The New SuDS Manual

Guidance for all, now and into the future

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Why SuDS?

- **Urbanisation**
  - Reduced land permeability
  - Reduced vegetation and habitat fragmentation
  - Increased population densities

- **Climate change**
  - More intense rainfall
  - Higher temperatures
  - Stressed habitats

- **Population growth**
  - Increased water demand
Why SuDS?

Flooding & erosion
Pollution
Urban heat stress

Water availability
Urban heath & wellbeing
Biodiversity & green space
Liveability
The principle of SuDS design

Surface water runoff should be managed for maximum benefit
Control the quantity of runoff to
- support the management of flood risk, and
- maintain and protect the natural water cycle

Manage the quality of the runoff to prevent pollution

SuDS Design

Water Quantity

Amenity

Biodiversity

Create and sustain better places for people

Create and sustain better places for nature
Structure of the new manual

PART A
Introducing SuDS

PART B
Philosophy and Approach

PART C
Applying the Approach

PART D
Technical Detail

PART E
Supporting Guidance

Everyone with an interest in SuDS
High level

Those responsible for policy and decision making
High to intermediate level

Those responsible for delivering and managing a SuDS scheme
Intermediate to detail level

Intermediate to detail level
Designing for amenity

This chapter explains the objective of designing for amenity, and the design criteria that should be followed to deliver this objective.

- This chapter should be read alongside Chapters 3, 4 and 6 to understand how the different SuDS design criteria relate to each other, and Chapter 7 to understand when and how to apply these criteria.
- Further discussion on designing for amenity specifically within the urban context can be found in Chapter 10.

5.1 AMENITY DESIGN OBJECTIVE

Create and sustain better places for people

Good urban design aims to deliver attractive, pleasant, useful and above all “livable” urban environments that support and enhance local communities (Box 5.1). Water is a valuable natural resource, and the management of rainfall and runoff can form a key part of an urban vision. Designs using surface water management systems to help structure the urban landscape can enrich its aesthetic and recreational values, promoting health and well-being and supporting green infrastructure. Water managed on the surface, rather than underground, can help to reduce summer temperatures, provide habitat for flora and fauna, act as a resource for local environmental education programmes and working groups and directly influence the sense of community and prosperity of an area. SuDS can provide opportunities for water to be visible and audible as it travels through the landscape – the places where water flows, stills, trickles or splashes are often where it is experienced and valued the most.

**Box 5.1**

**Amenity, place-making and liveability**

Amenity may be defined as “a useful or pleasant facility or service”, which includes the tangible (something that can be measured in terms of use), and the less tangible (something that can be experienced as pleasure or aesthetic appreciation).

This definition is particularly relevant for describing the multi-functional opportunities associated with SuDS designs, and it provides a link to the concept of place-making, now commonly used in describing the quality of a space in urban design.

Amenity also covers liveability, which is associated with factors that improve the quality of life for inhabitants. Liveability encompasses the well-being of a community and of individuals and comprises many characteristics that make a location a place where people want to live and work.

There are many amenity benefits that are intrinsic to SuDS – good SuDS design often provides amenity benefits while delivering water quantity, water quality and biodiversity benefits.

Where the concept of “creating and sustaining better places for people” is embedded in the design process, these benefits can be maximised. Table 5.1 provides a summary of how SuDS can add amenity value. Further information on amenity benefits of SuDS can be found in Bigman et al (2015).

**Figure 5.1**

The Triangle, Swindon

The Triangle is an award-winning development of 43 low-cost properties (2, 3 and 4-bedrooms) for social housing in Swindon. The design aimed to conserve 50% of the area for contiguous open space as a multi-functional landscape. The integrated plan combined social requirements with water attenuation and storage. Biodiversity and wildlife streets and gardens.

All rainwater is harvested and stored in underground tanks located in two kitchen gardens, accessed by hand pumps to irrigate vegetables and fruit. Surface water is attenuated in porous paving on all car park spaces, and the home zone street water is conveyed by a wide dished granite sett channel that clearly shows water moving towards a bioswale on two sides of the central triangular green. The base of the swale is planted with white willows and damp meadow species for biodiversity, water treatment, air improvement, urban thermal regulation and aesthetic amenity, making reference to the landscape signature of this play/housing. It is a place for playing in, with stepping and balancing logs and bridges, and it forms a barrier for cars that might be tempted to park on the green.

Water filtered by vegetation is conveyed to a geocellular storage tank under the green, and a hand pump linked to a till carved in a tree trunk allows kids to play with water. Finally, any excess water from the storage tank can be stored in oversized storm drains under the road, a requirement of Thames Water.

**Figure 5.2** Play pump (b) and hand pump (b) in the kitchen garden (b) (courtesy Studio Enpoints)
**Small residential infill**

Typically the type of housing in this category is low-rise apartment blocks, which may have a mix of one, two or three storeys. Typically these are low height urban infill schemes, as a result some of the key issues are to:

- Ensure there is good connectivity to the main roads and existing networks.
- Design for a high level of permeability, ensuring that the ground is well drained.
- Provide sufficient water storage to reduce runoff and help manage urban flooding.
- Ensure that the design is sustainable and promotes water-sensitive urban design principles.
- Consider the needs of pedestrians and cyclists, ensuring safe and convenient access to the site.

**Key considerations**

- **Connectivity:** Ensure that the site is well connected to the existing road network to facilitate easy access.
- **Drainage:** Design for effective drainage to prevent standing water and minimize flooding risks.
- **Storage:** Provide sufficient capacity for water storage to manage rainfall events effectively.
- **Access:** Ensure that the site is accessible by both pedestrians and vehicles, with appropriate signage and pathways.
- **Sustainability:** Incorporate sustainable design principles, such as green roofs and permeable surfaces, to improve water quality and reduce pollution.

**Figures and diagrams**

- Figure 10.1: Example layout for a small residential infill scheme showing key design elements.
- Figure 10.2: Plan view of a small residential infill scheme highlighting the connection to existing networks.
- Figure 10.3: Section view showing the permeable surface and storage capacity.

**Case study:**

- Site: A small infill site in a dense urban area.
- Challenges: Limited space for storage and connectivity issues.
- Solution: Designed a compact layout with underground storage tanks and permeable surfaces to manage rainfall events effectively.

**Conclusion:**

Small residential infill schemes can be an effective way to manage urban flooding and promote sustainable developments. By carefully planning and designing these schemes, it is possible to create functional and aesthetically pleasing environments that benefit both the residents and the wider community.
Technical Leadership

Collaborative work of over 70 people

Built upon latest evidence, research and guidance

Guidance for now and into the future

Internationally recognised and used
Motivational

Guidance on maximising the benefits

Clear drivers and evidence to promote a shift in approach

Opportunities and design approaches for all sites

Guidance on collaborator engagement and incentives

Water

Quantity

Water

Quality

SuDS

Design

Amenity

Biodiversity

Create and enhance places

Manage the runoff, pollutants

and sustain values for life

Opportunities and design approaches for all sites

Guidance on maximising the benefits

Clear drivers and evidence to promote a shift in approach

Guidance on collaborator engagement and incentives
Supportive

Comprehensive design example

Checklists for designers, approvers, adopters and maintainers

Guidance on SuDS delivery for challenging sites

Clear, consistent landscaped illustrations
Inter-disciplinary

Consideration of amenity and biodiversity

Updated guidance on stakeholder engagement through planning

Manual redesigned to speak to architects, landscape architects, planners and urban designers

More detail on the full range of SuDS components
Comprehensive

Planning
- Principles
- Process
- Engagement
- Overcoming challenges
- Costs and benefits
- Submissions

Design
- Criteria
- Methods
- Detailed component design
- Materials
- Inlets and outlets
- Landscape

Construction
- Planning
- Processes
- Programming
- Method statements

Maintenance
- Objectives
- Waste management
- Activities
- Frequencies
- Specifications
- Maintenance plans
### Inspirational

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Moving forwards with SuDS…

• We need visionary housebuilders
• We need forward thinking planners
• We need supportive local government and regulator policy
• We need more high quality SuDS in the ground
• We need to collate and share examples and good practice (www.susdrain.org)