



## Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by: RM Associates  
 Site name: Wombwell House  
 Site location: Fishtoft Road Boston

### Site Details

Latitude: 52.96385° N  
 Longitude: 0.01876° E  
 Reference: 2246068548  
 Date: Jun 21 2021 12:16

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 not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

### Site characteristics

Total site area (ha): 0.0451  
 Significant public open space (ha): 0  
 Area positively drained (ha): 0.0451  
 Impermeable area (ha): 0.0451  
 Percentage of drained area that is impermeable (%): 100  
 Impervious area drained via infiltration (ha): 0  
 Return period for infiltration system design (year): 10  
 Impervious area drained to rainwater harvesting (ha): 0  
 Return period for rainwater harvesting system (year): 10  
 Compliance factor for rainwater harvesting system (%): 66  
 Net site area for storage volume design (ha): 0.05  
 Net impermeable area for storage volume design (ha): 0.05  
 Pervious area contribution to runoff (%): 30

\* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of  $Q_{BAR}$  and other flow rates will have been reduced accordingly.

### Design criteria

Climate change allowance factor: 1.4  
 Urban creep allowance factor: 1.1  
 Volume control approach: Flow control to max of 2 l/s/ha or  $Q_{BAR}$   
 Interception rainfall depth (mm): 5  
 Minimum flow rate (l/s): 5

### Methodology

esti  
 $Q_{BAR}$  estimation method: Calculate from SPR and SAAR  
 SPR estimation method: Calculate from SOIL type

### Soil characteristics

SOIL type: Default 2 Edited 2  
 SPR: Default 0.3 Edited 0.3

### Hydrological characteristics

Default Edited  
 Rainfall 100 yrs 6 hrs: -- 63  
 Rainfall 100 yrs 12 hrs: -- 97.79  
 FEH / FSR conversion factor: 1.27 1.27  
 SAAR (mm): 566 566  
 M5-60 Rainfall Depth (mm): 20 20  
 'r' Ratio M5-60/M5-2 day: 0.4 0.4  
 Hydrological region: 5 5  
 Growth curve factor 1 year: 0.87 0.87  
 Growth curve factor 10 year: 1.65 1.65  
 Growth curve factor 30 year: 2.45 2.45  
 Growth curve factor 100 years: 3.56 3.56  
 $Q_{BAR}$  for total site area (l/s): 0.06 0.06  
 $Q_{BAR}$  for net site area (l/s): 0.06 0.06

### Site discharge rates

Default Edited  
 1 in 1 year (l/s): 5 5  
 1 in 30 years (l/s): 5 5  
 1 in 100 year (l/s): 5 5

### Estimated storage volumes

Default Edited  
 Attenuation storage 1/100 years (m³): 6 6  
 Long term storage 1/100 years (m³): 0 0  
 Total storage 1/100 years (m³): 6 6

This report was produced using the storage estimation tool developed by HR Wallingford and available at 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 <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. 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, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

# CONSTRUCTION OF AN AGRICULTURAL STORAGE BUILDING, WOMBWELL HOUSE, FISHTOFT ROAD, FISHTOFT, BOSTON. PE21 0QR

Planning Permission Ref B/21/0168 was granted 11<sup>th</sup> June 2021 for the erection of an agricultural Storage building.

Witham Fourth District IDB requested consent from the applicant is required to:

- 1 Directly discharge surface water to a watercourse (open or piped). A surface water development contribution (SWDC) will be charged on all rates of discharges.
- 2 Discharge the surface and treated water to a watercourse (open or piped).
- 3 Culvert, pipe or bridge the watercourse.

The aim of this SW strategy is to access the potential for the installation of sustainable urban drainage systems (SUDS) for the proposed development to satisfy The Witham Fourth District IDB.

It is proposed to utilise attenuation techniques to reduce the storm water discharge from the proposed development and to minimise the impact of the development on the surrounding area and to comply with guidelines

It is proposed that the surface water be discharged into a newly constructed pond located within in an area which is an established wildlife area. The outfall will be to the adjacent riparian-maintained watercourse.

The storage shed measures 19.35m x 23.31m) 451m<sup>2</sup>.

An on-line surface water detention and attenuation balancing pond of 6m<sup>3</sup> storage capacity, calculated using the Wallingford Tool for "Surface Water Storage requirements for Sites", provides storage at the flow control location.

A Hydrobrake Optimum flow control device will be provided to attenuate the final discharge flows down to 5 litres/sec for the 2-year, 30-year 5litres/sec and up to the 1-100 year plus 40% climate change standard 5 litres/sec Flows in excess of these figures are stored in the on-line balancing pond where they are stored for a period of time before draining back down again to normal water level.

The pond dimensions will be 24m<sup>2</sup> with a storage depth of 250mm with a 300mm freeboard giving a normal TWL of 550mm below the natural ground level.

**R M ASSOCIATES**

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