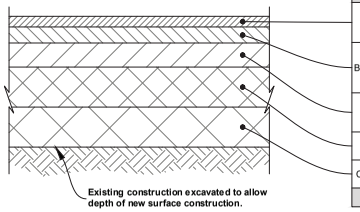
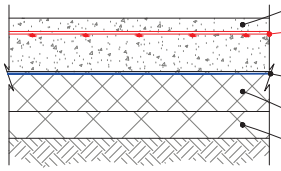
HEAVY DUTY CARRIAGEWAY - TYPICAL CONSTRUCTION DETAILS



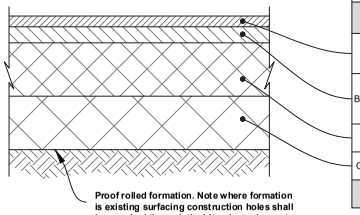
LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SURFACE COURSE	910	STONE MASTIC ASPHALT Mixture to BS 594987 2007, Table 6C (SMA14) Nominal aggregate size 14mm	40 mm	Laid and compacted to Specification for Highways Works Clauses 701, 702 and 901
BINDER COURSE	906	DENSE BITUMEN MACADAM Mixture to BS 594594 2007, Table 6A (HRA60/20 bin/base) Nominal aggregate size 20mm	60 mm	Laid and compacted to Specification for Highways Works Clauses 702 and 901
BASE COURSE	903	DENSE BITUMEN MACADAM Mixture to BS 594987 2007, Table 6A Nominal aggregate size 32mm	90 mm	Laid and compacted to Specification for Highways Works Clauses 701, 702 and 901
SUB BASE	801 & 803	Type 1	150 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	150 mm	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	490 mm	

CONCRETE FORECOURT - TYPICAL CONSTRUCTION DETAILS



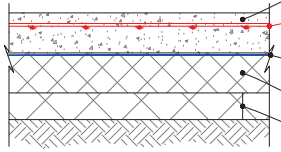
LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SLAB (A393 MESH)	–	GRADE C40 CONCRETE Average air entrainment = 5±1.5%. Minimum cement content of 330kg/m . Maximum water/cement ratio of 0.50 (by weight). Maximum aggregate size 20mm. Fine aggregate 30-40% (by weight) of total workability (target) 50 mm slump or designated mix 40 / 50 XF. 1 layer A393 mesh with 50mm top cover.	200 mm	Medium brush finish in direction of falls.
MEMBRANE	–	1200 GAUGE VISQUEEN (or similar approved)	–	Laid strictly in accordance with manufacturers recommendations.
SUB BASE	801 & 803	Type 1	150 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	100 mm (min)	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	450 mm (min)	

CAR PARK - TYPICAL CONSTRUCTION DETAILS



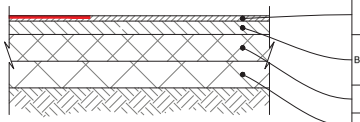
LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SURFACE COURSE	910	STONE MASTIC ASPHALT Mixture to BS 594987 2007, Table 6C (SMA14) Nominal aggregate size 14mm	40 mm	Laid and compacted to Specification for Highways Works Clauses 701, 702 and 901
BINDER COURSE	906	DENSE BITUMEN MACADAM Mixture to BS 594594 2007, Table 6A (HRA60/20 bin/base) Nominal aggregate size 20mm	60 mm	Laid and compacted to Specification for Highways Works Clauses 702 and 901
SUB BASE	801 & 803	Type 1	200 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	150 mm (min)	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	450 mm (min)	

CONCRETE FOOTPATH - TYPICAL CONSTRUCTION DETAILS



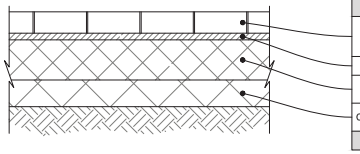
LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SLAB (A393 MESH)	–	GRADE C40 CONCRETE Average air entrainment = 5±1.5%. Minimum cement content of 330kg/m . Maximum water/cement ratio of 0.50 (by weight). Maximum aggregate size 20mm. Fine aggregate 30-40% (by weight) of total workability (target) 50 mm slump or designated mix 40 / 50 XF. 1 layer A393 mesh with 50mm top cover.	150 mm	Medium brush finish in direction of falls.
MEMBRANE	–	1200 GAUGE VISQUEEN (or similar approved)	–	Laid strictly in accordance with manufacturers recommendations.
SUB BASE	801 & 803	Type 1	150 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	100 mm (min)	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	400 mm (min)	

MACADAM FOOTPATH - TYPICAL CONSTRUCTION DETAILS



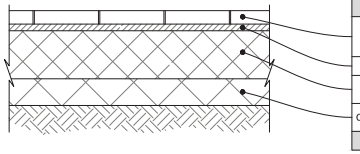
LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SURFACE COURSE	1105	FINE TEXTURE BITUMEN MACADAM (200 PEN)	20 mm	Aggregate type: Course aggregate Basalt. Laid and compacted to Specification for Highways Works Clauses 702 and 901
BINDER COURSE	906	DENSE BITUMEN MACADAM (100 PEN) Mixture to BS 594594 2007, Table 6A (HRA60/20 bin/base) Nominal aggregate size 20mm	50 mm	Used with fine texture bitumen macadam. Laid and compacted to Specification for Highways Works Clauses 702 and 901
SUB BASE	801 & 803	Type 1	100 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	100 mm	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	270 mm	

BLOCKED PAVED AREAS - TYPICAL CONSTRUCTION DETAILS



LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SURFACE COURSE	–	BLOCK PAVING Installed to Architects specification	80 mm	
BEDDING	–	SAND	25 mm	
SUB BASE	801 & 803	Type 1	150 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	100 mm	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	355 mm	

BLOCKED PAVED AREAS - TYPICAL CONSTRUCTION DETAILS

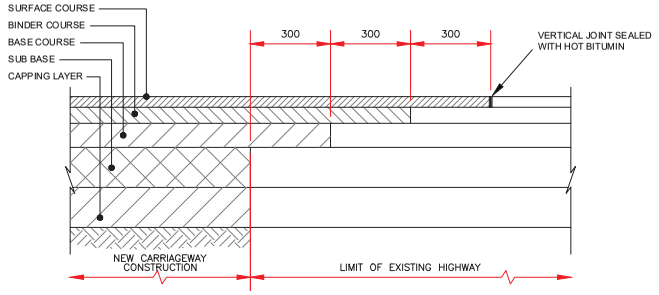


LAYER	CLAUSE (D.O.T.)	MATERIAL	THICKNESS	NOTES
SURFACE COURSE	–	TEGULA DRIVESETT Installed to Architects specification	50 mm	
BEDDING	–	SAND	25 mm	
SUB BASE	801 & 803	Type 1	180 mm	Laid and compacted to Specification for Highways Works Clause 802
CAPPING LAYER	801 & 803	6F2 Granular material Class 1A, 1B, 1C, 6F1 or 6F2	100 mm	Laid and compacted to Specification for Highways Works Clauses 608 and 612
		TOTAL CONSTRUCTION THICKNESS	355 mm	

NOTE:

CBR of 2% to be assumed for all road construction thicknesses unless ground testing determines otherwise.

FOUNDATION THICKNESS		
CBR %	GRANULAR SUB BASE - TYPE 1	CAPPING LAYER
>2	150	600
2	150	450
2.5	350	0
2.5	150	400
3	300	0
3	150	350
4	250	0
4	150	300
5	150	250
5	225	0
8	150	20
8	190	0
>15	150	



TIE-IN CONSTRUCTION DETAILS AT EDGE OF CARRIAGEWAY

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P1	Standard Issue	YA	04/23

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CLIENT: Monte Blackburn Ltd

PROJECT: Proposed Development

TITLE: Standard Details
Surface Construction

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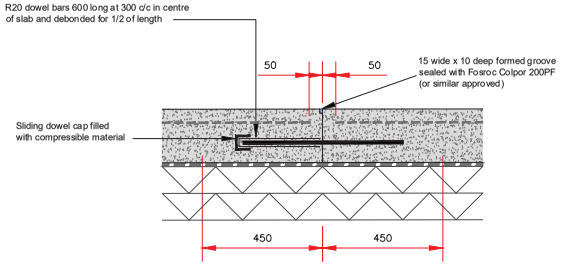
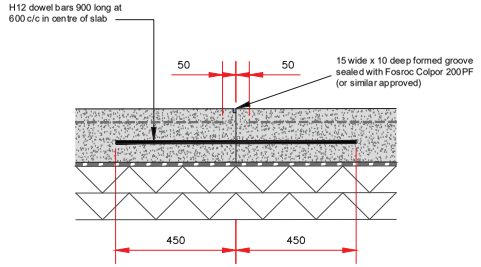
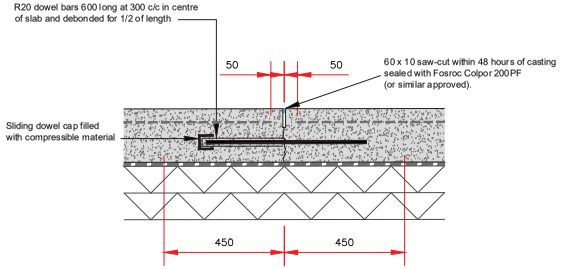
-	SD-300	P1



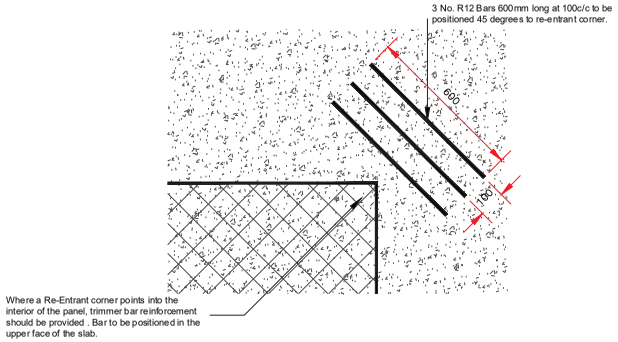
DEBONDED LONGITUDINAL JOINT (DLJ)



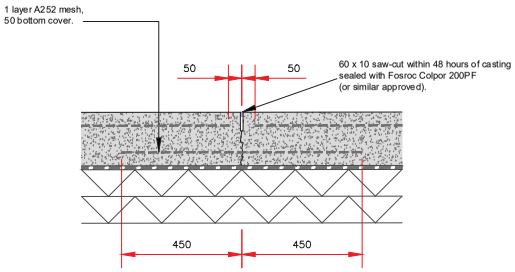
TIED LONGITUDINAL JOINT (TLJ)



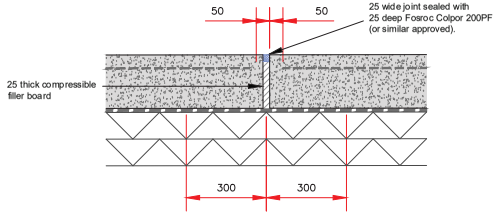
CONTRACTION JOINT (CJ)



TRIMMER BAR DETAIL FOR RE-ENTRANT CORNERS



INDUCED TIED JOINT (IJ)



ISOLATION JOINT (ISO)

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CLIENT: Monte Blackburn Ltd

PROJECT: Proposed Development

TITLE: Standard Details Construction Joints

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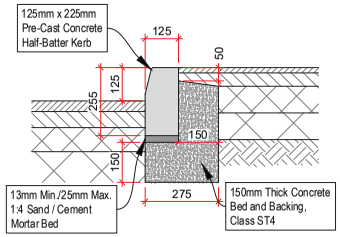
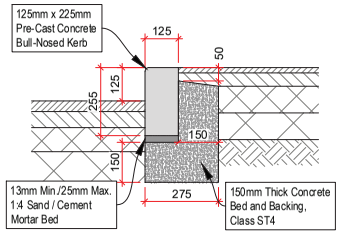
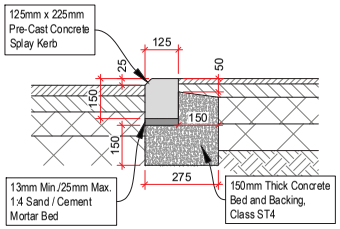
-	SD-301	P1



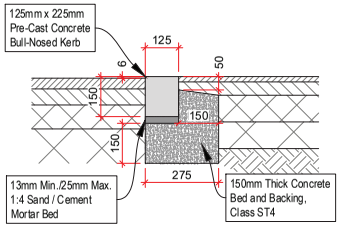
HALF-BATTER KERB - TYPICAL DETAIL



BULL-NOSE KERB - TYPICAL DETAIL



DROPPED KERB - TYPICAL DETAIL



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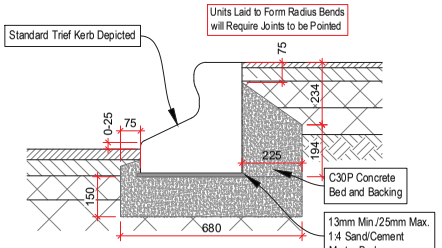
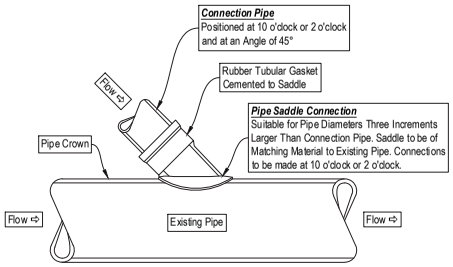
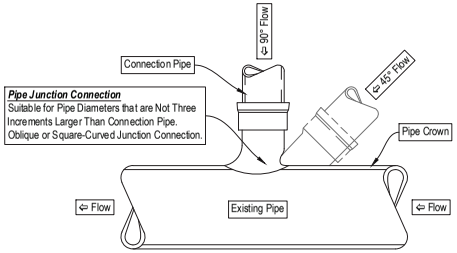


SAFETY KERB - TYPICAL DETAIL

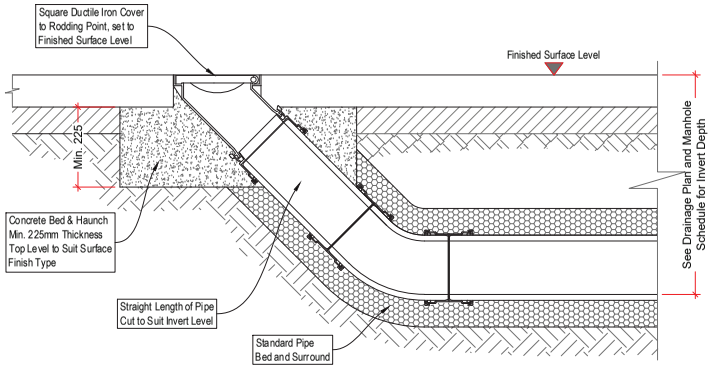


SADDLE CONNECTION - TYPICAL DETAIL

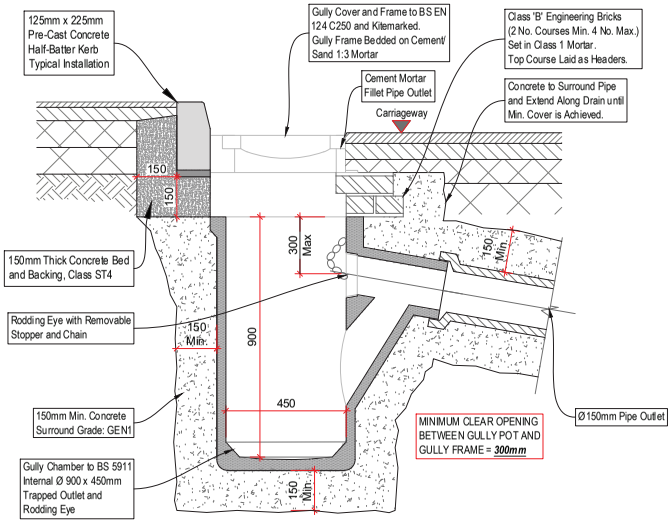
PROPOSED CONNECTION Ø	EXISTING CONNECTION DIAMETER									
	100	150	225	300	375	450	525	600	675	750
100	Jun.	Jun.	Jun.	Sad.	Sad.	Sad.	Sad.	Sad.	Sad.	Sad.
150		Jun.	Jun.	Jun.	Sad.	Sad.	Sad.	Sad.	Sad.	Sad.
225			Jun.	Jun.	Jun.	Sad.	Sad.	Sad.	Sad.	Sad.
300				Jun.	Jun.	Jun.	Sad.	Sad.	Sad.	Sad.
375					Jun.	Jun.	Jun.	Sad.	Sad.	Sad.
450						Jun.	Jun.	Jun.	Sad.	Sad.



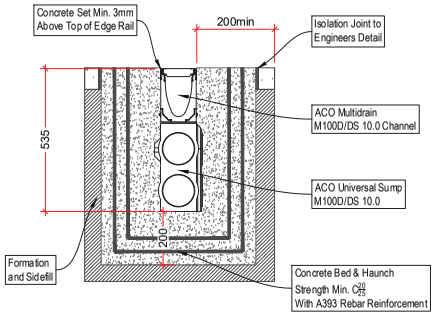
JUNCTION CONNECTION - TYPICAL DETAIL



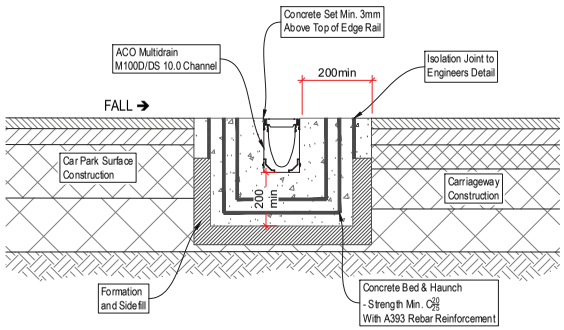
RODDING EYE - TYPICAL DETAIL



DRAINAGE GULLY - TYPICAL DETAIL



CHANNEL DRAIN SUMP - TYPICAL DETAIL



CHANNEL DRAIN - TYPICAL DETAIL

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CLIENT: Monte Blackburn Ltd

PROJECT: Proposed Development

TITLE: Standard Details
Drainage & External Details

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
As Shown	APR_2023	YA	MM

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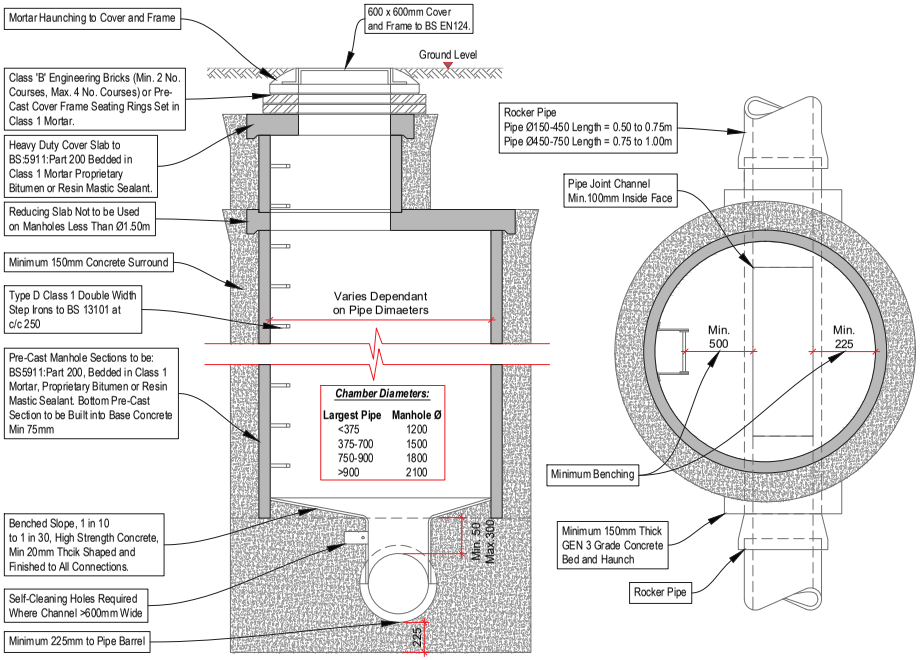
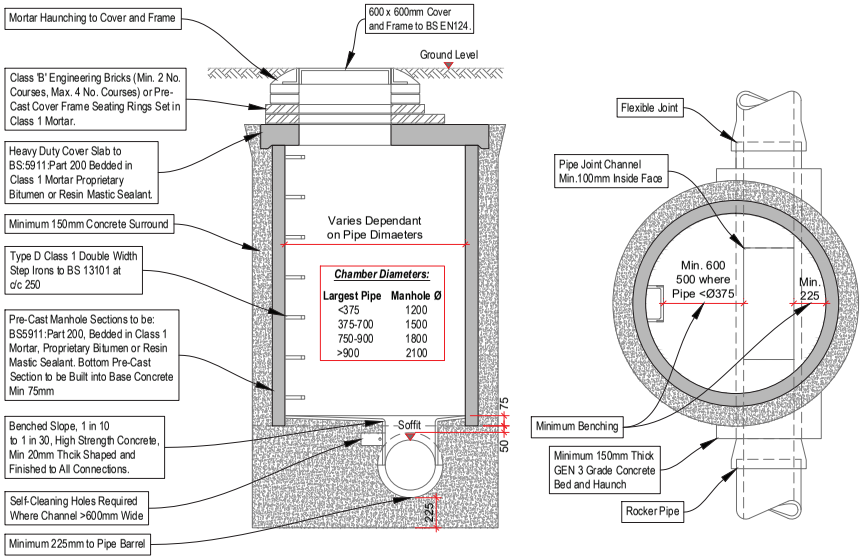
-	SD-302	P1

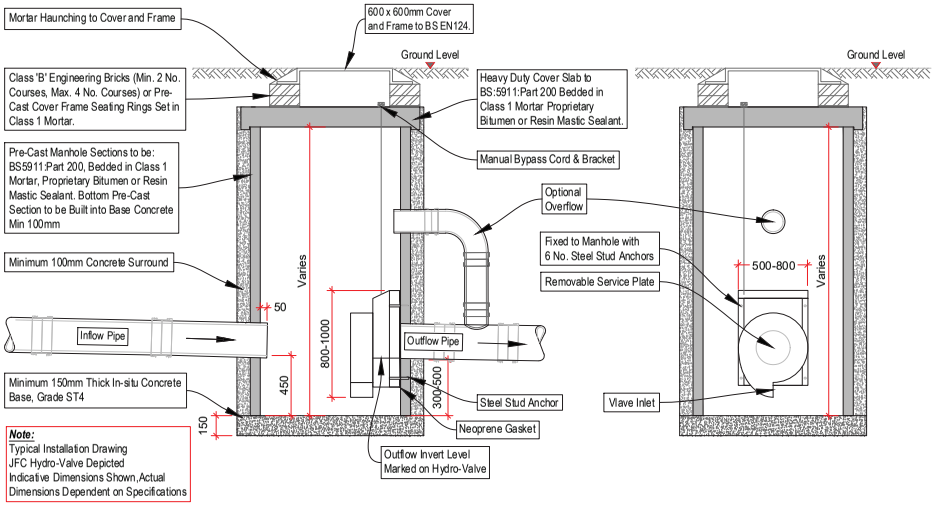


MANHOLE TYPE A - TYPICAL DETAILS



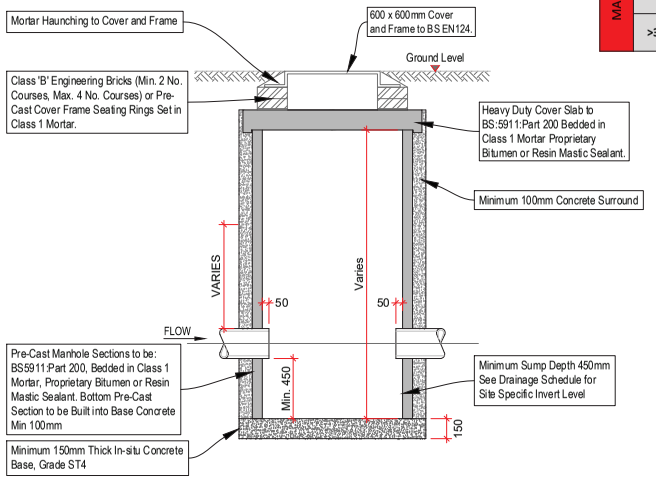
MANHOLE TYPE B - TYPICAL DETAILS

MANHOLE DEPTH TO SOFFIT		DIAMETERS AND OPENINGS		
		LARGEST PIPE Ø	MANHOLE INTERNAL Ø	MIN. CLEAR OPENING SIZE
	<1500	150	1050	750 X 750
		300	1200	675 X 675 ECCENTRIC
		450	1350	675 X 675 ECCENTRIC
		700	1500	675 X 675
		900	1800	675 X 675
		1000	2100	675 X 675
		>1000	SEE SCHEDULE	750 X 675
	>1500	100 - 450	1200	600 X 600
		>450	1800+	600 X 600
		>1000	SEE SCHEDULE	600 X 600
	>3000	STEPS	1050	600 X 600
		LADDERS	1200	600 X 600



FLOW RESTRICTOR - TYPICAL SECTION DETAIL

FLOW RESTRICTOR - TYPICAL PROFILE DETAIL



CATCHPIT SECTION - TYPICAL DETAIL

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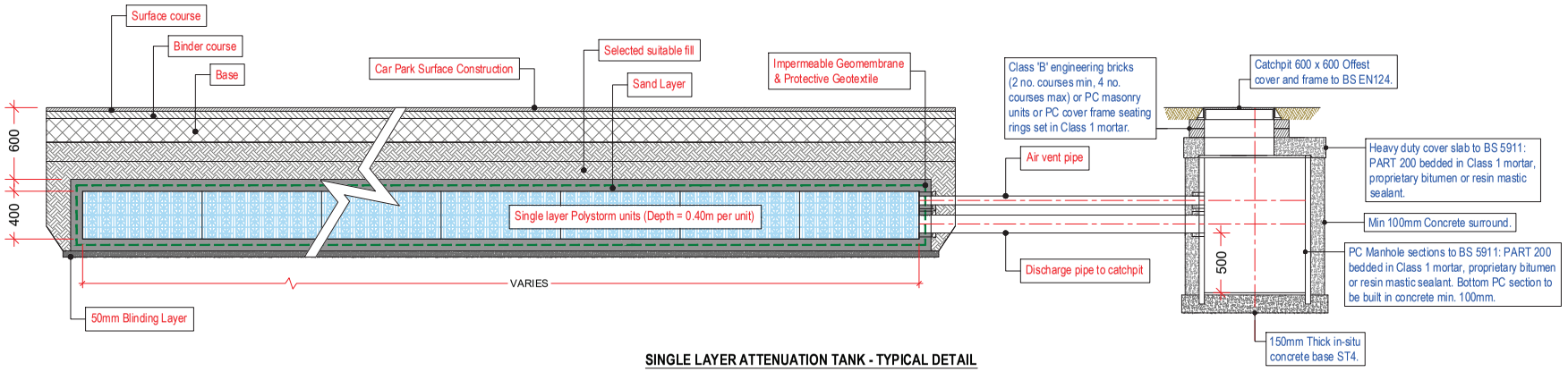
CLIENT: Monte Blackburn Ltd

PROJECT: Proposed Development

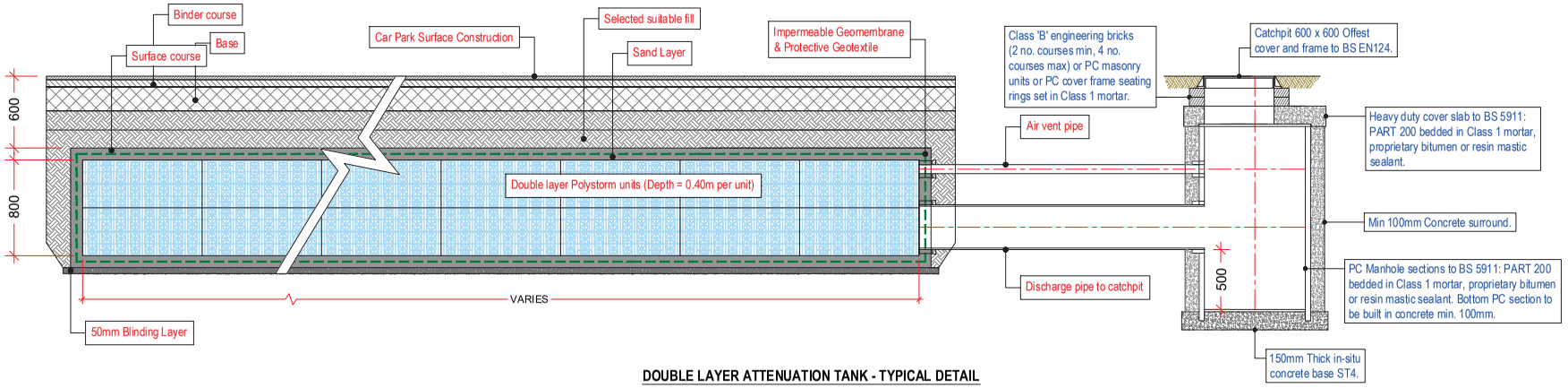
TITLE: Standard Details
Manhole Construction

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
As Shown	APR_2023	YA	MM

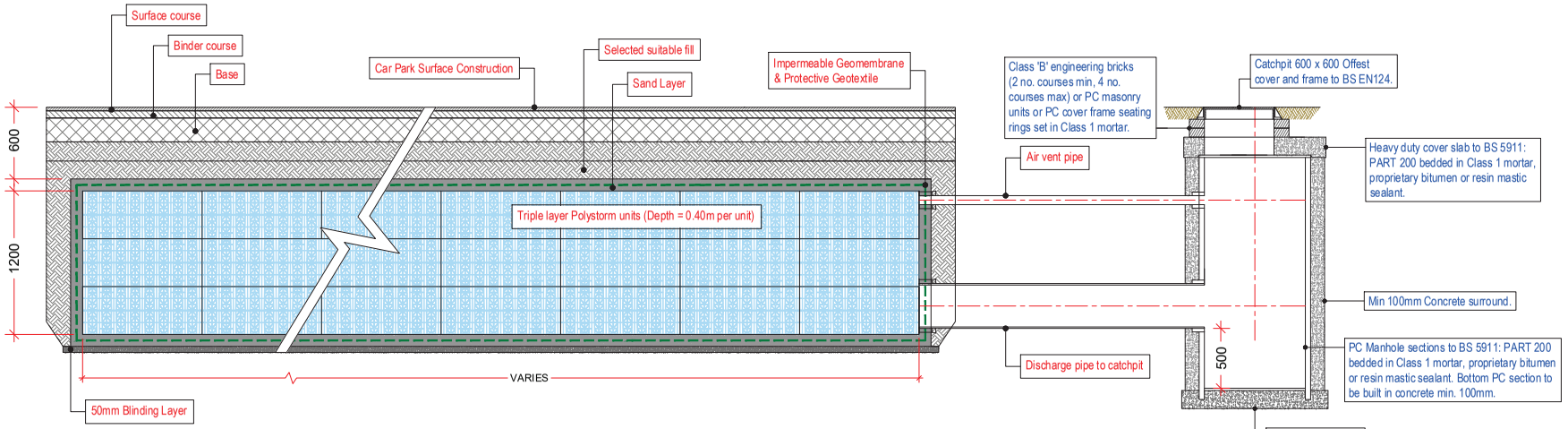
PROJECT NO:	DRAWING NO:	REVISION:
-	SD-303	P1



SINGLE LAYER ATTENUATION TANK - TYPICAL DETAIL



DOUBLE LAYER ATTENUATION TANK - TYPICAL DETAIL



TRIPLE LAYER ATTENUATION TANK - TYPICAL DETAIL

REV:	DESCRIPTION:	BY:	DATE:
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CLIENT: Monte Blackburn Ltd

PROJECT: Proposed Development

TITLE: Standard Details Attenuation Storage

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
As Shown	APR_2023	YA	MM

PROJECT NO:	DRAWING NO:	REVISION:
-	SD-304	P1

Appendix C

Hydraulic Modelling Calculations

SW Discharge Assessment

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.032	5.00	143.400	600	1156.706	5200.254	1.700
S2			143.320	1000	1162.340	5176.324	1.927
S3	0.079	5.00	142.975	1000	1188.958	5154.563	2.012
S4	0.208	5.00	142.500	1000	1270.684	5142.076	3.265
S5		5.00	143.420	1000	1270.952	5186.614	1.620
S6	0.093	5.00	143.000	1000	1299.512	5189.723	1.775
S7	0.149	5.00	141.500	1000	1323.245	5162.479	2.745
S8		5.00	142.000	1000	1329.527	5206.645	1.200
S9	0.027	5.00	142.000	1000	1339.274	5194.968	1.529
S10	0.071	5.00	142.000	1000	1334.257	5190.506	1.613
S11	0.078	5.00	141.010	1000	1346.009	5177.291	2.378
S12		5.00	142.600	1000	1196.061	5127.797	1.200
S13	0.113	5.00	141.500	1000	1261.747	5104.107	1.497
S14	0.158	5.00	140.400	1000	1336.170	5126.760	1.387
S15	0.115	5.00	140.300	1000	1375.235	5179.908	1.467
S16			140.300	1000	1371.068	5200.451	1.804
S17	0.037	5.00	140.000	1000	1391.332	5219.179	1.671
S18			140.000	1000	1379.295	5233.643	1.734
S19		5.00	142.000	1000	1343.735	5216.365	1.500
S20	0.011	5.00	142.000	1000	1351.930	5207.752	1.694
S21	0.024	5.00	142.000	1000	1365.697	5222.179	1.893
S22	0.013	5.00	142.000	1000	1352.413	5235.882	2.132
S23	0.019	5.00	141.000	1000	1363.945	5248.029	2.794
S24		5.00	143.400	1000	1211.825	5188.269	1.900
S25		5.00	143.160	1000	1215.874	5229.075	2.010
S26	0.255	5.00	143.350	1000	1200.898	5224.728	2.401
S27	0.027	5.00	143.650	1000	1158.786	5227.504	2.150
S28		5.00	143.100	1000	1228.136	5253.427	1.600
S29	0.184	5.00	143.100	1000	1191.663	5253.312	2.526
S30			143.200	1000	1182.325	5276.004	2.933
S31	0.027	5.00	142.500	1000	1201.413	5286.834	2.672
S32	0.038	5.00	141.650	1000	1190.118	5305.240	2.362
S33	0.072	5.00	141.000	1000	1212.042	5318.557	1.969
S34	0.036	5.00	141.900	1000	1224.627	5298.828	2.963
S35A	0.092	5.00	140.730	1000	1257.414	5326.651	1.730
S35	0.167	5.00	142.000	1000	1259.593	5297.590	3.278
S36		5.00	143.100	1000	1244.916	5215.740	1.600
S37			143.100	1000	1252.384	5190.724	2.122
S38	0.136	5.00	143.100	1000	1300.688	5205.550	2.754
S39	0.024	5.00	143.100	1000	1294.321	5227.832	3.044
S40		5.00	143.100	1000	1264.855	5240.185	1.800

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S41	0.150	5.00	142.950	1000	1289.715	5243.136	3.120
S42	0.047	5.00	142.800	1000	1306.150	5245.529	3.120
S43	0.037	5.00	142.750	1000	1311.321	5248.959	3.121
S44	0.015	5.00	142.000	1200	1303.890	5273.831	3.508
S45	0.016	5.00	140.000	1200	1339.627	5298.354	1.681
S46		5.00	142.200	1000	1332.055	5243.999	2.000
S47	0.035	5.00	141.500	1000	1342.212	5248.132	1.574
S48	0.016	5.00	139.500	1000	1355.264	5260.291	0.930
S49	0.020	5.00	139.500	1500	1358.534	5281.161	1.339
S50			139.500	1000	1370.498	5301.460	1.389

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)
1.000	S1	S2	24.584	0.600	141.700	141.393	0.307	80.0	225	5.28	46.3
1.001	S2	S3	34.381	0.600	141.393	140.963	0.430	80.0	225	5.67	45.0
1.002	S3	S4	82.674	0.600	140.963	139.310	1.653	50.0	225	6.42	42.7
1.003	S4	S7	56.382	0.600	139.235	138.830	0.405	139.2	300	7.12	40.7
1.004	S7	S11	27.159	0.600	138.755	138.632	0.123	220.0	375	7.49	39.8
1.005	S11	S16	34.122	0.600	138.632	138.496	0.136	250.9	375	7.99	38.6
1.006	S16	S17	27.593	0.600	138.496	138.404	0.092	299.9	375	8.43	37.7
1.007	S17	S18	18.817	0.600	138.329	138.266	0.063	300.0	450	8.70	37.1
2.000	S5	S6	28.729	0.600	141.800	141.225	0.575	50.0	225	5.26	46.4
2.001	S6	S7	36.132	0.600	141.225	138.905	2.320	15.6	225	5.65	45.1
3.000	S8	S9	15.210	0.600	140.800	140.546	0.254	60.0	150	5.19	46.6
3.001	S9	S10	6.714	0.600	140.471	140.387	0.084	80.0	225	5.27	46.3
3.002	S10	S11	17.685	0.600	140.387	138.782	1.605	11.0	225	5.35	46.1
4.000	S12	S13	69.827	0.600	141.400	140.003	1.397	50.0	225	5.80	44.6
4.001	S13	S14	77.794	0.600	140.003	139.088	0.915	85.0	225	6.71	41.8
4.002	S14	S15	65.960	0.600	139.013	138.833	0.180	366.4	300	8.06	38.5

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)
1.000	1.463	58.2	4.0	1.475	1.702	0.032	0.0	40	0.847
1.001	1.463	58.2	3.9	1.702	1.787	0.032	0.0	39	0.836
1.002	1.854	73.7	12.8	1.787	2.965	0.111	0.0	64	1.405
1.003	1.330	94.0	35.2	2.965	2.370	0.319	0.0	127	1.237
1.004	1.217	134.4	60.5	2.370	2.003	0.561	0.0	176	1.186
1.005	1.139	125.8	77.2	2.003	1.429	0.737	0.0	213	1.195
1.006	1.041	115.0	114.6	1.429	1.221	1.123	0.0	309	1.179
1.007	1.168	185.8	116.6	1.221	1.284	1.160	0.0	259	1.231
2.000	1.854	73.7	0.0	1.395	1.550	0.000	0.0	0	0.000
2.001	3.332	132.5	11.4	1.550	2.370	0.093	0.0	44	2.059
3.000	1.301	23.0	0.0	1.050	1.304	0.000	0.0	0	0.000
3.001	1.463	58.2	3.4	1.304	1.388	0.027	0.0	36	0.801
3.002	3.964	157.6	12.2	1.388	2.003	0.098	0.0	42	2.364
4.000	1.854	73.7	0.0	0.975	1.272	0.000	0.0	0	0.000
4.001	1.419	56.4	12.8	1.272	1.087	0.113	0.0	73	1.152
4.002	0.815	57.6	28.3	1.087	1.167	0.271	0.0	149	0.812

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)
4.003	S15	S16	20.961	0.600	138.833	138.571	0.262	80.0	300	7.65	39.4
5.000	S19	S20	11.889	0.600	140.500	140.381	0.119	100.0	150	5.20	46.6
5.001	S20	S21	19.942	0.600	140.306	140.107	0.199	100.0	225	5.45	45.7
1.008	S18	S23	21.038	0.600	138.266	138.206	0.060	350.0	450	9.03	36.4
1.009	S23	S49	33.571	0.600	138.206	138.161	0.045	746.0	450	9.05	36.4
5.002	S21	S22	19.085	0.600	140.107	139.868	0.239	80.0	225	5.67	45.0
5.003	S22	S23	16.749	0.600	139.868	138.504	1.364	12.3	225	5.74	44.7
6.000	S24	S26	38.061	0.600	141.500	141.024	0.476	80.0	225	5.43	45.8
6.001	S26	S29	30.039	0.600	140.949	140.574	0.375	80.1	300	5.72	44.8
6.002	S29	S30	24.538	0.600	140.574	140.267	0.307	80.0	300	5.95	44.1
6.003	S30	S31	21.946	0.600	140.267	139.828	0.439	50.0	300	6.12	43.6
6.004	S31	S32	21.595	0.600	139.828	139.288	0.540	40.0	300	6.26	43.1
6.005	S32	S33	25.652	0.600	139.288	139.031	0.257	100.0	300	6.53	42.3
6.006	S33	S34	23.401	0.600	139.031	138.937	0.094	250.0	300	6.93	41.3
6.007	S34	S35	34.988	0.600	138.937	138.797	0.140	250.0	300	7.51	39.8
6.008	S35	S44	50.266	0.600	138.722	138.567	0.155	325.0	375	8.35	37.8
6.009	S44	S45	43.342	0.600	138.492	138.319	0.173	250.5	450	8.92	36.7
6.010	S45	S49	25.555	0.600	138.319	138.161	0.158	161.7	450	8.72	37.1
7.000	S25	S26	15.594	0.600	141.150	140.949	0.201	77.6	300	5.15	46.8
8.000	S27	S29	41.797	0.600	141.500	140.649	0.851	49.1	225	5.37	46.0
9.000	S28	S29	36.473	0.600	141.500	140.649	0.851	42.9	225	5.30	46.2
11.000	S36	S37	26.107	0.600	141.500	140.978	0.522	50.0	225	5.23	46.5
11.001	S37	S38	50.528	0.600	140.978	140.346	0.632	80.0	225	5.81	44.5
11.002	S38	S39	23.174	0.600	140.346	140.056	0.290	80.0	225	6.07	43.7

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)
4.003	1.759	124.3	41.2	1.167	1.429	0.386	0.0	119	1.585
5.000	1.005	17.8	0.0	1.350	1.469	0.000	0.0	0	0.000
5.001	1.307	52.0	1.4	1.469	1.668	0.011	0.0	25	0.565
1.008	1.081	171.9	114.5	1.284	2.344	1.160	0.0	269	1.154
1.009	0.736	117.1	121.1	2.344	0.889	1.227	0.0	387	0.831
5.002	1.463	58.2	4.3	1.668	1.907	0.035	0.0	41	0.858
5.003	3.754	149.3	5.8	1.907	2.271	0.048	0.0	30	1.843
6.000	1.463	58.2	0.0	1.675	2.101	0.000	0.0	0	0.000
6.001	1.758	124.3	31.0	2.101	2.226	0.255	0.0	102	1.468
6.002	1.759	124.3	55.7	2.226	2.633	0.466	0.0	140	1.711
6.003	2.228	157.5	55.0	2.633	2.372	0.466	0.0	122	2.036
6.004	2.493	176.2	57.6	2.372	2.062	0.493	0.0	117	2.236
6.005	1.572	111.1	61.0	2.062	1.669	0.531	0.0	158	1.607
6.006	0.990	70.0	67.4	1.669	2.663	0.603	0.0	238	1.121
6.007	0.990	70.0	68.9	2.663	2.903	0.639	0.0	243	1.122
6.008	0.999	110.4	92.1	2.903	3.058	0.898	0.0	263	1.113
6.009	1.280	203.5	129.8	3.058	1.231	1.307	0.0	261	1.353
6.010	1.596	253.8	133.0	1.231	0.889	1.323	0.0	232	1.614
7.000	1.786	126.3	0.0	1.710	2.101	0.000	0.0	0	0.000
8.000	1.871	74.4	3.4	1.925	2.226	0.027	0.0	32	0.948
9.000	2.003	79.7	0.0	1.375	2.226	0.000	0.0	0	0.000
11.000	1.854	73.7	0.0	1.375	1.897	0.000	0.0	0	0.000
11.001	1.463	58.2	0.0	1.897	2.529	0.000	0.0	0	0.000
11.002	1.463	58.2	16.1	2.529	2.819	0.136	0.0	80	1.253

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)
11.003	S39	S41	15.982	0.600	140.056	139.830	0.226	70.7	225	6.25	43.2
11.004	S41	S42	16.608	0.600	139.830	139.680	0.150	110.7	225	6.47	42.5
11.005	S42	S43	6.205	0.600	139.680	139.629	0.051	121.7	225	6.56	42.3
11.006	S43	S44	25.958	0.600	139.629	138.692	0.937	27.7	300	6.70	41.9
12.000	S40	S41	25.035	0.600	141.300	139.830	1.470	17.0	225	5.13	46.8
13.000	S46	S47	10.966	0.600	140.200	139.926	0.274	40.0	225	5.09	47.0
13.001	S47	S48	17.838	0.600	139.926	139.034	0.892	20.0	225	5.19	46.6
13.002	S48	S49	21.125	0.600	138.570	138.236	0.334	63.2	375	5.34	46.1
10.000	S35A	S35	29.143	0.600	139.000	138.903	0.097	300.0	225	5.65	45.1
1.010	S49	S50	23.562	0.600	138.161	138.111	0.050	471.2	300	9.44	35.6

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)
11.003	1.557	61.9	18.7	2.819	2.895	0.160	0.0	85	1.369
11.004	1.242	49.4	35.7	2.895	2.895	0.310	0.0	142	1.349
11.005	1.184	47.1	40.9	2.895	2.896	0.357	0.0	163	1.329
11.006	2.998	211.9	44.7	2.821	3.008	0.394	0.0	93	2.390
12.000	3.186	126.7	0.0	1.575	2.895	0.000	0.0	0	0.000
13.000	2.074	82.5	0.0	1.775	1.349	0.000	0.0	0	0.000
13.001	2.939	116.8	4.4	1.349	0.241	0.035	0.0	29	1.415
13.002	2.281	251.9	6.4	0.555	0.889	0.051	0.0	41	0.988
10.000	0.750	29.8	11.2	1.505	2.872	0.092	0.0	95	0.697
1.010	0.718	50.7	252.9	1.039	1.089	2.621	0.0	300	0.727

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)
1.000	24.584	80.0	225	Circular	143.400	141.700	1.475	143.320	141.393	1.702
1.001	34.381	80.0	225	Circular	143.320	141.393	1.702	142.975	140.963	1.787
1.002	82.674	50.0	225	Circular	142.975	140.963	1.787	142.500	139.310	2.965
1.003	56.382	139.2	300	Circular	142.500	139.235	2.965	141.500	138.830	2.370
1.004	27.159	220.0	375	Circular	141.500	138.755	2.370	141.010	138.632	2.003
1.005	34.122	250.9	375	Circular	141.010	138.632	2.003	140.300	138.496	1.429
1.006	27.593	299.9	375	Circular	140.300	138.496	1.429	140.000	138.404	1.221
1.007	18.817	300.0	450	Circular	140.000	138.329	1.221	140.000	138.266	1.284
2.000	28.729	50.0	225	Circular	143.420	141.800	1.395	143.000	141.225	1.550
2.001	36.132	15.6	225	Circular	143.000	141.225	1.550	141.500	138.905	2.370

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	600	Manhole	Adoptable	S2	1000	Manhole	Adoptable
1.001	S2	1000	Manhole	Adoptable	S3	1000	Manhole	Adoptable
1.002	S3	1000	Manhole	Adoptable	S4	1000	Manhole	Adoptable
1.003	S4	1000	Manhole	Adoptable	S7	1000	Manhole	Adoptable
1.004	S7	1000	Manhole	Adoptable	S11	1000	Manhole	Adoptable
1.005	S11	1000	Manhole	Adoptable	S16	1000	Manhole	Adoptable
1.006	S16	1000	Manhole	Adoptable	S17	1000	Manhole	Adoptable
1.007	S17	1000	Manhole	Adoptable	S18	1000	Manhole	Adoptable
2.000	S5	1000	Manhole	Adoptable	S6	1000	Manhole	Adoptable
2.001	S6	1000	Manhole	Adoptable	S7	1000	Manhole	Adoptable

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)
3.000	15.210	60.0	150	Circular	142.000	140.800	1.050	142.000	140.546	1.304
3.001	6.714	80.0	225	Circular	142.000	140.471	1.304	142.000	140.387	1.388
3.002	17.685	11.0	225	Circular	142.000	140.387	1.388	141.010	138.782	2.003
4.000	69.827	50.0	225	Circular	142.600	141.400	0.975	141.500	140.003	1.272
4.001	77.794	85.0	225	Circular	141.500	140.003	1.272	140.400	139.088	1.087
4.002	65.960	366.4	300	Circular	140.400	139.013	1.087	140.300	138.833	1.167
4.003	20.961	80.0	300	Circular	140.300	138.833	1.167	140.300	138.571	1.429
5.000	11.889	100.0	150	Circular	142.000	140.500	1.350	142.000	140.381	1.469
5.001	19.942	100.0	225	Circular	142.000	140.306	1.469	142.000	140.107	1.668
1.008	21.038	350.0	450	Circular	140.000	138.266	1.284	141.000	138.206	2.344
1.009	33.571	746.0	450	Circular	141.000	138.206	2.344	139.500	138.161	0.889
5.002	19.085	80.0	225	Circular	142.000	140.107	1.668	142.000	139.868	1.907
5.003	16.749	12.3	225	Circular	142.000	139.868	1.907	141.000	138.504	2.271
6.000	38.061	80.0	225	Circular	143.400	141.500	1.675	143.350	141.024	2.101
6.001	30.039	80.1	300	Circular	143.350	140.949	2.101	143.100	140.574	2.226
6.002	24.538	80.0	300	Circular	143.100	140.574	2.226	143.200	140.267	2.633
6.003	21.946	50.0	300	Circular	143.200	140.267	2.633	142.500	139.828	2.372
6.004	21.595	40.0	300	Circular	142.500	139.828	2.372	141.650	139.288	2.062
6.005	25.652	100.0	300	Circular	141.650	139.288	2.062	141.000	139.031	1.669
6.006	23.401	250.0	300	Circular	141.000	139.031	1.669	141.900	138.937	2.663
6.007	34.988	250.0	300	Circular	141.900	138.937	2.663	142.000	138.797	2.903
6.008	50.266	325.0	375	Circular	142.000	138.722	2.903	142.000	138.567	3.058
6.009	43.342	250.5	450	Circular	142.000	138.492	3.058	140.000	138.319	1.231
6.010	25.555	161.7	450	Circular	140.000	138.319	1.231	139.500	138.161	0.889
7.000	15.594	77.6	300	Circular	143.160	141.150	1.710	143.350	140.949	2.101

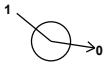
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.000	S8	1000	Manhole	Adoptable	S9	1000	Manhole	Adoptable
3.001	S9	1000	Manhole	Adoptable	S10	1000	Manhole	Adoptable
3.002	S10	1000	Manhole	Adoptable	S11	1000	Manhole	Adoptable
4.000	S12	1000	Manhole	Adoptable	S13	1000	Manhole	Adoptable
4.001	S13	1000	Manhole	Adoptable	S14	1000	Manhole	Adoptable
4.002	S14	1000	Manhole	Adoptable	S15	1000	Manhole	Adoptable
4.003	S15	1000	Manhole	Adoptable	S16	1000	Manhole	Adoptable
5.000	S19	1000	Manhole	Adoptable	S20	1000	Manhole	Adoptable
5.001	S20	1000	Manhole	Adoptable	S21	1000	Manhole	Adoptable
1.008	S18	1000	Manhole	Adoptable	S23	1000	Manhole	Adoptable
1.009	S23	1000	Manhole	Adoptable	S49	1500	Manhole	Adoptable
5.002	S21	1000	Manhole	Adoptable	S22	1000	Manhole	Adoptable
5.003	S22	1000	Manhole	Adoptable	S23	1000	Manhole	Adoptable
6.000	S24	1000	Manhole	Adoptable	S26	1000	Manhole	Adoptable
6.001	S26	1000	Manhole	Adoptable	S29	1000	Manhole	Adoptable
6.002	S29	1000	Manhole	Adoptable	S30	1000	Manhole	Adoptable
6.003	S30	1000	Manhole	Adoptable	S31	1000	Manhole	Adoptable
6.004	S31	1000	Manhole	Adoptable	S32	1000	Manhole	Adoptable
6.005	S32	1000	Manhole	Adoptable	S33	1000	Manhole	Adoptable
6.006	S33	1000	Manhole	Adoptable	S34	1000	Manhole	Adoptable
6.007	S34	1000	Manhole	Adoptable	S35	1000	Manhole	Adoptable
6.008	S35	1000	Manhole	Adoptable	S44	1200	Manhole	Adoptable
6.009	S44	1200	Manhole	Adoptable	S45	1200	Manhole	Adoptable
6.010	S45	1200	Manhole	Adoptable	S49	1500	Manhole	Adoptable
7.000	S25	1000	Manhole	Adoptable	S26	1000	Manhole	Adoptable

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)
8.000	41.797	49.1	225	Circular	143.650	141.500	1.925	143.100	140.649	2.226
9.000	36.473	42.9	225	Circular	143.100	141.500	1.375	143.100	140.649	2.226
11.000	26.107	50.0	225	Circular	143.100	141.500	1.375	143.100	140.978	1.897
11.001	50.528	80.0	225	Circular	143.100	140.978	1.897	143.100	140.346	2.529
11.002	23.174	80.0	225	Circular	143.100	140.346	2.529	143.100	140.056	2.819
11.003	15.982	70.7	225	Circular	143.100	140.056	2.819	142.950	139.830	2.895
11.004	16.608	110.7	225	Circular	142.950	139.830	2.895	142.800	139.680	2.895
11.005	6.205	121.7	225	Circular	142.800	139.680	2.895	142.750	139.629	2.896
11.006	25.958	27.7	300	Circular	142.750	139.629	2.821	142.000	138.692	3.008
12.000	25.035	17.0	225	Circular	143.100	141.300	1.575	142.950	139.830	2.895
13.000	10.966	40.0	225	Circular	142.200	140.200	1.775	141.500	139.926	1.349
13.001	17.838	20.0	225	Circular	141.500	139.926	1.349	139.500	139.034	0.241
13.002	21.125	63.2	375	Circular	139.500	138.570	0.555	139.500	138.236	0.889
10.000	29.143	300.0	225	Circular	140.730	139.000	1.505	142.000	138.903	2.872
1.010	23.562	471.2	300	Circular	139.500	138.161	1.039	139.500	138.111	1.089

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.000	S27	1000	Manhole	Adoptable	S29	1000	Manhole	Adoptable
9.000	S28	1000	Manhole	Adoptable	S29	1000	Manhole	Adoptable
11.000	S36	1000	Manhole	Adoptable	S37	1000	Manhole	Adoptable
11.001	S37	1000	Manhole	Adoptable	S38	1000	Manhole	Adoptable
11.002	S38	1000	Manhole	Adoptable	S39	1000	Manhole	Adoptable
11.003	S39	1000	Manhole	Adoptable	S41	1000	Manhole	Adoptable
11.004	S41	1000	Manhole	Adoptable	S42	1000	Manhole	Adoptable
11.005	S42	1000	Manhole	Adoptable	S43	1000	Manhole	Adoptable
11.006	S43	1000	Manhole	Adoptable	S44	1200	Manhole	Adoptable
12.000	S40	1000	Manhole	Adoptable	S41	1000	Manhole	Adoptable
13.000	S46	1000	Manhole	Adoptable	S47	1000	Manhole	Adoptable
13.001	S47	1000	Manhole	Adoptable	S48	1000	Manhole	Adoptable
13.002	S48	1000	Manhole	Adoptable	S49	1500	Manhole	Adoptable
10.000	S35A	1000	Manhole	Adoptable	S35	1000	Manhole	Adoptable
1.010	S49	1500	Manhole	Adoptable	S50	1000	Manhole	Adoptable

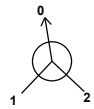
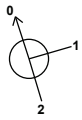
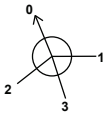
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
S1	1156.706	5200.254	143.400	1.700	600		0	1.000	141.700	225
S2	1162.340	5176.324	143.320	1.927	1000		1	1.000	141.393	225
							0	1.001	141.393	225
S3	1188.958	5154.563	142.975	2.012	1000		1	1.001	140.963	225
							0	1.002	140.963	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S4	1270.684	5142.076	142.500	3.265	1000	1	1.002	139.310	225
						0	1.003	139.235	300
S5	1270.952	5186.614	143.420	1.620	1000	0	2.000	141.800	225
S6	1299.512	5189.723	143.000	1.775	1000	1	2.000	141.225	225
						0	2.001	141.225	225
S7	1323.245	5162.479	141.500	2.745	1000	1	2.001	138.905	225
						2	1.003	138.830	300
						0	1.004	138.755	375
S8	1329.527	5206.645	142.000	1.200	1000	0	3.000	140.800	150
S9	1339.274	5194.968	142.000	1.529	1000	1	3.000	140.546	150
						0	3.001	140.471	225
S10	1334.257	5190.506	142.000	1.613	1000	1	3.001	140.387	225
						0	3.002	140.387	225
S11	1346.009	5177.291	141.010	2.378	1000	1	3.002	138.782	225
						2	1.004	138.632	375
						0	1.005	138.632	375
S12	1196.061	5127.797	142.600	1.200	1000	0	4.000	141.400	225
S13	1261.747	5104.107	141.500	1.497	1000	1	4.000	140.003	225
						0	4.001	140.003	225
S14	1336.170	5126.760	140.400	1.387	1000	1	4.001	139.088	225
						0	4.002	139.013	300
S15	1375.235	5179.908	140.300	1.467	1000	1	4.002	138.833	300
						0	4.003	138.833	300
S16	1371.068	5200.451	140.300	1.804	1000	1	4.003	138.571	300
						2	1.005	138.496	375
						0	1.006	138.496	375

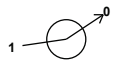
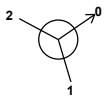
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S17	1391.332	5219.179	140.000	1.671	1000	 1	1.006	138.404	375
						0	1.007	138.329	450
S18	1379.295	5233.643	140.000	1.734	1000	 1	1.007	138.266	450
						0	1.008	138.266	450
S19	1343.735	5216.365	142.000	1.500	1000	 0	5.000	140.500	150
S20	1351.930	5207.752	142.000	1.694	1000	 1	5.000	140.381	150
						0	5.001	140.306	225
S21	1365.697	5222.179	142.000	1.893	1000	 1	5.001	140.107	225
						0	5.002	140.107	225
S22	1352.413	5235.882	142.000	2.132	1000	 1	5.002	139.868	225
						0	5.003	139.868	225
S23	1363.945	5248.029	141.000	2.794	1000	 1	5.003	138.504	225
						2	1.008	138.206	450
						0	1.009	138.206	450
S24	1211.825	5188.269	143.400	1.900	1000	 0	6.000	141.500	225
S25	1215.874	5229.075	143.160	2.010	1000	 0	7.000	141.150	300
S26	1200.898	5224.728	143.350	2.401	1000	 1	7.000	140.949	300
						2	6.000	141.024	225
						0	6.001	140.949	300
S27	1158.786	5227.504	143.650	2.150	1000	 0	8.000	141.500	225
S28	1228.136	5253.427	143.100	1.600	1000	 0	9.000	141.500	225
S29	1191.663	5253.312	143.100	2.526	1000	 1	9.000	140.649	225
						2	8.000	140.649	225
						3	6.001	140.574	300
						0	6.002	140.574	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S30	1182.325	5276.004	143.200	2.933	1000	1	6.002	140.267	300
						0	6.003	140.267	300
S31	1201.413	5286.834	142.500	2.672	1000	1	6.003	139.828	300
						0	6.004	139.828	300
S32	1190.118	5305.240	141.650	2.362	1000	1	6.004	139.288	300
						0	6.005	139.288	300
S33	1212.042	5318.557	141.000	1.969	1000	1	6.005	139.031	300
						0	6.006	139.031	300
S34	1224.627	5298.828	141.900	2.963	1000	1	6.006	138.937	300
						0	6.007	138.937	300
S35A	1257.414	5326.651	140.730	1.730	1000	0	10.000	139.000	225
S35	1259.593	5297.590	142.000	3.278	1000	1	10.000	138.903	225
						2	6.007	138.797	300
						0	6.008	138.722	375
S36	1244.916	5215.740	143.100	1.600	1000	0	11.000	141.500	225
S37	1252.384	5190.724	143.100	2.122	1000	1	11.000	140.978	225
						0	11.001	140.978	225
S38	1300.688	5205.550	143.100	2.754	1000	1	11.001	140.346	225
						0	11.002	140.346	225
S39	1294.321	5227.832	143.100	3.044	1000	1	11.002	140.056	225
						0	11.003	140.056	225
S40	1264.855	5240.185	143.100	1.800	1000	0	12.000	141.300	225
S41	1289.715	5243.136	142.950	3.120	1000	1	12.000	139.830	225
						2	11.003	139.830	225
						0	11.004	139.830	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S42	1306.150	5245.529	142.800	3.120	1000		1	11.004	139.680	225
							0	11.005	139.680	225
S43	1311.321	5248.959	142.750	3.121	1000		1	11.005	139.629	225
							0	11.006	139.629	300
S44	1303.890	5273.831	142.000	3.508	1200		1	11.006	138.692	300
							2	6.008	138.567	375
							0	6.009	138.492	450
S45	1339.627	5298.354	140.000	1.681	1200		1	6.009	138.319	450
							0	6.010	138.319	450
S46	1332.055	5243.999	142.200	2.000	1000		0	13.000	140.200	225
S47	1342.212	5248.132	141.500	1.574	1000		1	13.000	139.926	225
							0	13.001	139.926	225
S48	1355.264	5260.291	139.500	0.930	1000		1	13.001	139.034	225
							0	13.002	138.570	375
S49	1358.534	5281.161	139.500	1.339	1500		1	13.002	138.236	375
							2	6.010	138.161	450
							3	1.009	138.161	450
							0	1.010	138.161	300
S50	1370.498	5301.460	139.500	1.389	1000		1	1.010	138.111	300

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	20.0
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.300	1 year (l/s)	46.8
Summer CV	0.750	30 year (l/s)	91.4
Winter CV	0.840	100 year (l/s)	111.9
Analysis Speed	Normal	Check Discharge Volume	x
Skip Steady State	x		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.70
Greenfield Method	IH124	Growth Factor 100 year	2.08
Positively Drained Area (ha)	6.500	Betterment (%)	0
SAAR (mm)	1109	QBar	53.8
Soil Index	4	Q 1 year (l/s)	46.8
SPR	0.47	Q 30 year (l/s)	91.4
Region	10	Q 100 year (l/s)	111.9
Growth Factor 1 year	0.87		

Node S49 Online Weir Control

Flap Valve	✓	Invert Level (m)	138.700	Width (m)	0.075
Downstream Link	1.010	Design Depth (m)	1.500	Discharge Coefficient	0.590
Replaces Downstream Link	x	Design Flow (l/s)	255.0		

Node S49 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	137.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1500.0	0.0	0.800	3000.0	0.0

Node S33 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	139.031
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	20

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	0.800	150.0	0.0	0.801	0.0	0.0

Node S15 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	138.833
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	15

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	150.0	0.0	0.800	150.0	0.0	0.801	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	141.741	0.041	4.1	0.0270	0.0000	OK
15 minute winter	S2	11	141.433	0.040	4.1	0.0313	0.0000	OK
15 minute winter	S3	11	141.028	0.065	14.0	0.1024	0.0000	OK
15 minute winter	S4	11	139.372	0.137	39.1	0.2818	0.0000	OK
15 minute summer	S5	1	141.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S6	10	141.270	0.045	11.9	0.0830	0.0000	OK
15 minute winter	S7	11	138.962	0.207	68.0	0.3878	0.0000	OK
15 minute summer	S8	1	140.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S9	10	140.510	0.039	3.5	0.0441	0.0000	OK
15 minute winter	S10	10	140.430	0.043	12.6	0.0712	0.0000	OK
15 minute winter	S11	11	138.884	0.252	89.6	0.3632	0.0000	OK
15 minute summer	S12	1	141.400	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S13	11	140.078	0.075	14.5	0.1727	0.0000	OK
15 minute winter	S14	11	139.184	0.171	33.6	0.5246	0.0000	OK
30 minute winter	S15	22	138.924	0.091	38.8	13.8628	0.0000	OK
15 minute winter	S16	12	138.779	0.283	102.3	0.2222	0.0000	OK
15 minute winter	S17	13	138.615	0.286	104.9	0.3506	0.0000	OK
15 minute winter	S18	13	138.565	0.299	104.1	0.2343	0.0000	OK
15 minute summer	S19	1	140.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S20	10	140.331	0.025	1.4	0.0230	0.0000	OK
15 minute winter	S21	10	140.151	0.044	4.5	0.0460	0.0000	OK
15 minute winter	S22	11	139.899	0.031	6.0	0.0284	0.0000	OK
15 minute winter	S23	13	138.514	0.308	109.6	0.2840	0.0000	OK
15 minute summer	S24	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S25	1	141.150	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	4.1	0.850	0.070	0.1175	
15 minute winter	S2	1.001	S3	4.0	0.574	0.069	0.2449	
15 minute winter	S3	1.002	S4	13.3	1.412	0.181	0.7814	
15 minute winter	S4	1.003	S7	38.7	1.263	0.411	1.7264	
15 minute summer	S5	2.000	S6	0.0	0.000	0.000	0.0799	
15 minute winter	S6	2.001	S7	11.8	1.984	0.089	0.2431	
15 minute winter	S7	1.004	S11	68.2	0.964	0.507	1.9175	
15 minute summer	S8	3.000	S9	0.0	0.000	0.000	0.0000	
15 minute winter	S9	3.001	S10	3.5	0.710	0.060	0.0328	
15 minute winter	S10	3.002	S11	12.5	2.140	0.079	0.1996	
15 minute winter	S11	1.005	S16	88.6	1.107	0.704	2.8282	
15 minute summer	S12	4.000	S13	0.0	0.000	0.000	0.3922	
15 minute winter	S13	4.001	S14	13.8	1.038	0.244	1.0816	
15 minute winter	S14	4.002	S15	33.6	1.351	0.583	1.7155	
30 minute winter	S15	4.003	S16	25.3	1.205	0.203	0.6662	
15 minute winter	S16	1.006	S17	101.2	1.251	0.881	2.2289	
15 minute winter	S17	1.007	S18	104.1	0.971	0.560	2.0480	
15 minute winter	S18	1.008	S23	103.9	0.916	0.604	2.3919	
15 minute summer	S19	5.000	S20	0.0	0.000	0.000	0.0000	
15 minute winter	S20	5.001	S21	1.4	0.353	0.026	0.0788	
15 minute winter	S21	5.002	S22	4.3	0.994	0.075	0.0841	
15 minute winter	S22	5.003	S23	6.0	1.822	0.040	0.0550	
15 minute winter	S23	1.009	S49	109.9	1.109	0.938	3.3188	
15 minute summer	S24	6.000	S26	0.0	0.000	0.000	0.0476	
15 minute summer	S25	7.000	S26	0.0	0.000	0.000	0.1618	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S26	10	141.053	0.103	32.7	0.3012	0.0000	OK
15 minute winter	S27	10	141.533	0.033	3.5	0.0340	0.0000	OK
15 minute summer	S28	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S29	11	140.728	0.154	59.1	0.3450	0.0000	OK
15 minute winter	S30	11	140.402	0.135	58.2	0.1061	0.0000	OK
15 minute winter	S31	11	139.952	0.124	61.8	0.1227	0.0000	OK
15 minute winter	S32	11	139.473	0.185	66.5	0.2052	0.0000	OK
30 minute winter	S33	23	139.192	0.161	61.4	24.3795	0.0000	OK
30 minute winter	S34	24	139.098	0.161	37.2	0.1652	0.0000	OK
15 minute winter	S35A	11	139.099	0.099	11.8	0.1835	0.0000	OK
30 minute winter	S35	21	138.909	0.187	53.0	0.3378	0.0000	OK
15 minute summer	S36	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S37	1	140.978	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S38	10	140.432	0.086	17.4	0.1523	0.0000	OK
15 minute winter	S39	11	140.143	0.087	20.0	0.0821	0.0000	OK
15 minute summer	S40	1	141.300	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S41	11	139.997	0.167	38.9	0.2913	0.0000	OK
15 minute winter	S42	11	139.857	0.177	44.2	0.1926	0.0000	OK
15 minute winter	S43	11	139.731	0.102	48.9	0.1047	0.0000	OK
15 minute winter	S44	12	138.714	0.222	93.8	0.2705	0.0000	OK
15 minute winter	S45	12	138.524	0.205	96.5	0.2711	0.0000	OK
15 minute summer	S46	1	140.200	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S47	10	139.956	0.030	4.5	0.0374	0.0000	OK
15 minute winter	S48	10	138.612	0.042	6.5	0.0471	0.0000	OK
1440 minute winter	S49	1680	138.465	0.304	26.6	893.5259	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S26	6.001	S29	32.1	1.116	0.258	0.8661	
15 minute winter	S27	8.000	S29	3.4	0.705	0.046	0.3326	
15 minute summer	S28	9.000	S29	0.0	0.000	0.000	0.2098	
15 minute winter	S29	6.002	S30	58.2	1.733	0.468	0.8242	
15 minute winter	S30	6.003	S31	58.5	2.006	0.371	0.6403	
15 minute winter	S31	6.004	S32	61.9	1.694	0.352	0.7911	
15 minute winter	S32	6.005	S33	67.0	2.157	0.603	0.8847	
30 minute winter	S33	6.006	S34	35.4	0.921	0.506	0.8993	
30 minute winter	S34	6.007	S35	37.0	1.013	0.529	1.2786	
15 minute winter	S35A	10.000	S35	11.4	0.734	0.383	0.4538	
30 minute winter	S35	6.008	S44	52.8	1.033	0.478	2.5679	
15 minute summer	S36	11.000	S37	0.0	0.000	0.000	0.0000	
15 minute summer	S37	11.001	S38	0.0	0.000	0.000	0.3401	
15 minute winter	S38	11.002	S39	16.9	1.209	0.291	0.3247	
15 minute winter	S39	11.003	S41	19.9	0.866	0.321	0.3655	
15 minute summer	S40	12.000	S41	0.0	0.000	0.000	0.3805	
15 minute winter	S41	11.004	S42	38.5	1.183	0.780	0.5407	
15 minute winter	S42	11.005	S43	44.4	1.713	0.943	0.1585	
15 minute winter	S43	11.006	S44	49.0	2.391	0.231	0.5319	
15 minute winter	S44	6.009	S45	94.9	1.279	0.466	3.2170	
15 minute winter	S45	6.010	S49	96.2	1.444	0.379	1.7027	
15 minute summer	S46	13.000	S47	0.0	0.000	0.000	0.0170	
15 minute winter	S47	13.001	S48	4.4	1.403	0.038	0.0562	
15 minute winter	S48	13.002	S49	6.3	0.973	0.025	0.1381	
1440 minute winter	S49	1.010	S50	0.0	0.000	0.000	0.0000	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S50	1	138.111	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	141.765	0.065	10.0	0.0426	0.0000	OK
15 minute winter	S2	11	141.455	0.062	9.9	0.0486	0.0000	OK
15 minute winter	S3	11	141.069	0.106	34.5	0.1662	0.0000	OK
15 minute winter	S4	12	140.047	0.812	98.5	1.6727	0.0000	SURCHARGED
15 minute summer	S5	1	141.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S6	10	141.296	0.071	29.2	0.1304	0.0000	OK
15 minute winter	S7	12	139.664	0.909	150.3	1.7003	0.0000	SURCHARGED
15 minute summer	S8	1	140.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S9	10	140.534	0.063	8.5	0.0713	0.0000	OK
15 minute winter	S10	10	140.454	0.067	30.7	0.1115	0.0000	OK
15 minute winter	S11	12	139.468	0.836	196.1	1.2041	0.0000	SURCHARGED
15 minute summer	S12	1	141.400	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S13	11	140.128	0.125	35.5	0.2867	0.0000	OK
15 minute winter	S14	11	139.391	0.378	83.0	1.1567	0.0000	SURCHARGED
30 minute winter	S15	23	139.135	0.302	99.6	46.0304	0.0000	SURCHARGED
30 minute winter	S16	22	139.095	0.598	169.6	0.4698	0.0000	SURCHARGED
30 minute winter	S17	21	138.833	0.504	175.4	0.6191	0.0000	SURCHARGED
30 minute winter	S18	21	138.746	0.480	175.6	0.3770	0.0000	SURCHARGED
15 minute summer	S19	1	140.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S20	10	140.345	0.039	3.5	0.0358	0.0000	OK
15 minute winter	S21	10	140.178	0.071	10.9	0.0734	0.0000	OK
15 minute winter	S22	10	139.916	0.048	14.9	0.0432	0.0000	OK
1440 minute winter	S23	1470	138.741	0.535	23.8	0.4926	0.0000	SURCHARGED
15 minute summer	S24	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S25	1	141.150	0.000	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	9.9	1.088	0.170	0.2239	
15 minute winter	S2	1.001	S3	9.8	0.724	0.168	0.4677	
15 minute winter	S3	1.002	S4	33.6	1.369	0.455	2.4019	
15 minute winter	S4	1.003	S7	84.8	1.255	0.901	3.9704	
15 minute summer	S5	2.000	S6	0.0	0.000	0.000	0.1492	
15 minute winter	S6	2.001	S7	28.9	1.965	0.218	0.9127	
15 minute winter	S7	1.004	S11	147.9	1.341	1.100	2.9956	
15 minute summer	S8	3.000	S9	0.0	0.000	0.000	0.0000	
15 minute winter	S9	3.001	S10	8.4	0.894	0.145	0.0634	
15 minute winter	S10	3.002	S11	30.6	2.155	0.194	0.4391	
15 minute winter	S11	1.005	S16	192.9	1.749	1.533	3.7636	
15 minute summer	S12	4.000	S13	0.0	0.000	0.000	0.7638	
15 minute winter	S13	4.001	S14	34.0	1.032	0.603	2.4272	
15 minute winter	S14	4.002	S15	77.5	1.469	1.345	4.4903	
30 minute winter	S15	4.003	S16	91.9	1.466	0.739	1.4758	
30 minute winter	S16	1.006	S17	169.8	1.539	1.477	3.0434	
30 minute winter	S17	1.007	S18	175.6	1.108	0.945	2.9814	
30 minute winter	S18	1.008	S23	175.7	1.109	1.022	3.3319	
15 minute summer	S19	5.000	S20	0.0	0.000	0.000	0.0000	
15 minute winter	S20	5.001	S21	3.4	0.461	0.066	0.1520	
15 minute winter	S21	5.002	S22	10.8	1.297	0.185	0.1599	
15 minute winter	S22	5.003	S23	14.7	2.119	0.099	0.2877	
1440 minute winter	S23	1.009	S49	23.6	0.435	0.201	5.3191	
15 minute summer	S24	6.000	S26	0.0	0.000	0.000	0.2956	
15 minute summer	S25	7.000	S26	0.0	0.000	0.000	0.3170	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S26	11	141.133	0.183	80.0	0.5339	0.0000	OK
15 minute winter	S27	10	141.551	0.051	8.5	0.0526	0.0000	OK
15 minute summer	S28	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S29	12	141.017	0.443	144.0	0.9936	0.0000	SURCHARGED
15 minute winter	S30	12	140.610	0.343	128.4	0.2695	0.0000	SURCHARGED
15 minute winter	S31	11	140.242	0.414	133.3	0.4090	0.0000	SURCHARGED
15 minute winter	S32	11	139.828	0.540	143.3	0.5975	0.0000	SURCHARGED
30 minute winter	S33	24	139.418	0.387	147.9	58.6158	0.0000	SURCHARGED
30 minute winter	S34	22	139.276	0.339	82.3	0.3489	0.0000	SURCHARGED
15 minute winter	S35A	12	139.196	0.196	28.9	0.3629	0.0000	OK
30 minute summer	S35	19	139.145	0.423	130.6	0.7632	0.0000	SURCHARGED
15 minute summer	S36	1	141.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S37	1	140.978	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S38	12	140.883	0.537	42.7	0.9518	0.0000	SURCHARGED
15 minute winter	S39	12	140.761	0.705	39.5	0.6650	0.0000	SURCHARGED
15 minute summer	S40	1	141.300	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S41	12	140.636	0.806	80.6	1.4081	0.0000	SURCHARGED
15 minute winter	S42	12	140.146	0.466	90.2	0.5060	0.0000	SURCHARGED
15 minute summer	S43	10	139.775	0.146	96.4	0.1496	0.0000	OK
15 minute winter	S44	12	138.938	0.446	223.7	0.5429	0.0000	OK
1440 minute winter	S45	1470	138.741	0.422	25.8	0.5573	0.0000	OK
15 minute summer	S46	1	140.200	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S47	10	139.974	0.048	11.0	0.0586	0.0000	OK
1440 minute winter	S48	1470	138.741	0.171	1.0	0.1930	0.0000	OK
1440 minute winter	S49	1470	138.741	0.580	50.5	1721.4140	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S26	6.001	S29	77.8	1.306	0.626	1.7357	
15 minute winter	S27	8.000	S29	8.4	0.718	0.112	0.9709	
15 minute summer	S28	9.000	S29	0.0	0.000	0.000	0.7253	
15 minute winter	S29	6.002	S30	128.4	1.947	1.033	1.7279	
15 minute winter	S30	6.003	S31	126.1	2.195	0.800	1.5454	
15 minute winter	S31	6.004	S32	133.3	1.893	0.757	1.5207	
15 minute winter	S32	6.005	S33	143.6	2.299	1.293	1.8064	
30 minute winter	S33	6.006	S34	79.5	1.129	1.136	1.6479	
30 minute winter	S34	6.007	S35	82.4	1.225	1.178	2.4638	
15 minute winter	S35A	10.000	S35	27.6	0.921	0.927	1.1153	
30 minute summer	S35	6.008	S44	123.2	1.226	1.116	5.4931	
15 minute summer	S36	11.000	S37	0.0	0.000	0.000	0.0000	
15 minute summer	S37	11.001	S38	0.0	0.000	0.000	1.0048	
15 minute winter	S38	11.002	S39	34.7	1.290	0.596	0.9217	
15 minute winter	S39	11.003	S41	41.2	1.036	0.665	0.6356	
15 minute summer	S40	12.000	S41	0.0	0.000	0.000	0.4978	
15 minute winter	S41	11.004	S42	78.1	1.963	1.582	0.6605	
15 minute winter	S42	11.005	S43	90.0	2.455	1.912	0.2080	
15 minute summer	S43	11.006	S44	96.5	2.677	0.455	1.1501	
15 minute winter	S44	6.009	S45	223.4	1.494	1.098	6.4396	
1440 minute winter	S45	6.010	S49	25.5	0.632	0.101	3.9971	
15 minute summer	S46	13.000	S47	0.0	0.000	0.000	0.0324	
15 minute winter	S47	13.001	S48	10.9	1.816	0.093	0.1067	
1440 minute winter	S48	13.002	S49	1.0	0.429	0.004	1.6813	
1440 minute winter	S49	1.010	S50	1.1	0.326	0.022	0.0796	23.2

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	S50	1470	138.135	0.024	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	13	142.540	0.840	28.8	0.5533	0.0000	SURCHARGED
15 minute winter	S2	13	142.533	1.140	18.1	0.8949	0.0000	SURCHARGED
15 minute winter	S3	13	142.494	1.531	57.9	2.4049	0.0000	SURCHARGED
15 minute winter	S4	12	141.999	2.764	153.2	5.6947	0.0000	SURCHARGED
15 minute summer	S5	1	141.800	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S6	12	141.387	0.162	52.8	0.2976	0.0000	OK
15 minute winter	S7	12	141.145	2.390	247.5	4.4720	0.0000	SURCHARGED
15 minute winter	S8	13	140.807	0.007	0.6	0.0051	0.0000	OK
15 minute winter	S9	12	140.810	0.339	15.3	0.3866	0.0000	SURCHARGED
15 minute winter	S10	12	140.803	0.416	55.8	0.6934	0.0000	SURCHARGED
15 minute winter	S11	12	140.638	2.006	319.0	2.8908	0.0000	SURCHARGED
15 minute summer	S12	1	141.400	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S13	12	140.710	0.706	64.1	1.6214	0.0000	SURCHARGED
30 minute winter	S14	24	140.188	1.175	114.0	3.5987	0.0000	FLOOD RISK
30 minute winter	S15	23	140.022	1.189	237.5	122.8733	0.0000	FLOOD RISK
30 minute winter	S16	23	139.875	1.379	289.8	1.0822	0.0000	SURCHARGED
30 minute winter	S17	23	139.267	0.938	267.8	1.1521	0.0000	SURCHARGED
30 minute winter	S18	24	139.068	0.801	263.9	0.6292	0.0000	SURCHARGED
15 minute summer	S19	1	140.500	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S20	10	140.358	0.052	6.3	0.0478	0.0000	OK
15 minute winter	S21	10	140.205	0.098	19.8	0.1014	0.0000	OK
15 minute winter	S22	10	139.932	0.064	26.9	0.0583	0.0000	OK
1440 minute winter	S23	1140	138.980	0.774	41.1	0.7132	0.0000	SURCHARGED
15 minute winter	S24	13	143.057	1.557	21.1	1.2225	0.0000	SURCHARGED
15 minute winter	S25	13	143.030	1.880	15.8	1.4756	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	18.1	1.257	0.311	0.9777	
15 minute winter	S2	1.001	S3	25.9	0.760	0.446	1.3674	
15 minute winter	S3	1.002	S4	55.5	1.395	0.752	3.2880	
15 minute winter	S4	1.003	S7	126.4	1.795	1.344	3.9704	
15 minute summer	S5	2.000	S6	0.0	0.000	0.000	0.3474	
15 minute winter	S6	2.001	S7	47.9	2.079	0.361	1.2727	
15 minute winter	S7	1.004	S11	239.0	2.167	1.778	2.9956	
15 minute winter	S8	3.000	S9	-0.6	0.246	-0.026	0.1357	
15 minute winter	S9	3.001	S10	15.4	0.960	0.265	0.2670	
15 minute winter	S10	3.002	S11	50.1	2.122	0.318	0.7034	
15 minute winter	S11	1.005	S16	316.2	2.867	2.514	3.7636	
15 minute summer	S12	4.000	S13	0.0	0.000	0.000	1.3886	
15 minute winter	S13	4.001	S14	46.3	1.188	0.821	3.0940	
30 minute winter	S14	4.002	S15	102.8	1.460	1.784	4.6449	
30 minute winter	S15	4.003	S16	131.7	1.871	1.060	1.4761	
30 minute winter	S16	1.006	S17	259.6	2.354	2.258	3.0434	
30 minute winter	S17	1.007	S18	263.9	1.666	1.420	2.9814	
30 minute winter	S18	1.008	S23	263.9	1.666	1.536	3.3333	
15 minute summer	S19	5.000	S20	0.0	0.000	0.000	0.0000	
15 minute winter	S20	5.001	S21	6.2	0.538	0.120	0.2342	
15 minute winter	S21	5.002	S22	19.5	1.519	0.335	0.2466	
15 minute winter	S22	5.003	S23	26.8	2.287	0.179	0.4112	
1440 minute winter	S23	1.009	S49	41.0	0.491	0.350	5.3191	
15 minute winter	S24	6.000	S26	-21.1	-0.531	-0.363	1.5137	
15 minute winter	S25	7.000	S26	-15.8	-0.225	-0.125	1.0981	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S26	13	143.031	2.082	144.7	6.0581	0.0000	SURCHARGED
15 minute winter	S27	13	142.781	1.281	28.1	1.3283	0.0000	SURCHARGED
15 minute winter	S28	13	142.797	1.297	22.8	1.0182	0.0000	SURCHARGED
15 minute winter	S29	13	142.773	2.199	193.9	4.9291	0.0000	SURCHARGED
15 minute winter	S30	13	142.032	1.765	172.1	1.3852	0.0000	SURCHARGED
30 minute winter	S31	24	141.447	1.619	167.4	1.5983	0.0000	SURCHARGED
30 minute winter	S32	24	141.151	1.863	180.3	2.0621	0.0000	SURCHARGED
30 minute winter	S33	24	140.773	1.742	206.6	122.7180	0.0000	FLOOD RISK
30 minute winter	S34	24	140.360	1.423	135.7	1.4631	0.0000	SURCHARGED
30 minute winter	S35A	24	139.772	0.772	42.6	1.4269	0.0000	SURCHARGED
30 minute winter	S35	24	139.741	1.019	177.3	1.8385	0.0000	SURCHARGED
15 minute winter	S36	13	142.312	0.812	20.3	0.6375	0.0000	SURCHARGED
15 minute winter	S37	13	142.322	1.344	36.4	1.0554	0.0000	SURCHARGED
15 minute winter	S38	13	142.289	1.943	77.2	3.4450	0.0000	SURCHARGED
15 minute winter	S39	12	142.013	1.957	59.2	1.8451	0.0000	SURCHARGED
15 minute winter	S40	12	141.756	0.456	5.7	0.3582	0.0000	SURCHARGED
15 minute winter	S41	12	141.768	1.938	129.3	3.3862	0.0000	SURCHARGED
15 minute winter	S42	12	140.637	0.957	139.3	1.0398	0.0000	SURCHARGED
15 minute winter	S43	12	139.867	0.238	155.5	0.2435	0.0000	OK
30 minute winter	S44	20	139.283	0.791	289.1	0.9613	0.0000	SURCHARGED
1440 minute winter	S45	1140	138.980	0.661	44.5	0.8736	0.0000	SURCHARGED
15 minute summer	S46	1	140.200	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S47	10	139.991	0.065	19.9	0.0800	0.0000	OK
1440 minute winter	S48	1140	138.980	0.410	1.7	0.4629	0.0000	SURCHARGED
1440 minute winter	S49	1140	138.980	0.819	87.3	2439.2360	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S26	6.001	S29	94.1	1.337	0.758	2.1153	
15 minute winter	S27	8.000	S29	13.9	0.670	0.187	1.6623	
15 minute winter	S28	9.000	S29	-22.8	-0.691	-0.286	1.4506	
15 minute winter	S29	6.002	S30	172.1	2.445	1.384	1.7279	
15 minute winter	S30	6.003	S31	170.2	2.418	1.081	1.5454	
30 minute winter	S31	6.004	S32	166.5	2.365	0.945	1.5207	
30 minute winter	S32	6.005	S33	178.5	2.535	1.606	1.8064	
30 minute winter	S33	6.006	S34	129.4	1.837	1.850	1.6479	
30 minute winter	S34	6.007	S35	134.9	1.916	1.928	2.4638	
30 minute winter	S35A	10.000	S35	40.7	1.025	1.367	1.1590	
30 minute winter	S35	6.008	S44	177.2	1.606	1.605	5.5442	
15 minute winter	S36	11.000	S37	-20.3	-0.511	-0.276	1.0383	
15 minute winter	S37	11.001	S38	-36.4	-0.914	-0.625	2.0096	
15 minute winter	S38	11.002	S39	51.9	1.349	0.893	0.9217	
15 minute winter	S39	11.003	S41	62.5	1.573	1.010	0.6356	
15 minute winter	S40	12.000	S41	7.1	-0.234	0.056	0.9957	
15 minute winter	S41	11.004	S42	118.5	2.979	2.400	0.6605	
15 minute winter	S42	11.005	S43	139.1	3.498	2.955	0.2468	
15 minute winter	S43	11.006	S44	155.5	2.695	0.734	1.6919	
30 minute winter	S44	6.009	S45	288.6	1.821	1.418	6.8673	
1440 minute winter	S45	6.010	S49	44.1	0.729	0.174	4.0490	
15 minute summer	S46	13.000	S47	0.0	0.000	0.000	0.0501	
15 minute winter	S47	13.001	S48	19.7	2.140	0.169	0.1642	
1440 minute winter	S48	13.002	S49	1.6	0.412	0.006	2.3300	
1440 minute winter	S49	1.010	S50	19.6	0.755	0.387	0.6136	834.1

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.26%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	S50	1140	138.218	0.107	19.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)

Surface Water Flow Assessment

Site	Stanley House, Mellor	Date	31-Jul-23

Total area =		65000	m2
Impermeable area flowing to Surface Water, Ap =		26212	m2
Rainfall intensity, R=		50	mm/hr
where R			
Runoff, Q =	2.78*Ap*R	364.3	l/s
Required runoff reduction=		30	%
Allowable discharge =		255.0	l/s

Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:	Kwaku Tano-Yeboah
Site name:	Stanley House
Site location:	Preston New Road, Blackburn

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	53.76424° N
Longitude:	2.53776° W
Reference:	3086078207
Date:	Jul 26 2023 17:19

Site characteristics

Total site area (ha):	6.5
Significant public open space (ha):	0
Area positively drained (ha):	6.5
Impermeable area (ha):	3.5
Percentage of drained area that is impermeable (%):	54
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	6.5
Net impermable area for storage volume design (ha):	3.92
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Methodology

esti	IH124
Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
SPR:	0.47	0.47

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	70
Rainfall 100 yrs 12 hrs:	--	99.12
FEH / FSR conversion factor:	1.18	1.18
SAAR (mm):	1109	1109
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.3	0.3
Hydological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 10 year:	1.38	1.38
Growth curve factor 30 year:	1.7	1.7

Design criteria

Climate change allowance factor:	1.4		Growth curve factor 100 years:	2.08	2.08
Urban creep allowance factor:	1.1		Q_{BAR} for total site area (l/s):	53.76	53.76
Volume control approach	Use long term storage		Q_{BAR} for net site area (l/s):	53.76	53.76
Interception rainfall depth (mm):	5				
Minimum flow rate (l/s):	2				

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	46.8	46.8
1 in 30 years (l/s):	91.4	91.4
1 in 100 year (l/s):	111.8	111.8

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m^3):	3181	3181
Long term storage 1/100 years (m^3):	0	0
Total storage 1/100 years (m^3):	3181	3181