK
9	10.669 OK	29	10.675 OK	49	10.704 OK	69	10.725 OK	89	10.677 OK	109	10.670 OK
10	10.669 OK	30	10.675 OK	50	10.708 OK	70	10.721 OK	90	10.677 OK	110	10.670 OK
11	10.669 OK	31	10.675 OK	51	10.712 OK	71	10.717 OK	91	10.676 OK	111	10.669 OK
12	10.669 OK	32	10.676 OK	52	10.716 OK	72	10.713 OK	92	10.675 OK	112	10.669 OK
13	10.670 OK	33	10.676 OK	53	10.720 OK	73	10.709 OK	93	10.675 OK	113	10.669 OK
14	10.670 OK	34	10.677 OK	54	10.725 OK	74	10.705 OK	94	10.675 OK	114	10.669 OK
15	10.671 OK	35	10.678 OK	55	10.729 OK	75	10.702 OK	95	10.674 OK	115	10.669 OK
16	10.671 OK	36	10.678 OK	56	10.734 OK	76	10.698 OK	96	10.674 OK	116	10.668 OK
17	10.671 OK	37	10.679 OK	57	10.740 OK	77	10.695 OK	97	10.673 OK	117	10.668 OK
18	10.671 OK	38	10.680 OK	58	10.746 OK	78	10.693 OK	98	10.673 OK	118	10.668 OK
19	10.671 OK	39	10.681 OK	59	10.752 OK	79	10.689 OK	99	10.672 OK	119	10.668 OK
20	10.672 OK	40	10.683 OK	60	10.759 OK	80	10.688 OK	100	10.672 OK	120	10.668 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.650 m

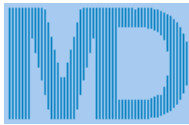
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.350 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>24</b>		
Date <b>25/09/10</b>		
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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW9.04 with free flowing final outlet*

1	10.230 OK	21	10.230 OK	41	10.230 OK	61	10.230 OK	81	10.230 OK	101	10.230 OK
2	10.230 OK	22	10.230 OK	42	10.230 OK	62	10.230 OK	82	10.230 OK	102	10.230 OK
3	10.230 OK	23	10.230 OK	43	10.230 OK	63	10.230 OK	83	10.230 OK	103	10.230 OK
4	10.230 OK	24	10.230 OK	44	10.230 OK	64	10.230 OK	84	10.230 OK	104	10.230 OK
5	10.230 OK	25	10.230 OK	45	10.230 OK	65	10.230 OK	85	10.230 OK	105	10.230 OK
6	10.230 OK	26	10.230 OK	46	10.230 OK	66	10.230 OK	86	10.230 OK	106	10.230 OK
7	10.230 OK	27	10.230 OK	47	10.230 OK	67	10.230 OK	87	10.230 OK	107	10.230 OK
8	10.230 OK	28	10.230 OK	48	10.230 OK	68	10.230 OK	88	10.230 OK	108	10.230 OK
9	10.230 OK	29	10.230 OK	49	10.230 OK	69	10.230 OK	89	10.230 OK	109	10.230 OK
10	10.230 OK	30	10.230 OK	50	10.230 OK	70	10.230 OK	90	10.230 OK	110	10.230 OK
11	10.230 OK	31	10.230 OK	51	10.230 OK	71	10.230 OK	91	10.230 OK	111	10.230 OK
12	10.230 OK	32	10.230 OK	52	10.230 OK	72	10.230 OK	92	10.230 OK	112	10.230 OK
13	10.230 OK	33	10.230 OK	53	10.230 OK	73	10.230 OK	93	10.230 OK	113	10.230 OK
14	10.230 OK	34	10.230 OK	54	10.230 OK	74	10.230 OK	94	10.230 OK	114	10.230 OK
15	10.230 OK	35	10.230 OK	55	10.230 OK	75	10.230 OK	95	10.230 OK	115	10.230 OK
16	10.230 OK	36	10.230 OK	56	10.230 OK	76	10.230 OK	96	10.230 OK	116	10.230 OK
17	10.230 OK	37	10.230 OK	57	10.230 OK	77	10.230 OK	97	10.230 OK	117	10.230 OK
18	10.230 OK	38	10.230 OK	58	10.230 OK	78	10.230 OK	98	10.230 OK	118	10.230 OK
19	10.230 OK	39	10.230 OK	59	10.230 OK	79	10.230 OK	99	10.230 OK	119	10.230 OK
20	10.230 OK	40	10.230 OK	60	10.230 OK	80	10.230 OK	100	10.230 OK	120	10.230 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 10.230 m

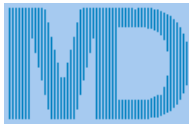
Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 1.770 m

Pipe diam. = 150 mm

Manhole shape = Circular (1200 mm)



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Job No. <b>1234/2010</b>		
Sheet no. <b>25</b>		
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SW 12.23

Project **Crown Estates**

Title **Surcharge calcs (Sized at 2 yrs storm) for COLLEGE.SW - surcharged at 50 yrs storm.**

*Hydrograph table for manhole SW1.07 with free flowing final outlet*

1	9.493 OK	21	9.529 OK	41	9.669 OK	61	11.940 Warn.	81	9.689 OK	101	9.532 OK
2	9.493 OK	22	9.532 OK	42	9.684 OK	62	11.940 Warn.	82	9.669 OK	102	9.529 OK
3	9.493 OK	23	9.532 OK	43	9.702 OK	63	11.774 Warn.	83	9.651 OK	103	9.529 OK
4	9.493 OK	24	9.537 OK	44	9.727 OK	64	11.564 Surch.	84	9.635 OK	104	9.524 OK
5	9.493 OK	25	9.542 OK	45	9.763 OK	65	11.371 Surch.	85	9.622 OK	105	9.519 OK
6	9.498 OK	26	9.544 OK	46	9.807 OK	66	11.188 Surch.	86	9.612 OK	106	9.519 OK
7	9.498 OK	27	9.549 OK	47	9.857 OK	67	11.023 Surch.	87	9.598 OK	107	9.519 OK
8	9.502 OK	28	9.557 OK	48	9.941 Surch.	68	10.858 Surch.	88	9.596 OK	108	9.519 OK
9	9.502 OK	29	9.562 OK	49	10.060 Surch.	69	10.711 Surch.	89	9.585 OK	109	9.512 OK
10	9.507 OK	30	9.567 OK	50	10.179 Surch.	70	10.582 Surch.	90	9.583 OK	110	9.512 OK
11	9.507 OK	31	9.567 OK	51	10.298 Surch.	71	10.445 Surch.	91	9.570 OK	111	9.507 OK
12	9.507 OK	32	9.570 OK	52	10.417 Surch.	72	10.307 Surch.	92	9.567 OK	112	9.507 OK
13	9.512 OK	33	9.575 OK	53	10.555 Surch.	73	10.197 Surch.	93	9.567 OK	113	9.507 OK
14	9.512 OK	34	9.585 OK	54	10.683 Surch.	74	10.078 Surch.	94	9.562 OK	114	9.502 OK
15	9.519 OK	35	9.596 OK	55	10.821 Surch.	75	9.977 Surch.	95	9.557 OK	115	9.502 OK
16	9.519 OK	36	9.598 OK	56	10.995 Surch.	76	9.863 OK	96	9.555 OK	116	9.498 OK
17	9.519 OK	37	9.606 OK	57	11.160 Surch.	77	9.811 OK	97	9.544 OK	117	9.498 OK
18	9.519 OK	38	9.622 OK	58	11.334 Surch.	78	9.772 OK	98	9.542 OK	118	9.498 OK
19	9.524 OK	39	9.632 OK	59	11.527 Surch.	79	9.732 OK	99	9.537 OK	119	9.493 OK
20	9.529 OK	40	9.648 OK	60	11.729 Warn.	80	9.705 OK	100	9.537 OK	120	9.493 OK

Manhole water levels (m) per time step of 7.5 seconds.

Colour codes = Green = OK; Black = Surcharged; Orange = Warning; Red = Flooded

*Manhole data*

Invert level = 9.322 m

Ground level = 12.000 m

Warning level = 11.700 m

Manhole depth = 2.678 m

Pipe diam. = 600 mm

Manhole shape = Circular (1800 mm)