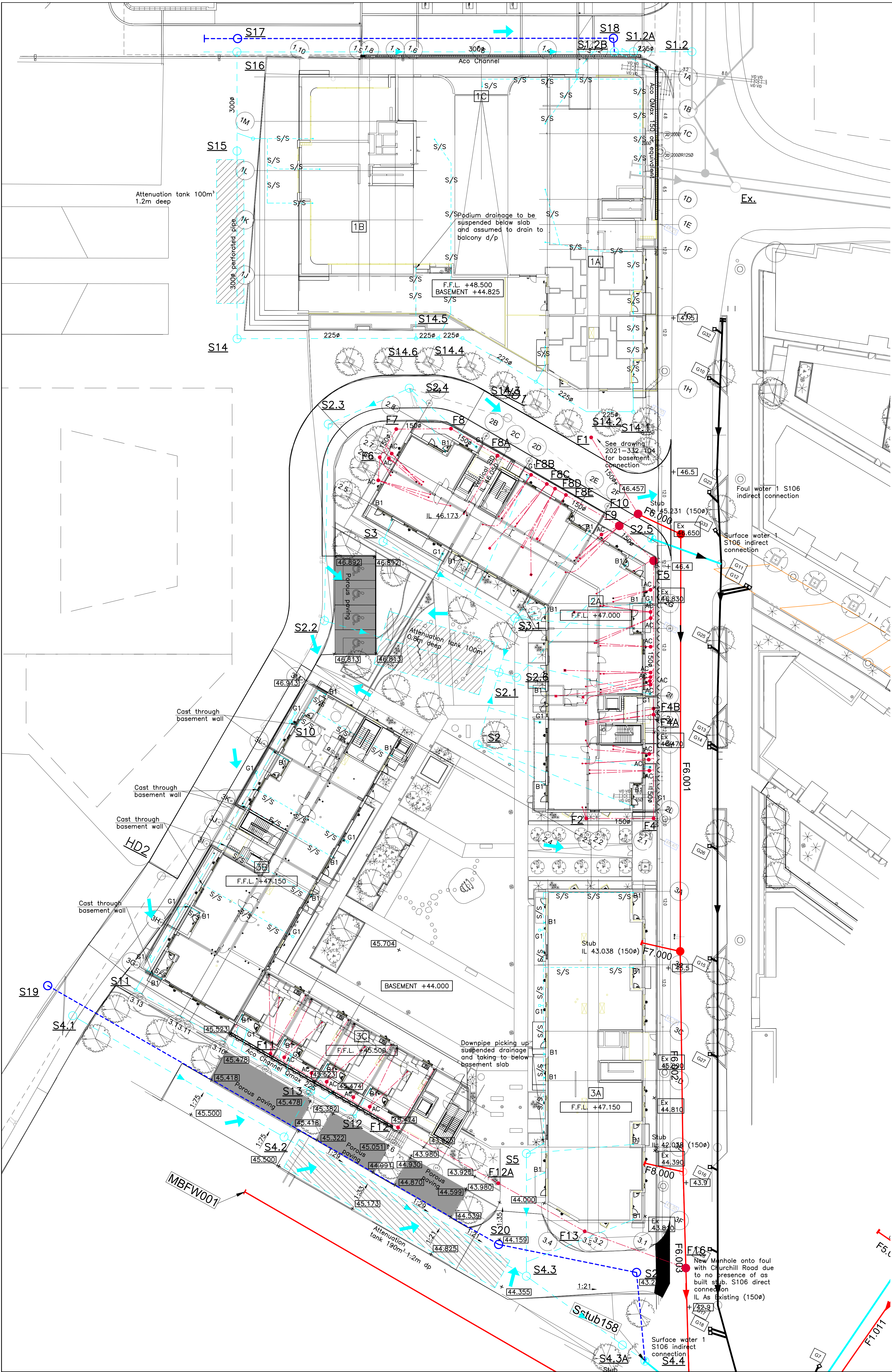
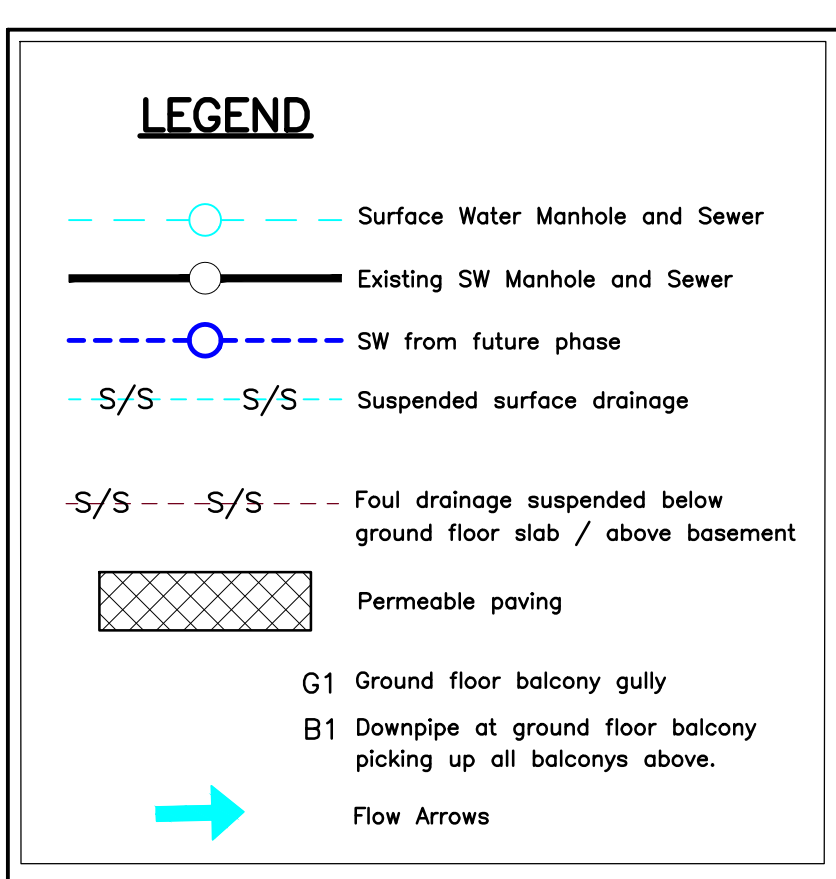




Project Title:		Town Centre West, Uxbridge					
Project No.:		2016-201					
Surface Water							
M.H.	Cover level	Invert level	Size	Type	Largest pipe	Cover type	Notes
S1	48.500	46.000	1200	CR	150	D400	
S1.1	48.500	45.900	1200	CR	225	D400	
S1.2	48.400	46.518	1200	CR	225	D400	
S1.2A	48.400	46.547	1200	CR	150	D400	Receiving chamber
S1.2B	48.400	45.187				D400	Pumping station 13.4/s
S1.3	48.600	T.B.C.	1200	CR	225	D400	Stub (I.L. To Be Confirmed)
S2	47.000	45.131	600	Tegra	225	B125	
S2.1	47.000	45.376	1200	CRCP	300	B125	Hydrobrake 5Lts/sec
S2.2	46.810	45.429	1200	CR	300	D400	
S2.3	46.970	45.567	1200	CR	225	D400	
S2.4	46.900	45.705	1200	CR	225	D400	
S2.5	46.670	44.910	1200	CR	225	D400	As confirmed by OC
S2.6	47.000	45.353	600	Tegra	225	B125	
S3	47.000	46.000	600	Tegra	225	B125	
S3.1	46.900	45.850	600	Tegra	225	B125	
S4	46.900	45.500	1200	CR	225	D400	
S4.1	46.700	44.094	1200	CR	300	D400	
S4.2	45.445	41.780	1200	CR	450	D400	
S4.3	44.300	41.700	1200	CRCP	450	D400	
S4.3A	43.800	41.500	1200	CRCP	450	C250	Hydrobrake 15Lts/sec
S4.4	43.800	40.494	1500	CR	375	B125	Atkins Stub158
S5	43.850	42.036	1200	CR	225	D400	
S6	45.000	43.500	1200	CR	150	D400	
S6.1	44.100	42.600	1200	CR	150	D400	
S7	45.100	43.900	1200	CR	150	B125	
S7.1	44.200	42.200	1200	CR	150	B125	
S7.2	42.600	40.500	1200	CR	225	B125	
S7.3	41.800	40.200	1200	CR	225	B125	Stub (I.L. To Be Confirmed)
S8	45.100	44.000	600	PPIC	150	B125	
S8.1	42.700	41.700	600	PPIC	150	B125	
S8.2	42.600	41.500	600	PPIC	150	B125	
S9	45.100	44.000	600	PPIC	150	B125	
S10	47.130	45.700	600	Tegra	225	B125	
S11	46.713	45.355	600	Tegra	300	C250	
S12	45.430	44.500	475	PPIC	100	C250	
S13	45.500	41.982	600	Tegra	300	C250	
S14	47.550	45.600	1200	CRCP	300	C250	
S14.1	47.000	46.350	600	Tegra	225	C250	
S14.2	47.000	46.273	600	Tegra	225	C250	
S14.3	47.000	46.178	600	Tegra	225	C250	
S14.4	47.000	46.039	600	Tegra	225	C250	
S14.5	47.000	46.000	600	Tegra	225	C250	
S14.6	47.000	45.965	600	Tegra	225	C250	
S15	48.100	45.506	1200	CRCP	300	C250	
S16	48.500	45.445	1200	CR	300	D400	
S17	48.300	46.389	1200	CR	150	D400	
S18	48.400	45.913	1200	CR	150	D400	
S19	46.950	41.456	1200	CR	150	D400	
S20	44.160	40.929	1200	CR	150	D400	
S21	43.390	40.758	1200	CR	150	D400	
NOTES							
C.R.	Concrete ring manhole see std. detail D1 or D15.						
P.P.I.C.	Polypropylene Inspection Chamber see std. detail D13						
Tegra	Tegra Inspection Chamber see std. detail D49						
X	600 sq. Medium duty recessed, air-tight, screw-down cover and frame eg Broadstel						
D400	600sq. Heavy duty, ductile iron, cover and frame to BS EN 124-D400						
C250	600sq. Medium duty, ductile iron, cover and frame to BS EN 124-C250						
B125	600sq. Light duty, ductile iron, cover and frame to BS EN 124-B125						
C	proprietary light duty cover and frame						
ALL COVER LEVELS ARE APPROXIMATE.							

Project Title:			Town Centre West				
Project No.:			2021-189				
Foul Water							
M.H. No.	Cover level	Invert level	Size	Type	Largest pipe	Cover type	Notes
F1	46.900	45.550	1200	CR	150	C250	
F2	46.800	46.466	475	PPIC	150	C250	
F3	46.800	46.100	475	PPIC	150	C250	
F4	46.800	46.400	475	PPIC	150	C250	
F4A	46.900	46.299	475	PPIC	150	C250	
F4B	46.900	46.293	475	PPIC	150	C250	
F5	46.800	46.150	475	PPIC	150	C250	
F6	46.800	46.100	475	PPIC	150	C250	
F7	46.900	45.495	600	Tegra	150	C250	
F8	46.900	45.442	600	Tegra	150	C250	
F8A	46.950	45.390	600	Tegra	150	C250	
F8B	46.950	45.352	600	Tegra	150	C250	
F8C	46.950	45.334	600	Tegra	150	C250	
F8D	46.950	45.325	600	Tegra	150	C250	
F8E	46.950	45.313	600	Tegra	150	C250	
F9	46.700	45.253	600	Tegra	150	C250	
F10	46.500	45.231	1200	CR	150	D400	Ex stub IL to be confirmed
F11	45.550	44.800	475	PPIC	150	C250	
F12	45.480	41.840	1200	CR	150	C250	
F12A	43.900	41.700	1200	CR	150	C250	
F13	44.200	41.980	1200	CR	150	C250	
F14	44.200	42.104	1200	CR	150	C250	
F15	44.675	43.826	475	PPIC	150	C250	
F16	44.100	41.247	1200	CR	150	D400	IL to be confirmed
NOTES							
C.R.	- Concrete ring manhole see std. detail D1 or D15.						
P.P.I.C.	- Polypropylene Inspection Chamber see std. detail D13						
A.C.	- Plastic Access Chamber						
Tegra	- Tegra Inspection Chamber see std. detail D49						
X	- 600 sq. Medium duty recessed air-tight, screw-down cover and frame eg Broadstel						
D400	- 600sq. Heavy duty, ductile iron, cover and frame to BS EN 124-D400						
C250	- 600sq. Medium duty, ductile iron, cover and frame to BS EN 124-C250						
B125	- 600sq. Light duty, ductile iron, cover and frame to BS EN 124-B125						
C	- proprietary light duty cover and frame						



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- NOTES.**
- This drawing is to be read in conjunction with all relevant Architect's, Engineer's, Specialists details and the Specification.
 - All surface water pipes sizes as stated.
 - All foul water pipe sizes as stated.
 - All drainage pipes to BS EN 295 (clayware) or BS EN 1401 (plastic) U.N.O. Other materials may be permitted subject to the approval of the Engineer.
 - Pipes to BS EN 295 with more than 900mm cover between pipe soffit and finished surface to be in Type 'B' bedding. Pipes to BS EN 1401 with more than 900mm between pipe soffit and finished surface to be in Type 'S' bedding.
 - All pipes under external paved areas with less than 900mm cover to be in Type 'A5' bedding.
 - All manholes, trenches, culverts etc to be backfilled with imported granular fill to Class 6F1 (capping material) compacted to a maximum of 95% of maximum dry density of BS-1377: Part 4 (Vibrating Hammer method).
 - The Contractor is responsible for ensuring that full and adequate temporary works are provided to maintain safety and stability of the existing structure whilst the new works are being carried out. The propping is to remain in position until such time that the new works can adequately sustain the intended loads. Details of the proposed temporary works are to be forwarded to the Engineer for comment prior to commencement of works being carried out. Reference should also be made to Nolan Associates Standard detail - Pipes near buildings. (D22)
 - Polypropylene Access Chambers (denoted A.C.) are to be no deeper than 600mm.
 - Pipe Gradients:
Pipes are to be laid to the levels and gradients shown. Pipe branches are to be laid no flatter than the following table:

	100#	150#
Gullies, sinks and basins	1:40	1:40
Pipes draining 1 or more WC's	1:80	—
Pipes draining 5 or more WC's	1:80	1:150
 - For Manhole covers see schedule.
 - The Contractor is to enter into all necessary legal agreements with the drainage authority for all connections to the Public Sewer Network.
 - The Contractor is to survey all drainage outfalls and determine the levels of any Utility Apparatus that might affect the levels of drainage connections, prior to commencing any drainage works on site.
 - The Contractor is to obtain the consent of the Highway Authority to any works within the highway and enter into any necessary legal agreements.
 - Rising main to be BS EN 13244-2, all joints electrofusion welded to provide continuous main.
- Stub levels are based on Atkins as-built drawings and to be confirmed prior to any works commencing.
- Pop-ups and RWP's to be confirmed by specialist design. Suspended drainage routes are shown indicatively and to be confirmed by M&E consultant. All drainage routes, manholes and levels in-abeysance pending pop-up confirmation.

IMPORTANT NOTE:

BLOCK 1, 2 AND HIGHWAY DRAINAGE ONLY ISSUED FOR CONSTRUCTION.
THE HIGHWAY DRAINAGE HAS NOT BEEN APPROVED BY HILLINGDON COUNCIL AND ST MODWEN HOMES CAN PROCEED AT RISK. NOLAN ASSOCIATES CAN ACCEPT NO RESPONSIBILITY FOR ANY DISCREPANCIES WITH HILLINGDON COUNCIL BLOCK 3 IN-ABEYANCE AND TO BE CONFIRMED

NOLAN ASSOCIATES
**CONSTRUCTION
DRAWING**

REV	DESCRIPTION	BY	CHKD	DATE
C20	F12, F12a and F13 IL revised.	MH	KAP	09.06.23
C19	MH schedule updated. Channel added to block 1.	MH	KAP	01.06.23
C18	Footpath levels to block 3 revised	MH	KAP	18.05.23
C17	ACO Channel and gully added	LC	KAP	22.05.23
C16	Cover levels revised.	MH	KAP	02.05.23
C15	F16 revised.	MH	JUG	25.04.23
C14	Flow arrows added.	LC	JUG	22.03.23
C13	Block 3C drainage revised.	MH	JUG	13.09.22
C12	In-abeysance note removed as requested. Gully repositioned on Block 2.	MH	JUG	08.07.22
C11	Block 3 car park levels revised.	MH	JUG	05.07.22
C10	Block 3 issued in-abeysance.	MH	JUG	04.07.22
C9	Block 2 issued for construction.	MH	JUG	27.06.22
C8	S5 invert level revised.	MH	JUG	13.06.22
C7	Block 1 drainage revised. Block 2 outfall adjusted	MH	JUG	05.05.22

Uxbridge – Town Centre West

Drainage Layout

NOLAN ASSOCIATES
CONSULTING CIVIL & STRUCTURAL ENGINEERS
54 HAGLEY ROAD, EDGBASTON, BIRMINGHAM B16 8PE
TEL: 0121-454 3099 FAX: 0121-454 3059
E-MAIL: enquiries@nolanassociates.co.uk

Drawn by	Date	Plot Date	Scale
MH	09.07.21	09.06.23	1:2500#A0
Checked by	Project No	Dwg No	
JUG	2021-189	100	C20

Nolan Associates		Page 1
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.009)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.145	4-8	0.104

Total Area Contributing (ha) = 0.249

Total Pipe Volume (m³) = 9.876

Time Area Diagram at outfall S (pipe S2.005)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.141	4-8	0.044

Total Area Contributing (ha) = 0.185

Total Pipe Volume (m³) = 8.861

Time Area Diagram at outfall S (pipe S5.005)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.385	4-8	0.115

Total Area Contributing (ha) = 0.500

Total Pipe Volume (m³) = 15.720

Network Design Table for Storm

« - Indicates pipe capacity < flow

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Nolan Associates			Page 2
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built		
Date 01/10/2025 14:39	Designed by MDH		
File Surface Water. As-built...	Checked by KAP		
Innovyze	Network 2020.1		

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	6.812	0.077	88.5	0.049	4.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	8.590	0.095	90.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.002	12.467	0.139	89.7	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.003	3.535	0.039	90.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	3.265	0.035	93.3	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.005	26.109	0.290	90.0	0.014	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	27.401	0.094	291.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.007	14.482	0.061	237.4	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.008	55.104	0.258	213.6	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.009	8.536	0.029	294.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	15.020	0.094	159.8	0.025	4.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	12.936	0.063	205.3	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	28.719	0.138	208.1	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.003	26.582	0.053	501.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	22.248	0.150	148.3	0.030	4.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	8.238	0.399	20.6	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	11.064	0.170	65.1	0.045	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.08	46.350	0.049	0.0	0.0	0.0	1.39	55.3	6.6
S1.001	50.00	4.19	46.273	0.049	0.0	0.0	0.0	1.38	54.7	6.6
S1.002	50.00	4.34	46.178	0.068	0.0	0.0	0.0	1.38	54.9	9.2
S1.003	50.00	4.38	46.039	0.068	0.0	0.0	0.0	1.37	54.6	9.2
S1.004	50.00	4.42	46.000	0.107	0.0	0.0	0.0	1.35	53.8	14.5
S1.005	50.00	4.73	45.965	0.121	0.0	0.0	0.0	1.38	54.8	16.4
S1.006	50.00	5.23	45.600	0.121	0.0	0.0	0.0	0.92	64.7	16.4
S1.007	50.00	5.47	45.506	0.168	0.0	0.0	0.0	1.02	71.8	22.7
S1.008	50.00	6.33	45.445	0.249	0.0	0.0	0.0	1.07	75.8	33.7
S1.009	50.00	6.48	45.187	0.249	0.0	0.0	0.0	0.91	64.4	33.7
S2.000	50.00	4.24	45.799	0.025	0.0	0.0	0.0	1.03	41.0	3.4
S2.001	50.00	4.48	45.705	0.052	0.0	0.0	0.0	0.91	36.1	7.0
S2.002	50.00	4.92	45.567	0.084	0.0	0.0	0.0	1.09	76.8	11.4
S2.003	50.00	5.56	45.429	0.084	0.0	0.0	0.0	0.70	49.1	11.4
S3.000	50.00	4.35	46.000	0.030	0.0	0.0	0.0	1.07	42.6	4.1
S3.001	50.00	4.39	45.850	0.056	0.0	0.0	0.0	2.89	115.0	7.6
S4.000	50.00	4.11	45.621	0.045	0.0	0.0	0.0	1.62	64.6	6.1

Nolan Associates		Page 3
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S2.004	2.700	0.023	117.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.005	28.265	0.443	63.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.000	45.251	0.270	167.6	0.087	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	29.510	3.373	8.7	0.018	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	7.438	2.318	3.2	0.029	4.00	0.0	0.600	o	100	Pipe/Conduit	
S5.002	7.780	0.080	97.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.000	35.580	2.014	17.7	0.087	4.00	0.0	0.600	o	300	Pipe/Conduit	
S5.003	40.801	0.080	510.0	0.043	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.000	17.317	0.166	104.3	0.236	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.004	17.252	0.200	86.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.005	4.042	0.876	4.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.004	50.00	5.59	45.376	0.185	0.0	0.0	0.0	1.45	102.5	25.1
S2.005	50.00	5.83	45.353	0.185	0.0	0.0	0.0	1.97	139.4	25.1
S5.000	50.00	4.75	45.700	0.087	0.0	0.0	0.0	1.01	40.0	11.8
S5.001	50.00	4.84	45.355	0.105	0.0	0.0	0.0	5.35	377.9	14.2
S6.000	50.00	4.03	44.500	0.029	0.0	0.0	0.0	4.35	34.2	3.9
S5.002	50.00	4.90	41.832	0.134	0.0	0.0	0.0	2.06	327.9	18.1
S7.000	50.00	4.16	44.094	0.087	0.0	0.0	0.0	3.76	265.7	11.8
S5.003	50.00	5.66	41.752	0.264	0.0	0.0	0.0	0.89	142.1	35.7
S8.000	50.00	4.23	42.036	0.236	0.0	0.0	0.0	1.28	50.9	32.0
S5.004	50.00	5.87	41.570	0.500	0.0	0.0	0.0	1.41	56.0	67.7
S5.005	50.00	5.88	41.370	0.500	0.0	0.0	0.0	6.13	243.9	67.7

Nolan Associates								Page 4			
Edgbaston House Hadley Road Birmingham B16 8NH				Uxbridge Planning Condition Discharge As-Built							
Date 01/10/2025 14:39 File Surface Water. As-built...				Designed by MDH Checked by KAP							
Innovyze								Network 2020.1			
Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	47.000	0.650	Open Manhole	1200	S1.000	46.350	225				
S2	47.000	0.727	Open Manhole	1200	S1.001	46.273	225	S1.000	46.273	225	
S3	47.000	0.822	Open Manhole	1200	S1.002	46.178	225	S1.001	46.178	225	
S4	47.000	0.961	Open Manhole	1200	S1.003	46.039	225	S1.002	46.039	225	
S5	47.000	1.000	Open Manhole	1200	S1.004	46.000	225	S1.003	46.000	225	
S6	47.000	1.035	Open Manhole	1200	S1.005	45.965	225	S1.004	45.965	225	
S7	47.550	1.950	Open Manhole	1200	S1.006	45.600	300	S1.005	45.675	225	
S8	48.100	2.594	Open Manhole	1200	S1.007	45.506	300	S1.006	45.506	300	
S9	48.500	3.055	Open Manhole	1200	S1.008	45.445	300	S1.007	45.445	300	
S10	48.400	3.213	Open Manhole	1200	S1.009	45.187	300	S1.008	45.187	300	
S	48.400	3.242	Open Manhole	0		OUTFALL		S1.009	45.158	300	
S11	46.900	1.101	Open Manhole	1200	S2.000	45.799	225				
S12	46.900	1.195	Open Manhole	1200	S2.001	45.705	225	S2.000	45.705	225	
S13	46.970	1.403	Open Manhole	1200	S2.002	45.567	300	S2.001	45.642	225	
S14	46.810	1.381	Open Manhole	1200	S2.003	45.429	300	S2.002	45.429	300	
S15	47.000	1.000	Open Manhole	1200	S3.000	46.000	225				
S16	46.900	1.050	Open Manhole	1200	S3.001	45.850	225	S3.000	45.850	225	
S17	47.000	1.379	Open Manhole	1200	S4.000	45.621	225				
S18	46.670	1.294	Open Manhole	1200	S2.004	45.376	300	S2.003	45.376	300	
								S3.001	45.451	225	
								S4.000	45.451	225	
S19	47.000	1.647	Open Manhole	1200	S2.005	45.353	300	S2.004	45.353	300	
S	46.670	1.760	Open Manhole	0		OUTFALL		S2.005	44.910	300	
S20	47.130	1.430	Open Manhole	1200	S5.000	45.700	225				
S21	46.173	0.818	Open Manhole	1200	S5.001	45.355	300	S5.000	45.430	225	
S22	45.430	0.930	Open Manhole	1200	S6.000	44.500	100				
S23	45.500	3.668	Open Manhole	1350	S5.002	41.832	450	S5.001	41.982	300	
								S6.000	42.182	100	
S24	46.700	2.606	Open Manhole	1200	S7.000	44.094	300				
S25	45.445	3.693	Open Manhole	1350	S5.003	41.752	450	S5.002	41.752	450	
								S7.000	42.080	300	178
S26	43.850	1.814	Open Manhole	1200	S8.000	42.036	225				
S27	44.300	2.730	Open Manhole	1350	S5.004	41.570	225	S5.003	41.672	450	327
								S8.000	41.870	225	300
S28	43.800	2.430	Open Manhole	1200	S5.005	41.370	225	S5.004	41.370	225	
S	43.800	3.306	Open Manhole	0		OUTFALL		S5.005	40.494	225	
No coordinates have been specified, layout information cannot be produced.											
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Nolan Associates		Page 5
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.049	0.049	0.049
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.019	0.019	0.019
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.039	0.039	0.039
1.005	-	-	100	0.014	0.014	0.014
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.047	0.047	0.047
1.008	-	-	100	0.081	0.081	0.081
1.009	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.025	0.025	0.025
2.001	-	-	100	0.027	0.027	0.027
2.002	-	-	100	0.032	0.032	0.032
2.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.030	0.030	0.030
3.001	-	-	100	0.026	0.026	0.026
4.000	-	-	100	0.045	0.045	0.045
2.004	-	-	100	0.000	0.000	0.000
2.005	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.087	0.087	0.087
5.001	-	-	100	0.018	0.018	0.018
6.000	-	-	100	0.029	0.029	0.029
5.002	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.087	0.087	0.087
5.003	-	-	100	0.043	0.043	0.043
8.000	-	-	100	0.236	0.236	0.236
5.004	-	-	100	0.000	0.000	0.000
5.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.934	0.934	0.934

Nolan Associates		Page 6
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39	Designed by MDH	
File Surface Water. As-built...	Checked by KAP	
Innovyze	Network 2020.1	

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1	225	0.425	0.502	Unclassified	1200	0	0.425	Unclassified
S1.001	S2	225	0.502	0.597	Unclassified	1200	0	0.502	Unclassified
S1.002	S3	225	0.597	0.736	Unclassified	1200	0	0.597	Unclassified
S1.003	S4	225	0.736	0.775	Unclassified	1200	0	0.736	Unclassified
S1.004	S5	225	0.775	0.810	Unclassified	1200	0	0.775	Unclassified
S1.005	S6	225	0.810	1.650	Unclassified	1200	0	0.810	Unclassified
S1.006	S7	300	1.650	2.294	Unclassified	1200	0	1.650	Unclassified
S1.007	S8	300	2.294	2.755	Unclassified	1200	0	2.294	Unclassified
S1.008	S9	300	2.755	2.913	Unclassified	1200	0	2.755	Unclassified
S1.009	S10	300	2.913	2.942	Unclassified	1200	0	2.913	Unclassified
S2.000	S11	225	0.876	0.970	Unclassified	1200	0	0.876	Unclassified
S2.001	S12	225	0.970	1.103	Unclassified	1200	0	0.970	Unclassified
S2.002	S13	300	1.081	1.103	Unclassified	1200	0	1.103	Unclassified
S2.003	S14	300	0.994	1.081	Unclassified	1200	0	1.081	Unclassified
S3.000	S15	225	0.775	0.825	Unclassified	1200	0	0.775	Unclassified
S3.001	S16	225	0.825	0.994	Unclassified	1200	0	0.825	Unclassified
S4.000	S17	225	0.994	1.154	Unclassified	1200	0	1.154	Unclassified
S2.004	S18	300	0.994	1.347	Unclassified	1200	0	0.994	Unclassified
S2.005	S19	300	1.347	1.460	Unclassified	1200	0	1.347	Unclassified
S5.000	S20	225	0.518	1.205	Unclassified	1200	0	1.205	Unclassified
S5.001	S21	300	0.518	3.218	Unclassified	1200	0	0.518	Unclassified
S6.000	S22	100	0.830	3.218	Unclassified	1200	0	0.830	Unclassified
S5.002	S23	450	3.218	3.243	Unclassified	1350	0	3.218	Unclassified
S7.000	S24	300	2.306	3.065	Unclassified	1200	0	2.306	Unclassified
S5.003	S25	450	2.178	3.243	Unclassified	1350	0	3.243	Unclassified
S8.000	S26	225	1.589	2.205	Unclassified	1200	0	1.589	Unclassified
S5.004	S27	225	2.205	2.505	Unclassified	1350	0	2.505	Unclassified
S5.005	S28	225	2.205	3.081	Unclassified	1200	0	2.205	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

S1.009	S	48.400	45.158	45.148	0	0
--------	---	--------	--------	--------	---	---

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

S2.005	S	46.670	44.910	44.910	0	0
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Nolan Associates		Page 7
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
S5.005	S	43.800	40.494	40.494	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Storage Structures	3
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.400		

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Nolan Associates		Page 8
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Online Controls for Storm

Pump Manhole: S10, DS/PN: S1.009, Volume (m³): 7.4

Invert Level (m) 45.187

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	13.4000	0.900	13.4000	1.700	13.4000	2.500	13.4000
0.200	13.4000	1.000	13.4000	1.800	13.4000	2.600	13.4000
0.300	13.4000	1.100	13.4000	1.900	13.4000	2.700	13.4000
0.400	13.4000	1.200	13.4000	2.000	13.4000	2.800	13.4000
0.500	13.4000	1.300	13.4000	2.100	13.4000	2.900	13.4000
0.600	13.4000	1.400	13.4000	2.200	13.4000	3.000	13.4000
0.700	13.4000	1.500	13.4000	2.300	13.4000		
0.800	13.4000	1.600	13.4000	2.400	13.4000		

Hydro-Brake® Optimum Manhole: S18, DS/PN: S2.004, Volume (m³): 3.9

Unit Reference MD-SHE-0107-5000-0900-5000	
Design Head (m)	0.900
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	107
Invert Level (m)	45.376
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	5.0
Flush-Flo™	0.271	5.0
Kick-Flo®	0.590	4.1
Mean Flow over Head Range	-	4.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.6	1.200	5.7	3.000	8.8	7.000	13.1
0.200	4.9	1.400	6.1	3.500	9.4	7.500	13.6
0.300	5.0	1.600	6.5	4.000	10.1	8.000	14.0
0.400	4.9	1.800	6.9	4.500	10.6	8.500	14.4
0.500	4.6	2.000	7.2	5.000	11.2	9.000	14.8
0.600	4.1	2.200	7.6	5.500	11.7	9.500	15.2
0.800	4.7	2.400	7.9	6.000	12.2		
1.000	5.2	2.600	8.2	6.500	12.7		

Nolan Associates		Page 9																																																																								
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built																																																																									
Date 01/10/2025 14:39	Designed by MDH																																																																									
File Surface Water. As-built...	Checked by KAP																																																																									
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<u>Hydro-Brake® Optimum Manhole: S27, DS/PN: S5.004, Volume (m³): 10.8</u>																																																																										
Unit Reference MD-SHE-0171-1500-1280-1500																																																																										
Design Head (m) 1.280																																																																										
Design Flow (l/s) 15.0																																																																										
Flush-Flo™ Calculated																																																																										
Objective Minimise upstream storage																																																																										
Application Surface																																																																										
Sump Available Yes																																																																										
Diameter (mm) 171																																																																										
Invert Level (m) 41.570																																																																										
Minimum Outlet Pipe Diameter (mm) 225																																																																										
Suggested Manhole Diameter (mm) 1500																																																																										
<table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>1.280</td><td>15.0</td></tr><tr><td>Flush-Flo™</td><td>0.381</td><td>15.0</td></tr><tr><td>Kick-Flo®</td><td>0.841</td><td>12.3</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>12.9</td></tr></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.280	15.0	Flush-Flo™	0.381	15.0	Kick-Flo®	0.841	12.3	Mean Flow over Head Range	-	12.9																																																									
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<table><tr><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td></tr><tr><td>0.100</td><td>6.1</td><td>1.200</td><td>14.5</td><td>3.000</td><td>22.5</td><td>7.000</td><td>33.8</td></tr><tr><td>0.200</td><td>14.0</td><td>1.400</td><td>15.7</td><td>3.500</td><td>24.2</td><td>7.500</td><td>35.0</td></tr><tr><td>0.300</td><td>14.8</td><td>1.600</td><td>16.7</td><td>4.000</td><td>25.8</td><td>8.000</td><td>36.1</td></tr><tr><td>0.400</td><td>15.0</td><td>1.800</td><td>17.6</td><td>4.500</td><td>27.3</td><td>8.500</td><td>37.2</td></tr><tr><td>0.500</td><td>14.8</td><td>2.000</td><td>18.5</td><td>5.000</td><td>28.8</td><td>9.000</td><td>38.2</td></tr><tr><td>0.600</td><td>14.5</td><td>2.200</td><td>19.4</td><td>5.500</td><td>30.1</td><td>9.500</td><td>39.2</td></tr><tr><td>0.800</td><td>13.0</td><td>2.400</td><td>20.2</td><td>6.000</td><td>31.4</td><td></td><td></td></tr><tr><td>1.000</td><td>13.3</td><td>2.600</td><td>21.0</td><td>6.500</td><td>32.6</td><td></td><td></td></tr></table>			Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	6.1	1.200	14.5	3.000	22.5	7.000	33.8	0.200	14.0	1.400	15.7	3.500	24.2	7.500	35.0	0.300	14.8	1.600	16.7	4.000	25.8	8.000	36.1	0.400	15.0	1.800	17.6	4.500	27.3	8.500	37.2	0.500	14.8	2.000	18.5	5.000	28.8	9.000	38.2	0.600	14.5	2.200	19.4	5.500	30.1	9.500	39.2	0.800	13.0	2.400	20.2	6.000	31.4			1.000	13.3	2.600	21.0	6.500	32.6		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																			
0.100	6.1	1.200	14.5	3.000	22.5	7.000	33.8																																																																			
0.200	14.0	1.400	15.7	3.500	24.2	7.500	35.0																																																																			
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0.400	15.0	1.800	17.6	4.500	27.3	8.500	37.2																																																																			
0.500	14.8	2.000	18.5	5.000	28.8	9.000	38.2																																																																			
0.600	14.5	2.200	19.4	5.500	30.1	9.500	39.2																																																																			
0.800	13.0	2.400	20.2	6.000	31.4																																																																					
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Nolan Associates		Page 10
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Storage Structures for Storm

Tank or Pond Manhole: S8, DS/PN: S1.007

Invert Level (m) 45.506

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	83.0	1.200	83.0	1.201	0.0

Tank or Pond Manhole: S18, DS/PN: S2.004

Invert Level (m) 45.376

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	125.0	0.800	125.0	0.801	0.0

Tank or Pond Manhole: S27, DS/PN: S5.004

Invert Level (m) 41.570

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	159.0	1.200	159.0	1.201	0.0

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Edgbaston House

Hadley Road

Birmingham B16 8NH

Date 01/10/2025 14:39

File Surface Water. As-built...

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Planning Condition Discharge

As-Built

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Micro Drainage

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 2.000

Inlet Coefficient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Online Controls 3

Number of Offline Controls 0

Number of Storage Structures 3

Number of Time/Area Diagrams 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

Region England and Wales

M5-60 (mm)

FSR

Cv (Summer)

20.000 Cv (Winter)

Ratio R 0.400

0.750

0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep

DTS Status

DVD Status OFF

Fine Inertia Status OFF

ON

Profile(s)

Duration(s) (mins)

Return Period(s) (years)

Climate Change (%)

Summer and Winter

15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

1, 30, 100

0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	15 Winter	100	+30%	100/15 Summer				46.643
S1.001	S2	15 Winter	100	+30%	100/15 Summer				46.618
S1.002	S3	15 Winter	100	+30%	100/15 Summer				46.589
S1.003	S4	15 Winter	100	+30%	30/15 Summer				46.517
S1.004	S5	15 Winter	100	+30%	30/15 Summer				46.461
S1.005	S6	15 Winter	100	+30%	100/15 Summer				46.319
S1.006	S7	60 Winter	100	+30%	100/15 Summer				46.236
S1.007	S8	60 Winter	100	+30%	100/15 Summer				46.235
S1.008	S9	60 Winter	100	+30%	30/15 Winter				46.594
S1.009	S10	120 Winter	100	+30%	30/15 Summer				47.164
S2.000	S11	15 Winter	100	+30%					45.924
S2.001	S12	120 Winter	100	+30%					45.912
S2.002	S13	120 Winter	100	+30%	100/60 Winter				45.910
S2.003	S14	120 Winter	100	+30%	100/30 Summer				45.907
S3.000	S15	15 Winter	100	+30%					46.109
S3.001	S16	15 Winter	100	+30%					45.947
S4.000	S17	120 Winter	100	+30%	100/60 Winter				45.906
S2.004	S18	120 Winter	100	+30%	100/15 Winter				45.904
S2.005	S19	30 Winter	100	+30%					45.391
S5.000	S20	15 Winter	100	+30%	100/15 Summer				46.160

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Nolan Associates		Page 12
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
S1.000	S1	0.068	0.000	0.71			27.9	SURCHARGED	
S1.001	S2	0.120	0.000	0.57			24.6	SURCHARGED	
S1.002	S3	0.186	0.000	0.72			33.9	SURCHARGED	
S1.003	S4	0.253	0.000	1.15			34.4	SURCHARGED	
S1.004	S5	0.236	0.000	1.78			53.2	SURCHARGED	
S1.005	S6	0.129	0.000	1.19			60.1	SURCHARGED	
S1.006	S7	0.336	0.000	0.56			32.5	SURCHARGED	
S1.007	S8	0.429	0.000	0.84			50.1	SURCHARGED	
S1.008	S9	0.849	0.000	0.40			28.7	SURCHARGED	
S1.009	S10	1.677	0.000	0.27			13.4	SURCHARGED	
S2.000	S11	-0.100	0.000	0.42			15.2	OK	
S2.001	S12	-0.018	0.000	0.31			9.6	OK	
S2.002	S13	0.043	0.000	0.21			14.8	SURCHARGED	
S2.003	S14	0.178	0.000	0.30			13.1	SURCHARGED	
S3.000	S15	-0.116	0.000	0.47			18.5	OK	
S3.001	S16	-0.128	0.000	0.39			34.5	OK	
S4.000	S17	0.060	0.000	0.15			8.2	SURCHARGED	
S2.004	S18	0.228	0.000	0.09			5.0	SURCHARGED	
S2.005	S19	-0.262	0.000	0.04			5.0	OK	
S5.000	S20	0.235	0.000	1.37			52.3	SURCHARGED	

Nolan Associates			Page 13
Edgbaston House Hadley Road Birmingham B16 8NH		Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:39 File Surface Water. As-built...		Designed by MDH Checked by KAP	
Innovyze		Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

										Water
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.		Level (m)
S5.001	S21	15 Winter	100	+30%						45.441
S6.000	S22	15 Winter	100	+30%						44.554
S5.002	S23	120 Winter	100	+30%	100/15 Winter					42.670
S7.000	S24	15 Winter	100	+30%						44.189
S5.003	S25	120 Winter	100	+30%	100/15 Summer					42.669
S8.000	S26	15 Winter	100	+30%	30/15 Summer					43.592
S5.004	S27	120 Winter	100	+30%	30/15 Summer					42.665
S5.005	S28	120 Summer	100	+30%						41.420

		Surcharged		Flooded		Half Drain		Pipe		
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded	
S5.001	S21	-0.214	0.000	0.18			61.9	OK		
S6.000	S22	-0.046	0.000	0.58			17.9	OK		
S5.002	S23	0.388	0.000	0.14			23.8	SURCHARGED		
S7.000	S24	-0.205	0.000	0.22			53.7	OK		
S5.003	S25	0.467	0.000	0.36			46.1	SURCHARGED		
S8.000	S26	1.331	0.000	2.96			134.6	FLOOD RISK		
S5.004	S27	0.870	0.000	0.30			14.9	SURCHARGED		
S5.005	S28	-0.175	0.000	0.11			15.0	OK		

Nolan Associates		Page 1
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.009)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.145	4-8	0.104

Total Area Contributing (ha) = 0.249

Total Pipe Volume (m³) = 9.876

Time Area Diagram at outfall S (pipe S2.005)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.141	4-8	0.044

Total Area Contributing (ha) = 0.185

Total Pipe Volume (m³) = 8.861

Time Area Diagram at outfall S (pipe S5.005)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.385	4-8	0.115

Total Area Contributing (ha) = 0.500

Total Pipe Volume (m³) = 15.720

Network Design Table for Storm

« - Indicates pipe capacity < flow

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Nolan Associates			Page 2
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built		
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP		
Innovyze	Network 2020.1		

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	6.812	0.077	88.5	0.049	4.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	8.590	0.095	90.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.002	12.467	0.139	89.7	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.003	3.535	0.039	90.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.004	3.265	0.035	93.3	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.005	26.109	0.290	90.0	0.014	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	27.401	0.094	291.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.007	14.482	0.061	237.4	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.008	55.104	0.258	213.6	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.009	8.536	0.029	294.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	15.020	0.094	159.8	0.025	4.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	12.936	0.063	205.3	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	28.719	0.138	208.1	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.003	26.582	0.053	501.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	22.248	0.150	148.3	0.030	4.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	8.238	0.399	20.6	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	11.064	0.170	65.1	0.045	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.08	46.350	0.049	0.0	0.0	0.0	1.39	55.3	6.6
S1.001	50.00	4.19	46.273	0.049	0.0	0.0	0.0	1.38	54.7	6.6
S1.002	50.00	4.34	46.178	0.068	0.0	0.0	0.0	1.38	54.9	9.2
S1.003	50.00	4.38	46.039	0.068	0.0	0.0	0.0	1.37	54.6	9.2
S1.004	50.00	4.42	46.000	0.107	0.0	0.0	0.0	1.35	53.8	14.5
S1.005	50.00	4.73	45.965	0.121	0.0	0.0	0.0	1.38	54.8	16.4
S1.006	50.00	5.23	45.600	0.121	0.0	0.0	0.0	0.92	64.7	16.4
S1.007	50.00	5.47	45.506	0.168	0.0	0.0	0.0	1.02	71.8	22.7
S1.008	50.00	6.33	45.445	0.249	0.0	0.0	0.0	1.07	75.8	33.7
S1.009	50.00	6.48	45.187	0.249	0.0	0.0	0.0	0.91	64.4	33.7
S2.000	50.00	4.24	45.799	0.025	0.0	0.0	0.0	1.03	41.0	3.4
S2.001	50.00	4.48	45.705	0.052	0.0	0.0	0.0	0.91	36.1	7.0
S2.002	50.00	4.92	45.567	0.084	0.0	0.0	0.0	1.09	76.8	11.4
S2.003	50.00	5.56	45.429	0.084	0.0	0.0	0.0	0.70	49.1	11.4
S3.000	50.00	4.35	46.000	0.030	0.0	0.0	0.0	1.07	42.6	4.1
S3.001	50.00	4.39	45.850	0.056	0.0	0.0	0.0	2.89	115.0	7.6
S4.000	50.00	4.11	45.621	0.045	0.0	0.0	0.0	1.62	64.6	6.1

Nolan Associates		Page 3
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S2.004	2.700	0.023	117.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.005	28.265	0.443	63.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.000	45.251	0.270	167.6	0.087	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	29.510	3.373	8.7	0.018	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	7.438	2.318	3.2	0.029	4.00	0.0	0.600	o	100	Pipe/Conduit	
S5.002	7.780	0.080	97.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.000	35.580	2.014	17.7	0.087	4.00	0.0	0.600	o	300	Pipe/Conduit	
S5.003	40.801	0.080	510.0	0.043	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.000	17.317	0.166	104.3	0.236	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.004	17.252	0.200	86.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.005	4.042	0.876	4.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.004	50.00	5.59	45.376	0.185	0.0	0.0	0.0	1.45	102.5	25.1
S2.005	50.00	5.83	45.353	0.185	0.0	0.0	0.0	1.97	139.4	25.1
S5.000	50.00	4.75	45.700	0.087	0.0	0.0	0.0	1.01	40.0	11.8
S5.001	50.00	4.84	45.355	0.105	0.0	0.0	0.0	5.35	377.9	14.2
S6.000	50.00	4.03	44.500	0.029	0.0	0.0	0.0	4.35	34.2	3.9
S5.002	50.00	4.90	41.832	0.134	0.0	0.0	0.0	2.06	327.9	18.1
S7.000	50.00	4.16	44.094	0.087	0.0	0.0	0.0	3.76	265.7	11.8
S5.003	50.00	5.66	41.752	0.264	0.0	0.0	0.0	0.89	142.1	35.7
S8.000	50.00	4.23	42.036	0.236	0.0	0.0	0.0	1.28	50.9	32.0
S5.004	50.00	5.87	41.570	0.500	0.0	0.0	0.0	1.41	56.0	67.7
S5.005	50.00	5.88	41.370	0.500	0.0	0.0	0.0	6.13	243.9	67.7

Nolan Associates								Page 4			
Edgbaston House Hadley Road Birmingham B16 8NH				Uxbridge Planning Condition Discharge As-Built							
Date 01/10/2025 14:43 File Surface Water. As-built...				Designed by MDH Checked by KAP							
Innovyze								Network 2020.1			
Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	47.000	0.650	Open Manhole	1200	S1.000	46.350	225				
S2	47.000	0.727	Open Manhole	1200	S1.001	46.273	225	S1.000	46.273	225	
S3	47.000	0.822	Open Manhole	1200	S1.002	46.178	225	S1.001	46.178	225	
S4	47.000	0.961	Open Manhole	1200	S1.003	46.039	225	S1.002	46.039	225	
S5	47.000	1.000	Open Manhole	1200	S1.004	46.000	225	S1.003	46.000	225	
S6	47.000	1.035	Open Manhole	1200	S1.005	45.965	225	S1.004	45.965	225	
S7	47.550	1.950	Open Manhole	1200	S1.006	45.600	300	S1.005	45.675	225	
S8	48.100	2.594	Open Manhole	1200	S1.007	45.506	300	S1.006	45.506	300	
S9	48.500	3.055	Open Manhole	1200	S1.008	45.445	300	S1.007	45.445	300	
S10	48.400	3.213	Open Manhole	1200	S1.009	45.187	300	S1.008	45.187	300	
S	48.400	3.242	Open Manhole	0		OUTFALL		S1.009	45.158	300	
S11	46.900	1.101	Open Manhole	1200	S2.000	45.799	225				
S12	46.900	1.195	Open Manhole	1200	S2.001	45.705	225	S2.000	45.705	225	
S13	46.970	1.403	Open Manhole	1200	S2.002	45.567	300	S2.001	45.642	225	
S14	46.810	1.381	Open Manhole	1200	S2.003	45.429	300	S2.002	45.429	300	
S15	47.000	1.000	Open Manhole	1200	S3.000	46.000	225				
S16	46.900	1.050	Open Manhole	1200	S3.001	45.850	225	S3.000	45.850	225	
S17	47.000	1.379	Open Manhole	1200	S4.000	45.621	225				
S18	46.670	1.294	Open Manhole	1200	S2.004	45.376	300	S2.003	45.376	300	
								S3.001	45.451	225	
								S4.000	45.451	225	
S19	47.000	1.647	Open Manhole	1200	S2.005	45.353	300	S2.004	45.353	300	
S	46.670	1.760	Open Manhole	0		OUTFALL		S2.005	44.910	300	
S20	47.130	1.430	Open Manhole	1200	S5.000	45.700	225				
S21	46.173	0.818	Open Manhole	1200	S5.001	45.355	300	S5.000	45.430	225	
S22	45.430	0.930	Open Manhole	1200	S6.000	44.500	100				
S23	45.500	3.668	Open Manhole	1350	S5.002	41.832	450	S5.001	41.982	300	
								S6.000	42.182	100	
S24	46.700	2.606	Open Manhole	1200	S7.000	44.094	300				
S25	45.445	3.693	Open Manhole	1350	S5.003	41.752	450	S5.002	41.752	450	
								S7.000	42.080	300	178
S26	43.850	1.814	Open Manhole	1200	S8.000	42.036	225				
S27	44.300	2.730	Open Manhole	1350	S5.004	41.570	225	S5.003	41.672	450	327
								S8.000	41.870	225	300
S28	43.800	2.430	Open Manhole	1200	S5.005	41.370	225	S5.004	41.370	225	
S	43.800	3.306	Open Manhole	0		OUTFALL		S5.005	40.494	225	
No coordinates have been specified, layout information cannot be produced.											
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Nolan Associates		Page 5
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.049	0.049	0.049
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.019	0.019	0.019
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.039	0.039	0.039
1.005	-	-	100	0.014	0.014	0.014
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.047	0.047	0.047
1.008	-	-	100	0.081	0.081	0.081
1.009	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.025	0.025	0.025
2.001	-	-	100	0.027	0.027	0.027
2.002	-	-	100	0.032	0.032	0.032
2.003	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.030	0.030	0.030
3.001	-	-	100	0.026	0.026	0.026
4.000	-	-	100	0.045	0.045	0.045
2.004	-	-	100	0.000	0.000	0.000
2.005	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.087	0.087	0.087
5.001	-	-	100	0.018	0.018	0.018
6.000	-	-	100	0.029	0.029	0.029
5.002	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.087	0.087	0.087
5.003	-	-	100	0.043	0.043	0.043
8.000	-	-	100	0.236	0.236	0.236
5.004	-	-	100	0.000	0.000	0.000
5.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.934	0.934	0.934

Nolan Associates		Page 6
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1	225	0.425	0.502	Unclassified	1200	0	0.425	Unclassified
S1.001	S2	225	0.502	0.597	Unclassified	1200	0	0.502	Unclassified
S1.002	S3	225	0.597	0.736	Unclassified	1200	0	0.597	Unclassified
S1.003	S4	225	0.736	0.775	Unclassified	1200	0	0.736	Unclassified
S1.004	S5	225	0.775	0.810	Unclassified	1200	0	0.775	Unclassified
S1.005	S6	225	0.810	1.650	Unclassified	1200	0	0.810	Unclassified
S1.006	S7	300	1.650	2.294	Unclassified	1200	0	1.650	Unclassified
S1.007	S8	300	2.294	2.755	Unclassified	1200	0	2.294	Unclassified
S1.008	S9	300	2.755	2.913	Unclassified	1200	0	2.755	Unclassified
S1.009	S10	300	2.913	2.942	Unclassified	1200	0	2.913	Unclassified
S2.000	S11	225	0.876	0.970	Unclassified	1200	0	0.876	Unclassified
S2.001	S12	225	0.970	1.103	Unclassified	1200	0	0.970	Unclassified
S2.002	S13	300	1.081	1.103	Unclassified	1200	0	1.103	Unclassified
S2.003	S14	300	0.994	1.081	Unclassified	1200	0	1.081	Unclassified
S3.000	S15	225	0.775	0.825	Unclassified	1200	0	0.775	Unclassified
S3.001	S16	225	0.825	0.994	Unclassified	1200	0	0.825	Unclassified
S4.000	S17	225	0.994	1.154	Unclassified	1200	0	1.154	Unclassified
S2.004	S18	300	0.994	1.347	Unclassified	1200	0	0.994	Unclassified
S2.005	S19	300	1.347	1.460	Unclassified	1200	0	1.347	Unclassified
S5.000	S20	225	0.518	1.205	Unclassified	1200	0	1.205	Unclassified
S5.001	S21	300	0.518	3.218	Unclassified	1200	0	0.518	Unclassified
S6.000	S22	100	0.830	3.218	Unclassified	1200	0	0.830	Unclassified
S5.002	S23	450	3.218	3.243	Unclassified	1350	0	3.218	Unclassified
S7.000	S24	300	2.306	3.065	Unclassified	1200	0	2.306	Unclassified
S5.003	S25	450	2.178	3.243	Unclassified	1350	0	3.243	Unclassified
S8.000	S26	225	1.589	2.205	Unclassified	1200	0	1.589	Unclassified
S5.004	S27	225	2.205	2.505	Unclassified	1350	0	2.505	Unclassified
S5.005	S28	225	2.205	3.081	Unclassified	1200	0	2.205	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.009	S	48.400	45.158	45.148	0	0
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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S2.005	S	46.670	44.910	44.910	0	0
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Nolan Associates		Page 7
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
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S5.005	S	43.800	40.494	40.494	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	3
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.400		

Nolan Associates				Page 8																																																																																																																																																																																						
Edgbaston House Hadley Road Birmingham B16 8NH		Uxbridge Planning Condition Discharge As-Built																																																																																																																																																																																								
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<u>Online Controls for Storm</u> <u>Pump Manhole: S10, DS/PN: S1.009, Volume (m³): 7.4</u> Invert Level (m) 45.187 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>13.4000</td><td>0.900</td><td>13.4000</td><td>1.700</td><td>13.4000</td><td>2.500</td><td>13.4000</td></tr><tr><td>0.200</td><td>13.4000</td><td>1.000</td><td>13.4000</td><td>1.800</td><td>13.4000</td><td>2.600</td><td>13.4000</td></tr><tr><td>0.300</td><td>13.4000</td><td>1.100</td><td>13.4000</td><td>1.900</td><td>13.4000</td><td>2.700</td><td>13.4000</td></tr><tr><td>0.400</td><td>13.4000</td><td>1.200</td><td>13.4000</td><td>2.000</td><td>13.4000</td><td>2.800</td><td>13.4000</td></tr><tr><td>0.500</td><td>13.4000</td><td>1.300</td><td>13.4000</td><td>2.100</td><td>13.4000</td><td>2.900</td><td>13.4000</td></tr><tr><td>0.600</td><td>13.4000</td><td>1.400</td><td>13.4000</td><td>2.200</td><td>13.4000</td><td>3.000</td><td>13.4000</td></tr><tr><td>0.700</td><td>13.4000</td><td>1.500</td><td>13.4000</td><td>2.300</td><td>13.4000</td><td></td><td></td></tr><tr><td>0.800</td><td>13.4000</td><td>1.600</td><td>13.4000</td><td>2.400</td><td>13.4000</td><td></td><td></td></tr></table> <u>Hydro-Brake® Optimum Manhole: S18, DS/PN: S2.004, Volume (m³): 3.9</u> <table><tr><td colspan="2">Unit Reference MD-SHE-0107-5000-0900-5000</td></tr><tr><td>Design Head (m)</td><td>0.900</td></tr><tr><td>Design Flow (l/s)</td><td>5.0</td></tr><tr><td>Flush-Flo™</td><td>Calculated</td></tr><tr><td>Objective</td><td>Minimise upstream storage</td></tr><tr><td>Application</td><td>Surface</td></tr><tr><td>Sump Available</td><td>Yes</td></tr><tr><td>Diameter (mm)</td><td>107</td></tr><tr><td>Invert Level (m)</td><td>45.376</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td>150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td>1200</td></tr></table> <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.900</td><td>5.0</td></tr><tr><td>Flush-Flo™</td><td>0.271</td><td>5.0</td></tr><tr><td>Kick-Flo®</td><td>0.590</td><td>4.1</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>4.3</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>3.6</td><td>1.200</td><td>5.7</td><td>3.000</td><td>8.8</td><td>7.000</td><td>13.1</td></tr><tr><td>0.200</td><td>4.9</td><td>1.400</td><td>6.1</td><td>3.500</td><td>9.4</td><td>7.500</td><td>13.6</td></tr><tr><td>0.300</td><td>5.0</td><td>1.600</td><td>6.5</td><td>4.000</td><td>10.1</td><td>8.000</td><td>14.0</td></tr><tr><td>0.400</td><td>4.9</td><td>1.800</td><td>6.9</td><td>4.500</td><td>10.6</td><td>8.500</td><td>14.4</td></tr><tr><td>0.500</td><td>4.6</td><td>2.000</td><td>7.2</td><td>5.000</td><td>11.2</td><td>9.000</td><td>14.8</td></tr><tr><td>0.600</td><td>4.1</td><td>2.200</td><td>7.6</td><td>5.500</td><td>11.7</td><td>9.500</td><td>15.2</td></tr><tr><td>0.800</td><td>4.7</td><td>2.400</td><td>7.9</td><td>6.000</td><td>12.2</td><td></td><td></td></tr><tr><td>1.000</td><td>5.2</td><td>2.600</td><td>8.2</td><td>6.500</td><td>12.7</td><td></td><td></td></tr></table>						Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	13.4000	0.900	13.4000	1.700	13.4000	2.500	13.4000	0.200	13.4000	1.000	13.4000	1.800	13.4000	2.600	13.4000	0.300	13.4000	1.100	13.4000	1.900	13.4000	2.700	13.4000	0.400	13.4000	1.200	13.4000	2.000	13.4000	2.800	13.4000	0.500	13.4000	1.300	13.4000	2.100	13.4000	2.900	13.4000	0.600	13.4000	1.400	13.4000	2.200	13.4000	3.000	13.4000	0.700	13.4000	1.500	13.4000	2.300	13.4000			0.800	13.4000	1.600	13.4000	2.400	13.4000			Unit Reference MD-SHE-0107-5000-0900-5000		Design Head (m)	0.900	Design Flow (l/s)	5.0	Flush-Flo™	Calculated	Objective	Minimise upstream storage	Application	Surface	Sump Available	Yes	Diameter (mm)	107	Invert Level (m)	45.376	Minimum Outlet Pipe Diameter (mm)	150	Suggested Manhole Diameter (mm)	1200	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.900	5.0	Flush-Flo™	0.271	5.0	Kick-Flo®	0.590	4.1	Mean Flow over Head Range	-	4.3	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	3.6	1.200	5.7	3.000	8.8	7.000	13.1	0.200	4.9	1.400	6.1	3.500	9.4	7.500	13.6	0.300	5.0	1.600	6.5	4.000	10.1	8.000	14.0	0.400	4.9	1.800	6.9	4.500	10.6	8.500	14.4	0.500	4.6	2.000	7.2	5.000	11.2	9.000	14.8	0.600	4.1	2.200	7.6	5.500	11.7	9.500	15.2	0.800	4.7	2.400	7.9	6.000	12.2			1.000	5.2	2.600	8.2	6.500	12.7		
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																																																																																																																																			
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Nolan Associates		Page 9																																																																								
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built																																																																									
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Innovyze Network 2020.1																																																																										
<u>Hydro-Brake® Optimum Manhole: S27, DS/PN: S5.004, Volume (m³): 10.8</u>																																																																										
Unit Reference MD-SHE-0171-1500-1280-1500 Design Head (m) 1.280 Design Flow (l/s) 15.0 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 171 Invert Level (m) 41.570 Minimum Outlet Pipe Diameter (mm) 225 Suggested Manhole Diameter (mm) 1500																																																																										
<table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>1.280</td><td>15.0</td></tr><tr><td>Flush-Flo™</td><td>0.381</td><td>15.0</td></tr><tr><td>Kick-Flo®</td><td>0.841</td><td>12.3</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>12.9</td></tr></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.280	15.0	Flush-Flo™	0.381	15.0	Kick-Flo®	0.841	12.3	Mean Flow over Head Range	-	12.9																																																									
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Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)																																																																			
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Nolan Associates		Page 10
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Storage Structures for Storm

Tank or Pond Manhole: S8, DS/PN: S1.007

Invert Level (m) 45.506

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	83.0	1.200	83.0	1.201	0.0

Tank or Pond Manhole: S18, DS/PN: S2.004

Invert Level (m) 45.376

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	125.0	0.800	125.0	0.801	0.0

Tank or Pond Manhole: S27, DS/PN: S5.004

Invert Level (m) 41.570

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	159.0	1.200	159.0	1.201	0.0

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Edgbaston House

Hadley Road

Birmingham B16 8NH

Date 01/10/2025 14:43

File Surface Water. As-built...

Innovyze

Uxbridge

Planning Condition Discharge

As-Built

Designed by MDH

Checked by KAP

Network 2020.1

Micro Drainage

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000

Additional Flow - % of Total Flow 0.000

Hot Start (mins) 0

MADD Factor * 10m³/ha Storage 2.000

Hot Start Level (mm) 0

Inlet Coefficient 0.800

Manhole Headloss Coeff (Global) 0.500

Flow per Person per Day (l/per/day) 0.000

Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0

Number of Storage Structures 3

Number of Online Controls 3

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

FSR

Ratio R 0.400

Region England and Wales

Cv (Summer) 0.750

M5-60 (mm)

20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

DVD Status OFF

Analysis Timestep Fine

Inertia Status OFF

DTS Status ON

Profile(s)

Summer and Winter

Duration(s) (mins)

15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Period(s) (years)

1, 30, 100

Climate Change (%)

0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S1	15 Winter	100	+40%	100/15 Summer				46.731
S1.001	S2	15 Winter	100	+40%	100/15 Summer				46.703
S1.002	S3	15 Winter	100	+40%	100/15 Summer				46.672
S1.003	S4	15 Winter	100	+40%	30/15 Summer				46.595
S1.004	S5	15 Winter	100	+40%	30/15 Summer				46.535
S1.005	S6	15 Winter	100	+40%	100/15 Summer				46.380
S1.006	S7	60 Winter	100	+40%	100/15 Summer				46.320
S1.007	S8	60 Winter	100	+40%	100/15 Summer				46.317
S1.008	S9	60 Winter	100	+40%	30/15 Winter				46.699
S1.009	S10	120 Winter	100	+40%	30/15 Summer				47.258
S2.000	S11	120 Winter	100	+40%					45.969
S2.001	S12	120 Winter	100	+40%	100/15 Summer				45.967
S2.002	S13	120 Winter	100	+40%	100/60 Winter				45.964
S2.003	S14	120 Winter	100	+40%	100/15 Winter				45.962
S3.000	S15	15 Winter	100	+40%					46.114
S3.001	S16	120 Winter	100	+40%					45.961
S4.000	S17	120 Winter	100	+40%	100/60 Summer				45.961
S2.004	S18	120 Winter	100	+40%	100/15 Summer				45.959
S2.005	S19	30 Winter	100	+40%					45.391
S5.000	S20	15 Winter	100	+40%	100/15 Summer				46.238

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Nolan Associates		Page 12
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43 File Surface Water. As-built...	Designed by MDH Checked by KAP	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
S1.000	S1	0.156	0.000	0.72			28.1	FLOOD RISK	
S1.001	S2	0.205	0.000	0.59			25.8	FLOOD RISK	
S1.002	S3	0.269	0.000	0.75			35.5	SURCHARGED	
S1.003	S4	0.331	0.000	1.19			35.7	SURCHARGED	
S1.004	S5	0.310	0.000	1.86			55.5	SURCHARGED	
S1.005	S6	0.190	0.000	1.23			62.6	SURCHARGED	
S1.006	S7	0.420	0.000	0.61			35.6	SURCHARGED	
S1.007	S8	0.511	0.000	0.84			50.3	SURCHARGED	
S1.008	S9	0.954	0.000	0.37			26.6	SURCHARGED	
S1.009	S10	1.771	0.000	0.27			13.4	SURCHARGED	
S2.000	S11	-0.055	0.000	0.14			5.0	OK	
S2.001	S12	0.037	0.000	0.33			10.2	SURCHARGED	
S2.002	S13	0.097	0.000	0.23			15.8	SURCHARGED	
S2.003	S14	0.233	0.000	0.32			14.1	SURCHARGED	
S3.000	S15	-0.111	0.000	0.51			19.9	OK	
S3.001	S16	-0.114	0.000	0.12			11.1	OK	
S4.000	S17	0.115	0.000	0.16			8.7	SURCHARGED	
S2.004	S18	0.283	0.000	0.09			5.0	SURCHARGED	
S2.005	S19	-0.262	0.000	0.04			5.0	OK	
S5.000	S20	0.313	0.000	1.46			56.0	SURCHARGED	

Nolan Associates		Page 13
Edgbaston House Hadley Road Birmingham B16 8NH	Uxbridge Planning Condition Discharge As-Built	
Date 01/10/2025 14:43	Designed by MDH	
File Surface Water. As-built...	Checked by KAP	
Innovyze	Network 2020.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH		Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level
	Name	Storm							(m)
S5.001	S21	15 Winter	100	+40%					45.445
S6.000	S22	15 Winter	100	+40%					44.557
S5.002	S23	120 Winter	100	+40%	100/15 Winter				42.776
S7.000	S24	15 Winter	100	+40%					44.192
S5.003	S25	120 Winter	100	+40%	100/15 Summer				42.775
S8.000	S26	15 Winter	100	+40%	30/15 Summer				43.801
S5.004	S27	120 Winter	100	+40%	30/15 Summer				42.770
S5.005	S28	30 Winter	100	+40%					41.420

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)			
S5.001	S21	-0.210	0.000	0.19			66.3		OK	
S6.000	S22	-0.043	0.000	0.62			19.3		OK	
S5.002	S23	0.494	0.000	0.15			25.6	SURCHARGED		
S7.000	S24	-0.202	0.000	0.24			57.8		OK	
S5.003	S25	0.573	0.000	0.39			49.7	SURCHARGED		
S8.000	S26	1.540	0.000	3.17			143.9	FLOOD RISK		
S5.004	S27	0.975	0.000	0.30			14.9	SURCHARGED		
S5.005	S28	-0.175	0.000	0.11			15.0		OK	