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Lion House Oriental Road Woking GU22 8AP	Phase 8 Haul Road Drainage Exceedance Model 1 in 200 year storm	
Date 16/06/2019	Designed by AM	
File Phase 8 Haul Road Draina...	Checked by RA	
Micro Drainage		Network 2018.1.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	200
FEH Rainfall Version	1999
Site Location GB 467450 109700 SU 67450 09700	
C (1km)	-0.027
D1 (1km)	0.461
D2 (1km)	0.289
D3 (1km)	0.376
E (1km)	0.304
F (1km)	2.245
Maximum Rainfall (mm/hr)	50
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)	0.200
Maximum Backdrop Height (m)	1.500
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

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
S1.000	65.430	0.654	100.0	0.017	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	80.172	1.546	51.9	0.021	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	56.897	0.973	58.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	7.129	0.280	25.5	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)	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)
S1.000	50.00	6.09	53.749	0.017	0.0	0.0	0.0	1.00	17.8	2.3
S1.001	50.00	7.04	53.095	0.038	0.0	0.0	0.0	1.40	24.7	5.1
S1.002	50.00	7.76	51.549	0.038	0.0	0.0	0.0	1.32	23.3	5.1
S1.003	50.00	7.82	50.280	0.038	0.0	0.0	0.0	2.00	35.4	5.1

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Network Design Table for Storm

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
S1.004	1.346	0.013	103.5	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)
S1.004	50.00	7.84	50.000	0.038	0.0	0.0	0.0	0.99	17.4	5.1

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Summary Wizard of 15 minute 200 year Summer I+0% 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 Coefficient	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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	1999
Site Location	GB 467450 109700 SU 67450 09700
C (1km)	-0.027
D1 (1km)	0.461
D2 (1km)	0.289
D3 (1km)	0.376
E (1km)	0.304
F (1km)	2.245
Cv (Summer)	0.750
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, 360
Return Period(s) (years)	200
Climate Change (%)	0

PN	US/MH Name	Storm Rank	Water Surcharged			Flooded		Pipe	Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S1.000	S1	4	55.102	1.203	2.861	0.23	4.0	FLOOD	
S1.001	S2	2	55.334	2.089	0.000	0.00	0.0	FLOOD RISK	
S1.002	S3	4	51.549	-0.150	0.000	0.00	0.0	OK	
S1.003	S4	3	50.280	-0.150	0.000	0.00	0.0	OK	
S1.004	S5	3	50.000	-0.150	0.000	0.00	0.0	OK	

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Summary Wizard of 360 minute 200 year Summer I+0% 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 Coefficient	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 Offline Controls	0	Number of Time/Area Diagrams	0
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Profile(s)	Summer and Winter
Duration(s) (mins)	15, 360
Return Period(s) (years)	200
Climate Change (%)	0

PN	US/MH Name	Storm Rank	Water Surcharged			Flooded		Pipe	Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S1.000	S1	2	55.117	1.218	17.757	0.01	0.2	FLOOD	
S1.001	S2	3	55.152	1.907	0.000	0.00	0.0	SURCHARGED	
S1.002	S3	3	51.549	-0.150	0.000	0.00	0.0	OK	
S1.003	S4	4	50.280	-0.150	0.000	0.00	0.0	OK	
S1.004	S5	4	50.000	-0.150	0.000	0.00	0.0	OK	

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Summary Wizard of 15 minute 200 year Winter I+0% 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 Coefficient	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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	1	Number of Real Time Controls	0

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Return Period(s) (years)	200
Climate Change (%)	0

PN	US/MH Name	Storm Rank	Water Surcharged			Flooded		Pipe	Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
S1.000	S1	3	55.103	1.204	3.894	0.21	3.6	FLOOD	
S1.001	S2	1	55.452	2.207	0.000	0.00	0.0	FLOOD RISK	
S1.002	S3	1	51.549	-0.150	0.000	0.00	0.0	OK	
S1.003	S4	1	50.280	-0.150	0.000	0.00	0.0	OK	
S1.004	S5	1	50.000	-0.150	0.000	0.00	0.0	OK	

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