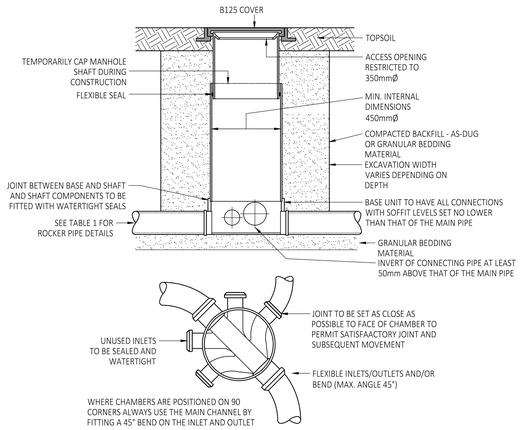
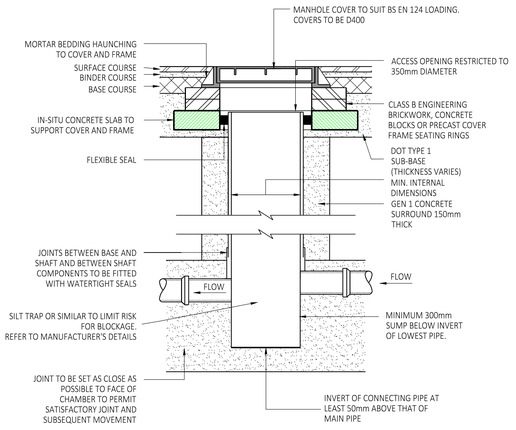


TYPE 4 ACCESS CHAMBER - FLEXIBLE MATERIAL SOFT LANDSCAPING

(SUBJECT TO LIGHT TRAFFIC LOADS, MAX. DEPTH 3m, NON-ENTRY)

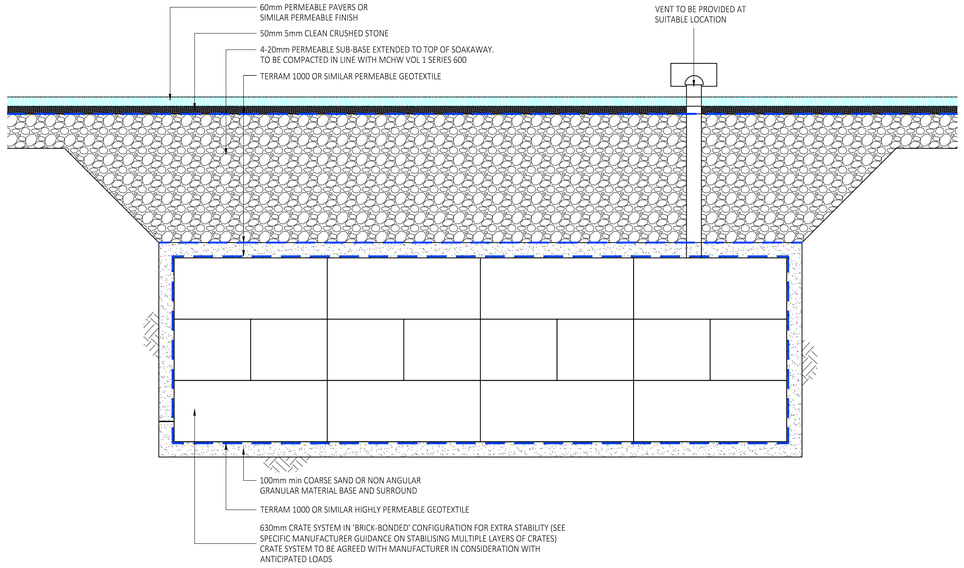
(1:20)



CATCHPIT INSPECTION CHAMBER.

(PREFORMED POLYPIPE RIGIDRAIN 600Ø CATCHPIT MANHOLE OR SIMILAR),
MAX. DEPTH 3m, NON-ENTRY)

(1:20)

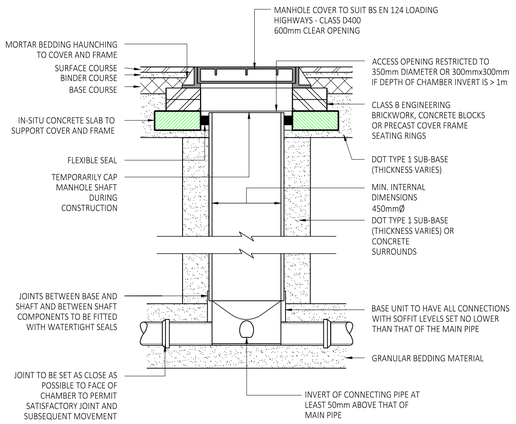


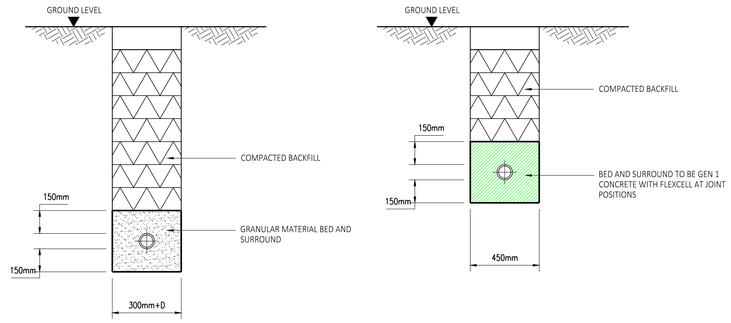
SECTION THROUGH GEOCELLULAR SOAKAWAY

TYPE 3&4 CHAMBER TYPES, SIZES AND DEPTH

MAX INVERT DEPTH (m)	0.6 – 2.01	0.6 – 2.01	1.2 – 3.02	1.2 – 3.02
BASE/SHAFT DIA (mm)	200	315	450	600
SFA7 TYPE	4	4	3 – 4	3 – 4
NO OF INLETS 1	Y	Y	Y	Y
1 TO 3	-	Y	Y	Y
4 TO 5	–	–	Y	–
INLET SIZES (mm)	110/160	110/160	110/160	150/225/300
MAX DEPTH(mm)	600	600	1200	3000

FOR DEPTH GREATER THAN 1200mm RESTRICT ACCESS TO 350mm DIAMETER





GRANULAR BEDDING DETAIL

(WHERE COVER >600mm)

(1:20)

CONCRETE BEDDING DETAIL

(WHERE COVER <600mm)

(1:20)

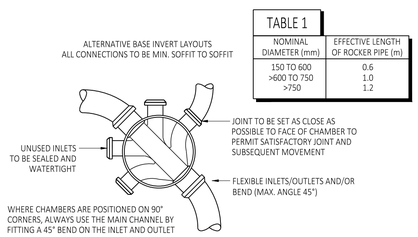


TABLE 1	
NOMINAL DIAMETER (mm)	EFFECTIVE LENGTH OF ROCKER PIPE (m)
150 TO 600	0.6
>600 TO 750	1.0
>750	1.2

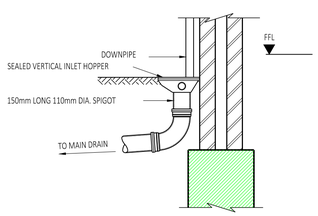
TYPE 3 ACCESS CHAMBER - FLEXIBLE MATERIAL

(SUBJECT TO VEHICLE LOADING, MAX. DEPTH 3m, NON-ENTRY)

(1:20)

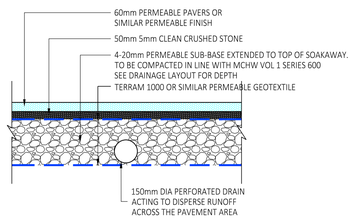
NOTE

ALL BACKFILLING AND REINSTATEMENT WITHIN ROADS AND STREETS TO BE IN ACCORDANCE WITH THE HIGHWAY AUTHORITY AND HAUC SPECIFICATION.

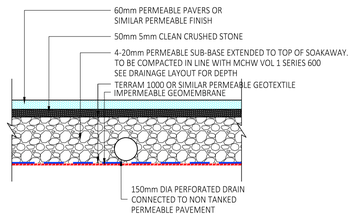


RWP CONNECTION.

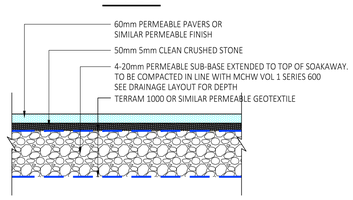
(1:20)



PERMEABLE PAVEMENT TYPE 1



PERMEABLE PAVEMENT TYPE 2



PERMEABLE PAVEMENT TYPE 3 AND 4

1. GENERAL
a. THIS DRAWING IS NOT TO BE SCALED, WORK TO FIGURED DIMENSIONS ONLY, CONFIRMED ON SITE.
b. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, DETAILED SPECIFICATIONS WHERE APPLICABLE AND ALL ASSOCIATED DRAWINGS IN THIS SERIES.
c. ANY DISCREPANCY ON THIS DRAWING IS TO BE REPORTED IMMEDIATELY TO THE PARTNERSHIP FOR CLARIFICATION.
d. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS AND FOR THE STABILITY OF THE WORKS IN PROGRESS.
e. CDM REGULATIONS 2015. ALL CURRENT DRAWINGS AND SPECIFICATIONS MUST BE READ IN CONJUNCTION WITH THE DESIGNER'S HAZARD RISK AND ENVIRONMENT ASSESSMENT RECORD. DESIGN HAS BEEN PRODUCED BASED ON INFORMATION PROVIDED BY THE CLIENT/PRINCIPLE DESIGNER AVAILABLE AT TIME OF ISSUE. CONTRACTOR TO REVIEW DRAWING AND SPECIFICATION IN CONTEXT WITH THE WIDER SITE AND SPECIFIC SITE INVESTIGATION, CONTAMINATION ASSESSMENT, ASBESTOS SURVEY, ENVIRONMENTAL SURVEY, UXO SURVEY AND ANY OTHER RELEVANT INFORMATION AND MANAGE RISKS RELATING TO THE WORKS OUTLINED IN THE DRAWINGS AND SPECIFICATION. PRINCIPLE CONTRACTOR TO MAKE DESIGNER AND CLIENT AWARE OF SITE SPECIFIC RISKS THAT MAY AFFECT THE DRAWING AND SPECIFICATION.
f. CDM REGULATIONS 2015 FOR GENERIC MAINTENANCE AND MANAGEMENT RISKS REFER TO CHAPTER 36 OF CIRIA 752 SUDS MANUAL. FOR PROPRIETARY SYSTEMS SEE MANUFACTURER'S MANAGEMENT AND MAINTENANCE DETAILS AND RISK ASSESSMENT WITH REGARDS TO MAINTENANCE OF PROPRIETARY SYSTEMS.

2. CONSTRUCTION NOTE
a. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
b. THE MAIN CONTRACTOR IS RESPONSIBLE FOR ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
c. ANY INFORMATION GIVEN REGARDING EXISTING UNDERGROUND SERVICES IS GIVEN IN GOOD FAITH AFTER CONSULTATION WITH THE RELEVANT AUTHORITY, HOWEVER ACCURACY IS NOT CERTAIN. THE MAIN CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL INFORMATION ON SITE PRIOR TO WORK COMMENCING AND TAKING DUE CARE AND ATTENTION WHILST UNDERTAKING THE WORKS.
d. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
e. ALL PRODUCTS SPECIFIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTRUCTIONS. IF THERE ARE DISCREPANCIES BETWEEN THAT INFORMATION AND THE DETAILS ON ANY MERIDIAN DRAWINGS, THE MANUFACTURERS INSTRUCTIONS MUST BE USED

3. BELOW GROUND DRAINAGE
a. UPVC-U PIPES TO BS 4660 : 2000 AND PLASTIC INSPECTION CHAMBERS AND FITTINGS TO BS EN 13598-1:2020. CLAY PIPES TO BS EN 295-1:2013. CONCRETE MANHOLE AND INSPECTION CHAMBERS TO BS EN 1917:2002
b. ALL ADOPTABLE DRAINAGE TO BE CONSTRUCTED IN ACCORDANCE WITH SEWERAGE SECTOR GUIDANCE App C - DESIGN AND CONSTRUCTION GUIDANCE AND THE RELEVANT COUNCIL DESIGN GUIDE.
c. ALL PRIVATE FOUL WATER SEWERS TO BE LAID AT 1 IN 40 AT THE HEAD OF PIPE RUNS AND 1 IN 80 ELSEWHERE UNLESS OTHERWISE STATED.
d. ALL PRIVATE FOUL SEWER PIPES TO BE 100mm DIAMETER FROM SOIL STACKS UNLESS OTHERWISE STATED ON THE DRAWING AND 150mm WHERE SERVING MORE THAN 9 PROPERTIES.
c. ALL PRIVATE SURFACE WATER SEWERS TO BE LAID AT 1 IN 100 UNLESS OTHERWISE STATED ON THE DRAWING.
d. ALL PRIVATE SURFACE WATER SEWER PIPES TO BE 100mm DIAMETER FROM DOWNPIPES AND 150mm DIAMETER ELSEWHERE UNLESS OTHERWISE STATED ON THE DRAWING.
e. ALLOW FOR RODDING ACCESS ABOVE GROUND WHERE RAINWATER DOWNPIPES OR SOIL STACKS DO NOT HAVE A DIRECT CONNECTION TO AN INSPECTION CHAMBER.
f. EXISTING SEWER PIPE TO BE RE-USED TO BE SURVEYED AND LEVELED PRIOR TO COMMENCEMENT OF THE DRAINAGE WORKS AND REFURBISHED IF NECESSARY.
g. CONNECTIONS TO AN ADOPTED SEWER ONLY TO BE MADE FOLLOWING APPROVAL FROM THE RELEVANT ADOPTING AUTHORITY.
h. ALL DRAINS, SEWER PIPES AND MANHOLES TO BE CLEANED AND TESTED FOR WATER TIGHTNESS ON COMPLETION OF CONSTRUCTION.

4. MANHOLE COVERS AND FRAMES
a. MANHOLE COVERS TO BE CLASS D400 IN HIGHWAYS, CLASS B125 IN FOOTWAYS AND VERGES, CLASS A15 IN NON-TRAFFICKED AREAS.
b. MANHOLE COVER AND FRAME TO BE BEDDED AND SURROUNDED IN 1:3 MORTAR.

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Client

Project
42 Brighton Road
Lancing BN15 8ET

Title
DRAINAGE CONSTRUCTION DETAILS

Date Apr 22	Drawn BB	Checked MN
Distribution Office Hove/ London		
Scale 1:100	Engineer BB	
Approved MN	Status PRELIMINARY	
Project Number	Drawing Number DR_10	Revision P1

ORIGINAL DRAWING SIZE A1

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APPENDIX III Hydraulic Calculations

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
10	0.007	4.00	5.850	450	28643.051	27066.064	0.750
9			5.850		28639.220	27063.336	1.040
8	0.012	4.00	7.410		28605.734	27075.689	0.750
7			7.410	450	28606.419	27060.453	0.902
6	0.010	4.00	7.350		28624.001	27076.672	0.750
5			5.850	450	28624.001	27060.453	0.750
4			5.850	450	28628.625	27060.453	0.796
3			5.850		28635.234	27063.344	1.040
2			5.850		28637.249	27063.344	1.249
1			5.850		28637.234	27061.820	1.250
11			7.350	450	28624.001	27063.997	1.250

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.005	2	1	1.524	0.600	4.601	4.600	0.001	1524.1	225	4.59	50.0
3.001	9	2	1.971	0.600	4.810	4.601	0.209	9.4	150	4.04	50.0
1.004	3	2	2.015	0.600	4.810	4.601	0.209	9.6	150	4.51	50.0
1.003	4	3	7.214	0.600	5.054	4.810	0.244	29.6	150	4.50	50.0
1.002	5	4	4.624	0.600	5.100	5.054	0.046	100.5	150	4.43	50.0
2.001	11	5	3.544	0.600	6.100	5.100	1.000	3.5	150	4.12	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.005	0.326	13.0	5.5	1.024	1.025	0.029	0.0	102	0.313
3.001	3.300	58.3	1.3	0.890	1.099	0.007	0.0	16	1.352
1.004	3.264	57.7	4.2	0.890	1.099	0.022	0.0	27	1.906
1.003	1.858	32.8	4.2	0.646	0.890	0.022	0.0	36	1.279
1.002	1.002	17.7	4.2	0.600	0.646	0.022	0.0	50	0.821
2.001	5.392	95.3	1.9	1.100	0.600	0.010	0.0	15	2.159

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	7	5	17.582	0.600	6.508	5.100	1.408	12.5	150	4.36	50.0
1.000	8	7	15.251	0.600	6.660	6.508	0.152	100.3	150	4.25	50.0
2.000	6	11	12.675	0.600	6.600	6.100	0.500	25.3	150	4.11	50.0
3.000	10	9	4.703	0.600	5.100	4.810	0.290	16.2	150	4.03	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	2.866	50.6	2.3	0.752	0.600	0.012	0.0	22	1.466
1.000	1.003	17.7	2.3	0.600	0.752	0.012	0.0	37	0.695
2.000	2.008	35.5	1.9	0.600	1.100	0.010	0.0	24	1.075
3.000	2.513	44.4	1.3	0.600	0.890	0.007	0.0	18	1.126

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.005	1.524	1524.1	225	Circular	5.850	4.601	1.024	5.850	4.600	1.025
3.001	1.971	9.4	150	Circular	5.850	4.810	0.890	5.850	4.601	1.099
1.004	2.015	9.6	150	Circular	5.850	4.810	0.890	5.850	4.601	1.099
1.003	7.214	29.6	150	Circular	5.850	5.054	0.646	5.850	4.810	0.890
1.002	4.624	100.5	150	Circular	5.850	5.100	0.600	5.850	5.054	0.646
2.001	3.544	3.5	150	Circular	7.350	6.100	1.100	5.850	5.100	0.600

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.005	2		Junction		1		Junction	
3.001	9		Junction		2		Junction	
1.004	3		Junction		2		Junction	
1.003	4	450	Manhole	Private_1	3		Junction	
1.002	5	450	Manhole	Private_1	4	450	Manhole	Private_1
2.001	11	450	Manhole	Private_1	5	450	Manhole	Private_1

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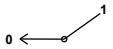
Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	17.582	12.5	150	Circular	7.410	6.508	0.752	5.850	5.100	0.600
1.000	15.251	100.3	150	Circular	7.410	6.660	0.600	7.410	6.508	0.752
2.000	12.675	25.3	150	Circular	7.350	6.600	0.600	7.350	6.100	1.100
3.000	4.703	16.2	150	Circular	5.850	5.100	0.600	5.850	4.810	0.890

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	7	450	Manhole	Private_1	5	450	Manhole	Private_1
1.000	8		Junction		7	450	Manhole	Private_1
2.000	6		Junction		11	450	Manhole	Private_1
3.000	10	450	Manhole	Private_1	9		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
10	28643.051	27066.064	5.850	0.750	450	 0	3.000	5.100	150
9	28639.220	27063.336	5.850	1.040		1	3.000	4.810	150
						 0	3.001	4.810	150
8	28605.734	27075.689	7.410	0.750		0	1.000	6.660	150
7	28606.419	27060.453	7.410	0.902	450	 1	1.000	6.508	150
						0	1.001	6.508	150

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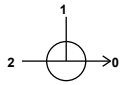
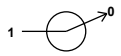
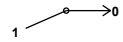
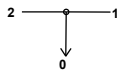
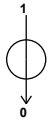
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
6	28624.001	27076.672	7.350	0.750			0	2.000	6.600	150
5	28624.001	27060.453	5.850	0.750	450		1	2.001	5.100	150
							2	1.001	5.100	150
							0	1.002	5.100	150
4	28628.625	27060.453	5.850	0.796	450		1	1.002	5.054	150
							0	1.003	5.054	150
3	28635.234	27063.344	5.850	1.040			1	1.003	4.810	150
							0	1.004	4.810	150
2	28637.249	27063.344	5.850	1.249			1	3.001	4.601	150
							2	1.004	4.601	150
							0	1.005	4.601	225
1	28637.234	27061.820	5.850	1.250			1	1.005	4.600	225
11	28624.001	27063.997	7.350	1.250	450		1	2.000	6.100	150
							0	2.001	6.100	150

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Detailed	Drain Down Time (mins)	240	Check Discharge Rate(s)	x
Summer CV	0.750	Skip Steady State	x	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x

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Storm Durations

15	30	60	120	180	240

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	10	0	100	40	10	0

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.90000	Safety Factor	4.0	Invert Level (m)	4.600
Side Inf Coefficient (m/hr)	1.80000	Porosity	0.95	Time to half empty (mins)	34

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	12.0	12.0	0.630	12.0	27.6	0.631	0.0	27.6

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Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	10	10	5.129	0.029	3.2	0.0104	0.0000	OK
60 minute summer	9	44	4.976	0.166	4.9	0.0000	0.0000	SURCHARGED
15 minute summer	8	10	6.722	0.062	5.5	0.0220	0.0000	OK
15 minute summer	7	10	6.541	0.033	5.5	0.0053	0.0000	OK
15 minute summer	6	10	6.641	0.041	4.6	0.0120	0.0000	OK
15 minute summer	5	10	5.188	0.088	10.1	0.0140	0.0000	OK
15 minute summer	4	10	5.115	0.061	10.1	0.0097	0.0000	OK
60 minute summer	3	43	4.977	0.167	9.6	0.0000	0.0000	SURCHARGED
60 minute summer	2	44	4.976	0.375	16.9	0.0000	0.0000	SURCHARGED
60 minute summer	1	44	4.976	0.376	13.3	4.2834	0.0000	OK
15 minute summer	11	10	6.122	0.022	4.6	0.0035	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	10	3.000	9	3.2	1.549	0.072	0.0301
60 minute summer	9	3.001	2	7.4	0.811	0.127	0.0347
15 minute summer	8	1.000	7	5.5	1.142	0.310	0.0747
15 minute summer	7	1.001	5	5.5	0.826	0.109	0.1198
15 minute summer	6	2.000	11	4.6	1.721	0.130	0.0346
15 minute summer	5	1.002	4	10.1	1.154	0.569	0.0404
15 minute summer	4	1.003	3	10.1	1.864	0.306	0.0489
60 minute summer	3	1.004	2	9.5	0.593	0.164	0.0355
60 minute summer	2	1.005	1	13.3	0.844	1.025	0.0606
60 minute summer	1	Infiltration		1.8			
15 minute summer	11	2.001	5	4.6	0.923	0.048	0.0219

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Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	10	45	5.307	0.207	3.7	0.0753	0.0000	SURCHARGED
60 minute summer	9	45	5.308	0.498	3.7	0.0000	0.0000	SURCHARGED
15 minute summer	8	10	6.746	0.086	9.8	0.0304	0.0000	OK
15 minute summer	7	10	6.553	0.045	9.8	0.0071	0.0000	OK
15 minute summer	6	10	6.655	0.055	8.2	0.0163	0.0000	OK
60 minute summer	5	45	5.310	0.210	11.8	0.0334	0.0000	SURCHARGED
60 minute summer	4	45	5.309	0.255	11.7	0.0405	0.0000	SURCHARGED
60 minute summer	3	45	5.308	0.498	11.6	0.0000	0.0000	SURCHARGED
60 minute summer	2	45	5.307	0.706	15.5	0.0000	0.0000	SURCHARGED
60 minute summer	1	45	5.307	0.707	16.1	7.1877	0.0000	OK
15 minute summer	11	10	6.130	0.030	8.2	0.0047	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
60 minute summer	10	3.000	9	3.7	1.379	0.083	0.0828
60 minute summer	9	3.001	2	10.2	0.953	0.174	0.0347
15 minute summer	8	1.000	7	9.8	1.331	0.553	0.1132
15 minute summer	7	1.001	5	9.8	0.929	0.194	0.1815
15 minute summer	6	2.000	11	8.2	2.014	0.231	0.0526
60 minute summer	5	1.002	4	11.7	1.247	0.660	0.0814
60 minute summer	4	1.003	3	11.6	1.677	0.354	0.1270
60 minute summer	3	1.004	2	10.7	0.606	0.185	0.0355
60 minute summer	2	1.005	1	16.1	0.826	1.238	0.0606
60 minute summer	1	Infiltration		2.7			
15 minute summer	11	2.001	5	8.2	1.559	0.086	0.0331

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