

241 The Broadway
London
SW19 1SD



Date 16/11/2022 14:18

Designed by h.hunter

File 2220303 - Existing Drainage M...

Checked by

Innovyze

Network 2020.1.3

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SSW2	88.200	0.550	Open Manhole	600	S1.000	87.650	150				
SMH1	88.100	1.260	Open Manhole	600	S1.001	86.840	150	S1.000	86.950	150	110
S	89.000	2.201	Open Manhole	0		OUTFALL		S1.001	86.799	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SSW2	526759.745	185709.395	526759.745	185709.395	Required	
SMH1	526756.896	185697.513	526756.896	185697.513	Required	
S	526756.256	185694.317			No Entry	

241 The Broadway
London
SW19 1SD



Date 16/11/2022 14:18

Designed by h.hunter

File 2220303 - Existing Drainage M...

Checked by

Innovyze

Network 2020.1.3

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)
S1.000	o	150	SSW2	88.200	87.650	0.400	Open Manhole	600
S1.001	o	150	SMH1	88.100	86.840	1.110	Open Manhole	600

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)
S1.000	12.219	17.5	SMH1	88.100	86.950	1.000	Open Manhole	600
S1.001	3.260	80.0	S	89.000	86.799	2.051	Open Manhole	0

241 The Broadway
London
SW19 1SD



Date 16/11/2022 14:18

Designed by h.hunter

File 2220303 - Existing Drainage M...

Checked by

Innovyze

Network 2020.1.3

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.007	0.007	0.007
1.001	-	-	100	0.005	0.005	0.005
				Total	Total	Total
				0.012	0.012	0.012

241 The Broadway
London
SW19 1SD



Date 16/11/2022 14:18

Designed by h.hunter

File 2220303 - Existing Drainage M...

Checked by

Innovyze

Network 2020.1.3

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	SSW2	150	0.400	1.000	Unclassified	600	0	0.400	Unclassified
S1.001	SMH1	150	1.110	2.051	Unclassified	600	0	1.110	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.001	S	89.000	86.799	0.000	0	0

Simulation Criteria for Storm

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	21.000	Storm Duration (mins)	30
Ratio R	0.438		

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) 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 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.438 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SSW2	15 Winter	1	+0%					87.666	-0.134	0.000
S1.001	SMH1	15 Winter	1	+0%					86.876	-0.114	0.000

		Half Drain Pipe				
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Time (mins)	Pipe Flow (l/s)	Level Exceeded Status
S1.000	SSW2	0.03			1.1	OK
S1.001	SMH1	0.13			1.7	OK

241 The Broadway
London
SW19 1SD



Date 16/11/2022 14:18

Designed by h.hunter

File 2220303 - Existing Drainage M...

Checked by

Innovyze

Network 2020.1.3

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) 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 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.438 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	SSW2	15 Winter	30	+0%					87.675	-0.125	0.000
S1.001	SMH1	15 Summer	30	+0%					86.902	-0.088	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Level Exceeded Status
S1.000	SSW2	0.07			2.6	OK
S1.001	SMH1	0.36			4.5	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) 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 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.438 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SSW2	15 Winter	100	+0%					87.680	-0.120	0.000
S1.001	SMH1	15 Winter	100	+0%					86.912	-0.078	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Level Exceeded Status
S1.000	SSW2	0.09			3.4	OK
S1.001	SMH1	0.47			5.9	OK

E Greenfield Runoff Rates

241 The Broadway
London
SW19 1SD

Date 16/11/2022 14:21

File

Designed by h.hunter

Checked by



Innovyze

Source Control 2020.1.3

ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 SAAR (mm) 643 Urban 0.000
Area (ha) 0.015 Soil 0.450 Region Number Region 6

Results 1/s

QBAR Rural 0.1

QBAR Urban 0.1


Q100 years 0.2

Q1 year 0.1

Q30 years 0.1

Q100 years 0.2

F Microdrainage Network Calculations

Elliott Wood Partnership LTD		Page 1
241 The Broadway London SW19 1SD	2220303 22 Kemplay Road Proposed Drainage Network	
Date 15/11/2022 17:41 File 2220303 - Proposed Drainage M...	Designed by HH Checked by	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD







FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	21.000	Add Flow / Climate Change (%)	0
Ratio R	0.438	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits


Network Design Table for Storm

« - Indicates pipe capacity < flow

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	0.581	0.000	0.0	0.007	4.00	0.0	0.600	o	100	Pipe/Conduit	
S1.001	1.169	0.050	23.4	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S1.002	12.219	0.700	17.5	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S2.000	0.777	0.000	0.0	0.004	4.00	0.0	0.600	o	100	Pipe/Conduit	
S2.001	1.560	0.016	100.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
S1.003	3.260	0.041	80.0	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	4.14	87.600	0.007	0.0	0.0	0.0	0.07	0.5«	0.9
S1.001	50.00	4.15	87.600	0.007	0.0	0.0	0.0	1.60	12.6	0.9
S1.002	50.00	4.26	87.550	0.007	0.0	0.0	0.0	1.86	14.6	0.9
S2.000	50.00	4.19	87.600	0.004	0.0	0.0	0.0	0.07	0.5	0.5
S2.001	50.00	4.22	87.600	0.004	0.0	0.0	0.0	0.77	6.0	0.5
S1.003	50.00	4.31	86.840	0.011	0.0	0.0	0.0	1.12	19.9	1.5

Elliott Wood Partnership LTD		Page 2
241 The Broadway London SW19 1SD	2220303 22 Kemplay Road Proposed Drainage Network	
Date 15/11/2022 17:41 File 2220303 - Proposed Drainage M...	Designed by HH Checked by	
Innovyze	Network 2020.1.3	

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	Invert Level (m)	Diameter (mm)	
SPP1	88.100	0.500	Open Manhole	450	S1.000	87.600	100				
SPP1 1 FC	88.100	0.500	Open Manhole	450	S1.001	87.600	100	S1.000	87.600	100	
SSW2	88.100	0.550	Open Manhole	600	S1.002	87.550	100	S1.001	87.550	100	
SPP2	88.100	0.500	Open Manhole	1200	S2.000	87.600	100				
SPP2 FC	88.100	0.500	Open Manhole	1200	S2.001	87.600	100	S2.000	87.600	100	
SMH1	88.100	1.260	Open Manhole	600	S1.003	86.840	150	S1.002	86.850	100	
								S2.001	87.584	100	694
S	89.000	2.201	Open Manhole	0		OUTFALL		S1.003	86.799	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SPP1	526761.448	185708.997	526761.448	185708.997	Required	
SPP1 1 FC	526760.878	185709.109	526760.878	185709.109	Required	
SSW2	526759.745	185709.395	526759.745	185709.395	Required	
SPP2	526759.207	185697.174	526759.207	185697.174	Required	
SPP2 FC	526758.435	185697.260	526758.435	185697.260	Required	
SMH1	526756.896	185697.513	526756.896	185697.513	Required	
S	526756.256	185694.317			No Entry	

241 The Broadway
London
SW19 1SD

2220303 22 Kemplay Road
Proposed Drainage Network



Date 15/11/2022 17:41

Designed by HH

File 2220303 - Proposed Drainage M...

Checked by

Innovyze

Network 2020.1.3

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)
S1.000	o	100	SPP1	88.100	87.600	0.400	Open Manhole	450
S1.001	o	100	SPP1 1 FC	88.100	87.600	0.400	Open Manhole	450
S1.002	o	100	SSW2	88.100	87.550	0.450	Open Manhole	600
S2.000	o	100	SPP2	88.100	87.600	0.400	Open Manhole	1200
S2.001	o	100	SPP2 FC	88.100	87.600	0.400	Open Manhole	1200
S1.003	o	150	SMH1	88.100	86.840	1.110	Open Manhole	600

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)
S1.000	0.581	0.0	SPP1 1 FC	88.100	87.600	0.400	Open Manhole	450
S1.001	1.169	23.4	SSW2	88.100	87.550	0.450	Open Manhole	600
S1.002	12.219	17.5	SMH1	88.100	86.850	1.150	Open Manhole	600
S2.000	0.777	0.0	SPP2 FC	88.100	87.600	0.400	Open Manhole	1200
S2.001	1.560	100.0	SMH1	88.100	87.584	0.416	Open Manhole	600
S1.003	3.260	80.0	S	89.000	86.799	2.051	Open Manhole	0

241 The Broadway
London
SW19 1SD

2220303 22 Kemplay Road
Proposed Drainage Network



Date 15/11/2022 17:41

Designed by HH

File 2220303 - Proposed Drainage M...

Checked by

Innovyze

Network 2020.1.3

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.007	0.007	0.007
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.004	0.004	0.004
2.001	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.011	0.011	0.011

241 The Broadway
London
SW19 1SD

2220303 22 Kemplay Road
Proposed Drainage Network



Date 15/11/2022 17:41

Designed by HH

File 2220303 - Proposed Drainage M...

Checked by

Innovyze

Network 2020.1.3

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	SPP1	100	0.400	0.400	Unclassified	450	0	0.400	Unclassified
S1.001	SPP1 1 FC	100	0.400	0.450	Unclassified	450	0	0.400	Unclassified
S1.002	SSW2	100	0.450	1.150	Unclassified	600	0	0.450	Unclassified
S2.000	SPP2	100	0.400	0.400	Unclassified	1200	0	0.400	Unclassified
S2.001	SPP2 FC	100	0.400	0.416	Unclassified	1200	0	0.400	Unclassified
S1.003	SMH1	150	1.110	2.051	Unclassified	600	0	1.110	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

S1.003	S	89.000	86.799	0.000	0	0
--------	---	--------	--------	-------	---	---

Simulation Criteria for Storm

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	21.000	Storm Duration (mins)	30
Ratio R	0.438		