

### Overview

CASDeF is used to solve hydraulic problems within a drainage system. Identifying, understanding and solving every individual issue within a network can be extremely time consuming.

CASDeF replaces guesswork, trial and error with optimum solutions, automatically and quickly.

CASDeF can embed this enhanced functionality within the Simulation or Source Control module. It requires the APT (Advanced Productivity Tools) module to be in the suite.

### Description

The CASDeF Controller provides the engineer with complete control over the design and analysis processes.

To solve individual problems CASDeF uses a logical three step procedure.

- ⊖ Step 1 to size flow controls that will utilise the existing upstream storage
- ⊖ Step 2 to upgrade pipe sizes where there is insufficient flow capacity
- ⊖ Step 3 to provide the optimum online storage

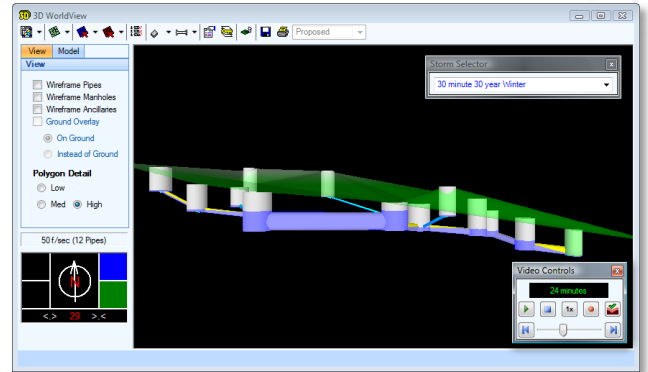
Any or all options may be switched off at each node to prevent CASDeF from defining impractical solutions.

Pipe Number	US Manhole	Level Not Exceeded (m)	Modify Control	Modify Pipe Size	Max Pipe Diameter (mm)	Add Storage	Use CASDeF
1.000	1	102.000	<input type="checkbox"/>	<input type="checkbox"/>	1325	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.001	2	101.000	<input type="checkbox"/>	<input type="checkbox"/>	1550	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.000	3	102.800	<input type="checkbox"/>	<input type="checkbox"/>	1525	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.001	4	101.000	<input type="checkbox"/>	<input type="checkbox"/>	1550	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.002	5	100.500	<input type="checkbox"/>	<input type="checkbox"/>	1700	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.003	6	99.800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1700	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.000	7	102.500	<input type="checkbox"/>	<input type="checkbox"/>	1650	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.000	8	100.800	<input type="checkbox"/>	<input type="checkbox"/>	1875	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.004	9	99.800	<input type="checkbox"/>	<input type="checkbox"/>	1975	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.005	11	100.000	<input type="checkbox"/>	<input type="checkbox"/>	2050	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.006	12	99.000	<input type="checkbox"/>	<input type="checkbox"/>	2050	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.007	13	98.500	<input type="checkbox"/>	<input type="checkbox"/>	1775	<input type="checkbox"/>	<input checked="" type="checkbox"/>

A complete Source Control treatment train can be optimised with CASDeF, before it is modelled in Simulation.

### Wizard

- ⊖ The CASDeF + Summary Wizard can run all the storm durations for one return period



- ⊖ CASDeF will analyse several sweeps to solve the hydraulic problems

### Results

- ⊖ A summary of results can be assessed to peruse the effects of changes made
- ⊖ A full Audit Trail to trace the decisions made by CASDeF is provided

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Summary of Orifices Defined by CASDeF
No Orifices Defined by CASDeF

Summary of Pipes Upsized by CASDeF
No Pipes Upsized by CASDeF

Summary of Storage > 20m³ by CASDeF
Pipe Number    MH Name    Plan area    Vol. (ex-10%)
1.007           13         1155m²       2022m³
    
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### With Other Modules

CASDeF cannot be used by itself. It extends across the Simulation and Source Control modules.

APT is a required addition before CASDeF can be used.

### Additional Features in WinDes W.12.6

**Fast CASDeF** allows CASDeF to be run on a series of rainfall files employing the Super-Storm technology automatically. This can radically improve run times.

Pipe Number	US/MH Name	Level Not Exceeded (m)	Modify Control	Modify Pipe Size	Max Pipe Diameter (mm)	No. Pipe Failures	Add Storage	No. Storage Failures	Use CASDeF
3.001	5	164.439	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1550	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
2.001	6 Car Park	164.477	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1600	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
2.002	7	164.257	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1275	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.002	8	163.688	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1275	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.003	9	163.893	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1275	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.004	10	163.087	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1275	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.005	11	159.800	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1275	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.006	12	159.566	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1350	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
1.007	13	159.260	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1350	12	<input checked="" type="checkbox"/>	12	<input checked="" type="checkbox"/>
1.008	14	158.131	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1350	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
4.000	15	158.793	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1150	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
4.001	16	157.315	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1200	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
4.002	18	156.841	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1200	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
4.003	19	157.036	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1810	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
5.000	20	158.094	<input checked="" type="checkbox"/>	<input type="checkbox"/>	150	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
5.001	28	157.239	<input checked="" type="checkbox"/>	<input type="checkbox"/>	990	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>
4.004	24	157.444	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1150	0	<input checked="" type="checkbox"/>	0	<input checked="" type="checkbox"/>

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

#### Fast CASDeF + Summary Wizard

will help to quickly resolve problems such as flooding.

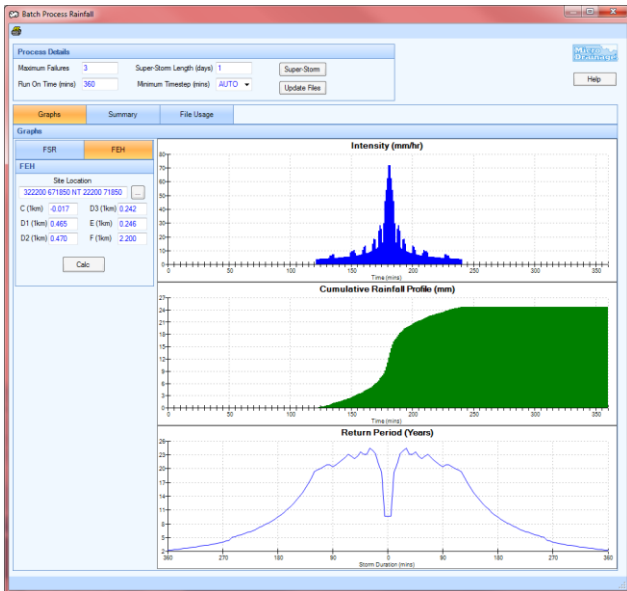
The program can for example;

- ⊖ Generate a Super-Storm from a batch of rainfall files
- ⊖ Resolve the flooding issue(s) by incorporating the appropriate amount of online storage
- ⊖ Analyse the amended model with the original rainfall files

The benefits of eliminating guesswork and improving productivity whilst resolving problems cannot be overstated.

**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.

WinDes can now support larger pipe numbers, from 1.000 to 9999.999 in a single network.

WinDes will now detect if a file is already in use, to prevent file locking issues and avoid any errors when saving.

#### 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.

#### 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.