APPENDICES

Appendix A Greenfield Runoff Calculation

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

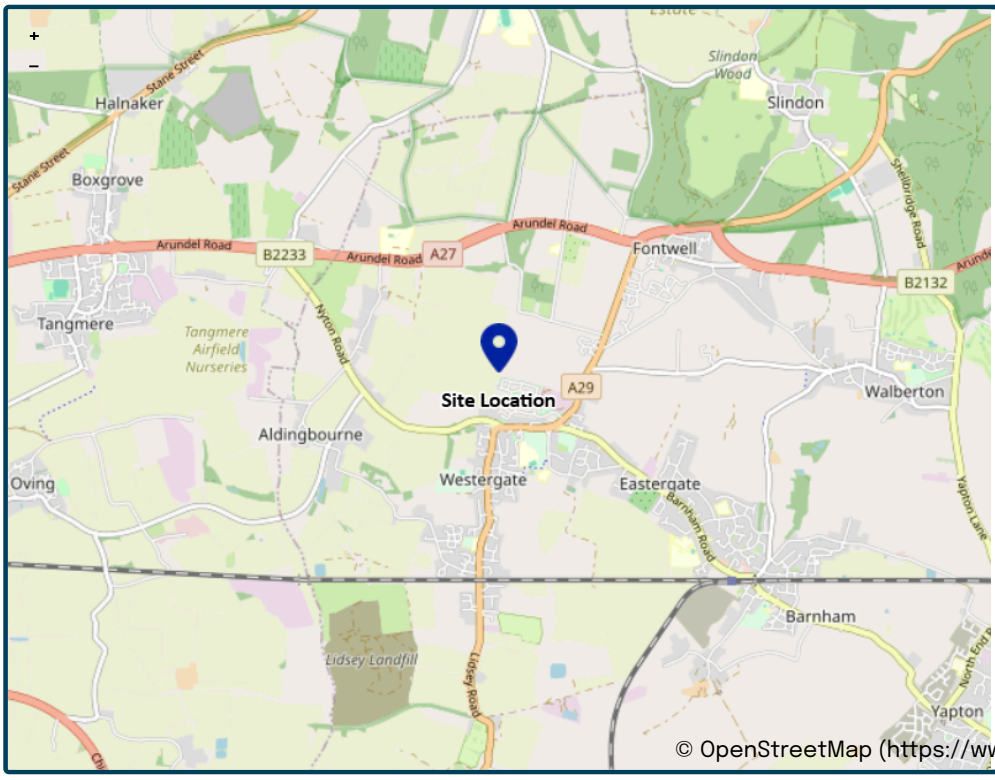
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	22/10/2025
Calculated by	DJL
Reference	C109
Model version	2.2.1

Location

Site name	Northfields Lane
Site location	Westergate



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Site easting (British National Grid)	493931
Site northing (British National Grid)	105847

Site details

Total site area (ha)	0.1 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value	
SAAR (mm)	760	mm		760
How should SPR be derived?	WRAP soil type			
WRAP soil type	3			2
SPR	0.37			
QBar (IH124) (l/s)	0.3	l/s		

Growth curve factors

	My value	Map value
Hydrological region	7	7
1 year growth factor	0.85	
2 year growth factor	0.88	
10 year growth factor	1.62	
30 year growth factor	2.3	
100 year growth factor	3.19	
200 year growth factor	3.74	

Results

Method	IH124	
Flow rate 1 year (l/s)	0.3	l/s
Flow rate 2 year (l/s)	0.3	l/s
Flow rate 10 years (l/s)	0.5	l/s
Flow rate 30 years (l/s)	0.7	l/s
Flow rate 100 years (l/s)	1.0	l/s
Flow rate 200 years (l/s)	1.2	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.1) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix B Groundwater Flotation Calculations (Tank)

HARBOURSTONE DESIGN

Project No: C109
Project Name: Land East of Northfields Lane
Sheet No: 1 Node / System

GEOCELLULAR STORAGE TANK HYDROSTATIC UPLIFT ANALYSIS FOR SOFT GROUND

Level Data:

Ground Level =	12.75	m
Depth to Groundwater =	0.6	m
Invert of Tank =	11.855	m
Top Level of Tank =	**12.255**	**m**
Depth of Penetration in groundwater =	0.30	m
Hydrostatic Uplift	**2.95**	**kN/m²**
Factor of Safety =	1.2	
Min' downward force required =	**3.54**	**kN/m²**

Height of Tank =	400	mm
(Existing ground level) **TOTAL =**	**400**	**mm**

Thickness of surfacing above Tank:

Soil =	400	mm
Clay =	0	mm
TOTAL =	**400**	**mm**

(Minus sand bedding surround from total surfacing above tank)

Densities:

Top Soil =	15.7	kN/m³
Clay =	22	kN/m³

Weight of Topsoil =	6.28	kN/m²
Weight of Clay =	0.00	kN/m²

Downward force of layers over liner= **6.28** **kN/m²**

Make-up over TANK OK

Appendix C Hydraulic Modelling Calculations

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
RWP3	0.000	0.180	Type E	13.010	12.450	0.460	493942.452	105842.423
S8	0.000	0.250	250	12.987	12.410	0.477	493940.264	105841.120
S5-D	0.000	0.180	Type E	12.906	12.335	0.471	493933.388	105839.264
RWP7	0.000	0.180	Type E	12.979	12.450	0.429	493937.339	105831.186
RWP6	0.000	0.180	Type E	12.993	12.450	0.443	493939.153	105835.405
S7	0.000	0.250	250	12.984	12.410	0.474	493938.295	105834.969
S4-D	0.000	0.180	Type E	12.929	12.365	0.464	493934.354	105836.587
S3-D	0.033	0.180	Type E	12.444	11.970	0.374	493900.648	105832.028
S2	0.000	1.200	Type B	12.600	11.600	0.900	493900.404	105829.137
S1	0.000	0.000	Type E	11.864	11.340	0.424	493893.257	105829.242

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	RWP3	12.450	S8	12.410	Circ	0.1mØ	2.547	63.7	0.600	0.460	0.477
1.001	S8	12.410	S5-D	12.335	Circ	0.1mØ	7.122	95.0	0.600	0.477	0.471
1.002	S5-D	12.335	S3-D	11.970	Circ	0.1mØ	33.530	91.9	0.600	0.471	0.374
2.000	RWP7	12.450	S7	12.410	Circ	0.1mØ	3.902	97.5	0.600	0.429	0.474
3.000	RWP6	12.450	S7	12.410	Circ	0.1mØ	0.963	24.1	0.600	0.443	0.474
2.001	S7	12.410	S4-D	12.365	Circ	0.1mØ	4.260	94.7	0.600	0.474	0.464
2.002	S4-D	12.365	S3-D	11.970	Circ	0.1mØ	34.013	86.1	0.600	0.464	0.374
1.003	S3-D	11.970	S2	11.600	Circ	0.1mØ	2.901	7.8	0.600	0.374	0.900
1.004	S2	11.600	S1	11.340	Circ	0.1mØ	7.148	27.5	0.600	0.900	0.424

Permeable Paving Schedule

Permeable Paving	Assigned Manhole	Effective Storage Volume (m3)	CL (m)	IL (m)	Storage Infil Rate (m/hr)	Safety Factor	Easting (m)	Northing (m)
PP1	S3-D	19.993	12.444	11.964	0.00000000	2.00	493934.807	105839.708

Outfall Details

Outfall Manhole S1 : Surcharged (Constant Level)

Surcharged Constant

Water Elevation (m)	Water Depth (m)
11.560	0.220

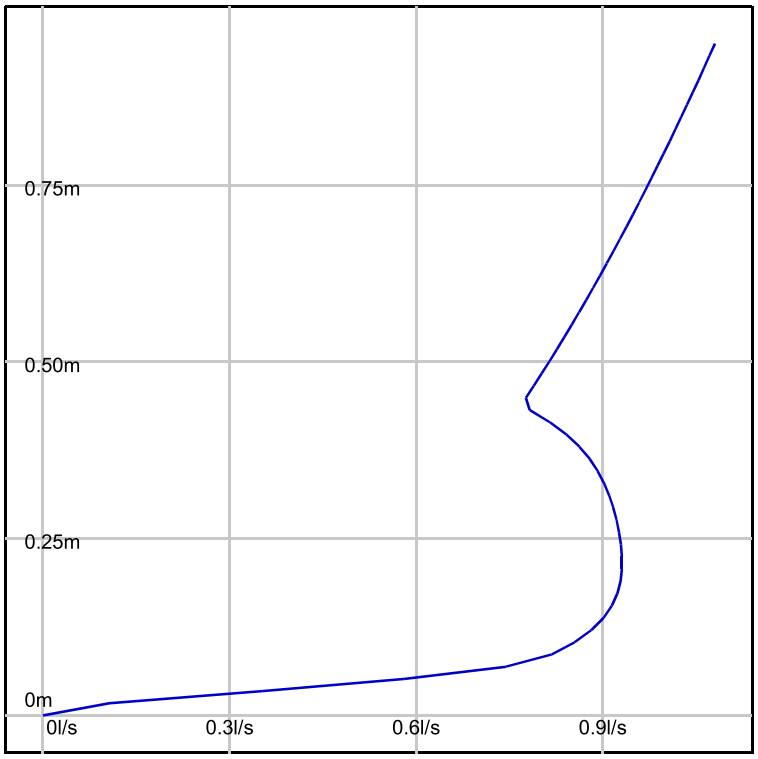
Flow Control Details

Controls within Manhole S2

Hydro-Brake® Optimum Control at Manhole S2

Model Ref	Design Depth (m)	Design Flow (l/s)	Depth Above Invert (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0049-1000-0800-1000	0.800	1.000	0.000	0.216	0.931	0.438	0.768

Hydro-Brake® Optimum Control at S2



Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_493934_105827_v5_1_0.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Periods (yrs) + Climate Change: (1, +0%), (10, +35%), (30, +35%), (100, +45%)

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	15.653	0.00	0.00	30Yr+35% 15Min Summer	110.177	0.00	0.20
1Yr 15Min Summer	15.653	0.00	0.00	30Yr+35% 15Min Winter	110.177	0.00	0.20
1Yr 30Min Winter	10.370	0.00	0.00	30Yr+35% 30Min Summer	73.477	0.00	0.18
1Yr 30Min Summer	10.370	0.00	0.00	30Yr+35% 30Min Winter	73.477	0.00	0.18
1Yr 60Min Winter	6.643	0.00	0.00	30Yr+35% 60Min Summer	46.696	0.00	0.12
1Yr 60Min Summer	6.643	0.00	0.00	30Yr+35% 60Min Winter	46.696	0.00	0.12
1Yr 120Min Summer	5.343	0.00	0.00	30Yr+35% 120Min Summer	28.564	0.00	0.00
1Yr 120Min Winter	5.343	0.00	0.00	30Yr+35% 120Min Winter	28.564	0.00	0.00
1Yr 180Min Summer	4.504	0.00	0.00	30Yr+35% 180Min Summer	21.155	0.00	0.00
1Yr 180Min Winter	4.504	0.00	0.00	30Yr+35% 180Min Winter	21.155	0.00	0.00
1Yr 240Min Summer	3.726	0.00	0.00	30Yr+35% 240Min Summer	16.967	0.00	0.00
1Yr 240Min Winter	3.726	0.00	0.00	30Yr+35% 240Min Winter	16.967	0.00	0.00
1Yr 360Min Summer	2.902	0.00	0.00	30Yr+35% 360Min Summer	12.320	0.00	0.00
1Yr 360Min Winter	2.902	0.00	0.00	30Yr+35% 360Min Winter	12.320	0.00	0.00
1Yr 480Min Summer	2.418	0.00	0.00	30Yr+35% 480Min Summer	9.778	0.00	0.00
1Yr 480Min Winter	2.418	0.00	0.00	30Yr+35% 480Min Winter	9.778	0.00	0.00
1Yr 600Min Summer	2.065	0.00	0.00	30Yr+35% 600Min Summer	8.147	0.00	0.00
1Yr 600Min Winter	2.065	0.00	0.00	30Yr+35% 600Min Winter	8.147	0.00	0.00
1Yr 720Min Winter	1.802	0.00	0.00	30Yr+35% 720Min Summer	7.002	0.00	0.00
1Yr 720Min Summer	1.802	0.00	0.00	30Yr+35% 720Min Winter	7.002	0.00	0.00
1Yr 960Min Summer	1.455	0.00	0.00	30Yr+35% 960Min Summer	5.511	0.00	0.00
1Yr 960Min Winter	1.455	0.00	0.00	30Yr+35% 960Min Winter	5.511	0.00	0.00
1Yr 1440Min Summer	1.096	0.00	0.00	30Yr+35% 1440Min Summer	3.944	0.00	0.00
1Yr 1440Min Winter	1.096	0.00	0.00	30Yr+35% 1440Min Winter	3.944	0.00	0.00
10Yr+35% 15Min Summer	85.192	0.00	0.31	100Yr+45% 15Min Summer	148.603	0.00	0.46
10Yr+35% 15Min Winter	85.192	0.00	0.30	100Yr+45% 15Min Winter	148.603	0.00	0.43
10Yr+35% 30Min Summer	56.204	0.00	0.23	100Yr+45% 30Min Summer	99.595	0.00	0.58
10Yr+35% 30Min Winter	56.204	0.00	0.23	100Yr+45% 30Min Winter	99.595	0.00	0.58
10Yr+35% 60Min Summer	35.559	0.00	0.00	100Yr+45% 60Min Summer	63.976	0.00	0.34
10Yr+35% 60Min Winter	35.559	0.00	0.00	100Yr+45% 60Min Winter	63.976	0.00	0.33
10Yr+35% 120Min Winter	22.362	0.00	0.00	100Yr+45% 120Min Summer	38.349	0.00	0.00
10Yr+35% 120Min Summer	22.362	0.00	0.00	100Yr+45% 120Min Winter	38.349	0.00	0.00
10Yr+35% 180Min Summer	16.811	0.00	0.00	100Yr+45% 180Min Summer	28.108	0.00	0.00
10Yr+35% 180Min Winter	16.811	0.00	0.00	100Yr+45% 180Min Winter	28.108	0.00	0.00
10Yr+35% 240Min Summer	13.540	0.00	0.00	100Yr+45% 240Min Summer	22.587	0.00	0.00
10Yr+35% 240Min Winter	13.540	0.00	0.00	100Yr+45% 240Min Winter	22.587	0.00	0.00
10Yr+35% 360Min Summer	9.904	0.00	0.00	100Yr+45% 360Min Summer	16.413	0.00	0.00
10Yr+35% 360Min Winter	9.904	0.00	0.00	100Yr+45% 360Min Winter	16.413	0.00	0.00
10Yr+35% 480Min Summer	7.896	0.00	0.00	100Yr+45% 480Min Summer	13.030	0.00	0.00
10Yr+35% 480Min Winter	7.896	0.00	0.00	100Yr+45% 480Min Winter	13.030	0.00	0.00
10Yr+35% 600Min Winter	6.592	0.00	0.00	100Yr+45% 600Min Summer	10.871	0.00	0.00
10Yr+35% 600Min Summer	6.592	0.00	0.00	100Yr+45% 600Min Winter	10.871	0.00	0.00
10Yr+35% 720Min Summer	5.672	0.00	0.00	100Yr+45% 720Min Summer	9.359	0.00	0.00
10Yr+35% 720Min Winter	5.672	0.00	0.00	100Yr+45% 720Min Winter	9.359	0.00	0.00
10Yr+35% 960Min Summer	4.477	0.00	0.00	100Yr+45% 960Min Summer	7.377	0.00	0.00
10Yr+35% 960Min Winter	4.477	0.00	0.00	100Yr+45% 960Min Winter	7.377	0.00	0.00
10Yr+35% 1440Min Summer	3.220	0.00	0.00	100Yr+45% 1440Min Winter	5.271	0.00	0.00
10Yr+35% 1440Min Winter	3.220	0.00	0.00	100Yr+45% 1440Min Summer	5.271	0.00	0.00

Simulation Results

Return Period Yrs: 1.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWP3	-	0	12.450	0.000	0.000		OK
S8	-	0	12.410	0.000	0.000		OK
S5-D	-	0	12.335	0.000	0.000		OK
RWP7	-	0	12.450	0.000	0.000		OK
RWP6	-	0	12.450	0.000	0.000		OK
S7	-	0	12.410	0.000	0.000		OK
S4-D	-	0	12.365	0.000	0.000		OK
S3-D	360 min Summer	205	11.982	0.012	0.633		OK
S2	360 min Summer	208	11.673	0.073	0.631		OK
S1	15 min Winter	0	11.560	0.220	0.000		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	0	RWP3	S8	0.000	0.000	0.000	0.000	OK
1.001	15 min Winter	0	S8	S5-D	0.000	0.000	0.000	0.000	OK
1.002	360 min Summer	205	S5-D	S3-D	0.006	0.000	0.000	0.000	OK
2.000	15 min Winter	0	RWP7	S7	0.000	0.000	0.000	0.000	OK
3.000	15 min Winter	0	RWP6	S7	0.000	0.000	0.000	0.000	OK
2.001	15 min Winter	0	S7	S4-D	0.000	0.000	0.000	0.000	OK
2.002	360 min Summer	205	S4-D	S3-D	0.006	0.000	0.000	0.000	OK
1.003	360 min Summer	208	S3-D	S2	0.042	0.441	0.632	0.029	OK
1.004	360 min Summer	208	S2	S1	0.058	0.134	0.631	0.054	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
PP1	360 min Summer	205	11.999	0.035	0.635		OK

Return Period Yrs: 10.0
Climate Change %: 35

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWP3	-	0	12.450	0.000	0.000		OK
S8	-	0	12.410	0.000	0.000		OK
S5-D	-	0	12.335	0.000	0.000		OK
RWP7	-	0	12.450	0.000	0.000		OK
RWP6	-	0	12.450	0.000	0.000		OK
S7	-	0	12.410	0.000	0.000		OK
S4-D	-	0	12.365	0.000	0.000		OK
S3-D	180 min Summer	138	12.127	0.157	0.820		Surcharged
S2	180 min Summer	138	12.126	0.526	0.820		Surcharged
S1	15 min Summer	0	11.560	0.220	0.000		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	0	RWP3	S8	0.000	0.000	0.000	0.000	OK
1.001	15 min Summer	0	S8	S5-D	0.000	0.000	0.000	0.000	OK
1.002	30 min Summer	30	S5-D	S3-D	0.050	0.000	0.000	0.000	OK
2.000	15 min Summer	0	RWP7	S7	0.000	0.000	0.000	0.000	OK
3.000	15 min Summer	0	RWP6	S7	0.000	0.000	0.000	0.000	OK
2.001	15 min Summer	0	S7	S4-D	0.000	0.000	0.000	0.000	OK
2.002	30 min Summer	30	S4-D	S3-D	0.050	0.000	0.000	0.000	OK
1.003	30 min Winter	30	S3-D	S2	0.100	0.932	3.553	0.163	Surcharged
1.004	720 min Winter	335	S2	S1	0.060	0.191	0.931	0.080	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
PP1	180 min Summer	138	12.128	0.165	0.818		OK

Return Period Yrs: 30.0
Climate Change %: 35

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWP3	-	0	12.450	0.000	0.000		OK
S8	-	0	12.410	0.000	0.000		OK
S5-D	-	0	12.335	0.000	0.000		OK
RWP7	-	0	12.450	0.000	0.000		OK
RWP6	-	0	12.450	0.000	0.000		OK
S7	-	0	12.410	0.000	0.000		OK
S4-D	-	0	12.365	0.000	0.000		OK
S3-D	180 min Winter	151	12.185	0.215	0.860		Flood Risk
S2	180 min Winter	151	12.185	0.585	0.859		Surcharged
S1	15 min Summer	0	11.560	0.220	0.000		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	0	RWP3	S8	0.000	0.000	0.000	0.000	OK
1.001	15 min Summer	0	S8	S5-D	0.000	0.000	0.000	0.000	OK
1.002	15 min Summer	20	S5-D	S3-D	0.050	0.000	0.000	0.000	OK
2.000	15 min Summer	0	RWP7	S7	0.000	0.000	0.000	0.000	OK
3.000	15 min Summer	0	RWP6	S7	0.000	0.000	0.000	0.000	OK
2.001	15 min Summer	0	S7	S4-D	0.000	0.000	0.000	0.000	OK
2.002	15 min Summer	20	S4-D	S3-D	0.050	0.000	0.000	0.000	OK
1.003	15 min Winter	20	S3-D	S2	0.100	1.130	3.471	0.159	Surcharged
1.004	720 min Winter	305	S2	S1	0.060	0.191	0.931	0.080	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
PP1	180 min Winter	151	12.187	0.223	0.862		OK

Return Period Yrs: 100.0
Climate Change %: 45

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWP3	-	0	12.450	0.000	0.000		OK
S8	-	0	12.410	0.000	0.000		OK
S5-D	-	0	12.335	0.000	0.000		OK
RWP7	-	0	12.450	0.000	0.000		OK
RWP6	-	0	12.450	0.000	0.000		OK
S7	-	0	12.410	0.000	0.000		OK
S4-D	-	0	12.365	0.000	0.000		OK
S3-D	180 min Winter	164	12.284	0.314	0.922		Flood Risk
S2	180 min Winter	164	12.283	0.683	0.922		Surcharged
S1	15 min Summer	0	11.560	0.220	0.000		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	0	RWP3	S8	0.000	0.000	0.000	0.000	OK
1.001	15 min Summer	0	S8	S5-D	0.000	0.000	0.000	0.000	OK
1.002	15 min Summer	18	S5-D	S3-D	0.050	0.000	0.000	0.000	OK
2.000	15 min Summer	0	RWP7	S7	0.000	0.000	0.000	0.000	OK
3.000	15 min Summer	0	RWP6	S7	0.000	0.000	0.000	0.000	OK
2.001	15 min Summer	0	S7	S4-D	0.000	0.000	0.000	0.000	OK
2.002	15 min Summer	18	S4-D	S3-D	0.050	0.000	0.000	0.000	OK
1.003	30 min Winter	23	S3-D	S2	0.100	0.905	3.507	0.161	Surcharged
1.004	1440 min Summer	651	S2	S1	0.060	0.191	0.931	0.080	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
PP1	180 min Winter	164	12.286	0.322	0.916		OK

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
S15-RE	0.004	0.100	Unknown	12.831	12.375	0.356	493935.189	105825.624
S14	0.008	0.250	250	12.818	12.275	0.443	493944.061	105821.794
S13	0.007	0.450	450	12.843	12.125	0.618	493949.970	105835.377
S17-RE	0.006	0.100	Unknown	12.867	12.335	0.432	493943.146	105848.588
S16	0.000	0.250	250	12.795	12.110	0.585	493963.532	105839.943
S12-CP	0.000	0.450	450	12.789	11.965	0.674	493959.775	105831.185
S11-A	0.000	0.180	Type E	12.767	11.935	0.682	493958.260	105827.621
S11	0.000	0.180	Type E	12.749	11.855	0.744	493956.309	105823.016
S10	0.000	1.200	Type B	12.740	11.840	0.750	493955.659	105821.522
S9	0.000	0.000	Type E	11.959	11.700	0.109	493971.227	105807.662

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	S15-RE	12.375	S14	12.275	Circ	0.1mØ	9.663	96.6	0.600	0.356	0.443
1.001	S14	12.275	S13	12.125	Circ	0.1mØ	14.813	98.8	0.600	0.443	0.618
1.002	S13	12.125	S12-CP	12.015	Circ	0.1mØ	10.663	96.9	0.600	0.618	0.674
2.000	S17-RE	12.335	S16	12.110	Circ	0.1mØ	22.143	98.4	0.600	0.432	0.585
2.001	S16	12.110	S12-CP	12.015	Circ	0.1mØ	9.529	100.3	0.600	0.585	0.674
1.003	S12-CP	11.965	S11-A	11.935	Circ	0.15mØ	3.873	129.1	0.600	0.674	0.682
1.004	S11-A	11.935	S11	11.855	Circ	0.15mØ	5.002	62.5	0.600	0.682	0.744
1.005	S11	11.855	S10	11.840	Circ	0.15mØ	1.629	108.6	0.600	0.744	0.750
1.006	S10	11.840	S9	11.700	Circ	0.15mØ	20.844	148.9	0.600	0.750	0.109

Outfall Details

Outfall Manhole S9 : Surcharged (Constant Level)

Surcharged Constant

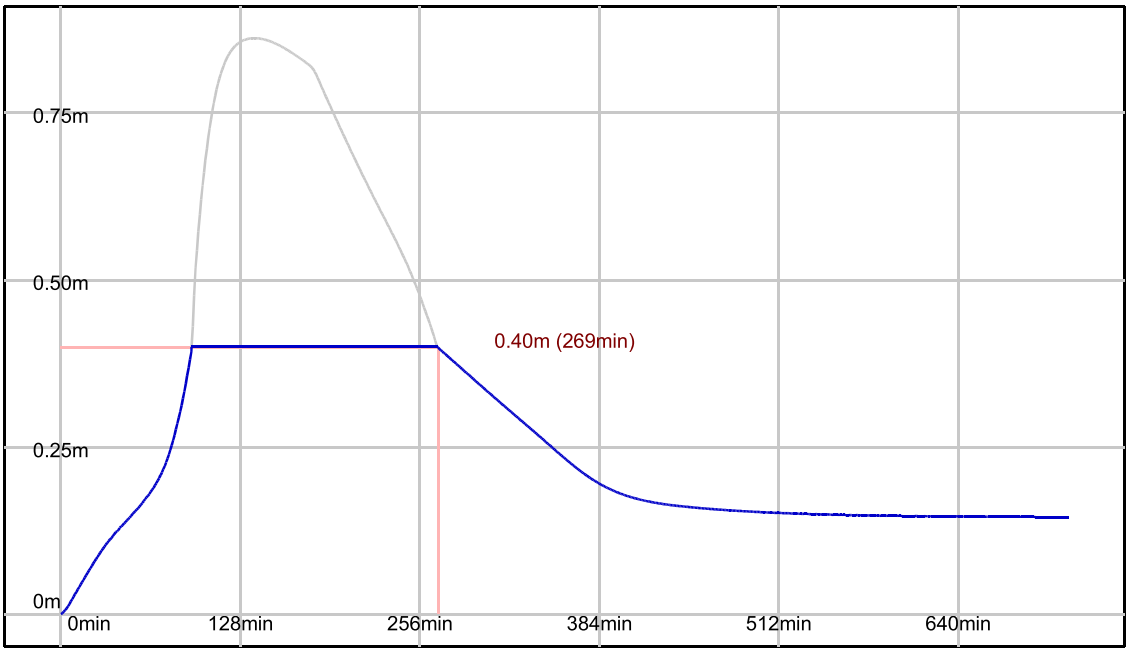
Water Elevation (m)	Water Depth (m)
12.000	0.300

Flow Control Details

Tank Structure at Manhole S11

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
11.855	0.400	95.00	25.000	23.750	9.500	0.00000000	0.00000000	1.00

Tank at S11 (100Yr+45% 180Min Summer)

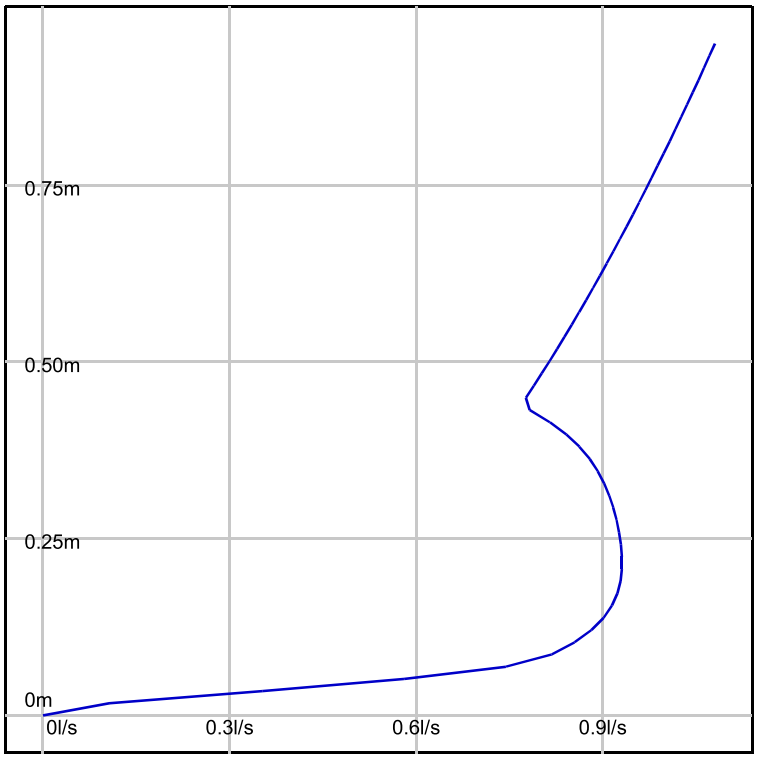


Controls within Manhole S10

Hydro-Brake® Optimum Control at Manhole S10

Model Ref	Design Depth (m)	Design Flow (l/s)	Depth Above Invert (m)	FF Head (m)	FF Flow (l/s)	KF Head (m)	KF Flow (l/s)
SHE-0049-1000-0800-1000	0.800	1.000	0.000	0.216	0.931	0.438	0.768

Hydro-Brake® Optimum Control at S10



Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_493934_105827_v5_1_0.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Periods (yrs) + Climate Change: (1, +0%), (10, +35%), (30, +35%), (100, +45%)

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	15.653	0.00	1.13	30Yr+35% 15Min Summer	110.177	0.00	2.04
1Yr 15Min Summer	15.653	0.00	1.13	30Yr+35% 15Min Winter	110.177	0.00	1.95
1Yr 30Min Winter	10.370	0.00	1.43	30Yr+35% 30Min Summer	73.477	0.00	1.64
1Yr 30Min Summer	10.370	0.00	1.42	30Yr+35% 30Min Winter	73.477	0.00	1.61
1Yr 60Min Winter	6.643	0.00	1.61	30Yr+35% 60Min Summer	46.696	0.00	1.08
1Yr 60Min Summer	6.643	0.00	1.62	30Yr+35% 60Min Winter	46.696	0.00	1.01
1Yr 120Min Summer	5.343	0.00	1.28	30Yr+35% 120Min Summer	28.564	0.00	0.63
1Yr 120Min Winter	5.343	0.00	1.30	30Yr+35% 120Min Winter	28.564	0.00	0.65
1Yr 180Min Summer	4.504	0.00	1.14	30Yr+35% 180Min Summer	21.155	0.00	0.51
1Yr 180Min Winter	4.504	0.00	1.09	30Yr+35% 180Min Winter	21.155	0.00	0.53
1Yr 240Min Summer	3.726	0.00	1.04	30Yr+35% 240Min Summer	16.967	0.00	0.48
1Yr 240Min Winter	3.726	0.00	1.05	30Yr+35% 240Min Winter	16.967	0.00	0.46
1Yr 360Min Summer	2.902	0.00	0.97	30Yr+35% 360Min Summer	12.320	0.00	0.39
1Yr 360Min Winter	2.902	0.00	0.90	30Yr+35% 360Min Winter	12.320	0.00	0.39
1Yr 480Min Summer	2.418	0.00	0.85	30Yr+35% 480Min Summer	9.778	0.00	0.38
1Yr 480Min Winter	2.418	0.00	0.97	30Yr+35% 480Min Winter	9.778	0.00	0.38
1Yr 600Min Summer	2.065	0.00	0.83	30Yr+35% 600Min Summer	8.147	0.00	0.36
1Yr 600Min Winter	2.065	0.00	0.75	30Yr+35% 600Min Winter	8.147	0.00	0.35
1Yr 720Min Winter	1.802	0.00	0.87	30Yr+35% 720Min Summer	7.002	0.00	0.26
1Yr 720Min Summer	1.802	0.00	0.82	30Yr+35% 720Min Winter	7.002	0.00	0.28
1Yr 960Min Summer	1.455	0.00	0.91	30Yr+35% 960Min Summer	5.511	0.00	0.31
1Yr 960Min Winter	1.455	0.00	0.74	30Yr+35% 960Min Winter	5.511	0.00	0.27
1Yr 1440Min Summer	1.096	0.00	0.78	30Yr+35% 1440Min Summer	3.944	0.00	0.30
1Yr 1440Min Winter	1.096	0.00	0.72	30Yr+35% 1440Min Winter	3.944	0.00	0.34
10Yr+35% 15Min Summer	85.192	0.00	1.85	100Yr+45% 15Min Summer	148.603	0.00	2.14
10Yr+35% 15Min Winter	85.192	0.00	1.88	100Yr+45% 15Min Winter	148.603	0.00	2.10
10Yr+35% 30Min Summer	56.204	0.00	1.58	100Yr+45% 30Min Summer	99.595	0.00	1.97
10Yr+35% 30Min Winter	56.204	0.00	1.55	100Yr+45% 30Min Winter	99.595	0.00	1.92
10Yr+35% 60Min Summer	35.559	0.00	1.13	100Yr+45% 60Min Summer	63.976	0.00	-0.84
10Yr+35% 60Min Winter	35.559	0.00	1.05	100Yr+45% 60Min Winter	63.976	0.00	-0.53
10Yr+35% 120Min Winter	22.362	0.00	0.70	100Yr+45% 120Min Summer	38.349	0.00	-1.20
10Yr+35% 120Min Summer	22.362	0.00	0.73	100Yr+45% 120Min Winter	38.349	0.00	-0.49
10Yr+35% 180Min Summer	16.811	0.00	0.60	100Yr+45% 180Min Summer	28.108	0.00	-0.68
10Yr+35% 180Min Winter	16.811	0.00	0.57	100Yr+45% 180Min Winter	28.108	0.00	0.00
10Yr+35% 240Min Summer	13.540	0.00	0.54	100Yr+45% 240Min Summer	22.587	0.00	-0.23
10Yr+35% 240Min Winter	13.540	0.00	0.49	100Yr+45% 240Min Winter	22.587	0.00	0.15
10Yr+35% 360Min Summer	9.904	0.00	0.47	100Yr+45% 360Min Summer	16.413	0.00	0.11
10Yr+35% 360Min Winter	9.904	0.00	0.46	100Yr+45% 360Min Winter	16.413	0.00	0.31
10Yr+35% 480Min Summer	7.896	0.00	0.40	100Yr+45% 480Min Summer	13.030	0.00	0.23
10Yr+35% 480Min Winter	7.896	0.00	0.45	100Yr+45% 480Min Winter	13.030	0.00	0.30
10Yr+35% 600Min Winter	6.592	0.00	0.36	100Yr+45% 600Min Summer	10.871	0.00	0.26
10Yr+35% 600Min Summer	6.592	0.00	0.37	100Yr+45% 600Min Winter	10.871	0.00	0.29
10Yr+35% 720Min Summer	5.672	0.00	0.30	100Yr+45% 720Min Summer	9.359	0.00	0.30
10Yr+35% 720Min Winter	5.672	0.00	0.41	100Yr+45% 720Min Winter	9.359	0.00	0.25
10Yr+35% 960Min Summer	4.477	0.00	0.42	100Yr+45% 960Min Summer	7.377	0.00	0.21
10Yr+35% 960Min Winter	4.477	0.00	0.45	100Yr+45% 960Min Winter	7.377	0.00	0.23
10Yr+35% 1440Min Summer	3.220	0.00	0.33	100Yr+45% 1440Min Winter	5.271	0.00	0.26
10Yr+35% 1440Min Winter	3.220	0.00	0.38	100Yr+45% 1440Min Summer	5.271	0.00	0.22

Simulation Results

Return Period Yrs: 1.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S15-RE	15 min Summer	8	12.391	0.016	0.358		OK
S14	15 min Summer	8	12.303	0.028	1.052		OK
S13	15 min Summer	9	12.160	0.035	1.618		OK
S17-RE	15 min Summer	8	12.355	0.020	0.544		OK
S16	15 min Summer	9	12.130	0.020	0.531		OK
S12-CP	240 min Summer	140	12.044	0.079	0.527		OK
S11-A	240 min Summer	128	12.047	0.112	0.000		OK
S11	360 min Summer	203	12.043	0.188	0.541		Surcharged
S10	360 min Summer	203	12.043	0.203	0.470		Surcharged
S9	15 min Winter	0	12.000	0.300	0.327		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	8	S15-RE	S14	0.022	0.273	0.348	0.057	OK
1.001	15 min Summer	9	S14	S13	0.031	0.492	1.035	0.171	OK
1.002	15 min Summer	9	S13	S12-CP	0.035	0.665	1.634	0.267	OK
2.000	15 min Summer	9	S17-RE	S16	0.020	0.486	0.538	0.089	OK
2.001	15 min Summer	9	S16	S12-CP	0.020	0.477	0.534	0.089	OK
1.003	360 min Summer	205	S12-CP	S11-A	0.093	0.255	0.961	0.062	OK
1.004	240 min Summer	128	S11-A	S11	0.131	0.193	2.888	0.128	OK
1.005	240 min Summer	125	S11	S10	0.150	0.030	0.538	0.032	Surcharged
1.006	360 min Summer	203	S10	S9	0.150	0.026	0.466	0.032	Surcharged

Return Period Yrs: 10.0

Climate Change %: 35

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S15-RE	15 min Summer	8	12.413	0.038	1.946		OK
S14	15 min Summer	9	12.405	0.130	5.556		Surcharged
S13	15 min Summer	9	12.294	0.169	8.432		Surcharged
S17-RE	15 min Summer	8	12.384	0.049	2.964		OK
S16	180 min Summer	121	12.207	0.097	0.230		OK
S12-CP	180 min Summer	121	12.207	0.242	0.933		Surcharged
S11-A	180 min Summer	121	12.207	0.272	0.933		Surcharged
S11	180 min Summer	121	12.207	0.352	0.933		Surcharged
S10	180 min Summer	121	12.207	0.367	0.931		Surcharged
S9	15 min Summer	0	12.000	0.300	0.327		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	9	S15-RE	S14	0.069	0.411	1.928	0.314	OK
1.001	15 min Summer	9	S14	S13	0.100	0.718	5.247	0.865	Surcharged
1.002	15 min Summer	9	S13	S12-CP	0.095	1.069	8.235	1.345	OK
2.000	180 min Summer	117	S17-RE	S16	0.055	0.582	1.048	0.172	OK
2.001	180 min Summer	121	S16	S12-CP	0.099	0.466	1.047	0.174	OK
1.003	120 min Winter	64	S12-CP	S11-A	0.150	0.607	6.530	0.419	Surcharged
1.004	30 min Winter	22	S11-A	S11	0.150	0.895	8.510	0.378	Surcharged
1.005	180 min Summer	80	S11	S10	0.150	0.063	1.107	0.065	Surcharged
1.006	180 min Summer	121	S10	S9	0.150	0.053	0.931	0.064	Surcharged

Return Period Yrs: 30.0

Climate Change %: 35

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S15-RE	15 min Summer	10	12.527	0.152	2.009		Surcharged
S14	15 min Summer	10	12.516	0.241	5.990		Surcharged
S13	15 min Summer	10	12.369	0.244	9.492		Surcharged
S17-RE	15 min Summer	8	12.392	0.057	3.834		OK
S16	180 min Summer	128	12.352	0.242	0.221		Surcharged
S12-CP	180 min Summer	128	12.352	0.387	0.894		Surcharged
S11-A	180 min Summer	128	12.352	0.417	0.892		Surcharged
S11	180 min Summer	128	12.352	0.497	0.891		Surcharged
S10	180 min Summer	128	12.352	0.512	0.889		Surcharged
S9	15 min Summer	0	12.000	0.300	0.327		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	11	S15-RE	S14	0.100	0.410	2.232	0.364	Surcharged
1.001	15 min Winter	10	S14	S13	0.100	0.735	5.777	0.952	Surcharged
1.002	30 min Winter	19	S13	S12-CP	0.100	1.041	8.001	1.307	Surcharged
2.000	120 min Summer	67	S17-RE	S16	0.065	0.670	1.734	0.285	OK
2.001	60 min Winter	43	S16	S12-CP	0.100	0.663	1.845	0.307	Surcharged
1.003	30 min Winter	19	S12-CP	S11-A	0.150	1.065	10.525	0.676	Surcharged
1.004	15 min Winter	13	S11-A	S11	0.150	1.409	12.653	0.563	Surcharged
1.005	30 min Summer	18	S11	S10	0.150	0.072	1.267	0.075	Surcharged
1.006	60 min Winter	61	S10	S9	0.150	0.053	0.931	0.064	Surcharged

Return Period Yrs: 100.0

Climate Change %: 45

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
S15-RE	15 min Summer	10	12.737	0.362	2.701		Flood Risk
S14	15 min Summer	10	12.723	0.448	7.563		Flood Risk
S13	180 min Summer	138	12.718	0.593	0.720		Flood Risk
S17-RE	180 min Summer	138	12.717	0.382	0.234		Flood Risk
S16	180 min Summer	138	12.717	0.607	0.234		Flood Risk
S12-CP	180 min Summer	138	12.717	0.752	0.954		Flood Risk
S11-A	180 min Summer	138	12.717	0.782	0.954		Flood Risk
S11	180 min Summer	138	12.717	0.862	0.954		Surcharged
S10	180 min Summer	138	12.717	0.877	0.953		Flood Risk
S9	15 min Summer	0	12.000	0.300	0.327		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Winter	12	S15-RE	S14	0.100	0.408	2.682	0.437	Surcharged
1.001	15 min Winter	11	S14	S13	0.100	0.881	6.920	1.141	Surcharged
1.002	15 min Winter	10	S13	S12-CP	0.100	1.420	11.153	1.822	Surcharged
2.000	60 min Winter	42	S17-RE	S16	0.100	0.737	2.529	0.416	Surcharged
2.001	30 min Winter	20	S16	S12-CP	0.100	0.791	3.719	0.618	Surcharged
1.003	15 min Winter	11	S12-CP	S11-A	0.150	1.123	15.723	1.010	Surcharged
1.004	15 min Winter	11	S11-A	S11	0.150	1.495	14.986	0.666	Surcharged
1.005	60 min Winter	38	S11	S10	0.150	0.136	2.402	0.141	Surcharged
1.006	180 min Summer	138	S10	S9	0.150	0.054	0.953	0.066	Surcharged

Appendix D Maintenance Schedule

HARBOURSTONE DESIGN

MANAGEMENT & MAINTENANCE SCHEDULE

LAND EAST OF NORTHFIELDS LANE, WESTERGATE PO20 3UH

Residential Development

2025-C109-MMS01

October 2025

Prepared on Behalf of Domusea Northfields Limited

1 MAINTENANCE

1.1 General Maintenance

1.1.1 In accordance with National Standards for SuDS (Standard 7), a Maintenance Plan, within an Operation and Maintenance Manual, is required to ensure that the proposed drainage system can be maintained safely. Chapter 32 of the SuDS Manual details good practice for operation and maintenance activities, and the below sets out the basis of measures to be incorporated in a detailed management plan as part of the detailed drainage design.

1.1.2 Maintenance of private features serving only one residential dwelling are the responsibility of the resident.

1.1.3 A maintenance regime should include tasks to be taken at regular intervals to keep the system in good working order (see SuDS Manual Table 32.1). General measures should include:

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Inlet, Outfall	Inspection, vegetation clearance and additional clearing/cleansing of potential outfall blockages	At least once a year
	Desilting	Year 1, Year 3, then every 5 years
Catch pits, gully sumps and drains, flap valves	Inspection and additional cleansing as required.	Every 6 months
	Desilting	Year 1, Year 3, then every 5 years
Pipework	Jetting to clear blockages	As required

1.1.4 Chapters 11-23 of the CIRIA SuDS Manual set out specific maintenance for differing SuDS features, and this is detailed below for the proposed SuDS features.

1.2 Permeable Pavements & Diffuser Units

1.2.1 The areas of permeable paving are designed to allow surface water run-off to percolate through the joints in the block paving surface course and into the sub-base below. This provides a volume of attenuated storage (as it is proposed that the permeable paving will be tanked in view of site constraints) before collected run-off is discharged, at a control rate, to the receiving outfall(s).

1.2.2 As part of the permeable paving system, diffuser units are used to discharge surface water run-off from roof areas into the sub-base, as well as conveying runoff to the outfall from the permeable paving. These diffuser units are small heavy-duty cellular units which allow more efficient discharge of surface water into the sub-base base of the permeable paved areas.

1.2.3 The areas of permeable paving will require additional maintenance measures to ensure they operate as designed. Failure in carrying out this maintenance, could increase the risk of flooding. The additional measures are as follows:

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Permeable Pavement	Surface sweeping to reduce silt and debris accumulation.	Every 8 to 12 weeks
	Replace broken slabs/blocks	As required
	Removal / management of weed growth	At least once a year
	Silt removal from permeable surfaces, possibly involving raking out of joints, redressing, removal and remedial works.	As required / to be specified by manufacturer
Diffuser units	Inspection and additional cleansing as required.	Annual
	Desilting.	Year 1, Year 3, then every 5 years

1.3 Flow Control Chambers

1.3.1 A flow control chamber (such as a HydroBrake) or device is self-activating, relying on upstream hydraulic head to generate an air-filled vortex within the centre of the casing. Once the vortex is initiated water drains down through a small opening in the back of the device at the designed restricted flow rate.

1.3.2 The flow control device includes a bypass valve for use should it become blocked. A valve is situated in the front of the unit which is operated from the surface by a release cable situated just under the chamber cover. The valve also proved access of rodding of the downstream pipework.

1.3.3 The flow control chamber will require the following maintenance:

- The sump within the flow control chamber should be monitored for build-up of silts and should be emptied as a minimum on the same regime as specified for catchpits previously within this document.
- The drain down door located on the centre of the unit will require inspection, greasing and opening annually, to ensure it is operating as intended.

1.3.4 The flap valve chamber will require the following maintenance:

- The catchpit chamber should be monitored for build-up of silts and should be emptied as a minimum on the same regime as specified for catchpits previously within this document.
- The hinged door located on the mounted concrete block will require inspection, greasing and opening annually, to ensure it is operating as intended.

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Flow Control Chambers	Clean out chamber/sump	Monthly for first 3 months then twice annually
	Inspect flow control unit and remove debris	

1.4 Attenuation Storage Tanks

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Upstream & Downstream catchpit chambers	Clean out chamber/sump.	Twice annually for the first 2 years of operation then annually
Inlets & Outlets	Inspection, vegetation clearance and additional clearing/cleansing of potential outfall blockages.	Annually and after large storms
Geocellular Units	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Post-construction, monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance).	Monthly
	For systems where rainfall infiltrates into the tank from above, check the surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Monthly, or as required

1.5 On-site & Boundary Ditches/Watercourses

1.5.1 The purpose of these features primarily is to convey water and provide an element of storage. It is the responsibility of the legal riparian for ensuring all ditches/watercourses are free flowing.

1.5.2 The inspection frequency and maintenance requirements are illustrated in the table below and may be affected by other seasonal ecology constraints i.e. bird nesting.

Maintenance	Required Action	Required frequency of works
Regular Maintenance	Remove litter/debris	Monthly, or as required
	Cut grass – may be to suit design parameters	Monthly, or as required
	Manage and/or cut back vegetation	Monthly, or as required
	Inspect inlets/outlets (i.e. culvert at upstream and downstream headwalls)	Monthly
	Inspect base for silt and remove as required	Twice annually
Occasional Maintenance	Reseed areas of poor grass coverage and/or vegetation growth	As required
Remedial Actions	Repair erosion or other damage	As required
	Remove silt from base	As required
	Re-level uneven surfaces to existing/design surface profile	As required
	Remove and dispose of oils, petrols and/or other pollutants and dispose to licenced tip as required	As required

1.6 Remedial Maintenance

1.6.1 As well as the frequencies set out in the above tables, inspections should be undertaken after significant storm events to establish any remedial maintenance may be required, as there may be damage to the drainage system that could cause adverse impacts in a future storm event if not identified.

1.7 Accidental Spillages

1.7.1 In the event of a serious spillage, either by volume or of unknown or toxic compounds, the spillage should be isolated with the use of soil, turf or fabric with outlet pipes from chambers downstream of the spillage blocked with a bung/bungs.

1.7.2 Minor spillages of fuels and oils from motor vehicles will be dealt with by the permachannel, filter gully & catchpits collecting the hydrocarbons.

1.7.3 In the event of a spillage, the responsibility lies with the private resident to clear up any spillage before it enters the drainage network. The primary method of dealing with any spillage of hydrocarbons should be using sand (or equivalent) to soak up the leak and mitigate pollution migration. Any contaminated waste shall be disposed of by a licensed contractor, & SmartSponge replacement (inserted within filter gully) should be made in accordance with the manufacturer's instructions.

1.7.4 The Environment Agency should then be contacted immediately on their incident hotline; 0800 807060.

1.8 Construction & Operation (Maintenance) Considerations

1.8.1 In addition to the regular, occasional and remedial maintenance measures set out above, the following considerations are to be taken:

i. The Construction Management Plan needs to include management of surface water runoff during construction to prevent pollution. In addition, it is recommended that construction phasing ensures SuDs are completed prior to the construction of buildings and hardstanding areas where possible to provide treatment during construction. These features will need a complete inspection upon completion with necessary remedial maintenance taken.

ii. Any future changes to the proposed development will need assessment by the designer to determine impacts on and/or changes required to the proposed drainage system.

Appendix E Groundwater Monitoring Results

Site Name:	Northfields	HARBOURSTONE DESIGN
Item **GROUNDWATER MONITORING RESULTS**	Project No.: C109	
Taken by: AT/ER		

	Total Depth	2.0m	**Cover Level**	12.20m AOD
Location	**centre-east of site, adjacent earth mound**			

Date	**Water Depth (mbgl)**	**Notes**
25/10/2025	1.50	Ditches dry
05/11/2025	1.20	Ditches dry
25/11/2025	1.00	Following heavy rainfall - 50mm ditch depth
01/12/2025	1.00	Following heavy rainfall - 1000mm ditch depth
15/12/2025	0.70	30mm water in ditch
19/12/2025	0.70	200mm water in ditch
06/01/2026	0.80	150mm water in ditch

HARBOURSTONE DESIGN

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