

Incorporating Pillars of Sustainability in sites

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The philosophy to implementing sustainable drainage systems (SuDS) on a proposed development has four key pillars to it. These are water quality, water quantity, amenity, and biodiversity.

Water quantity is about controlling the overall volume of runoff to support the management of flood risk and maintain and protect the natural water cycle, which is typically the most included aspect of SuDS in a drainage design.

Water quality is about managing the quality of the runoff to prevent pollution and has some basic guidance within the new SUDS manual and supporting documentation.

Amenity refers to creating and sustaining better places for people and Biodiversity is about creating and sustaining better places for wildlife. The government is currently focused on introducing biodiversity net gain into new developments. Biodiversity net gain is an approach which aims to leave the natural environment in a measurably better state than beforehand.

In sustainable drainage systems, the introduction of biodiversity net gain goes together with improvements to amenity of the development site. This is due to the nature of a single SuDS element being almost strictly either green/blue infrastructure at ground level or underground civils infrastructure. While the latter deals with the quantity and sometimes quality pillars of SuDS, the former is more suited to the amenity and biodiversity pillars.

Why do we push water underground?

A surface mounted pond or swale system is clearly favourable for targeting all 4 pillars of SuDS and provides a sustainable feature for the overall management of surface water on a development site. So why don't we just use natural surface water features all the time? There are several reasons, which usually relate to overall cost to the developer:

1. Land take for a surface mounted feature is significantly higher than an underground system, which can be hidden under roads, car parks or other amenity space.
2. Detailing of surface water conveyance features (such as ditches and swales) and installation is more intricate and costly than a simple underground pipe system.
3. In the current climate, cut and fill on a site is crucial, with the developer needing as little muck away from site as possible. A large surface water feature will not help in this regard.
4. Ongoing maintenance is costly, and ownership of surface mounted drainage systems is a currently hotly contested subject with the introduction of the new Design Construction Guidance. It would typically fall onto a private maintenance company in perpetuity.
5. The site may just not warrant it. It's hard to build a swale in a London Basement.

How do we develop sustainably?

The key is to get in early. Introduce allowance for surface mounted sustainable drainage in the master-planning stage and it can be designed well, rather than shoehorned in at a later stage in the scheme's development.

It's often a difficult sell to a developer to introduce sustainable surface mounted features, especially if that means they will be sacrificing land for one of their feature new dwellings and would make a bit dent in their profit margin.

There have been some initial studies, as found on the [SusDrain website](#), that indicate there is a significant property value benefit to the introduction of SuDS. Also, CIRIA have released the [B&ST tool](#), which gives evidence of the long-term lifecycle cost/benefit to sustainable drainage systems on a development site. Of course, there are the other unspoken benefits of increased wildlife habitat and improved mental health for people having a nice green/blue feature within their development as a focal point.

It should never be a case of the developer having to take the introduction of good sustainable drainage on the chin, but part of the ongoing planning of a scheme to give the most cost/benefit and to provide improvements in all 4 pillars of SuDS.

The challenge is to introduce the most appropriate sustainable features on sites wherever we can and promote the use of drainage that will improve biodiversity and amenity space as well as tick the box for quantity and quality. We will continue to build schemes and we should always be thinking about how to promote natural habitat and wellbeing for all.