

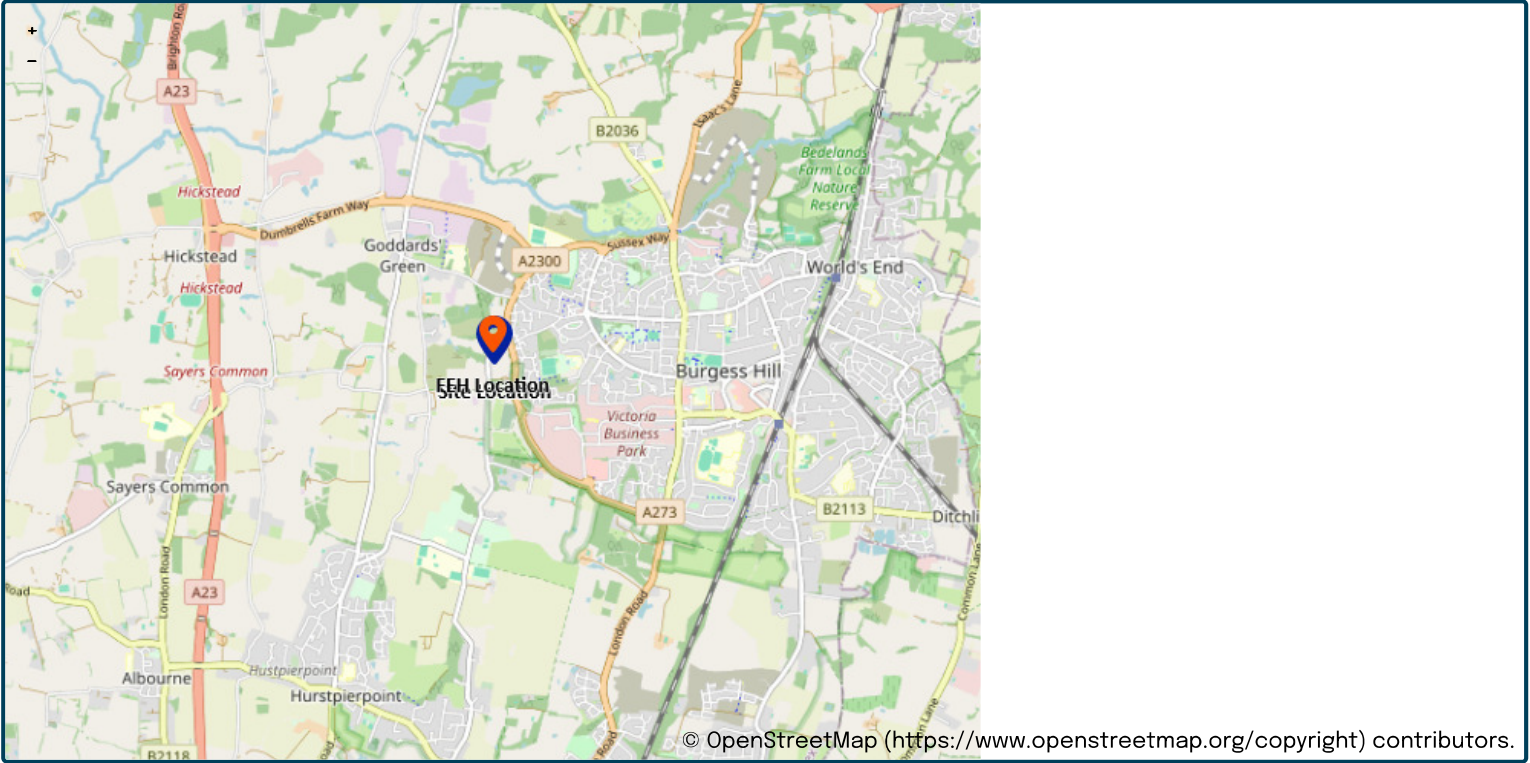
This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is recommended that the total storage volume for the site is distributed across the site using multiple SuDS and that hydraulic modelling software is used to undertake and finalise the detailed design of the drainage system.

Project details

Date	10/06/2025
Calculated by	Simon Dent Associates
Reference	1894
Model version	2.0.1

Location

Site name	Eastlands Farm
Site location	Hurstpierpoint



Site easting	529280
Site northing	119046

Site areas

Total site area (ha)	.1989 ha
----------------------	--

Roof area

Total roof area (ha)	.0379 ha
Contributing roof area (ha)	.0379 ha
Non-contributing roof area (ha)	0 ha

Paved area

Total paved area (ha)	.0175 ha
Contributing paved area (ha)	.0175 ha
Non-contributing paved area (ha)	0 ha

Grass / vegetated area

Total grass / vegetated area (ha)	.1435 ha
Contributing grass / vegetated area (ha)	ha
Non-contributing grass / vegetated area (ha)	0.1435 ha

Total area

Total contributing area (ha)	0.0554 ha
------------------------------	---

Contributing areas with urban creep allowance

Urban creep allowance factor	+10%
Contributing roof area (adjusted for urban creep) (ha)	0.0379 ha
Contributing paved area (adjusted for urban creep) (ha)	0.0175 ha
Contributing grass / vegetated area (adjusted for urban creep) (ha)	0 ha

Storage design parameters

Storage base shape	Rectangular / square
Storage base length to width ratio	1:1 (square)
Storage design depth (mm)	500 mm
Storage side slope (1 in x)	1 in 1
Storage voids ratio (%)	90% (e.g. geocellular crate systems)
Storage volume design return period (years)	1:100 years

Discharge flow rate from the site

Method

Type of site

Greenfield

Specify the method

FEH statistical

FEH statistical

My value

823mm

Map/default value

823

BFIHOST

.233

QMed (l/s)

1.6l/s

QMed-QBar conversion

1.136

1.136

Total area for greenfield runoff calculation (ha)

0.1989ha

0.1989

QBar (l/s)

1.8l/s

Hydrological region

7

7

Return period (years)

Qbar (1:2.3 years)

Growth curve factor

1

Flow rate (FEH statistical) (l/s)

1.8l/s

Final discharge rate

Runoff calculation method

FEH statistical

Design flow rate (l/s)

1.8l/s

Blockage risk

Specify the method

Orifice diameter

Minimum orifice diameter to prevent blockage (mm)

mm

My value

35mm

Calculated value

35

Design orifice diameter (mm)

35mm

Flow rate of orifice (l/s)

1.8l/s

Rainfall and runoff

Rainfall input type

FEH22 CSV file

FEH_Point_Rainfall_FEH22_POT_529263_119045.csv

Distance from FEH location to site (km)

0km

Climate change allowance factor

145%

Specify the runoff method from grass / vegetated areas

Fixed percentage - based on rainfall event depth and SPR

My value

WRAP soil type

Map value

4

How should SPR be derived?

WRAP soil type

WRAP soil type

4

4

SPR

0.47

Model results

- Maximum discharge flow rate: 1.8 (l/s)
- Outflow orifice diameter: 35 (mm)
- Storage base length: 8.39 (m)
- Storage base width: 8.39 (m)
- Storage base area: 70.45 (m²)
- Storage total volume: 39.6 (m³)
- Storage total water volume: 35.6 (m³)
- Storm return periods run: 1, 2, 10, 30, 100, 200 (years)
- Storm durations run: 15, 30, 60, 120, 180, 240, 360, 540, 720, 900, 1080, 1440, 1800, 2160, 2880 (minutes)

Return Period (years)	Critical Duration (minutes)	Peak Flow Rate (l/s)	Max Depth (m)	Max water volume (m ³)	Max storage volume (m ³)
1	360	1	0.18	11.9	13.2
2	240	1.1	0.21	13.8	15.3
10	240	1.4	0.32	21.8	24.2
30	240	1.6	0.4	28	31.1
<u>100</u>	<u>240</u>	<u>1.8</u>	<u>0.5</u>	<u>35.6</u>	<u>39.6</u>
200	240	1.9	0.56	40.9	45.4

Disclaimer

This report was produced using the surface water storage volume design tool (2.0.1) developed by HR Wallingford and available at [uksuds.com](https://www.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) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate surface water storage volumes for the whole site based on a limiting discharge rate from the site. 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.

HR Wallingford are not responsible for any rainfall data shared that is subject to licensing terms imposed by UK Centre for Ecology & Hydrology's Flood Estimation Handbook web service (<https://fehweb.ceh.ac.uk/Home/Terms> (<https://fehweb.ceh.ac.uk/Home/Terms>)).

Appendix A – Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	11.14	13.41	22.74	29.2	36.58	41.02
30	0.5	14.53	17.54	29.97	38.8	49.18	55.53
60	1	18.3	22.1	37.92	49.46	63	71.4
120	2	26.22	30.51	48.18	60.96	76.05	85.75
180	3	31.25	35.83	54.66	68.31	84.61	95.34
240	4	34.92	39.72	59.39	73.72	91.12	102.82
360	6	40.08	45.18	66.08	81.43	100.91	114.54
540	9	45.17	50.58	72.75	89.39	111.51	127.74
720	12	48.84	54.46	77.55	95.19	119.52	137.88
900	15	51.78	57.57	81.34	99.72	125.96	146
1080	18	54.27	60.19	84.53	103.54	131.46	152.84
1440	24	58.55	64.66	89.91	110.06	140.68	163.94
1800	30	62.31	68.58	94.61	115.65	148.28	172.75
2160	36	65.79	72.21	98.9	120.68	154.85	180.22
2880	48	72.18	78.85	106.68	129.6	165.97	192.56

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	10 years	30 years	100 years	200 years
15	0.25	7.68	9.25	15.68	20.14	25.23	28.29
30	0.5	10.02	12.1	20.67	26.76	33.92	38.3
60	1	12.62	15.24	26.15	34.11	43.45	49.24
120	2	18.08	21.04	33.23	42.04	52.45	59.14
180	3	21.55	24.71	37.7	47.11	58.35	65.75
240	4	24.08	27.39	40.96	50.84	62.84	70.91
360	6	27.64	31.16	45.57	56.16	69.59	78.99
540	9	31.15	34.88	50.17	61.65	76.9	88.1
720	12	33.69	37.56	53.48	65.65	82.43	95.09
900	15	35.71	39.7	56.1	68.77	86.87	100.69
1080	18	37.43	41.51	58.3	71.41	90.66	105.41
1440	24	40.38	44.59	62.01	75.9	97.02	113.06
1800	30	42.98	47.3	65.25	79.76	102.26	119.14
2160	36	45.38	49.8	68.21	83.23	106.79	124.29
2880	48	49.78	54.38	73.57	89.38	114.46	132.8