

### Overview

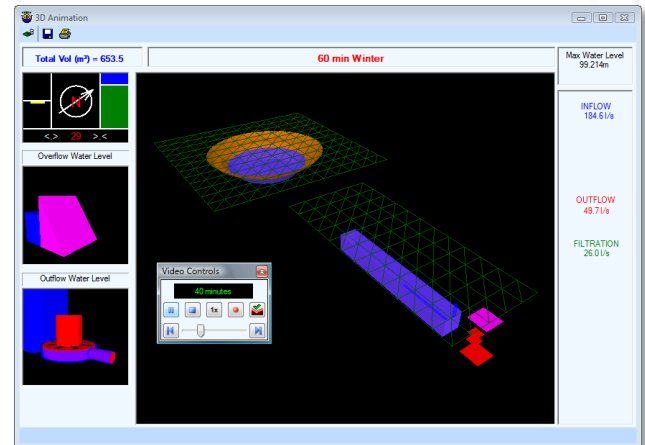
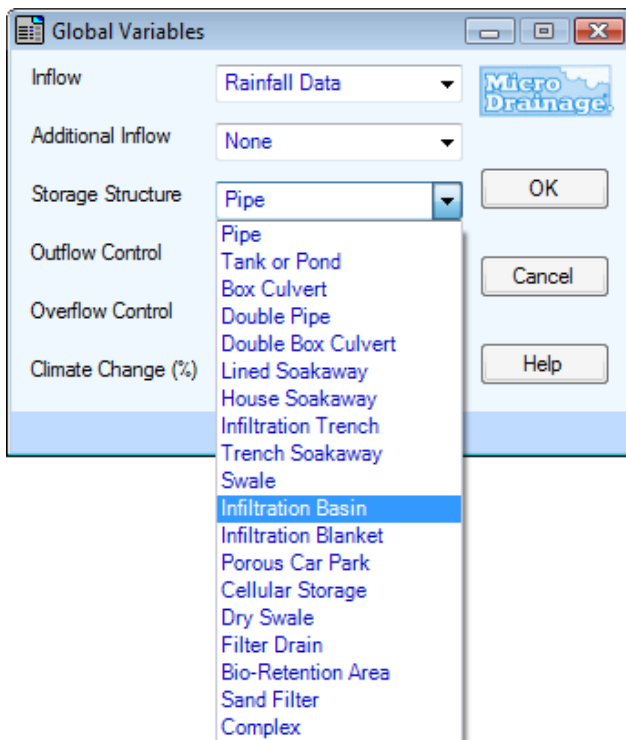
Source Control provides a complete analysis and design solution for engineers, which can instigate infiltration techniques seamlessly with conventional design solutions.

BRE 365, Sewers for Adoption, Sewers for Scotland, building regulations and CIRIA guidance recognise the importance of adequate storage at both source and throughout a drainage network. Source Control has been designed to comply with these regulations. It employs a full hydrograph method to design, size and test storage structures. Furthermore, Source Control can calculate green field runoff rates as required by the Code for Sustainable Homes.

### Description

#### Design

- Full range of (online and offline) traditional and infiltration (SUDs) structures supported



- A large range of controls can be chosen to model separate outflow and overflow controls
- Support for both FSR and FEH rainfall in the UK and Ireland
- Specify rainfall profiles directly for international use or undertake continuous analysis of time series rainfall
- Generate inflow from rainfall profile and time area diagram
- Specify an input hydrograph or model inflow from a green roof
- Scale rainfall to model climate change

### Analysis and Results

- Analyse multiple storms for a required return period, collate results and identify critical duration
- Output minute by minute results in tabular or graphical form
- Real-time animation of water level in the structure
- Print design data and results in pre-defined or custom reports and export to a wide range of formats such as Excel and HTML

### Tools

- Quick Storage Estimate assesses the technical feasibility of employing storage with (or without) infiltration in seconds. The program generates an extensive range of options represented in graphical forms to illustrate the storage requirements. This may be combined with an analysis of the likely impact of infiltration as a cost saving approach.

- ⊙ The Quick Design feature allows the range of sizes for soakaways, infiltration trenches, ponds etc. to be determined to provide the engineer with an outline design. These results include estimates of the volumes of excavation, porous fill material, net storage, times to 1/2 empty etc. to confirm the feasibility of each option.

Quick Design : Infiltration Systems

Micro Drainage

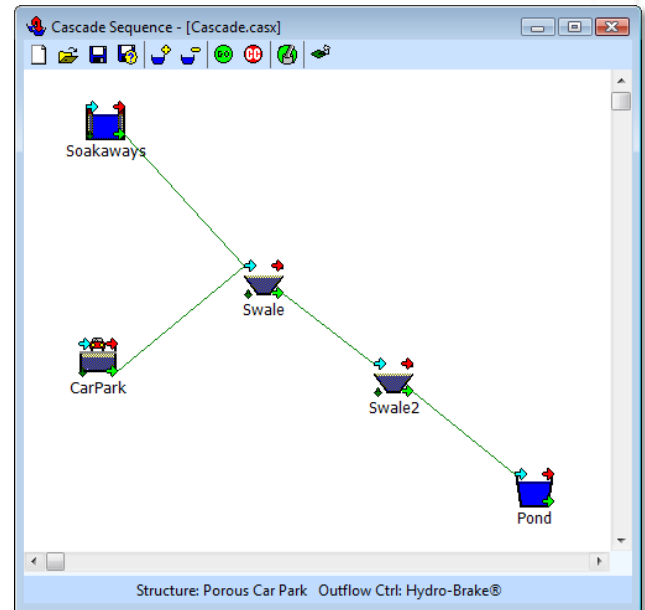
Results

Results are presented in paired rows. These represent maximum and minimum storage requirements for each size of structure.

Width (m)	Net Vol (m <sup>3</sup> )	Length (m)	Unit Area (m <sup>2</sup> )	Ex Vol (m <sup>3</sup> )	Fill Vol (m <sup>3</sup> )	Half Drain (mins)
0.2	672.6	7042.8	4.3	2112.8	2057.5	24
	500.3	5239.0	5.7	1571.7	1530.6	23
0.3	723.1	5147.0	5.8	2316.2	2275.7	33
	561.3	3994.9	7.5	1797.7	1766.3	32
0.4	757.1	4081.2	7.4	2448.7	2416.7	42
	611.1	3294.5	9.1	1976.7	1950.8	40
0.6	810.1	2940.4	10.2	2646.4	2623.3	58
	670.3	2433.1	12.3	2189.7	2170.6	55
1.0	879.5	1930.9	15.5	2896.4	2881.2	83
	737.7	1619.5	18.5	2429.2	2416.5	77
1.5	909.7	1336.9	22.4	3007.9	2997.4	107
	781.1	1147.8	26.1	2582.5	2573.5	98
2.0	927.0	1023.7	29.3	3071.2	3063.1	125
	821.9	907.7	33.1	2723.1	2716.0	113

Buttons: Analyse, OK, Cancel, Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0



### CASDeF

- ⊙ Resize single or cascaded structures to maintain water level below predefined maximum

### Additional Features in WinDes W.12.6

The Greenfield Runoff Volume Calculator that was previously in the Design Audit Wizard is now part of the Rural Runoff Calculator in Source Control.

- ⊙ Rural Runoff Calculator (Qbar and Qmed) allows the peak runoff rates to be calculated for undeveloped or partially developed catchments
- ⊙ Additional tools aid the design of bioretention areas, rainwater harvesting, Vt design and more
- ⊙ The Cascade feature allows several structures to be linked to determine their combined performance. A Pollution Summary can be generated to estimate the range of pollutant removal percentages achieved.

### With Other Modules

Data is defined in Source Control. It is a starting point for the WinDes workflow process. Source Control functionality can be used alone or in combination with Simulation.

The following extensions are also available if the relevant modules are licensed:

### APT

- ⊙ Define FSR, FEH and ReFH Unit Hydrographs to allow combined urban and rural catchments to be analysed

Rural Runoff Calculator

Greenfield Runoff Volume

Greenfield Runoff Volume Input

Rainfall Model: FEH Rainfall | Return Period (years): 100 | Storm Duration (mins): 360

Site Location: GB 430700 434100 SE 30700 3410 | Area (ha): 5.000

C (1km): 0.025 | D3 (1km): 0.279 | SAAR (mm): 754 | Map

D1 (1km): 0.363 | E (1km): 0.299 | CWI: 111.968

D2 (1km): 0.383 | F (1km): 2.379 | SPR Host: 36.460

Areal Reduction Factor: 1.00 | URBEXT: 2000 | 0.0000

Calculate

Results

PR%: 37.68

Greenfield Runoff Volume (m<sup>3</sup>): 1254.724

Calculate Greenfield Volume results.

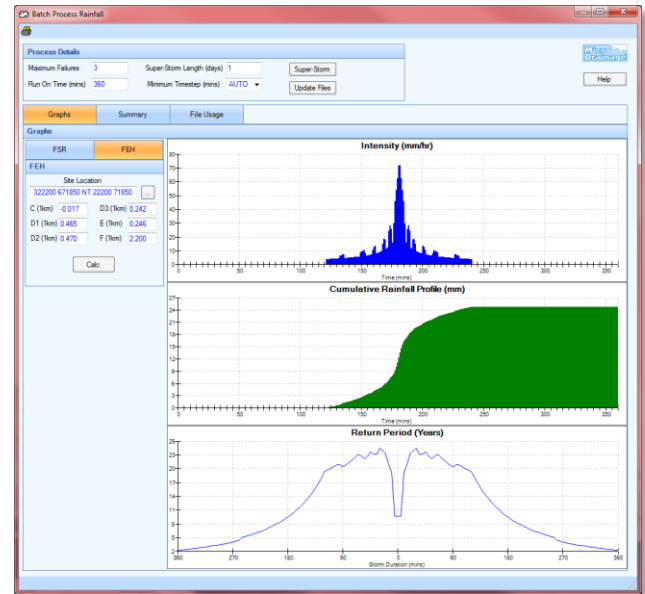
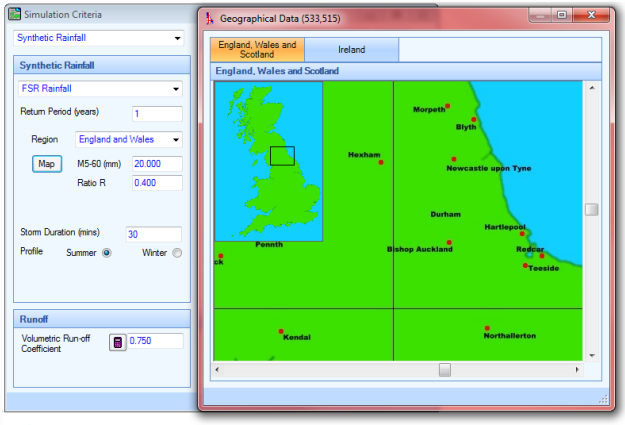
Buttons: OK, Cancel, Help

Enter Area between 0.000 and 99999.999

A Time Area Diagram (TAD) can now be cleared in Source Control. Previously, each 4 minute cell had to be cleared individually.

## Additional Features in WinDes W.12.6 (cont'd)

**MAP buttons** are now provided in the DrawNet, System 1, Simulation and Source Control modules.



**Copy and Paste** into spreadsheets for easier data input such as;

- ⊖ Manhole coordinates
- ⊖ Utility forms
- ⊖ CRP, IDF & rainfall profiles
- ⊖ Depth flow relationship

**Update MH Cover from the TIN.** When importing a drainage network with a TIN it will not force updated cover levels for manholes outside the TIN extents.

**Compress Rainfall/Hydrographs** allows the user to load in large sets of data and break them up into individual files in order to remove any values below a set threshold, e.g. X mm of rainfall or X l/s of flow.

**Super-Storm** creates a single all encompassing 'Super-Storm' from a set of rainfall files so that the key criteria of both Peak Intensity and Total Volume are preserved. It is possible to view the resulting storm to see which aspects were taken from each file and compare this with either Flood Studies Report (FSR) or Flood Estimation Handbook (FEH) rainfall data to view the equivalent Return Period.

**Batch Process Rainfall** enables the user to automatically set a batch of rainfall files.

## Support Material

WinDes is supplied with a hard-copy manual which includes worked examples. All the modules benefit from extensive online help including 'How Do I' tutorials for frequently asked questions.

All Micro Drainage software is backed up by a comprehensive support and maintenance program.

## Training

**Training Course B** covers Storage, Attenuation & Simulation.

**Training Course F** covers designing and modelling Sustainable Drainage Systems (SUDS).

**Training Course G** covers Greenfield Runoff, Unit Hydrographs and Flood Risk Management Tools.

**Training Course H** covers Checking and Auditing WinDes Submissions.

## Contact Details

For further information about WinDes, training and workshops, visit [www.microdrainage.co.uk](http://www.microdrainage.co.uk), email [info@microdrainage.co.uk](mailto:info@microdrainage.co.uk) or call +44 (0)1635 582555.

If you have been struggling to keep abreast of the latest guidance, rules and regulations visit the Micro Drainage Blog at <http://pipedup.wordpress.com>



WinDes W.12.6, keeping you up to date and industry compliant.