

Ironside Farrar Ltd		Page 1
3 Worsley Court High Street Worsley Manchester	30580 Pioneer House Wythenshawe Ex SW Run Off	
Date 23/02/2023 File 30580 EXISITNG SW 230209...	Designed by SAP Checked by	
Micro Drainage	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
M5-60 (mm) 18.000
Ratio R 0.381
Maximum Rainfall (mm/hr) 100
Maximum Time of Concentration (mins) 30
Foul Sewage (l/s/ha) 0.000
Volumetric Runoff Coeff. 0.750
PIMP (%) 100
Add Flow / Climate Change (%) 0
Minimum Backdrop Height (m) 0.000
Maximum Backdrop Height (m) 0.000
Min Design Depth for Optimisation (m) 1.200
Min Vel for Auto Design only (m/s) 1.00
Min Slope for Optimisation (1:X) 500

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

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	15.650	0.190	82.4	0.150	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	9.000	0.490	18.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	60.49	5.24	29.870	0.150	0.0	0.0	0.0	1.11	19.6«	24.6
1.001	60.18	5.30	29.680	0.150	0.0	0.0	0.0	2.36	41.7	24.6

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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 Coeffiecient	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	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	Ratio R	0.381
Region England and Wales Cv (Summer)			0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

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, 2, 30, 100
Climate Change (%)	0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	2/15 Summer				29.996
1.001	2	15 Winter	1	+0%	30/15 Winter				29.754

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.024	0.000	1.00		18.1	OK	
1.001	2	-0.076	0.000	0.49		18.1	OK	

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Return Period(s) (years)		1, 2, 30, 100							
Climate Change (%)		0, 0, 0, 0							
									Water
PN	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level
	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
1.000	1	15 Winter	100	+0%	2/15 Summer				31.242
1.001	2	15 Winter	100	+0%	30/15 Winter				30.069