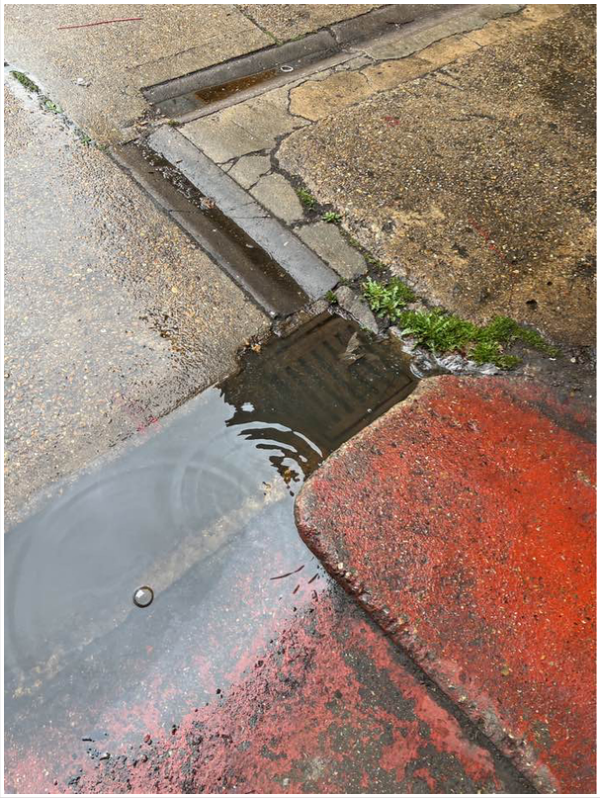
Site Survey Form

	
Is it Damage?	No
Is it accessible?	Yes
Any RW Gullies?	Yes
Please take a picture	

Site Survey Form



Site Survey Form

Site Survey Form

Site Survey Form

	
SVP (Soil Vent Pipework)	Yes
Please take a picture the back of the property	
For the operatives only:	You are agreeing that you have carried out all the necessary checks and followed the company's procedure Thank You
For Client only	I can confirm that I have supervised the works and satisfied with the works provided. Thank You
Client's Print Name	Client not present

Site Survey Form

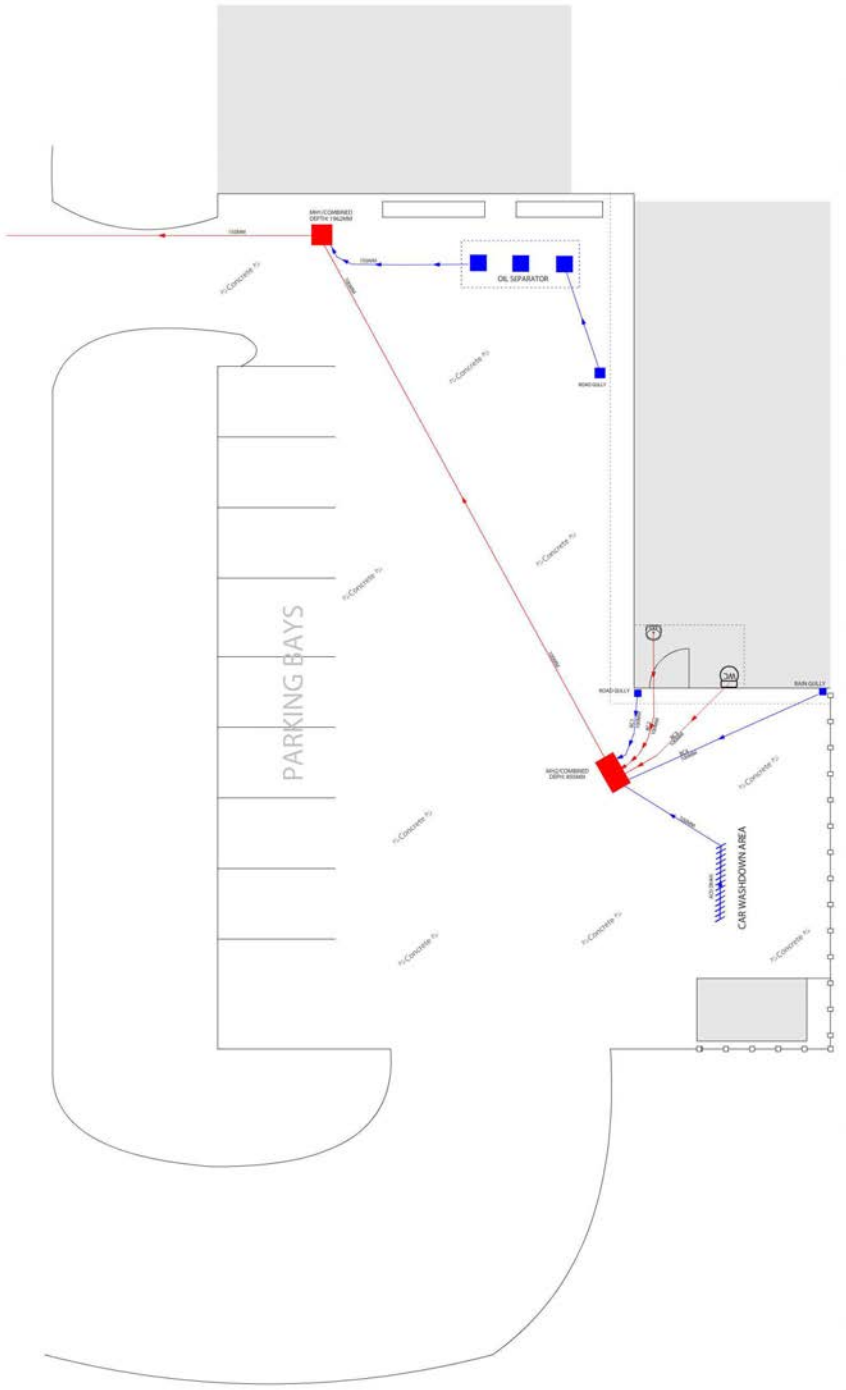
Signature	
	51.626488, -0.269226 23/05/2022 14:48

Site Survey Form

Form Locations

Job Number	Surveyed by (Operator)	Base Unit	Date
JB00148	**TG**	**R1QM2ND4JB**	**20/05/2022**

This sketch is not to scale and does not represent the exact routing of the drainage system



Appendix: F – Surface Water Flood Maps

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

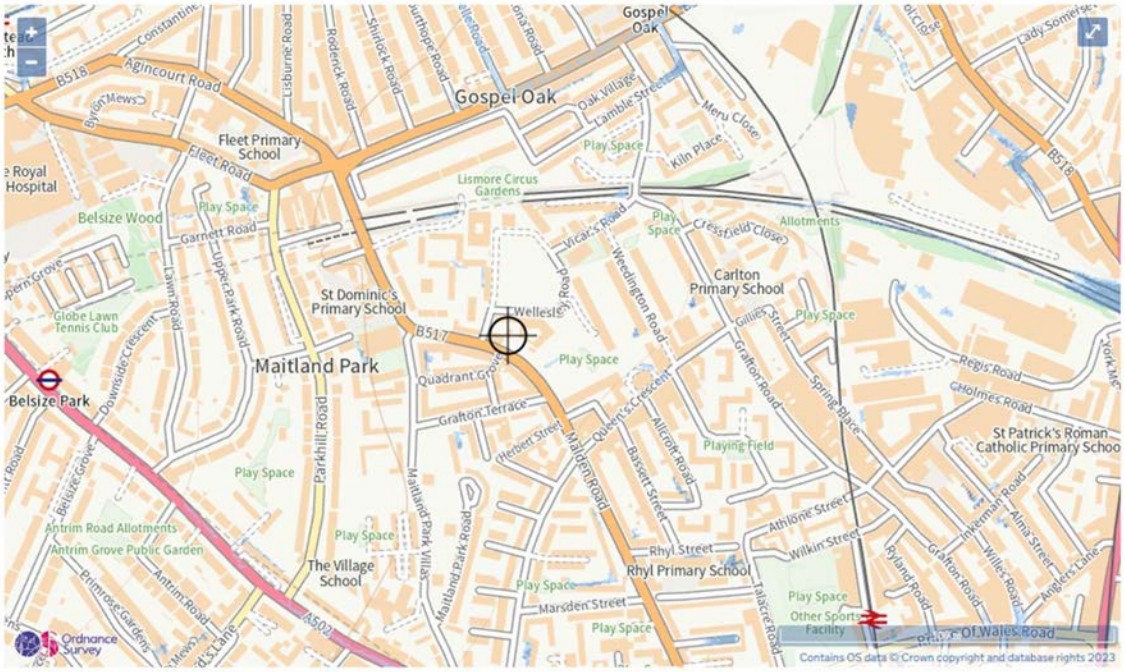
EA Long Term Surface Water Flood Depth Maps

Surface Water Flood Extents:

Extent of flooding from surface water

High Medium Low Very low Location you selected

Surface Water High-risk Scenario Flood Depths:

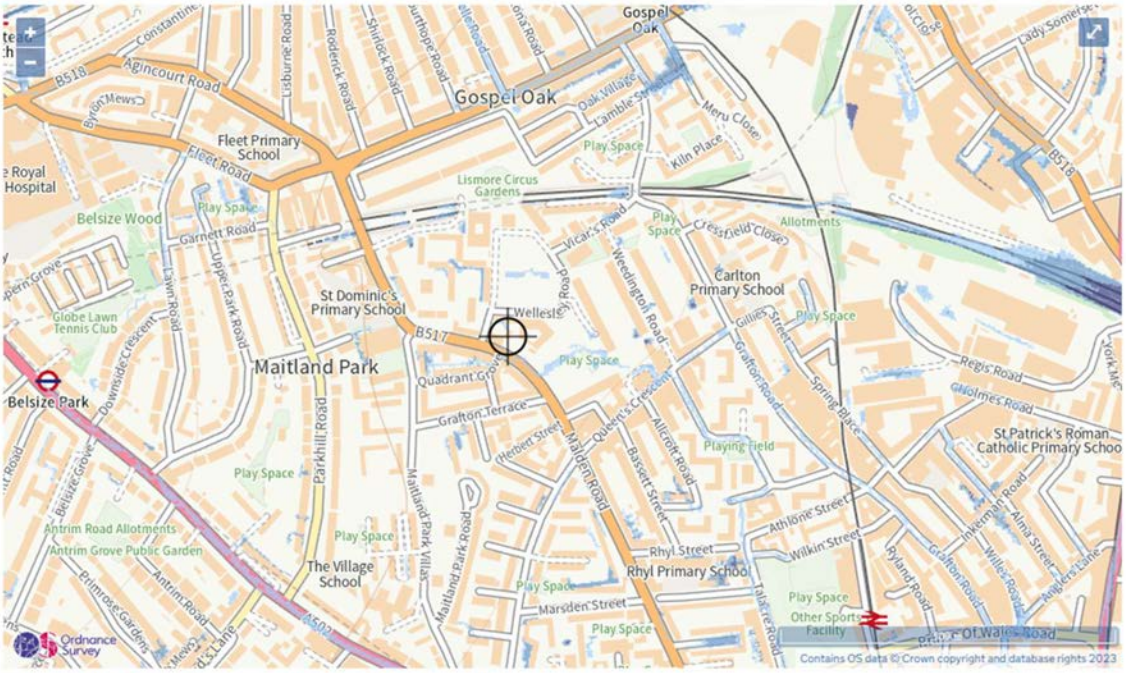


Surface water flood risk: water depth in a high risk scenario

Flood depth (millimetres)

Over 900mm 300 to 900mm Below 300mm Location you selected

Surface Water Medium-risk Scenario Flood Depths:



Surface water flood risk: water depth in a medium risk scenario

Flood depth (millimetres)

Over 900mm | 300 to 900mm | Below 300mm | Location you selected

Surface Water Low-risk Scenario Flood Depths:

Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

Over 900mm | 300 to 900mm | Below 300mm | Location you selected

Artificial Flood Extents:

Maximum extent of flooding from reservoirs:

when river levels are normal | when there is also flooding from rivers | Location you selected

Appendix: G – Pre-development Greenfield Runoff Rates & Volume

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	50	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Simulation Settings

Rainfall Methodology	FEH-22	Drain Down Time (mins)	1440	100 year (l/s)	45.1
Summer CV	1.000	Additional Storage (m³/ha)	20.0	Check Discharge Volume	✓
Winter CV	1.000	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	
Analysis Speed	Normal	2 year (l/s)	11.2		
Skip Steady State	x	30 year (l/s)	33.4		

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 %)
2	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Betterment (%)	0
Greenfield Method	ReFH2	Q 2 year (l/s)	11.2
Region	England, Wales, NI	Q 30 year (l/s)	33.4
Include Baseflow	x	Q 100 year (l/s)	45.1
Positively Drained Area (ha)	1.000		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	ReFH2	Storm Duration (mins)	360
Region	England, Wales, NI	Betterment (%)	0
Include Baseflow	x	Runoff Volume (m³)	529
Positively Drained Area (ha)	1.000		

Appendix: H – Pre-development Brownfield Runoff Rates & Volume

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	50	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.022	5.00	43.000	1200	7.137	78.325	1.350
2	0.022	5.00	42.950	1200	75.469	77.515	1.400
3	0.022	5.00	42.900	1200	11.188	32.275	1.450
4	0.022	5.00	42.850	1200	78.845	33.086	1.500
5	0.000	5.00	42.700	1200	109.770	61.040	1.550

Links (Input)

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	10.000	0.600	41.650	41.550	0.100	100.0	150	5.17	50.0
1.001	2	3	10.000	0.600	41.550	41.450	0.100	100.0	150	5.33	50.0
1.002	3	4	10.000	0.600	41.450	41.350	0.100	100.0	150	5.50	50.0
1.003	4	5	20.000	0.600	41.350	41.150	0.200	100.0	150	5.83	50.0

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	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 %)
2	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	40	0	0

Results for 2 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
15 minute summer	1	10	41.698	0.048	4.0	0.0700	0.0000	OK
15 minute summer	2	10	41.624	0.074	8.0	0.1071	0.0000	OK
15 minute summer	3	10	41.548	0.098	11.8	0.1407	0.0000	OK
15 minute summer	4	11	41.466	0.116	15.6	0.1654	0.0000	OK
15 minute summer	5	11	41.259	0.109	15.7	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	4.0	0.587	0.223	0.0676	
15 minute summer	2	1.001	3	7.8	0.750	0.442	0.1044	
15 minute summer	3	1.002	4	11.7	0.874	0.659	0.1341	
15 minute summer	4	1.003	5	15.7	1.105	0.882	0.2834	6.8

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
15 minute summer	1	12	42.541	0.891	12.4	1.2978	0.0000	SURCHARGED
15 minute summer	2	12	42.512	0.962	19.3	1.3903	0.0000	SURCHARGED
15 minute summer	3	12	42.397	0.947	26.9	1.3586	0.0000	SURCHARGED
15 minute summer	4	12	42.134	0.784	35.1	1.1159	0.0000	SURCHARGED
15 minute summer	5	10	41.292	0.142	33.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	8.5	0.640	0.476	0.1760	
15 minute summer	2	1.001	3	16.9	0.959	0.951	0.1760	
15 minute summer	3	1.002	4	25.3	1.436	1.423	0.1760	
15 minute summer	4	1.003	5	33.9	1.927	1.911	0.3485	21.3

Results for 30 year +40% CC 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
15 minute summer	1	11	43.000	1.350	17.3	1.9670	0.5487	FLOOD
15 minute summer	2	11	42.950	1.400	26.9	2.0230	1.3458	FLOOD
15 minute summer	3	12	42.876	1.426	33.6	2.0454	0.0000	FLOOD RISK
15 minute summer	4	12	42.562	1.212	45.1	1.7259	0.0000	FLOOD RISK
15 minute summer	5	9	41.292	0.142	41.7	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	10.9	0.627	0.612	0.1760	
15 minute winter	2	1.001	3	19.5	1.105	1.096	0.1760	
30 minute summer	3	1.002	4	29.2	1.659	1.645	0.1760	
15 minute summer	4	1.003	5	41.7	2.371	2.351	0.3485	28.4

Results for 100 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
15 minute summer	1	12	43.000	1.350	16.2	1.9670	0.1005	FLOOD
15 minute summer	2	12	42.950	1.400	24.3	2.0230	0.4758	FLOOD
15 minute summer	3	12	42.849	1.399	33.4	2.0063	0.0000	FLOOD RISK
15 minute summer	4	12	42.510	1.160	43.1	1.6518	0.0000	SURCHARGED
15 minute summer	5	9	41.292	0.142	40.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	10.9	0.665	0.612	0.1760	
30 minute summer	2	1.001	3	19.5	1.109	1.100	0.1760	
30 minute summer	3	1.002	4	29.2	1.661	1.647	0.1760	
15 minute summer	4	1.003	5	40.8	2.320	2.300	0.3485	27.4

Results for 100 year +40% CC 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
30 minute summer	1	18	43.000	1.350	20.0	1.9670	1.8690	FLOOD
15 minute summer	2	10	42.950	1.400	33.5	2.0230	4.2439	FLOOD
15 minute summer	3	10	42.900	1.450	37.4	2.0793	1.4750	FLOOD
15 minute summer	4	11	42.696	1.346	47.1	1.9167	0.0000	FLOOD RISK
15 minute summer	5	8	41.292	0.142	43.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	10.9	0.658	0.612	0.1760	
60 minute summer	2	1.001	3	19.5	1.108	1.099	0.1760	
30 minute winter	3	1.002	4	29.3	1.662	1.648	0.1760	
15 minute summer	4	1.003	5	43.9	2.492	2.471	0.3485	31.9

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	50	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.022	5.00	43.000	1200	7.137	78.325	1.350
2	0.022	5.00	42.950	1200	75.469	77.515	1.400
3	0.022	5.00	42.900	1200	11.188	32.275	1.450
4	0.022	5.00	42.850	1200	78.845	33.086	1.500
5	0.000	5.00	42.700	1200	109.770	61.040	1.550

Links (Input)

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	10.000	0.600	41.650	41.550	0.100	100.0	150	5.17	50.0
1.001	2	3	10.000	0.600	41.550	41.450	0.100	100.0	150	5.33	50.0
1.002	3	4	10.000	0.600	41.450	41.350	0.100	100.0	150	5.50	50.0
1.003	4	5	20.000	0.600	41.350	41.150	0.200	100.0	150	5.83	50.0

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

360

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

Results for 100 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	1	184	41.694	0.044	3.4	0.0646	0.0000	OK
360 minute summer	2	184	41.618	0.068	6.8	0.0977	0.0000	OK
360 minute summer	3	184	41.539	0.089	10.1	0.1271	0.0000	OK
360 minute summer	4	184	41.453	0.103	13.5	0.1462	0.0000	OK
360 minute summer	5	184	41.247	0.097	13.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	1	1.000	2	3.4	0.566	0.191	0.0602	
360 minute summer	2	1.001	3	6.7	0.728	0.380	0.0926	
360 minute summer	3	1.002	4	10.1	0.852	0.569	0.1184	
360 minute summer	4	1.003	5	13.4	1.077	0.756	0.2489	74.9

Appendix: I – Causeway Flow Hydraulic Model Outputs

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Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	30	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
GR1	0.004	5.00	43.700	1200	54.344	40.175	0.650
BR1	0.028	5.00	44.000	1200	17.275	42.361	0.800
RB1	0.010	5.00	44.000	1200	56.393	57.159	1.150
PP1	0.005	5.00	43.750		6.642	64.543	0.400
GR2	0.003	5.00	44.000	1200	36.984	73.774	1.150
ST1			43.750		36.517	57.280	1.090
TW MH1			43.800	1200	28.707	39.341	1.962
FB1	0.007	5.00	46.000	1200	62.589	30.737	3.300
F-IC	0.000	5.00	43.900	1200	28.564	30.582	2.500
TW COMBINED SEWER			43.500	1200	28.774	19.586	5.370

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	GR1	ST1	15.800	0.600	43.050	42.850	0.200	79.0	150	5.23	50.0
2.000	BR1	ST1	13.100	0.600	43.200	42.660	0.540	24.3	150	5.11	50.0
1.001	RB1	ST1	9.600	0.600	42.850	42.700	0.150	64.0	150	5.13	50.0
5.000	PP1	ST1	2.000	0.600	43.350	43.050	0.300	6.7	150	5.01	50.0
3.000	GR2	ST1	6.100	0.600	42.850	42.660	0.190	32.1	100	5.07	50.0
1.002	ST1	TW MH1	18.150	0.600	42.660	41.838	0.822	22.1	150	5.37	50.0
1.003	TW MH1	F-IC	5.105	0.600	41.838	41.400	0.438	11.7	150	5.40	50.0
4.000	FB1	F-IC	25.000	0.600	42.700	41.400	1.300	19.2	100	5.24	50.0
1.004	F-IC	TW COMBINED SEWER	38.000	0.600	41.400	38.130	3.270	11.6	150	5.62	50.0

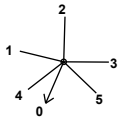
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.132	20.0	0.7	0.500	0.750	0.004	0.0	20	0.535
2.000	2.053	36.3	5.1	0.650	0.940	0.028	0.0	38	1.452
1.001	1.259	22.2	1.8	1.000	0.900	0.010	0.0	29	0.761
5.000	3.927	69.4	0.9	0.250	0.550	0.005	0.0	12	1.359
3.000	1.366	10.7	0.5	1.050	0.990	0.003	0.0	15	0.705
1.002	2.152	38.0	9.0	0.940	1.812	0.050	0.0	50	1.766
1.003	2.967	52.4	9.0	1.812	2.350	0.050	0.0	42	2.225
4.000	1.769	13.9	1.3	3.200	2.400	0.007	0.0	21	1.107
1.004	2.972	52.5	10.3	2.350	5.220	0.057	0.0	45	2.313

Pipeline Schedule

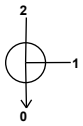
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	15.800	79.0	150	Circular	43.700	43.050	0.500	43.750	42.850	0.750
2.000	13.100	24.3	150	Circular	44.000	43.200	0.650	43.750	42.660	0.940
1.001	9.600	64.0	150	Circular	44.000	42.850	1.000	43.750	42.700	0.900
5.000	2.000	6.7	150	Circular	43.750	43.350	0.250	43.750	43.050	0.550
3.000	6.100	32.1	100	Circular	44.000	42.850	1.050	43.750	42.660	0.990
1.002	18.150	22.1	150	Circular	43.750	42.660	0.940	43.800	41.838	1.812
1.003	5.105	11.7	150	Circular	43.800	41.838	1.812	43.900	41.400	2.350
4.000	25.000	19.2	100	Circular	46.000	42.700	3.200	43.900	41.400	2.400
1.004	38.000	11.6	150	Circular	43.900	41.400	2.350	43.500	38.130	5.220

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	GR1	1200	Manhole	Adoptable	ST1		Junction	
2.000	BR1	1200	Manhole	Adoptable	ST1		Junction	
1.001	RB1	1200	Manhole	Adoptable	ST1		Junction	
5.000	PP1		Junction		ST1		Junction	
3.000	GR2	1200	Manhole	Adoptable	ST1		Junction	
1.002	ST1		Junction		TW MH1	1200	Manhole	Adoptable
1.003	TW MH1	1200	Manhole	Adoptable	F-IC	1200	Manhole	Adoptable
4.000	FB1	1200	Manhole	Adoptable	F-IC	1200	Manhole	Adoptable
1.004	F-IC	1200	Manhole	Adoptable	TW COMBINED SEWER	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
GR1	54.344	40.175	43.700	0.650	1200		0	1.000	43.050	150
BR1	17.275	42.361	44.000	0.800	1200		0	2.000	43.200	150
RB1	56.393	57.159	44.000	1.150	1200		0	1.001	42.850	150
PP1	6.642	64.543	43.750	0.400			0	5.000	43.350	150
GR2	36.984	73.774	44.000	1.150	1200		0	3.000	42.850	100
ST1	36.517	57.280	43.750	1.090			1	5.000	43.050	150
							2	3.000	42.660	100
							3	1.001	42.700	150
							4	2.000	42.660	150
							5	1.000	42.850	150
							0	1.002	42.660	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
TW MH1	28.707	39.341	43.800	1.962	1200		1	1.002	41.838	150
							0	1.003	41.838	150
FB1	62.589	30.737	46.000	3.300	1200					
							0	4.000	42.700	100
F-IC	28.564	30.582	43.900	2.500	1200		1	4.000	41.400	100
							2	1.003	41.400	150
							0	1.004	41.400	150
TW COMBINED SEWER	28.774	19.586	43.500	5.370	1200		1	1.004	38.130	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	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 %)
2	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	40	0	0

Node BR1 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Depth (mm)	5
Overrides Design Additional Inflow	x	Evapo-transpiration (mm/day)	3
Depression Storage Area (m²)	284		

Applies to All storms

Node GR1 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	41	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node GR2 Design Modifiers (Hydrograph)

Overrides Design Area	x	Depression Storage Area (m²)	31	Evapo-transpiration (mm/day)	3
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	5		

Applies to All storms

Node TW COMBINED SEWER Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.150	300	0.150	600	0.150	900	0.150	1200	0.150
60	0.150	360	0.150	660	0.150	960	0.150	1260	0.150
120	0.150	420	0.150	720	0.150	1020	0.150	1320	0.150
180	0.150	480	0.150	780	0.150	1080	0.150	1380	0.150
240	0.150	540	0.150	840	0.150	1140	0.150	1440	0.150

Node ST1 Online Orifice Control

Flap Valve	x	Invert Level (m)	42.660	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node F-IC Online Orifice Control

Flap Valve	x	Invert Level (m)	41.400	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.030		

Node PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	43.350	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	68	Depth (m)	0.300
Safety Factor	2.0	Width (m)	6.803	Inf Depth (m)	
Porosity	0.30	Length (m)	6.803		

Node ST1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	42.660
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	216

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	35.0	0.0	0.660	35.0	0.0	0.661	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	GR1	20	43.066	0.016	0.6	0.0206	0.0000	OK
30 minute summer	BR1	19	43.234	0.034	3.9	0.0622	0.0000	OK
15 minute summer	RB1	10	42.879	0.029	1.8	0.0379	0.0000	OK
15 minute summer	PP1	11	43.362	0.012	0.9	0.0264	0.0000	OK
30 minute summer	GR2	19	42.862	0.012	0.4	0.0145	0.0000	OK
180 minute summer	ST1	112	42.772	0.112	3.6	3.7097	0.0000	OK
240 minute summer	TW MH1	168	42.019	0.181	1.5	0.2049	0.0000	SURCHARGED
15 minute summer	FB1	10	42.721	0.021	1.3	0.0241	0.0000	OK
240 minute summer	F-IC	168	42.019	0.619	1.7	0.6997	0.0000	SURCHARGED
15 minute summer	TW COMBINED SEWER	1	38.280	0.150	0.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	GR1	1.000	ST1	0.5	0.479	0.025	0.0164	
30 minute summer	BR1	2.000	ST1	3.9	1.370	0.106	0.0524	
15 minute summer	RB1	1.001	ST1	1.8	0.749	0.079	0.0226	
15 minute summer	PP1	5.000	ST1	0.9	1.362	0.013	0.0013	
30 minute summer	GR2	3.000	ST1	0.3	0.267	0.031	0.0169	
180 minute summer	ST1	Orifice	TW MH1	1.5				
180 minute summer	TW MH1	1.003	F-IC	1.5	0.161	0.028	0.0899	
15 minute summer	FB1	4.000	F-IC	1.3	0.720	0.091	0.1104	
240 minute summer	F-IC	Orifice	TW COMBINED SEWER	1.5				11.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	GR1	10	43.084	0.034	2.2	0.0420	0.0000	OK
15 minute summer	BR1	9	43.270	0.070	15.7	0.1278	0.0000	OK
180 minute summer	RB1	124	43.022	0.172	1.8	0.2251	0.0000	SURCHARGED
15 minute summer	PP1	10	43.371	0.021	2.8	0.0711	0.0000	OK
180 minute summer	GR2	124	43.022	0.172	0.5	0.2040	0.0000	SURCHARGED
180 minute summer	ST1	124	43.022	0.362	8.4	12.0505	0.0000	SURCHARGED
180 minute summer	TW MH1	128	42.871	1.033	2.8	1.1678	0.0000	SURCHARGED
180 minute summer	FB1	128	42.870	0.170	1.3	0.1991	0.0000	SURCHARGED
180 minute summer	F-IC	128	42.869	1.469	3.1	1.6620	0.0000	SURCHARGED
15 minute summer	TW COMBINED SEWER	1	38.280	0.150	1.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	GR1	1.000	ST1	2.1	0.738	0.107	0.0601	
15 minute summer	BR1	2.000	ST1	15.6	2.129	0.431	0.1655	
15 minute summer	RB1	1.001	ST1	5.6	1.009	0.254	0.1198	
15 minute summer	PP1	5.000	ST1	2.7	1.914	0.040	0.0029	
15 minute summer	GR2	3.000	ST1	1.7	0.473	0.157	0.0396	
120 minute summer	ST1	Orifice	TW MH1	2.9				
120 minute summer	TW MH1	1.003	F-IC	2.6	0.159	0.050	0.0899	
15 minute summer	FB1	4.000	F-IC	3.9	0.878	0.279	0.1298	
180 minute summer	F-IC	Orifice	TW COMBINED SEWER	2.3				28.9

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	GR1	132	43.238	0.188	1.0	0.2363	0.0000	SURCHARGED
15 minute summer	BR1	10	43.284	0.084	22.0	0.1540	0.0000	OK
180 minute summer	RB1	132	43.238	0.388	2.5	0.5069	0.0000	SURCHARGED
15 minute summer	PP1	10	43.374	0.024	3.9	0.0966	0.0000	OK
180 minute summer	GR2	132	43.238	0.388	0.8	0.4595	0.0000	SURCHARGED
180 minute summer	ST1	132	43.238	0.578	12.0	19.2313	0.0000	SURCHARGED
180 minute summer	TW MH1	124	43.082	1.244	2.8	1.4066	0.0000	SURCHARGED
180 minute summer	FB1	124	43.082	0.382	1.8	0.4478	0.0000	SURCHARGED
180 minute summer	F-IC	124	43.081	1.681	3.5	1.9007	0.0000	SURCHARGED
15 minute summer	TW COMBINED SEWER	1	38.280	0.150	2.2	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	GR1	1.000	ST1	3.1	0.816	0.154	0.1533	
15 minute summer	BR1	2.000	ST1	21.9	2.201	0.604	0.1818	
15 minute summer	RB1	1.001	ST1	7.9	1.028	0.353	0.1690	
15 minute summer	PP1	5.000	ST1	3.8	2.115	0.055	0.0036	
15 minute summer	GR2	3.000	ST1	2.4	0.563	0.222	0.0477	
30 minute summer	ST1	Orifice	TW MH1	3.3				
30 minute summer	TW MH1	1.003	F-IC	2.9	0.167	0.056	0.0899	
15 minute summer	FB1	4.000	F-IC	5.5	0.957	0.393	0.1558	
180 minute summer	F-IC	Orifice	TW COMBINED SEWER	2.4				41.0

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	GR1	132	43.196	0.146	1.0	0.1832	0.0000	OK
15 minute summer	BR1	10	43.281	0.081	20.6	0.1478	0.0000	OK
180 minute summer	RB1	132	43.196	0.346	2.4	0.4517	0.0000	SURCHARGED
15 minute summer	PP1	10	43.373	0.023	3.7	0.0912	0.0000	OK
180 minute summer	GR2	132	43.196	0.346	0.7	0.4095	0.0000	SURCHARGED
180 minute summer	ST1	132	43.196	0.536	11.4	17.8257	0.0000	SURCHARGED
180 minute summer	TW MH1	124	43.042	1.204	2.9	1.3621	0.0000	SURCHARGED
180 minute summer	FB1	124	43.042	0.342	1.7	0.4016	0.0000	SURCHARGED
180 minute summer	F-IC	124	43.041	1.641	3.6	1.8563	0.0000	SURCHARGED
15 minute summer	TW COMBINED SEWER	1	38.280	0.150	2.2	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	GR1	1.000	ST1	2.9	0.800	0.143	0.1482	
15 minute summer	BR1	2.000	ST1	20.5	2.237	0.565	0.1786	
15 minute summer	RB1	1.001	ST1	7.4	1.069	0.332	0.1690	
15 minute summer	PP1	5.000	ST1	3.6	2.076	0.052	0.0035	
15 minute summer	GR2	3.000	ST1	2.2	0.558	0.203	0.0477	
60 minute summer	ST1	Orifice	TW MH1	3.3				
60 minute summer	TW MH1	1.003	F-IC	2.9	0.165	0.055	0.0899	
15 minute summer	FB1	4.000	F-IC	5.1	0.957	0.371	0.1371	
180 minute summer	F-IC	Orifice	TW COMBINED SEWER	2.4				38.7

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.11%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	GR1	140	43.677	0.627	1.3	0.7867	0.0000	FLOOD RISK
180 minute summer	BR1	140	43.678	0.478	9.4	0.8754	0.0000	SURCHARGED
180 minute summer	RB1	140	43.677	0.827	3.3	1.0797	0.0000	SURCHARGED
180 minute summer	PP1	140	43.677	0.327	5.1	3.9278	0.0000	FLOOD RISK
180 minute summer	GR2	140	43.677	0.827	1.0	0.9786	0.0000	SURCHARGED
180 minute summer	ST1	140	43.677	1.017	15.4	21.9616	0.0000	FLOOD RISK
180 minute summer	TW MH1	144	43.466	1.628	2.9	1.8408	0.0000	SURCHARGED
180 minute summer	FB1	144	43.465	0.765	2.3	0.8971	0.0000	SURCHARGED
180 minute summer	F-IC	144	43.464	2.064	3.8	2.3345	0.0000	SURCHARGED
15 minute summer	TW COMBINED SEWER	1	38.280	0.150	2.3	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	GR1	1.000	ST1	4.1	0.853	0.204	0.2542	
15 minute summer	BR1	2.000	ST1	28.3	2.251	0.779	0.2104	
15 minute summer	RB1	1.001	ST1	10.0	1.104	0.449	0.1690	
60 minute summer	PP1	5.000	ST1	7.1	2.021	0.102	0.0302	
15 minute summer	GR2	3.000	ST1	2.9	0.591	0.271	0.0477	
15 minute summer	ST1	Orifice	TW MH1	3.5				
15 minute winter	TW MH1	1.003	F-IC	3.1	-0.227	0.059	0.0899	
15 minute summer	FB1	4.000	F-IC	7.0	1.021	0.500	0.1956	
180 minute summer	F-IC	Orifice	TW COMBINED SEWER	2.7				55.1

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	30	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
GR1	0.004	5.00	43.700	1200	54.344	40.175	0.650
BR1	0.028	5.00	44.000	1200	17.275	42.361	0.800
RB1	0.010	5.00	44.000	1200	56.393	57.159	1.150
PP1	0.005	5.00	43.750		6.642	64.543	0.400
GR2	0.003	5.00	44.000	1200	36.984	73.774	1.150
ST1			43.750		36.517	57.280	1.090
TW MH1			43.800	1200	28.707	39.341	1.962
FB1	0.007	5.00	46.000	1200	62.589	30.737	3.300
F-IC	0.000	5.00	43.900	1200	28.564	30.582	2.500
TW COMBINED SEWER			43.500	1200	28.774	19.586	5.370

Links (Input)

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	GR1	ST1	15.800	0.600	43.050	42.850	0.200	79.0	150	5.23	50.0
2.000	BR1	ST1	13.100	0.600	43.200	42.660	0.540	24.3	150	5.11	50.0
1.001	RB1	ST1	9.600	0.600	42.850	42.700	0.150	64.0	150	5.13	50.0
5.000	PP1	ST1	2.000	0.600	43.350	43.050	0.300	6.7	150	5.01	50.0
3.000	GR2	ST1	6.100	0.600	42.850	42.660	0.190	32.1	100	5.07	50.0
1.002	ST1	TW MH1	18.150	0.600	42.660	41.838	0.822	22.1	150	5.37	50.0
1.003	TW MH1	F-IC	5.105	0.600	41.838	41.400	0.438	11.7	150	5.40	50.0
4.000	FB1	F-IC	25.000	0.600	42.700	41.400	1.300	19.2	100	5.24	50.0
1.004	F-IC	TW COMBINED SEWER	38.000	0.600	41.400	38.130	3.270	11.6	150	5.62	50.0

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x

Storm Durations

360

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

Results for 100 year 360 minute summer. 1800 minute analysis at 8 minute timestep. 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	GR1	232	43.155	0.105	0.6	0.1319	0.0000	OK
360 minute summer	BR1	184	43.235	0.035	4.3	0.0639	0.0000	OK
360 minute summer	RB1	232	43.155	0.305	1.5	0.3980	0.0000	SURCHARGED
360 minute summer	PP1	184	43.361	0.011	0.8	0.0238	0.0000	OK
360 minute summer	GR2	232	43.155	0.305	0.5	0.3608	0.0000	SURCHARGED
360 minute summer	ST1	232	43.155	0.495	7.3	16.4573	0.0000	SURCHARGED
360 minute summer	TW MH1	232	43.002	1.164	2.5	1.3169	0.0000	SURCHARGED
360 minute summer	FB1	232	43.002	0.302	1.1	0.3543	0.0000	SURCHARGED
360 minute summer	F-IC	232	43.001	1.601	2.8	1.8111	0.0000	SURCHARGED
360 minute summer	TW COMBINED SEWER	8	38.280	0.150	2.4	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute summer	GR1	1.000	ST1	0.6	0.449	0.030	0.2433	
360 minute summer	BR1	2.000	ST1	4.3	0.401	0.118	0.1356	
360 minute summer	RB1	1.001	ST1	1.3	0.390	0.057	0.1690	
360 minute summer	PP1	5.000	ST1	0.8	1.310	0.011	0.0134	
360 minute summer	GR2	3.000	ST1	0.3	0.118	0.031	0.0477	
360 minute summer	ST1	Orifice	TW MH1	2.5				
360 minute summer	TW MH1	1.003	F-IC	2.2	0.159	0.042	0.0899	
360 minute summer	FB1	4.000	F-IC	0.9	0.252	0.064	0.1956	
360 minute summer	F-IC	Orifice	TW COMBINED SEWER	2.4				46.7

Results for 100 year 360 minute winter. 1800 minute analysis at 8 minute timestep. 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 winter	GR1	248	43.115	0.065	0.4	0.0813	0.0000	OK
360 minute winter	BR1	184	43.228	0.028	2.8	0.0517	0.0000	OK
360 minute winter	RB1	248	43.115	0.265	1.0	0.3459	0.0000	SURCHARGED
360 minute winter	PP1	176	43.359	0.009	0.5	0.0162	0.0000	OK
360 minute winter	GR2	248	43.115	0.265	0.3	0.3135	0.0000	SURCHARGED
360 minute winter	ST1	248	43.115	0.455	4.8	15.1284	0.0000	SURCHARGED
360 minute winter	TW MH1	248	42.966	1.128	2.4	1.2762	0.0000	SURCHARGED
360 minute winter	FB1	248	42.966	0.266	0.7	0.3121	0.0000	SURCHARGED
360 minute winter	F-IC	248	42.965	1.565	2.7	1.7704	0.0000	SURCHARGED
360 minute winter	TW COMBINED SEWER	8	38.280	0.150	2.3	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	GR1	1.000	ST1	0.4	0.412	0.020	0.1967	
360 minute winter	BR1	2.000	ST1	2.8	0.388	0.077	0.1303	
360 minute winter	RB1	1.001	ST1	0.9	0.438	0.039	0.1690	
360 minute winter	PP1	5.000	ST1	0.5	1.136	0.007	0.0075	
360 minute winter	GR2	3.000	ST1	0.3	0.113	0.027	0.0477	
360 minute winter	ST1	Orifice	TW MH1	2.4				
360 minute winter	TW MH1	1.003	F-IC	2.1	0.159	0.040	0.0899	
360 minute winter	FB1	4.000	F-IC	0.7	0.409	0.050	0.1956	
360 minute winter	F-IC	Orifice	TW COMBINED SEWER	2.3				47.0

Appendix: J – SuDS Design Layout (SK01A)

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

GREEN ROOF ABOVE BIKE SHED (GR2)
AREA: 31.28m²

GEO-CELLULAR STORAGE TANK (ST1) LOCATED UNDERNEATH PP1 PROVIDING NECESSARY STORAGE OF SURFACE WATER RUNOFF FOR ALL STORM EVENTS UP TO & INCLUDING 1:100YR + 40%CC
SURFACE AREA: 35.00m²
DEPTH: 660mm

IC5
CL: 43.50m AOD
IL: 42.85m AOD

PROPOSED RAINWATER HARVESTING BUTT - LOCATION SUBJECT TO CHANGE

3.000, 6.1m, 1:35, 100ø

IC4
CL: 43.80m AOD
IL: 42.66m AOD

IC7
CL: 43.90m AOD
IL: 42.70m AOD

IC3
CL: 43.80m AOD
IL: 42.70m AOD

1.001, 9.6m, 1:65, 150ø

50mm ORIFICE PLATE TO RESTRICT FLOWS FROM ST1 TO TW MH1 TO A MAXIMUM OF 3.5 l/s FOR ALL STORM EVENTS UP TO & INCLUDING 1:100YR + 40%CC
CL: 43.75m AOD
IL: 42.66m AOD

IMPERMEABLE PAVING OF PRIVATE GROUNDFLOOR PATIOS OUTFALLING TO PROPOSED NETWORK CONNECTING TO ST1
COMBINED AREA: 26.84m²

2.000, 13.1m, 1:24, 150ø

1.002, 18.15m, 1:22, 150ø

IC2
CL: 43.75m AOD
IL: 42.85m AOD

IC1
CL: 43.65m AOD
IL: 43.05m AOD

PERMEABLE PAVING/RESIN-BOUND GRAVEL (PP1) WITH SHARED SUBBASE OF MIN. 300mm DEPTH & 30% VOID RATIO
AREA: 46.28m²

1.000, 15.8m, 1:79, 150ø

GREEN ROOF (GR1) ABOVE GROUND FLOOR ROOF
AREA: 40.65m²

REAR BALCONY (RB1) WITH OUTFALL TO ST1 VIA RAINWATER DOWNPIPE
AREA: 64.81m²

IC6
CL: 44.00m AOD
IL: 43.20m AOD

CONNECTION TO EXISTING MANHOLE (TWMH1) IDENTIFIED BY CCTV SURVEY ADJACENT TO GROUNDFLOOR WORKS
CL: 43.80m AOD
IL: 41.84m AOD

1.003, 5.1m, 1:12, 150ø

INTEGRATED BROWN ROOF (BR1) WITH SOLAR PANELS LOCATED ON TOP FLOOR ROOF
AREA: 284.27m²

4.000, 21.0m, 1:23, 100ø

IC8
CL: 43.65m AOD
IL: 42.70m AOD

30mm ORIFICE PLATE TO RESTRICT FLOWS FROM ST1 TO TW COMBINED SEWER OFF SITE AT A MAXIMUM OF 2.7 l/s FOR ALL STORM EVENTS UP TO & INCLUDING 1:100YR + 40%CC
CL: 43.75m AOD
IL: 41.40m AOD

1.004, 38.0m, 1:12, 150ø

FINAL INSPECTION CHAMBER (F-IC) BEFORE OUTFALL FROM SITE
CL: 43.90m AOD
IL: 41.40m AOD

OUTFALL FROM PROPOSED SuDS SYSTEM TO THAMES WATER COMBINED SEWER NETWORK ALONG MALDEN ROAD VIA EXISTING OR NEW SADDLE CONNECTION
CL: 43.50m AOD
IL: 38.13m AOD

BALCONY WITH OUTFALL TO IC1 COLLECTING UNDERNEATH BALCONY AND GROUNDFLOOR SPACE
AREA: 69.10m²

NOTE: ALL LEVELS ARE BASED ON LiDAR DTM DATA

KEY

- SITE BOUNDARY (TOTAL SITE AREA 0.088ha)
- EXISTING BUILDING
- PROPOSED BUILDING
- PROPOSED BALCONY SPACE
- PROPOSED STAIRWELL AND LIFT
- PERMEABLE RESIN-BOUND GRAVEL WITH MIN. 100mm SUB-BASE
- PERMEABLE PAVING WITH MIN. 100mm SUB-BASE
- PROPOSED GEO-CELLULAR STORAGE TANK (5.00m X 7.00m X 0.66m)
- GREEN ROOF
- BROWN ROOF
- IMPERMEABLE PAVING
- SURFACE WATER PIPE NETWORK
- SURFACE WATER FILTER DRAIN
- SURFACE WATER INSPECTION CHAMBER
- PERMAVOID DIFFUSER UNIT
- RAINWATER DOWNPIPE
- VARYING SIZE ORIFICE PLATES WITH SUITABLE FILTER TO RESTRICT RUNOFF
- EXISTING PROPOSED ADOPTED MANHOLE
- EXISTING SURFACE WATER PIPE NETWORK
- FLOW ARROW
- EXCEEDANCE FLOW ARROW
- RAINWATER BUTT

REV	DATE	BY	DESCRIPTION	CHK	APD
A	24/06/2024	MS	LLFA COMMENTS	SA	SA

DRAWING STATUS: PLANNING APPLICATION

EAS
1st Floor Millers House, Roydon Road,
Stanstead Abbotts, Hertfordshire, SG12 8HN
Tel: 01920 871777
www.eastp.co.uk

CLIENT: GRADE PLANNING LTD.

ARCHITECT:

PROJECT: 160 MALDEN ROAD
CAMDEN LB, NW5 4BT

TITLE: PROPOSED SuDS LAYOUT

SCALE @ A1:	DESIGN-DRAWN:	DATE:
1:100	MS	07/12/2023
PROJECT No: 3779/2023	DRAWING No: SK01A	

Appendix: K – Camden SuDS Proforma

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
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LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	FRA & SuDS Report - 160 Malden Road
Address & post code	160 Malden Road, Belsize Park, Camden LB, London, NW5 4BT
OS Grid ref. (Easting, Northing)	E 528053
	N 185157
LPA reference (if applicable)	
Brief description of proposed work	Erection of a 4-storey building to provide 15 self-contained flats at ground, first, second and third floor levels and office use at ground floor level, following demolition of the existing MOT repair garage & car wash
Total site Area	880 m^2
Total existing impervious area	880 m^2
Total proposed impervious area	880 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Maitland Park Local Flood Risk Zone
Existing drainage connection type and location	See CCTV survey - Appendix E within report
Designer Name	Mathew Spicer
Designer Position	Graduate Consultant

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	None Recorded
Bedrock geology classification	London Clay formation
Site infiltration rate	n/a m/s
Depth to groundwater level	n/a m below ground level
Is infiltration feasible?	No

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	Y	Y

2c. Proposed Discharge Details

Proposed discharge location	Thames Water combined sewer
Has the owner/regulator of the discharge location been	Yes

	Designer Company	EAS Transport Planning		consulted?	

Camden GREATERLONDONAUTHORITY LoDEG

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	n/a			
1 in 1	0.98	15.7		1.4
1 in 30	2.94	33.9		2.3
1 in 100	3.97	40.8		2.4
1 in 100 + CC				2.7
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Orifice Plates		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	356	356	3
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	46	46	4
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	475		22
Total	**877**	**402**	**29**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 5
Drainage hierarchy (2b)	Section 5
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Appendix D & J
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 5, Appendix I
Proposed SuDS measures & specifications (3b)	Section 5, Appendix J

4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Appendix B
Detailed drainage design drawings, including exceedance flow routes	Appendix J
Detailed landscaping plans	n/a
Maintenance strategy	Section 6
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Section 5
b) biodiversity?	Section 5
c) amenity?	Section 5