

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	09/10/2025
Calculated by	Simon Dent Associates
Reference	1859 - Sussex Business Centre Barnham
Model version	2.1.2

Location

Site name	SBC - Barnham
Site location	Barnham



Site easting (British National Grid)	497214
Site northing (British National Grid)	104612

Site areas

Total site area (ha)	<input type="text" value="0.1405"/>	ha
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Roof area

Total roof area (ha)	<input type="text" value="0.0263"/>	ha
Contributing roof area (ha)	<input type="text" value="0.0263"/>	ha
Non-contributing roof area (ha)	<input type="text" value="0"/>	ha

Paved area

Total paved area (ha)	<input type="text" value=".0281"/>	ha
Contributing paved area (ha)	<input type="text" value=".0281"/>	ha
Non-contributing paved area (ha)	<input type="text" value="0"/>	ha

Grass / vegetated area

Total grass / vegetated area (ha)	<input type="text" value=".0861"/>	ha
Contributing grass / vegetated area (ha)	<input type="text"/>	ha
Non-contributing grass / vegetated area (ha)	<input type="text" value="0.0861"/>	ha

Total area

Total contributing area (ha)	<input type="text" value="0.0544"/>	ha
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Contributing areas with urban creep allowance

Urban creep allowance factor	<input type="text" value="+10%"/>	
Contributing roof area (adjusted for urban creep) (ha)	<input type="text" value="0.0263"/>	ha
Contributing paved area (adjusted for urban creep) (ha)	<input type="text" value="0.0281"/>	ha
Contributing grass / vegetated area (adjusted for urban creep) (ha)	<input type="text" value="0"/>	ha

Storage design parameters

Storage base shape	<input type="text" value="Rectangular / square"/>	
Storage base length to width ratio	<input type="text" value="1:1 (square)"/>	
Storage design depth (m)	<input type="text" value="0.5"/>	m
Storage side slope (1 in x)	<input type="text" value="1 in 1"/>	
Storage voids ratio (%)	<input type="text" value="90% (e.g. geocellular crate systems)"/>	
Storage volume design return period (years)	<input type="text" value="1:100 years"/>	

Discharge flow rate from the site

Method

Type of site

Greenfield

Specify the method

User specified

User specified discharge

Flow rate (user specified) (l/s)

0.7l/s

Final discharge rate

Runoff calculation method

User specified

Design flow rate (l/s)

0.7l/s

Blockage risk

Specify the method

Orifice diameter

Minimum orifice diameter to prevent blockage (mm)

21mm

My value

Design orifice diameter (mm)

21mm

Flow rate of orifice (l/s)

0.65l/s

Calculated value

21

Rainfall and runoff

Rainfall input type

FEH22 CSV file

FEH_Point_Rainfall_FEH22_POT_514534_103783.csv

Distance from FEH location to site (km)

17.3km

Climate change allowance factor

145%

Specify the runoff method from grass / vegetated areas

Fixed percentage - based on rainfall event depth and SPR

My value

How should SPR be derived?

WRAP soil type

WRAP soil type

2

SPR

0.3

Map value

2

Model results

- Maximum discharge flow rate: 0.6 (l/s)
- Outflow orifice diameter: 21 (mm)
- Storage base length: 9.9 (m)
- Storage base width: 9.9 (m)
- Storage base area: 98 (m²)
- Storage total volume: 54 (m³)
- Storage total water volume: 49 (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, 3600, 4320, 5040, 5760 (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	540	0.4	0.16	15	17
2	540	0.4	0.21	19	21
10	540	0.5	0.32	30	33
30	540	0.6	0.40	38	42
100	540	0.6	0.50	49	54
200	540	0.7	0.57	56	62

Please note runoff estimation and storage volume estimation are subject to uncertainty. Storage volume results are therefore reported to the nearest 1 m³ value, unless storage volumes are less than 10 m³, in which case, storage volumes are provided to 1 decimal place.

Disclaimer

This report was produced using the surface water storage volume design tool (2.1.2) 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.

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