Green Roof

Green Roof Inflows can be applied to the system using the **Green Roof Inflow** type.

Area

An area can be entered directly or calculated automatically from the polygon drawn on the Plan.

Proportion Drained

Used to factor the amount of the area that is actually roof and therefore enters the system.

Area Drained

An actual area to be drained based on the Proportion drained can be entered directly or calculated automatically from the polygon drawn on the Plan.

Area Drained = Area * Percentage Drained.

Runoff Method

The preferred runoff methods can be selected from the following:

- **Green Roof Runoff Method**
- **Time of Concentration**
- **Time Area Diagram**

Depression Storage

The depth of depression storage, or the amount of water that can be retained by the green roof (in millimetres).

Evapotranspiration

The rate (in mm/day) at which water is transferred from the surface to the atmosphere by evaporation and transpiration on the green roof surface.

Decay Coeffiency (k)

The k value affects the decay of the areas calculated in the Time Area Diagram and should be edited with caution. The two graphs below plot the areas calculated for the Time Area Diagram and show the difference made by editing the k value. The higher the value the quicker the roof will drain down.
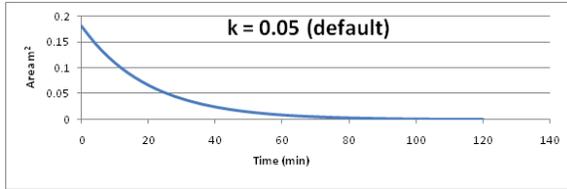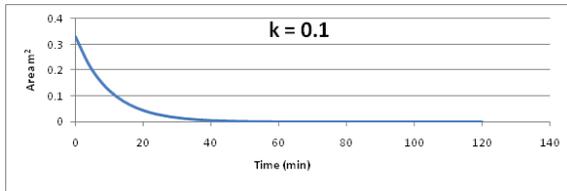
k = 0.1

k = 0.05 (default)

Green Roof Background calculation

The formulas used are:

$$A_t = e^{-kt} \qquad a_t = \left(\frac{A_t}{\sum A_t} \right) a$$

Where:

    a - the total area of the green roof

    A - a factor required to scale the curve to provide the correct total catchment area (area under the graph).

    e - exponential

    k - the decay coefficiency

    t - the time in minutes. Equation is based upon a 120 minute period (time taken before the roof becomes saturated), broken down into 4 minute increments.

Contact your Green Roof manufacturer for further information on soil substrate depth etc.

This methodology has been developed in collaboration with Dr Virginia Stovin of Sheffield University. It has been based on research at Sheffield University into green roofs and a review of current practice. The decision to use the method and the selection of input variables are the responsibility of the user. Liability is not accepted for losses arising from the use of the method howsoever caused.

Time Delay

Sets the amount of time (in minutes) between rainfall and discharge peaks.