



PRECAST CONCRETE SUDS SOLUTIONS

# Factsheet 3: Stormwater Attenuation SuDS

*In April 2020, a new sewers adoption code Design & Construction Guide (DCG) came into force, allowing water authorities for the first time to adopt sustainable drainage systems (SuDS). This factsheet offers advice to specifiers, contractors and asset owners about a range of precast stormwater attenuation and storage tanks used in SuDS applications.*

Precast attenuation and storage tanks help with the management of stormwater during peak flow and can offer additional services associated with filtering and sedimentation, contributing to water quality. Attenuation tanks can be employed as part of an integrated SuDS solution where combinations of natural and engineered components are employed to manage stormwater runoff.

## Why precast?

Precast attenuation tanks offer a wide range of advantages:

Precast tanks have a proven track record and are recognised by standards and national specification to last for at least 100-120 years. They are structurally robust, highly resistant to flotation and can be designed to different loading requirements including highway braking and acceleration loading and can maintain their strength throughout their service life. Precast tanks are also fully accessible for maintenance and can be effectively cleaned with up to 5,000 psi water jetting pressure. Any silt or pollutants inside the tank can be easily removed. Another advantage of precast attenuation tanks is the reduced carbon footprint. Precast tanks may be significantly heavier than lightweight alternatives, such as stormwater crates, but concrete tanks with sizes exceeding 40-50m<sup>3</sup> in storage volume can have a significantly lower carbon footprint compared to a wide range of equivalent geocellular tank alternatives. The tanks are also resistant to rodents' attack and can effectively resist damage from fires.



Durable



Strong



Resistant to lateral forces



Accessible



Fire, Resists rodents



Sustainable

## SuDS attenuation components

A variety of surface water precast attenuation components are available for use in SuDS schemes:

### Concrete pipe tanks

Concrete pipes are made to different sizes (up to DN2400) to convey and temporarily store stormwater with controlled release to the drainage network or an infiltration component.

Concrete pipes can also include dry weather flow channels and side entry manhole access. Concrete pipe tanks can also be perforated to enable stormwater infiltration into the ground.



### Box culvert tanks

Box culvert are monolithic structures used usually for the culverting of watercourses. Box culverts can come with a flat bottom surface or with a dry weather channel. The units can be used for attenuation of stormwater as part of a multifunctional SuDS solution. Box culverts come in different shapes and sizes.



### Flow control chamber tanks

Flow control chambers are used to manage discharge from new developments or existing systems. By controlling flow, it can mitigate the risk of flooding.

The chambers can come in different sizes and can be manufactured to large sizes as attenuation solutions.



## Modular panel tanks

Modular tanks are generally used for storage of foul or stormwater and are usually built below ground level. The tanks consist of flat prefabricated precast concrete units which are assembled on site to form the walls, base and roof.

The tank can be designed for light or heavy traffic loading and should have an intended working life of 100-120 years.



## Elliptical & Ovoid pipe tanks

Elliptical and Ovoid shaped concrete pipes are typically used for surface water conveyance and storage. They can be used with the widest part laid horizontally or vertically and are fully accessible for maintenance and cleaning.

They are suitable where regular pipes may not provide the necessary hydraulic performance.



## Chamber unit tanks

Chamber units come in different shapes (mainly rectangular) and can perform a number of functions, a multifunctional SuDS or a conventional drainage system.

Chamber unit tanks can be used for flow control, attenuation or as Combined Sewer Overflow (CSO) chambers.



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