

# Stormwater Control Sizing Calculator

Each [Stormwater Controls - SWC](#) has an associated sizing calculator that allows the user to either:

- (a) specify a new volume for the Stormwater Control whilst varying a chosen dimension, e.g. Depth, Width, Length etc.
- (b) specify a scale factor to modify the existing volume of the Stormwater Control, again whilst varying a chosen dimension
- (c) in the case of a Tank or Pond to specify a particular side slope, either from its top downwards or base upwards

The screenshot shows the 'Infiltration Trench' software window. The 'Name' field contains 'Infiltration Trench'. The 'Dimensions' tab is selected, and the 'Sizing Calculator' sub-tab is highlighted with a red circle. The 'Sizing Calculator' sub-tab contains the following controls:

- Radio buttons for 'Exceedence Level (m)', 'Depth (m)', and 'Base Level (m)'. 'Depth (m)' is selected.
- Input fields for 'Exceedence Level (m)' (567.57), 'Depth (m)' (567.568), and 'Base Level (m)' (0.00).
- Input fields for 'Freeboard (mm)' (0), 'Void Ratio (%)' (0), 'Length (m)' (44.63), 'Long. Slope (1:x)' (0.00), and 'Width (m)' (55.20).
- Checkbox for 'Under Drain On' (unchecked).
- Input fields for 'Height Above Base (m)' (0.00), 'Diameter (mm)' (0), and 'No. of Barrels' (0).
- Dropdown menu for 'Manning' (set to 'Manning').
- Input fields for 'n' (0.015) and 'Release Height (m)' (0.00).

At the bottom of the window, there are 'OK', 'Cancel', and 'Apply' buttons. The status bar shows 'Name' and 'Total Volume (m³): 0.000' with a 'Help' icon.

The SWC sizing calculator consists of the following options:

## Method

The screenshot shows the 'Sizing Calculator' dialog box. It contains the following controls:

- Dropdown menu for 'Method' (set to 'Runoff Reduction Volume').
- Dropdown menu for 'Design up to' (set to 'Exceedence').
- Input field for 'Volume (m³)' (0.000) with a calculator icon.
- Dropdown menu for 'Update' (set to 'Length').
- 'OK' and 'Cancel' buttons.
- 'Select Method' and 'Help' buttons at the bottom.

Choose **Quick Storage Estimate** or **Runoff Reduction Volume** to specify a volume in the field below. When choosing either of these a calculator button appears to the right of the Volume field below; if Quick Storage Estimate was chosen then clicking on the calculator button produces the [Quick Storage Estimate Calculator](#) (QSE) calculator, if Runoff Reduction Volume is chosen then clicking on the calculator button produces the [Water Quality Calculator](#) (WQv) calculator. Using either of these calculators will return a volume into the sizing calculator; in the case of the QSE calculator the returned volume is the centre of the estimated storage volume range, in the case the WQv calculator the returned volume is the Target Volume stated in the WQv calculator's report.

Using the Quick Storage Estimate option also allows the user to enter manually the desired volume rather than using the calculators.

Choose **Scale** to specify a change in scale of the current Total Volume of the SWC (as given in the bottom right of the SWC's Properties form). The figure entered is relative, so 0% is no change in Total Volume, 100% is a doubling in Total Volume, -50% results in halving the Total Volume.

For [Tank](#) and [Pond](#) SWCs there is a fourth option: **Side Slope**. Choose this option to impose a side slope to the structure of the [Tank](#) or [Pond](#), specifying the side slope in the field below. In addition the third row of the form is changed to Maintain whose combo box contains two options: Top Area and Base Area. Choose Top Area to impose the side slope from the top area downwards; choose Base Area to impose the side slope from the base area upwards.

## Design Up To

(for all Methods except Side Slope - relevant to Tank and Pond SWCs only)

Choose the level that the volume will be provided up to:

- **Exceedence** - The Exceedence Level of the Stormwater Control.
- **Freeboard** - The Freeboard level of the Stormwater Control. i.e. Exceedence Level - Freeboard depth.  
Note: Where the freeboard is not specified the Exceedence level will be used.
- **Lowest Outlet** - The invert level of the lowest outlet with a control specified.  
Notes: If the control invert level is below the base level of the structure (or Ponding/Swale in a Bioretention/Swale) the control will not be considered. If there are no outlets the Exceedence Level will be used.

## Update

(for all Methods except Side Slope - relevant to Tank and Pond SWCs only)

Choose a parameter that is to be updated when the SWC is resized to the new volume. This list is specific to the type of SWC. Most of the options are self-explanatory, e.g. Length, Width, Base Level etc.

Two options perhaps needs a little more explanation:

- Areas (for Pond and Tank only). Choosing this option results in the cross-sectional area for each entry in the Tank / Pond's Depth / Area / Perimeter spreadsheet to be scaled by the same scale factor to achieve the specified volume. In addition, the Perimeter value for each entry in the Depth / Area / Perimeter is set to the circular circumference of its new area.
- Number Of Soakaways (for Soakaway only). Choosing this option results in the Number Of Soakaways parameter being set to the minimum no. of soakaways of the current dimensions that are required to satisfy *at least* the specified volume.