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Richmond House Chester Bus. Park CH4 9QZ	Phase 2 Ashbrook Moss Nook Manchester	
Date 17/08/2021 17:40 File 5.MDX	Designed by J Hale Checked by	
Innovyze	Network 2020.1.3	

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)	2	PIMP (%)	100
M5-60 (mm)	18.100	Add Flow / Climate Change (%)	0
Ratio R	0.392	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

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.186	4-8	0.070

Total Area Contributing (ha) = 0.256

Total Pipe Volume (m³) = 8.451

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
1.000	17.040	0.100	170.4	0.040	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	15.430	0.093	166.7	0.040	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	15.603	0.092	170.0	0.017	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	21.587	0.127	170.0	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	11.399	0.067	170.1	0.015	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.28	64.993	0.040	0.0	0.0	0.0	1.00	39.7	5.4
1.001	50.00	5.54	64.893	0.080	0.0	0.0	0.0	1.01	40.1	10.8
2.000	50.00	5.26	65.287	0.017	0.0	0.0	0.0	1.00	39.8	2.3
2.001	50.00	5.62	65.195	0.023	0.0	0.0	0.0	1.00	39.8	3.1
3.000	50.00	5.19	64.867	0.015	0.0	0.0	0.0	1.00	39.7	2.0

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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)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	66.150	1.157	Open Manhole	600	1.000	64.993	225				
2	66.150	1.257	Open Manhole	1200	1.001	64.893	225	1.000	64.893	225	
3	66.200	0.913	Open Manhole	600	2.000	65.287	225				
4	66.200	1.005	Open Manhole	600	2.001	65.195	225	2.000	65.195	225	
5	66.100	1.233	Open Manhole	1200	3.000	64.867	225				
6	66.150	1.350	Open Manhole	1200	1.002	64.800	225	1.001	64.800	225	
								2.001	65.068	225	268
								3.000	64.800	225	
7	66.150	1.375	Open Manhole	1200	1.003	64.775	225	1.002	64.775	225	
8	65.700	0.818	Open Manhole	600	4.000	64.882	225				
9	65.700	0.944	Open Manhole	600	5.000	64.756	225				
11	65.700	1.015	Open Manhole	600	1.004	64.685	225	1.003	64.685	225	
								4.000	64.701	225	16
								5.000	64.701	225	16
12	65.700	0.739	Open Manhole	600	6.000	64.961	225				
13	65.700	0.968	Open Manhole	600	6.001	64.732	225	6.000	64.732	225	
14	65.700	1.182	Open Manhole	1200	1.005	64.518	225	1.004	64.518	225	
								6.001	64.618	225	100
	65.400	0.896	Open Manhole	0		OUTFALL		1.005	64.504	225	

No coordinates have been specified, layout information cannot be produced.

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	1	66.150	64.993	0.932	Open Manhole	600
1.001	o	225	2	66.150	64.893	1.032	Open Manhole	1200
2.000	o	225	3	66.200	65.287	0.688	Open Manhole	600
2.001	o	225	4	66.200	65.195	0.780	Open Manhole	600
3.000	o	225	5	66.100	64.867	1.008	Open Manhole	1200
1.002	o	225	6	66.150	64.800	1.125	Open Manhole	1200
1.003	o	225	7	66.150	64.775	1.150	Open Manhole	1200
4.000	o	225	8	65.700	64.882	0.593	Open Manhole	600
5.000	o	225	9	65.700	64.756	0.719	Open Manhole	600
1.004	o	225	11	65.700	64.685	0.790	Open Manhole	600
6.000	o	225	12	65.700	64.961	0.514	Open Manhole	600
6.001	o	225	13	65.700	64.732	0.743	Open Manhole	600
1.005	o	225	14	65.700	64.518	0.957	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	17.040	170.4	2	66.150	64.893	1.032	Open Manhole	1200
1.001	15.430	166.7	6	66.150	64.800	1.125	Open Manhole	1200
2.000	15.603	170.0	4	66.200	65.195	0.780	Open Manhole	600
2.001	21.587	170.0	6	66.150	65.068	0.857	Open Manhole	1200
3.000	11.399	170.1	6	66.150	64.800	1.125	Open Manhole	1200
1.002	4.252	170.0	7	66.150	64.775	1.150	Open Manhole	1200
1.003	15.300	170.0	11	65.700	64.685	0.790	Open Manhole	600
4.000	30.769	170.0	11	65.700	64.701	0.774	Open Manhole	600
5.000	9.426	170.0	11	65.700	64.701	0.774	Open Manhole	600
1.004	11.129	66.6	14	65.700	64.518	0.957	Open Manhole	1200
6.000	38.894	170.0	13	65.700	64.732	0.743	Open Manhole	600
6.001	19.336	170.0	14	65.700	64.618	0.857	Open Manhole	1200
1.005	2.371	169.6		65.400	64.504	0.671	Open Manhole	0

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	65.400	64.504	64.600	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	1	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)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.100	Storm Duration (mins)	30
Ratio R	0.392		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 14, DS/PN: 1.005, Volume (m³): 2.5

Unit Reference	MD-SHE-0105-5000-1050-5000
Design Head (m)	1.050
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	105
Invert Level (m)	64.518
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.050	5.0
Flush-Flo™	0.313	5.0
Kick-Flo®	0.667	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	3.5	1.200	5.3	3.000	8.2	7.000	12.2
0.200	4.8	1.400	5.7	3.500	8.8	7.500	12.6
0.300	5.0	1.600	6.1	4.000	9.4	8.000	13.0
0.400	4.9	1.800	6.4	4.500	9.9	8.500	13.4
0.500	4.8	2.000	6.7	5.000	10.4	9.000	13.8
0.600	4.5	2.200	7.1	5.500	10.9	9.500	14.1
0.800	4.4	2.400	7.3	6.000	11.3		
1.000	4.9	2.600	7.6	6.500	11.8		

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Storage Structures for Storm

Porous Car Park Manhole: 7, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	18.0
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	50.0	Slope (1:X)	250.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	65.700	Membrane Depth (mm)	250

Porous Car Park Manhole: 11, DS/PN: 1.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	24.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	133.3	Slope (1:X)	250.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	65.250	Membrane Depth (mm)	250

Cellular Storage Manhole: 14, DS/PN: 1.005

Invert Level (m)	64.614	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	200.0	200.0	0.401	0.0	222.7
0.400	200.0	222.6			

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1 year Return Period 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 1

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 0.389

Region England and Wales Cv (Summer) 0.750

M5-60 (mm)

18.100 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)

300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status

OFF

DVD Status

ON

Inertia Status

ON

Profile(s)

Summer and Winter

Duration(s) (mins)

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

Return Period(s) (years)

1, 30, 100

Climate Change (%)

0, 0, 40

	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level
									(m)
1.000	1	15 Winter	1	+0%	100/15 Summer				65.049
1.001	2	15 Winter	1	+0%	30/15 Winter				64.970
2.000	3	15 Winter	1	+0%	100/15 Winter				65.323
2.001	4	15 Winter	1	+0%	100/15 Summer				65.236
3.000	5	15 Winter	1	+0%	100/15 Summer				64.918
1.002	6	15 Winter	1	+0%	30/15 Summer				64.911
1.003	7	30 Summer	1	+0%	100/15 Summer				64.873
4.000	8	15 Winter	1	+0%	100/15 Summer				64.937
5.000	9	15 Winter	1	+0%	100/15 Summer				64.797
1.004	11	15 Winter	1	+0%	100/15 Summer				64.780
6.000	12	15 Winter	1	+0%	100/60 Winter				65.008
6.001	13	15 Winter	1	+0%	100/30 Winter				64.785
1.005	14	60 Winter	1	+0%	30/15 Summer				64.674

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

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Flow		
1.000	1	-0.169	0.000	0.14			4.9		OK	
1.001	2	-0.147	0.000	0.26			9.1		OK	
2.000	3	-0.189	0.000	0.06			2.1		OK	
2.001	4	-0.184	0.000	0.08			2.7		OK	
3.000	5	-0.174	0.000	0.05			1.8		OK	
1.002	6	-0.114	0.000	0.48			13.5		OK	
1.003	7	-0.127	0.000	0.38		8	13.3		OK	
4.000	8	-0.170	0.000	0.13			4.9		OK	
5.000	9	-0.184	0.000	0.06			1.8		OK	
1.004	11	-0.130	0.000	0.37		7	19.8		OK	
6.000	12	-0.178	0.000	0.10			3.6		OK	
6.001	13	-0.172	0.000	0.13			4.6		OK	
1.005	14	-0.069	0.000	0.14		37	4.1		OK	

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30 year Return Period 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 1 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 0.389							
Region England and Wales Cv (Summer) 0.750							
M5-60 (mm) 18.100 Cv (Winter) 0.840							
Margin for Flood Risk Warning (mm) 300.0							
Analysis Timestep 2.5 Second Increment (Extended)							
DTS Status OFF							
DVD Status ON							
Inertia Status ON							
Profile(s) Summer and Winter							
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440							
Return Period(s) (years) 1, 30, 100							
Climate Change (%) 0, 0, 40							
WARNING: Half Drain Time has not been calculated as the structure is too full.							
PN	US/MH Name Storm	Return Climate Period Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1 15 Winter	30 +0%	100/15 Summer				65.148
1.001	2 15 Winter	30 +0%	30/15 Winter				65.126
2.000	3 15 Winter	30 +0%	100/15 Winter				65.345
2.001	4 15 Winter	30 +0%	100/15 Summer				65.263
3.000	5 15 Summer	30 +0%	100/15 Summer				65.068
1.002	6 15 Winter	30 +0%	30/15 Summer				65.062
1.003	7 15 Winter	30 +0%	100/15 Summer				64.997
4.000	8 15 Winter	30 +0%	100/15 Summer				64.971
5.000	9 15 Winter	30 +0%	100/15 Summer				64.865
1.004	11 15 Winter	30 +0%	100/15 Summer				64.859
6.000	12 15 Winter	30 +0%	100/60 Winter				65.036
6.001	13 60 Winter	30 +0%	100/30 Winter				64.824
1.005	14 60 Winter	30 +0%	30/15 Summer				64.823
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

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)	Flow (l/s)		
1.000	1	-0.069	0.000	0.33			11.7		OK	
1.001	2	0.009	0.000	0.59			21.0		SURCHARGED	
2.000	3	-0.167	0.000	0.15			5.1		OK	
2.001	4	-0.157	0.000	0.19			7.0		OK	
3.000	5	-0.024	0.000	0.11			3.8		OK	
1.002	6	0.037	0.000	1.09			30.3		SURCHARGED	
1.003	7	-0.002	0.000	1.01		6	35.4		OK	
4.000	8	-0.136	0.000	0.32			11.9		OK	
5.000	9	-0.116	0.000	0.14			4.4		OK	
1.004	11	-0.051	0.000	0.95		7	51.1		OK	
6.000	12	-0.150	0.000	0.24			8.9		OK	
6.001	13	-0.133	0.000	0.17			6.2		OK	
1.005	14	0.080	0.000	0.18			5.0		SURCHARGED	

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<u>Simulation Criteria</u>																																																																																																																																																																											
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		1		Number of Time/Area Diagrams		0																																																																																																																																																																					
Number of Offline Controls		0		Number of Real Time Controls		0																																																																																																																																																																					
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Rainfall Model		FSR		Ratio R		0.389																																																																																																																																																																					
Region England and Wales		Cv (Summer)		0.750																																																																																																																																																																							
M5-60 (mm)		18.100		Cv (Winter)		0.840																																																																																																																																																																					
Margin for Flood Risk Warning (mm)						300.0																																																																																																																																																																					
Analysis Timestep		2.5 Second Increment (Extended)																																																																																																																																																																									
DTS Status						OFF																																																																																																																																																																					
DVD Status						ON																																																																																																																																																																					
Inertia Status						ON																																																																																																																																																																					
Profile(s)						Summer and Winter																																																																																																																																																																					
Duration(s) (mins)		15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440																																																																																																																																																																									
Return Period(s) (years)		1, 30, 100																																																																																																																																																																									
Climate Change (%)		0, 0, 40																																																																																																																																																																									
<table><tr><th></th><th>US/MH</th><th></th><th>Return</th><th>Climate</th><th>First (X)</th><th>First (Y)</th><th>First (Z)</th><th>Overflow</th><th>Water</th></tr><tr><th>PN</th><th>Name</th><th>Storm</th><th>Period</th><th>Change</th><th>Surcharge</th><th>Flood</th><th>Overflow</th><th>Act.</th><th>Level</th></tr><tr><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>(m)</th></tr><tr><td>1.000</td><td>1</td><td>15 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.653</td></tr><tr><td>1.001</td><td>2</td><td>15 Winter</td><td>100</td><td>+40%</td><td>30/15 Winter</td><td></td><td></td><td></td><td>65.601</td></tr><tr><td>2.000</td><td>3</td><td>15 Winter</td><td>100</td><td>+40%</td><td>100/15 Winter</td><td></td><td></td><td></td><td>65.547</td></tr><tr><td>2.001</td><td>4</td><td>15 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.533</td></tr><tr><td>3.000</td><td>5</td><td>15 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.522</td></tr><tr><td>1.002</td><td>6</td><td>15 Winter</td><td>100</td><td>+40%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>65.512</td></tr><tr><td>1.003</td><td>7</td><td>15 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.394</td></tr><tr><td>4.000</td><td>8</td><td>180 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.368</td></tr><tr><td>5.000</td><td>9</td><td>180 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.366</td></tr><tr><td>1.004</td><td>11</td><td>180 Winter</td><td>100</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>65.366</td></tr><tr><td>6.000</td><td>12</td><td>180 Winter</td><td>100</td><td>+40%</td><td>100/60 Winter</td><td></td><td></td><td></td><td>65.363</td></tr><tr><td>6.001</td><td>13</td><td>180 Winter</td><td>100</td><td>+40%</td><td>100/30 Winter</td><td></td><td></td><td></td><td>65.362</td></tr><tr><td>1.005</td><td>14</td><td>180 Winter</td><td>100</td><td>+40%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>65.360</td></tr></table>													US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level										(m)	1.000	1	15 Winter	100	+40%	100/15 Summer				65.653	1.001	2	15 Winter	100	+40%	30/15 Winter				65.601	2.000	3	15 Winter	100	+40%	100/15 Winter				65.547	2.001	4	15 Winter	100	+40%	100/15 Summer				65.533	3.000	5	15 Winter	100	+40%	100/15 Summer				65.522	1.002	6	15 Winter	100	+40%	30/15 Summer				65.512	1.003	7	15 Winter	100	+40%	100/15 Summer				65.394	4.000	8	180 Winter	100	+40%	100/15 Summer				65.368	5.000	9	180 Winter	100	+40%	100/15 Summer				65.366	1.004	11	180 Winter	100	+40%	100/15 Summer				65.366	6.000	12	180 Winter	100	+40%	100/60 Winter				65.363	6.001	13	180 Winter	100	+40%	100/30 Winter				65.362	1.005	14	180 Winter	100	+40%	30/15 Summer				65.360
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Tier Consult		Page 13
Richmond House Chester Bus. Park CH4 9QZ	Phase 2 Ashbrook Moss Nook Manchester	
Date 17/08/2021 17:40 File 5.MDX	Designed by J Hale Checked by	
Innovyze	Network 2020.1.3	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

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)	Flow (l/s)		
1.000	1	0.436	0.000	0.54			19.3		SURCHARGED	
1.001	2	0.483	0.000	1.04			36.9		SURCHARGED	
2.000	3	0.035	0.000	0.25			8.9		SURCHARGED	
2.001	4	0.112	0.000	0.30			11.0		SURCHARGED	
3.000	5	0.430	0.000	0.20			6.9		SURCHARGED	
1.002	6	0.487	0.000	1.76			48.9		SURCHARGED	
1.003	7	0.394	0.000	1.63		6	57.1		SURCHARGED	
4.000	8	0.261	0.000	0.14			5.4		SURCHARGED	
5.000	9	0.385	0.000	0.06			1.9		SURCHARGED	
1.004	11	0.456	0.000	0.48		33	25.6		SURCHARGED	
6.000	12	0.177	0.000	0.11			4.1		SURCHARGED	
6.001	13	0.405	0.000	0.13			4.8		SURCHARGED	
1.005	14	0.617	0.000	0.18		219	5.0		SURCHARGED	