

# 7.0 Design & Evaluation Stage 1 – Concept Design

The Concept Design stage is critical for pre-application consultation, as it is an opportunity to offer preliminary design ideas for discussion. It should give an early indication of the type of approach being proposed for surface water management through the SuDS design.

## 7.1 Objectives of SuDS Concept Design

SuDS Concept Design is used to express initial ideas for the management of rainfall within a development. The Concept Design plan and Preliminary Design Statement are necessary for discussions with planners, regulatory bodies, water companies and other stakeholders.

## 7.2 Presentation of the Concept Design submission

The Concept Design information will usually be presented in two parts:

- a plan with all aspects of the design that can be shown graphically, and
- a short SuDS design statement including information such as hydraulic data that is more easily described in words.

The Concept Design will reflect the criteria and performance parameters set out in the Surface Water Management Strategy and Flood Risk Assessment for the development, where these are present. It will also meet the Non-Statutory Technical Standards, Planning Policy Framework (paragraphs 100, 103 and 109 - current at time of writing) and Local

Authority requirements.

Key data and information will include:

- data to inform the design, where relevant e.g. maps of site context, outline river and coastal flood risk, surface water flood risk, and ground water source protection
- a drawing to identify existing landscape and habitat features that may influence SuDS proposals
- information on utility services, as these may fundamentally affect the SuDS design, particularly on previously developed land or in retrofit schemes
- a contour plan using the best source of topographical information available.



### 7.3 What Concept Design demonstrates

The SuDS Concept Design will demonstrate an understanding of how proposed development will impact on:

- the site and its natural hydrology
- historical drainage elements where these are present
- the ecology of the site and its surroundings
- the landscape character of the locality
- natural flow routes.

**Evaluation will begin with:**

- existing flow route analysis for the existing site
- a modified flow route analysis for the proposed development.

**Preliminary design will include:**

- Runoff collection – how rainfall is collected and conveyed to source control features.
- Source control – runoff managed as close as possible to where rain falls.
- The management train – SuDS components and storage features linked in series, which convey flows along modified flow routes through the development.
- Sub-catchments – small discrete areas that manage their own runoff.
- Maintenance – effective performance and reasonable care costs.

*Australia Road, London, where permeable paving provides source control prior to SuDS Basins.*



### 7.4 Concept Design process

#### 7.4.1 Flow route analysis

The natural hydrology, and the way that a development affects how rainfall behaves on a site, are assessed initially by flow route analysis.

The first step in flow route analysis is to consider how a site behaves naturally before development. This analysis can be applied to re-development and retrofit sites, and is informed largely by topography and geology. There may be a number of other factors influencing the analysis, including:

- historical drainage e.g. sewers or land drains
- discharge locations
- contamination issues
- existing landscape features
- habitat considerations.

A topographical survey, expressed both as spot levels and contours, provides the basic template for existing and future flows. Geology indicates whether rainfall will flow from the site as runoff, infiltrate into the ground, or leave a site in a combination of these two ways.

Designers should be mindful that a site that infiltrates naturally may not continue to infiltrate once it has been developed.

*The final treatment stage at Hopwood Motorway Service Station. Monitoring has demonstrated that water of a very high quality (near drinking water standards) leaves site.*

