

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

This is an estimation of the greenfield runoff rates that are used 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). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
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SOIL type:

<input type="text" value="2"/>	<input type="text" value="3"/>
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HOST class:

<input type="text" value="N/A"/>	<input type="text" value="N/A"/>
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SPR/SPRHOST:

<input type="text" value="0.3"/>	<input type="text" value="0.37"/>
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Hydrological characteristics

	Default	Edited
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SAAR (mm):

<input type="text" value="598"/>	<input type="text" value="605"/>
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Hydrological region:

<input type="text" value="6"/>	<input type="text" value="6"/>
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Growth curve factor 1 year:

<input type="text" value="0.85"/>	<input type="text" value="0.85"/>
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Growth curve factor 30 years:

<input type="text" value="2.3"/>	<input type="text" value="2.3"/>
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Growth curve factor 100 years:

<input type="text" value="3.19"/>	<input type="text" value="3.19"/>
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Growth curve factor 200 years:

<input type="text" value="3.74"/>	<input type="text" value="3.74"/>
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Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	<input type="text" value="1.52"/>	<input type="text" value="2.42"/>
1 in 1 year (l/s):	<input type="text" value="1.29"/>	<input type="text" value="2.06"/>
1 in 30 years (l/s):	<input type="text" value="3.49"/>	<input type="text" value="5.57"/>
1 in 100 year (l/s):	<input type="text" value="4.84"/>	<input type="text" value="7.73"/>
1 in 200 years (l/s):	<input type="text" value="5.67"/>	<input type="text" value="9.06"/>

This report was produced using the greenfield runoff 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 www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. 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 this data in the design or operational characteristics of any drainage scheme.

CALCULATIONS

Company: WIE
 Sheet No: 1 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Existing Discharge Rate - Modified Rational Method**

LOCATION	CALCULATIONS	OPTIONS
	Calculations based on: Design and Analysis of urban storm drainage. The Wallingford Procedure, Volume 1 Principles methods and practice.	
	User Input Data	
	Total site area	5.69 ha
	SAAR (From FEH)	605
	Rainfall Intensity (From FEH)	51.80
	PIMP (% impervious)	100 %
	Soil Type	0.40
	Very Low Runoff (well drained sandy, loamy or earthy peat soils)	0.15
	Low Runoff (Very permeable soils (e.g. gravel, sand)	0.30
	Moderate (Very fine sands, silts and sedimentary clays)	0.40
	High Runoff (Clayey or loamy soils)	0.45
	Very High Runoff (Soils of the wet uplands)	0.50
Fig. 9.7	UCWI (From Figure 9.7 of Wallingford Method)	52
Eqn. 13	Q_p (peak discharge) = 2.78 C_v CR i A Where: Q_p (Peak Discharge) i = rainfall intensity A = Total Area	
From FEH	Average rainfall Intensity (i) M100_60 is: 51.80 mm	
Eqn 7.20	C_v = PR/100	
Eqn 7.3	PR = (0.829 PIMP) + (25.0 SOIL) + (0.078 UCWI) - 20.7 PIMP (Percentage of catchment which is impervious)	100 %
Page 52	Note: PIMP can not be less than 40% Thus value of PIMP to be used	40 % 100 %
	Soil: 0.40 UCWI: 52	
	PR =	76.26
	Thus C_v =	0.76
Sec 7.10	CR (Recommended for simulation and design)	1.3
	Q_p for 1 in 100 year 60 minute duration =	812.3 l/s or 142.8 l/s/ha
	50% of the existing runoff rate=	405.0 l/s 71.3 l/s/ha



CALCULATIONS

Company: WIE Office: London
 Sheet No: 2 of 9 Project No: WIE18671
 By: S Whelan Date: 29/07/2022
 Checked: B McCarthy Date: 29/07/2022

Project Title **Former Stag Brewery, Mortlake**
 Calculations Title **Surface water attenuation volume, IH124 Greenfield Runoff Rate**

LOCATION	CALCULATIONS	OPTIONS																																				
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;																																					
	IH124 Greenfield Runoff Rate - Q100																																					
	7.7 l/s/ha																																					
Summary	Attenuation volumes required by Drainage Catchment																																					
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Catchment</th> <th style="width: 15%;">Area (ha)</th> <th style="width: 15%;">Allowable runoff Rate (l/s)</th> <th style="width: 15%;">Required attenuation (m³)</th> </tr> </thead> <tbody> <tr> <td>East - 1</td> <td style="text-align: center;">0.30</td> <td style="text-align: center;">2.4</td> <td style="text-align: center;">251</td> </tr> <tr> <td>East - 2</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">1.9</td> <td style="text-align: center;">210</td> </tr> <tr> <td>East - 3</td> <td style="text-align: center;">0.18</td> <td style="text-align: center;">1.4</td> <td style="text-align: center;">150</td> </tr> <tr> <td>West - school</td> <td style="text-align: center;">1.31</td> <td style="text-align: center;">10.1</td> <td style="text-align: center;">1095</td> </tr> <tr> <td>West - 4</td> <td style="text-align: center;">1.07</td> <td style="text-align: center;">8.3</td> <td style="text-align: center;">893</td> </tr> <tr> <td>West - 5</td> <td style="text-align: center;">0.92</td> <td style="text-align: center;">7.1</td> <td style="text-align: center;">769</td> </tr> <tr> <td>West - 6</td> <td style="text-align: center;">0.79</td> <td style="text-align: center;">6.1</td> <td style="text-align: center;">319</td> </tr> <tr> <td>Total</td> <td style="text-align: center;">4.84</td> <td style="text-align: center;">37.4</td> <td style="text-align: center;">3686</td> </tr> </tbody> </table>	Catchment	Area (ha)	Allowable runoff Rate (l/s)	Required attenuation (m ³)	East - 1	0.30	2.4	251	East - 2	0.25	1.9	210	East - 3	0.18	1.4	150	West - school	1.31	10.1	1095	West - 4	1.07	8.3	893	West - 5	0.92	7.1	769	West - 6	0.79	6.1	319	Total	4.84	37.4	3686	
Catchment	Area (ha)	Allowable runoff Rate (l/s)	Required attenuation (m ³)																																			
East - 1	0.30	2.4	251																																			
East - 2	0.25	1.9	210																																			
East - 3	0.18	1.4	150																																			
West - school	1.31	10.1	1095																																			
West - 4	1.07	8.3	893																																			
West - 5	0.92	7.1	769																																			
West - 6	0.79	6.1	319																																			
Total	4.84	37.4	3686																																			



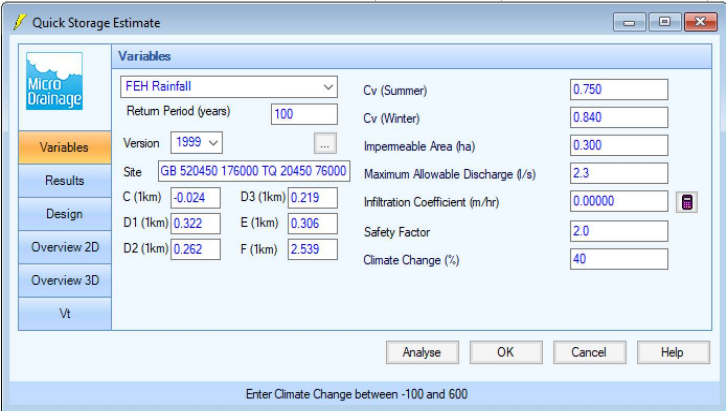
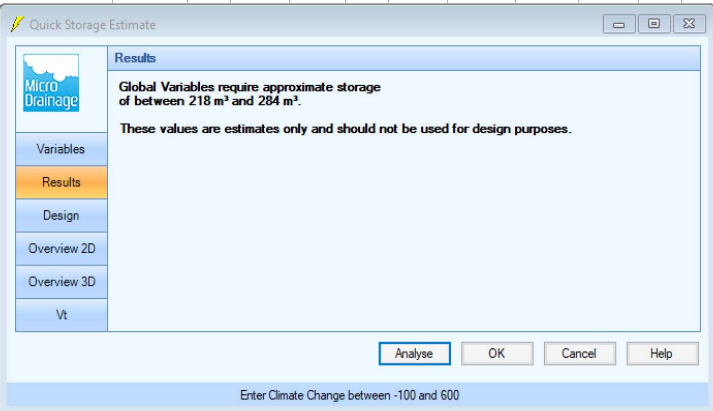
CALCULATIONS

Company: WIE
 Sheet No: 3 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake

Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS		OPTIONS	
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - East 1			
	Area	0.30	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	2.35	l/s	
				
				
	50% attenuation volume (m ³)	140		
	Greenfield attenuation volume (m ³)	251		

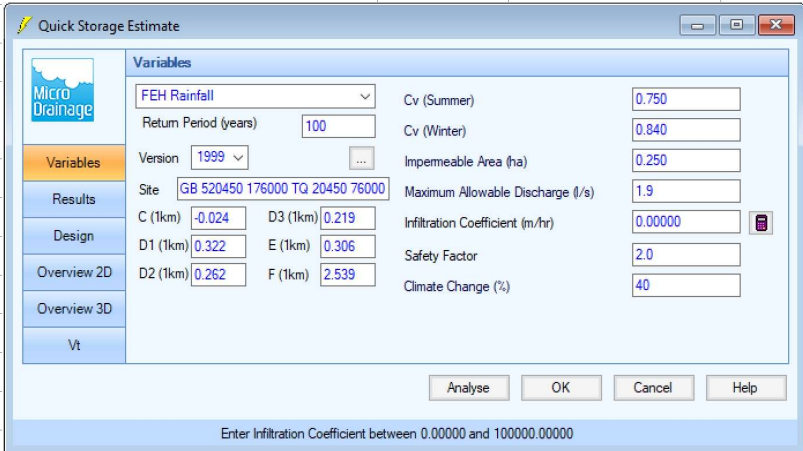
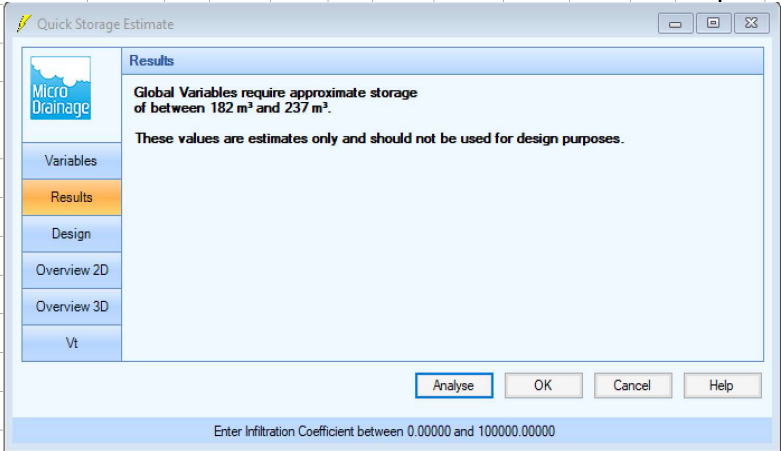
CALCULATIONS

Company: WIE
 Sheet No: 4 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake

Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS										OPTIONS	
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;											
	Drainage Catchment - East 2											
	Area	0.25	ha									
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha									
	Maximum allowable discharge	1.94	l/s									
												
												
	50% attenuation volume (m ³)	116.5										
	Greenfield attenuation volume (m ³)	210										

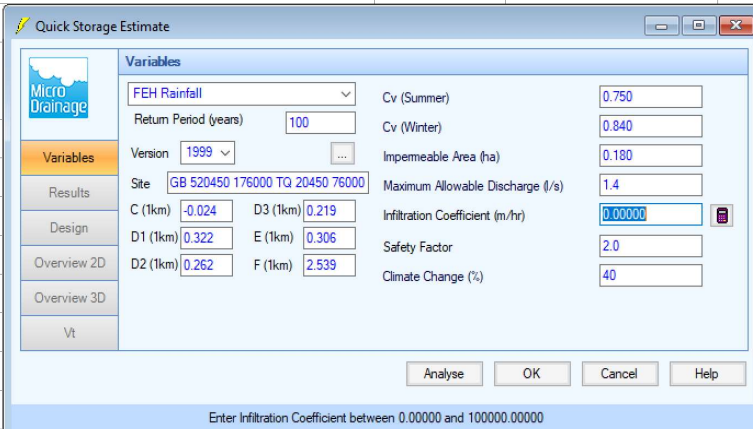
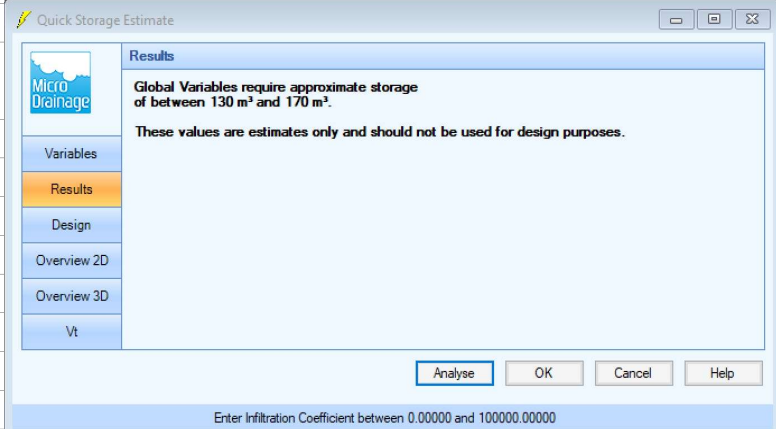


CALCULATIONS

Company: WIE
 Sheet No: 5 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake
Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS	OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;	
	Drainage Catchment - East 3	
	Area 0.18 ha	
	IH124 Greenfield Runoff Rate - Q10 7.73 l/s/ha	
	Maximum allowable discharge 1.39 l/s	
		
		
	50% attenuation volume (m ³) 84	
	Greenfield attenuation volume (m ³) 150	

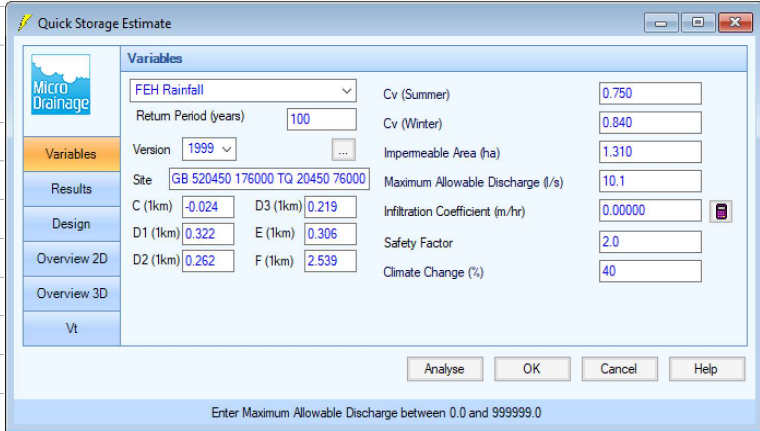
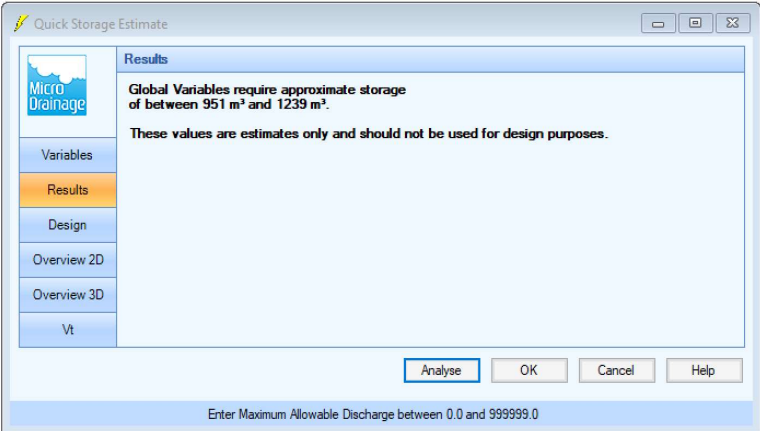


CALCULATIONS

Company: WIE
 Sheet No: 6 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake
Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS										OPTIONS	
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;											
	Drainage Catchment - School											
	Area	1.31 ha										
	IH124 Greenfield Runoff Rate - Q10	7.73 l/s/ha										
	Maximum allowable discharge	10.14 l/s										
												
	50% attenuation volume (m ³)	NA										
	Greenfield attenuation volume (m ³)	1095										

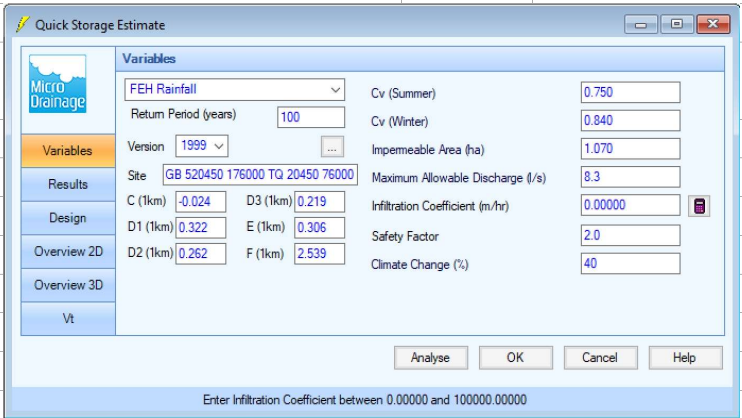
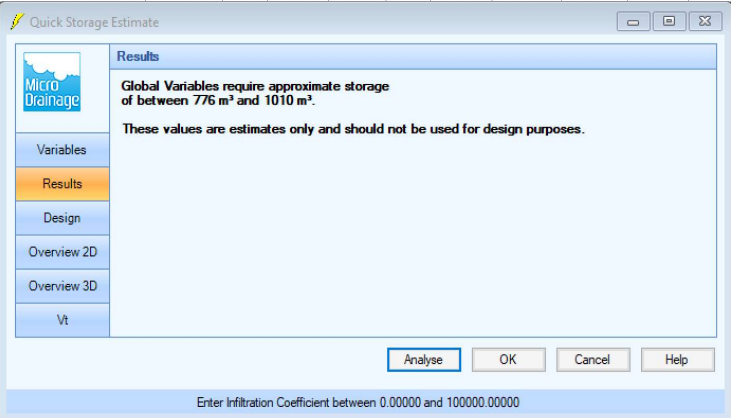


CALCULATIONS

Company: WIE
 Sheet No: 7 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake
Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS										OPTIONS		
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;												
	Drainage Catchment - West 4												
	Area	1.07 ha											
	IH124 Greenfield Runoff Rate - Q10	7.73 l/s/ha											
	Maximum allowable discharge	8.30 l/s											
	 												
	50% attenuation volume (m ³)	499											
	Greenfield attenuation volume (m ³)	893											

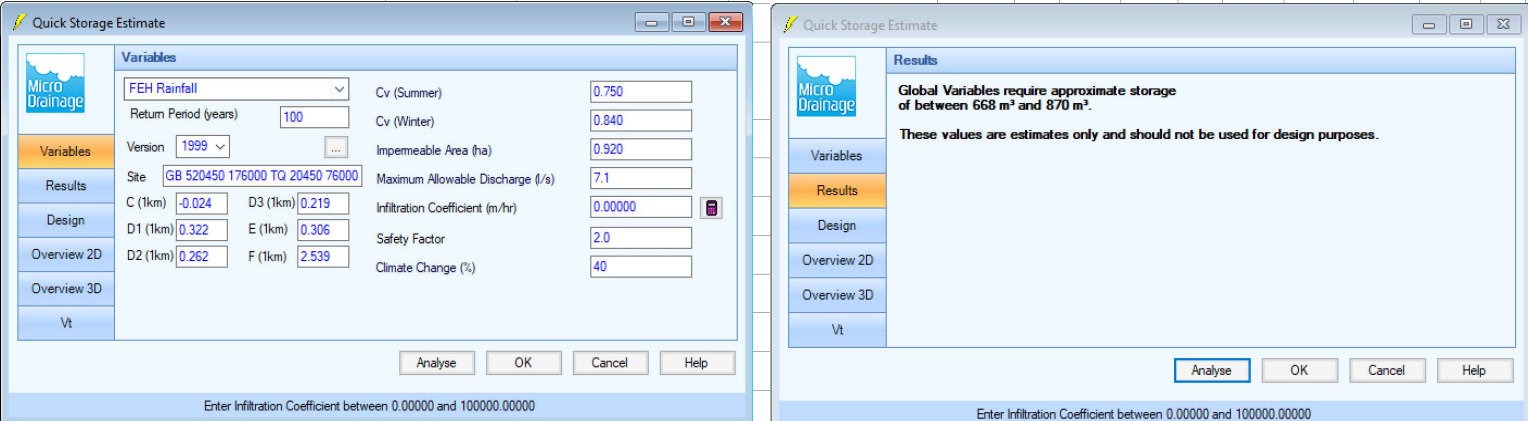


CALCULATIONS

Company: WIE
 Sheet No: 8 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
 Date: 29/07/2022

Project Title Former Stag Brewery, Mortlake
Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS										OPTIONS		
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;												
	Drainage Catchment - West 5												
	Area	0.92 ha											
	IH124 Greenfield Runoff Rate - Q10	7.73 l/s/ha											
	Maximum allowable discharge	7.14 l/s											
													
	50% attenuation volume (m ³)	NA											
	Greenfield attenuation volume (m ³)	769											

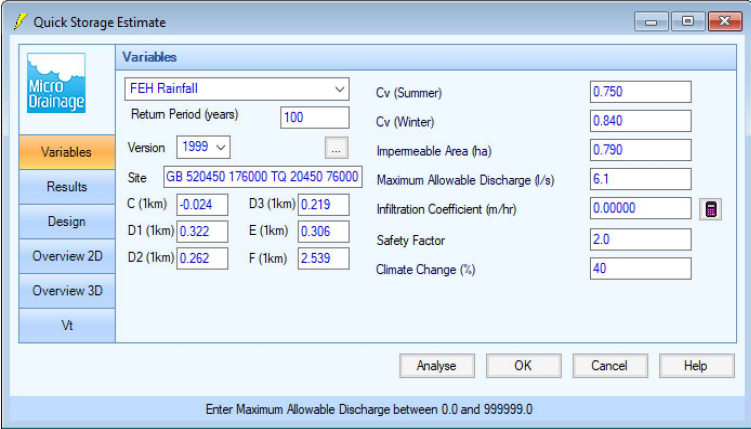
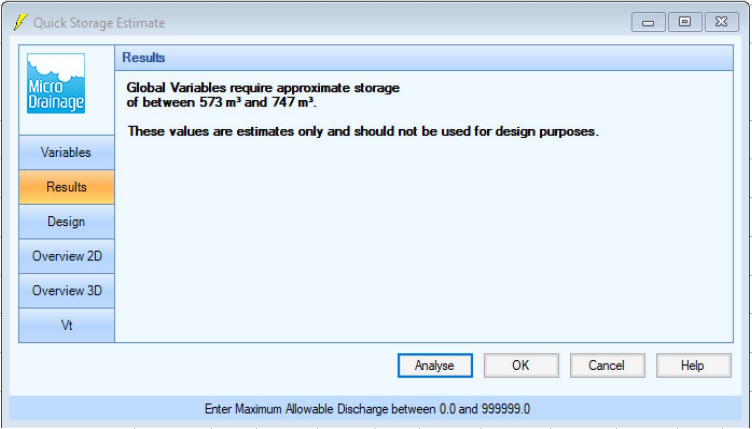


CALCULATIONS

Company: WIE
 Sheet No: 9 of 9
 By: S Whelan
 Checked: B McCarthy

Office: London
 Project No: WIE18671
 Date: 29/07/2022
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Project Title Former Stag Brewery, Mortlake
Calculations Title Surface water attenuation volume to achieve IH124 greenfield runoff rate

LOCATION	CALCULATIONS										OPTIONS		
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;												
	Drainage Catchment - West 6												
	Area	0.79 ha											
	IH124 Greenfield Runoff Rate - Q10	7.73 l/s/ha											
	Maximum allowable discharge	6.11 l/s											
	 												
	50% attenuation volume (m ³)	177											
	Greenfield attenuation volume (m ³)	318.5											