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9B Pemberton House Stafford Court Telford TF3 3BD	Fitzjohns Ave Hampstead, London Network 2	
Date 20.08.15 File Fitzjohn Avenue network...	Designed by JJM Checked by	
Causeway		Network 2015.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for FITZJOHNS NETWORK 2.SWS

Pipe Sizes FITZJOHNS Manhole Sizes FITZJOHNS

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	10
M5-60 (mm)	20.800	Minimum Backdrop Height (m)	0.200
Ratio R	0.438	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	0.75
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Network Design Table for FITZJOHNS NETWORK 2.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.122	0.062	50.4	0.008	5.00	0.0	0.600	o	100
1.001	4.196	0.084	50.0	0.000	0.00	0.0	0.600	o	100
1.002	7.375	0.072	102.4	0.000	0.00	0.0	0.600	o	100

Network Results Table


PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.05	102.900	0.008	0.0	0.0	0.1	1.09	8.5	1.2
1.001	50.00	5.11	102.838	0.008	0.0	0.0	0.1	1.09	8.6	1.2
1.002	50.00	5.27	99.200	0.008	0.0	0.0	0.1	0.76	6.0	1.2

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Manhole Schedules for FITZJOHNS NETWORK 2.SWS

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)
20	104.100	1.200	Open Manhole	1200	1.000	102.900	100				
21	104.100	1.262	Open Manhole	1200	1.001	102.838	100	1.000	102.838	100	
22	104.100	4.900	Open Manhole	1200	1.002	99.200	100	1.001	102.754	100	3554
23	104.800	5.672	Open Manhole	0		OUTFALL		1.002	99.128	100	

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PIPELINE SCHEDULES for FITZJOHNS NETWORK 2.SWS

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	100	20	104.100	102.900	1.100	Open Manhole	1200
1.001	o	100	21	104.100	102.838	1.162	Open Manhole	1200
1.002	o	100	22	104.100	99.200	4.800	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	3.122	50.4	21	104.100	102.838	1.162	Open Manhole	1200
1.001	4.196	50.0	22	104.100	102.754	1.246	Open Manhole	1200
1.002	7.375	102.4	23	104.800	99.128	5.572	Open Manhole	0

Free Flowing Outfall Details for FITZJOHNS NETWORK 2.SWS


Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.002	23	104.800	99.128	0.000	0	0

Simulation Criteria for FITZJOHNS NETWORK 2.SWS

Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	30.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start Level (mm)	0	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.500	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		

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.800	Storm Duration (mins)	15
Ratio R	0.438		

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Summary of Results for 15 minute 100 year Winter (FITZJOHNS NETWORK 2.SWS)

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

PN	US/MH Name	Water	Surcharged	Flooded	Pipe			Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (1/s)	Flow (1/s)	
1.000	20	102.963	-0.037	0.000	0.71		4.9	OK
1.001	21	102.899	-0.039	0.000	0.67		4.9	OK
1.002	22	99.275	-0.025	0.000	0.92		5.0	OK