

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	0.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	0.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	8.000	Minimum Backdrop Height (m)	0.000
Ratio-R	0.001	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Depth (m)
F3	5.00	0.2	79.500	450	1.000
F4			79.500		1.001

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)
F3	F3	F4	24.000	0.600	78.500	78.499	0.001	24000.0	150	0.00

Name	Vel (m/s)	Cap (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
F3	0.057	1.0	0.850	0.851	0.000	0.2	0	0.000

Sumner

consultancy Ltd

Civil Engineering & Transportation Consultant

Sumner Consultancy Ltd

The Old School

Astley

Shrewsbury SY4 4BP

File: 719-21 FW Calculations 06.pfd

Network: Storm Network

John Sumner

25/01/2024

Page 2

719-21 Chapel Farm Whitewell Whitchurch

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
F3	24.000	24000.0	150	Circular	79.500	78.500	0.850	79.500	78.499	0.851

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Node Type
F3	F3	450	Manhole	Private	F4	Junction

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
F3	79.500	1.000	450					
				0	F3	78.500	150	
F4	79.500	1.001			1	F3	78.499	150

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	60
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m³/ha)	0.0
M5-60 (mm)	8.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.001	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15

30

60

120

180

240

360

480

600

720

960

1440

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

Flow+ v10.2 Copyright © 1988-2024 Causeway Technologies Ltd

Node F3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.11880	Safety Factor	2.0	Invert Level (m)	78.200
Side Inf Coefficient (m/hr)	0.11880	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	8.6	0.0	0.001	8.6	8.6	0.450	8.6	8.6	0.451	0.0	8.6

Node F4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.11880	Safety Factor	2.0	Invert Level (m)	78.200
Side Inf Coefficient (m/hr)	0.11880	Porosity	0.30	Time to half empty (mins)	61

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	8.6	0.0	0.001	8.6	8.6	0.450	8.6	8.6	0.451	0.0	8.6

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	F3	376	78.519	0.019	0.2	0.8253	0.0000	OK
360 minute summer	F4	344	78.200	-0.299	0.1	0.0011	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	
360 minute summer	F3	F3	F4	0.1	0.081	0.057	0.0184	
360 minute summer	F3	Infiltration		0.1				
360 minute summer	F4	Infiltration		0.1				