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Kent	POUND LANE	
ME14 5PP	PHASE 1 SW NETWORK	
Date 24/04/2020 09:10	Designed by JEM	
File 3554-SW NETWORK-PHASE 1-P01.MDX	Checked by MJF	
Innovyze	Network 2020.1	

Existing Network Details 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
1.000	0.916	0.020	45.8	0.007	5.00	0.0	0.600	o	100	Pipe/Conduit
2.000	0.673	0.070	9.6	0.005	5.00	0.0	0.600	o	100	Pipe/Conduit
1.001	8.083	0.180	44.9	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
1.002	2.283	0.030	76.1	0.020	0.00	0.0	0.600	o	100	Pipe/Conduit
1.003	5.885	0.080	73.6	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
1.004	7.529	0.100	75.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
1.005	6.894	0.420	16.4	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit
1.006	1.190	0.010	119.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	9.560	0.007	0.0	1.14	9.0
2.000	9.610	0.005	0.0	2.51	19.7
1.001	9.540	0.012	0.0	1.15	9.1
1.002	9.360	0.033	0.0	0.88	6.9
1.003	9.330	0.033	0.0	0.90	7.1
1.004	9.250	0.033	0.0	0.89	7.0
1.005	9.100	0.041	0.0	2.50	44.2
1.006	8.680	0.041	0.0	0.92	16.3

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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
1.007	4.917	0.060	82.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit

Network Results Table


PN	US/IL (m)	I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.007	7.640	0.041	0.0	0.85	6.7

Manhole Schedules for Storm









MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out		Pipes In		Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	
S7	10.460	0.900	Open Manhole	450	1.000	9.560	100		
S6	10.500	0.890	Open Manhole	450	2.000	9.610	100		
JUNCTION S6	10.500	0.960	Junction		1.001	9.540	100	1.000 2.000	9.540 100
S5	10.760	1.400	Open Manhole	450	1.002	9.360	100	1.001	9.360 100
S4	10.630	1.300	Open Manhole	450	1.003	9.330	100	1.002	9.330 100
S3	9.900	0.650	Open Manhole	450	1.004	9.250	100	1.003	9.250 100
S2 CP	10.410	1.310	Open Manhole	450	1.005	9.100	150	1.004	9.150 100
ATT1	10.590	1.910	Junction		1.006	8.680	150	1.005	8.680 150
S1 HB	10.560	2.920	Open Manhole	1200	1.007	7.640	100	1.006	8.670 150
	10.420	2.840	Open Manhole	0		OUTFALL		1.007	7.580 100


MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
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S7 614645.855 158075.506 614645.855 158075.506 Required

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Manhole Schedules for Storm


MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S6	614645.122	158075.646	614645.122	158075.646	Required	
JUNCTION S6	614645.359	158076.276			No Entry	
S5	614639.376	158081.712	614639.376	158081.712	Required	
S4	614639.606	158083.984	614639.606	158083.984	Required	
S3	614635.243	158087.932	614635.243	158087.932	Required	
S2 CP	614628.185	158090.555	614628.185	158090.555	Required	
ATT1	614622.516	158086.633			No Entry	
S1 HB	614621.613	158087.409	614621.613	158087.409	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
	614623.890	158091.767			No Entry	



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PIPELINE SCHEDULES for Storm

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	S7	10.460	9.560	0.800	Open Manhole	450
2.000	o	100	S6	10.500	9.610	0.790	Open Manhole	450
1.001	o	100	JUNCTION	S6	10.500	9.540	0.860	Junction
1.002	o	100	S5	10.760	9.360	1.300	Open Manhole	450
1.003	o	100	S4	10.630	9.330	1.200	Open Manhole	450
1.004	o	100	S3	9.900	9.250	0.550	Open Manhole	450
1.005	o	150	S2 CP	10.410	9.100	1.160	Open Manhole	450

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	0.916	45.8	JUNCTION	S6	10.500	9.540	0.860	Junction
2.000	0.673	9.6	JUNCTION	S6	10.500	9.540	0.860	Junction
1.001	8.083	44.9	S5	10.760	9.360	1.300	Open Manhole	450
1.002	2.283	76.1	S4	10.630	9.330	1.200	Open Manhole	450
1.003	5.885	73.6	S3	9.900	9.250	0.550	Open Manhole	450
1.004	7.529	75.3	S2 CP	10.410	9.150	1.160	Open Manhole	450
1.005	6.894	16.4	ATT1	10.590	8.680	1.760	Junction	

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PIPELINE SCHEDULES for Storm

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)
1.006	o	150	ATT1	10.590	8.680	1.760	Junction	
1.007	o	100	S1 HB	10.560	7.640	2.820	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)
1.006	1.190	119.0	S1 HB	10.560	8.670	1.740	Open Manhole	1200
1.007	4.917	82.0		10.420	7.580	2.740	Open Manhole	0


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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.007	0.007	0.007
2.000	User	-	100	0.005	0.005	0.005
1.001	-	-	100	0.000	0.000	0.000
1.002	User	-	100	0.020	0.020	0.020
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	User	-	100	0.009	0.009	0.009
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.041	0.041	0.041

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,I (mm)	W (mm)
1.007		10.420	7.580	0.000	0	0

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coefficient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m ³ /ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 614650 158103 TR 14650 58103	Cv (Winter)	0.840
Data Type	Point Storm	Duration (mins)	30

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Online Controls for Storm


Hydro-Brake® Optimum Manhole: S1 HB, DS/PN: 1.007, Volume (m³): 3.3

Unit Reference	MD-SHE-0058-2000-1840-2000	Sump Available	Yes
Design Head (m)	1.840	Diameter (mm)	58
Design Flow (l/s)	2.0	Invert Level (m)	7.640
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.840	2.0	Kick-Flo®	0.520	1.1
Flush-Flo™	0.256	1.4	Mean Flow over Head Range	-	1.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.2	0.600	1.2	1.600	1.9	2.600	2.3	5.000	3.2	7.500	3.8
0.200	1.4	0.800	1.4	1.800	2.0	3.000	2.5	5.500	3.3	8.000	4.0
0.300	1.4	1.000	1.5	2.000	2.1	3.500	2.7	6.000	3.5	8.500	4.1
0.400	1.3	1.200	1.6	2.200	2.2	4.000	2.9	6.500	3.6	9.000	4.2
0.500	1.2	1.400	1.8	2.400	2.3	4.500	3.0	7.000	3.7	9.500	4.3


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Storage Structures for Storm

Cellular Storage Manhole: ATT1, DS/PN: 1.006

Invert Level (m) 8.680 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

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	12.0	0.0	0.800	12.0	0.0	0.801	0.0	0.0

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coefficient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 0.750
Site Location GB 614650 158103 TR 14650 58103 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status OFF
Analysis Timestep Fine DVD Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged	Flooded	Half Drain	
									Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)
1.000	S7 15	Winter	100	+40%	30/15	Summer	100/15	Winter	10.460	0.800	0.068	0.98	
2.000	S6 15	Winter	100	+40%	30/15	Summer			10.469	0.759	0.000	0.37	

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	Pipe		Status	Level Exceeded
	US/MH Name	Flow (l/s)		
1.000	S7	3.9	FLOOD	1
2.000	S6	2.7	FLOOD RISK	

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)
1.001	JUNCTION S6	15 Winter	100	+40%					9.640	0.000	0.000	0.81
1.002	S5	15 Winter	100	+40%	30/15 Summer				10.431	0.971	0.000	2.93
1.003	S4	15 Winter	100	+40%	30/15 Summer				10.153	0.723	0.000	2.25
1.004	S3	60 Winter	100	+40%	30/15 Summer				9.878	0.528	0.000	1.53
1.005	S2 CP	60 Winter	100	+40%	100/15 Summer				9.866	0.616	0.000	0.32
1.006	ATT1	120 Winter	100	+40%	30/15 Summer				9.481	0.651	0.000	0.27
1.007	S1 HB	60 Winter	100	+40%	2/15 Summer				9.859	2.119	0.000	0.37

PN	US/MH Name	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.001	JUNCTION S6		7.3	SURCHARGED*	
1.002	S5		14.1	SURCHARGED	
1.003	S4		14.1	SURCHARGED	
1.004	S3		9.7	FLOOD RISK	
1.005	S2 CP		12.1	SURCHARGED	
1.006	ATT1	88	2.9	SURCHARGED*	
1.007	S1 HB		2.2	SURCHARGED	