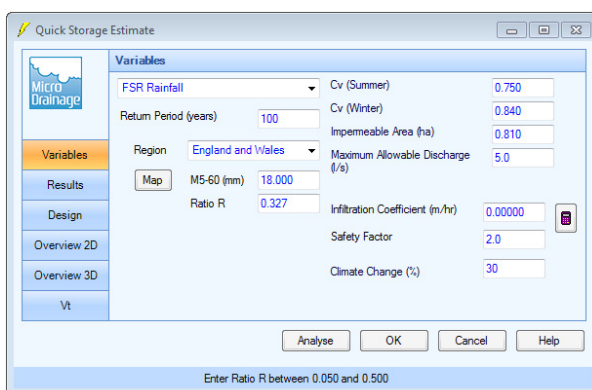


Wrexham Custody Suite - Car Park Drainage Design

The Car Park drainage design has been based on the use of soakaways followed by attenuation ponds and on a separate drainage system from the main building. The car park will surface drain to perimeter filter drains around the southern and western edges and pass through a class 1 bypass interceptor for all of the 8100m² area of the car park. This treated flow will then pass through 5No 3m diameter concrete ring soakaways ranging from 3.75m to 5.25m deep. The soakaways would generally have the last 2m as permeable rings at the base as the clay layer finishes at around 3m below existing ground. The proposed surface would be approximate 1m above exiting.

The size of the storage of the soakaway has been agreed with Welsh Water to allow for 100m³ of storage within them. When the soakaways have reached their capacity, the exceedance will flow by gravity pipe to an attenuation pond to the south of the car park. This pond will have a restriction of 5l/s connecting to the exiting watercourse running through the east of the site. The volume of the pond has been based on a Microdrainage Quick Storage Estimate giving an average volume required for a 100 year plus 30% climate change of 552m³.

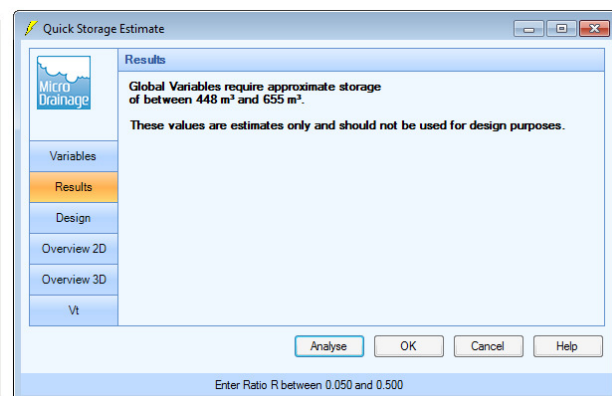
The amount of storage with in the soakaways is just above the required 100m³ at 109m³
Therefore the size of the pond storage required would be $552 - 109 = 443\text{m}^3$



Micro Drainage Quick Storage Estimate - Variables screen. The interface shows various input fields for rainfall, return period, region, and infiltration parameters. The 'Variables' tab is selected on the left sidebar.

Variable	Value
FSR Rainfall	0.750
Return Period (years)	100
Cv (Summer)	0.840
Cv (Winter)	0.810
Impermeable Area (ha)	5.0
Region	England and Wales
Map	M5-60 (mm)
Ratio R	18.000
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	30

Buttons: Analyse, OK, Cancel, Help. Footer: Enter Ratio R between 0.050 and 0.500



Micro Drainage Quick Storage Estimate - Results screen. The 'Results' tab is selected on the left sidebar. The screen displays a summary of the required storage volume.

Results

Global Variables require approximate storage of between 448 m³ and 655 m³.

These values are estimates only and should not be used for design purposes.

Buttons: Analyse, OK, Cancel, Help. Footer: Enter Ratio R between 0.050 and 0.500

Upon finalisation of the external works design, detailed analysis of the storage and infiltration systems will be undertaken to refine the attenuation volume.

