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	Watsons Homes	Network: Storm D.Wood 09/10/2025	Spurr House Bury

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	5.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.800	Minimum Backdrop Height (m)	0.200
Ratio-R	0.316	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	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
1	0.090	5.00	93.500	1200	235.990	262.500	1.707	91.793
2	0.090	5.00	93.450	1500	248.490	262.500	1.699	91.751
3	0.090	5.00	93.150	1500	301.490	262.500	1.576	91.574
4	0.090	5.00	93.150	1500	319.630	262.500	1.636	91.514
5			93.100	1800	324.630	262.500	1.724	91.376
5_OUT			92.010		329.630	262.500	0.801	91.209

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)	Rain (mm/hr)
1.000	1	2	12.500	0.600	91.793	91.751	0.042	297.6	375	5.20	5.0
1.001	2	3	53.000	0.600	91.751	91.574	0.177	300.0	375	6.05	5.0
1.002	3	4	18.140	0.600	91.574	91.514	0.060	300.0	375	6.34	5.0
1.003	4	5	5.000	0.600	91.514	91.376	0.138	36.2	150	6.39	5.0
1.004	5	5_OUT	5.000	0.600	91.376	91.209	0.167	29.9	150	6.43	5.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.045	115.4	1.2	1.332	1.324	0.090	0.0
1.001	1.041	114.9	2.4	1.324	1.201	0.180	0.0
1.002	1.041	114.9	3.7	1.201	1.261	0.270	0.0
1.003	1.677	29.6	4.9	1.486	1.574	0.360	0.0
1.004	1.846	32.6	4.9	1.574	0.651	0.360	0.0

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)
1.000	12.500	297.6	375	1 STANDARD	93.500	91.793	1.332	93.450	91.751	1.324
1.001	53.000	300.0	375	1 STANDARD	93.450	91.751	1.324	93.150	91.574	1.201
1.002	18.140	300.0	375	1 STANDARD	93.150	91.574	1.201	93.150	91.514	1.261
1.003	5.000	36.2	150	1 STANDARD	93.150	91.514	1.486	93.100	91.376	1.574

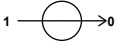
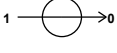
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	1 STANDARD	2	1500	Manhole	1 STANDARD
1.001	2	1500	Manhole	1 STANDARD	3	1500	Manhole	1 STANDARD
1.002	3	1500	Manhole	1 STANDARD	4	1500	Manhole	1 STANDARD
1.003	4	1500	Manhole	1 STANDARD	5	1800	Manhole	1 STANDARD

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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)
1.004	5.000	29.9	150	1 STANDARD	93.100	91.376	1.574	92.010	91.209	0.651

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.004	5	1800	Manhole	1 STANDARD	5_OUT		Manhole	1 STANDARD

Manhole Schedule									
Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	235.990	262.500	93.500	1.707	1200				
							0	1.000	91.793 375
2	248.490	262.500	93.450	1.699	1500		1	1.000	91.751 375
							0	1.001	91.751 375
3	301.490	262.500	93.150	1.576	1500		1	1.001	91.574 375
							0	1.002	91.574 375
4	319.630	262.500	93.150	1.636	1500		1	1.002	91.514 375
							0	1.003	91.514 150
5	324.630	262.500	93.100	1.724	1800		1	1.003	91.376 150
							0	1.004	91.376 150
5_OUT	329.630	262.500	92.010	0.801			1	1.004	91.209 150

Simulation Settings			
Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	18.800	Additional Storage (m³/ha)	20.0
Ratio-R	0.316	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

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

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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 4 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.800	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	5.0		
Invert Level (m)	91.514	Diameter (m)	0.045		

Node 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	91.793
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	145.0	0.0	1.200	145.0	0.0	1.201	0.0	0.0

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
180 minute winter	1	144	91.954	0.161	8.8	23.7253	0.0000	OK
180 minute winter	2	144	91.954	0.203	6.2	0.5744	0.0000	OK
240 minute winter	3	184	91.955	0.380	3.6	1.1064	0.0000	SURCHARGED
240 minute winter	4	184	91.954	0.440	3.0	1.2621	0.0000	SURCHARGED
180 minute winter	5	144	91.407	0.031	2.7	0.0784	0.0000	OK
180 minute winter	5_OUT	144	91.238	0.029	2.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	1	1.000	2	-5.7	-0.303	-0.050	0.6637	
180 minute winter	2	1.001	3	-3.1	0.204	-0.027	4.5377	
240 minute winter	3	1.002	4	2.6	0.135	0.022	2.0008	
240 minute winter	4	1.003	5	2.7	1.004	0.091	0.0135	
180 minute winter	5	1.004	5_OUT	2.7	1.079	0.083	0.0125	52.8

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	228	92.341	0.548	18.5	80.6311	0.0000	SURCHARGED
240 minute winter	2	228	92.341	0.590	13.7	1.6674	0.0000	SURCHARGED
240 minute winter	3	228	92.341	0.767	8.4	2.2311	0.0000	SURCHARGED
240 minute winter	4	228	92.341	0.827	5.9	2.3700	0.0000	SURCHARGED
240 minute winter	5	228	91.413	0.037	3.8	0.0933	0.0000	OK
240 minute winter	5_OUT	228	91.243	0.034	3.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	1	1.000	2	-12.7	-0.251	-0.110	1.3787	
240 minute winter	2	1.001	3	-7.8	0.233	-0.068	5.8457	
240 minute winter	3	1.002	4	3.6	0.147	0.032	2.0008	
240 minute winter	4	1.003	5	3.8	1.089	0.127	0.0172	
240 minute winter	5	1.004	5_OUT	3.8	1.179	0.115	0.0159	87.5

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.47%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	336	93.085	1.292	26.5	176.8949	0.0000	SURCHARGED
360 minute winter	2	336	93.085	1.334	19.0	3.7705	0.0000	SURCHARGED
360 minute winter	3	336	93.085	1.511	11.5	4.3964	0.0000	FLOOD RISK
360 minute winter	4	336	93.085	1.571	8.0	4.5033	0.0000	FLOOD RISK
360 minute winter	5	336	91.420	0.044	5.2	0.1116	0.0000	OK
360 minute winter	5_OUT	336	91.249	0.041	5.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	1	1.000	2	-18.5	-0.167	-0.160	1.3787	
360 minute winter	2	1.001	3	-11.0	0.232	-0.096	5.8457	
360 minute winter	3	1.002	4	4.9	0.144	0.043	2.0008	
360 minute winter	4	1.003	5	5.2	1.178	0.176	0.0222	
360 minute winter	5	1.004	5_OUT	5.2	1.285	0.160	0.0203	144.5