

Civic Engineers		Page 1
Carvers Warehouse 77 Dale Street Manchester, M1 2HG	Brunswick Mill Manchester	
Date 29/06/2021 11:45 File 846-04 Existing 2yr Run...	Designed by TC Checked by TC	
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)	1	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.360	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	0.343	4-8	0.104

Total Area Contributing (ha) = 0.447

Total Pipe Volume (m³) = 3.181

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Level Name	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.001		53.000	50.800	50.800	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 * 10m³/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 0
 Number of Online Controls 0 Number of Time/Area Diagrams 0
 Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Region	England and Wales
Return Period (years)	1	M5-60 (mm)	18.000

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Synthetic Rainfall Details

Ratio R 0.360 Cv (Winter) 0.840
 Profile Type Summer Storm Duration (mins) 30
 Cv (Summer) 0.750

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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) 2																																																							
Climate Change (%) 0																																																							
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