

# S104 SuDS Landscaping & Planting Guidance Document

Version 2 (October 22)

For further information, please see CIRIA C753 Chapter 29

**\*The information below should help inform your design in line with CIRIA C753 and all considerations should be incorporated within your operation & maintenance manual as appropriate to facilitate requirements for adoption\***

The landscaping and planting schedule for the SuDS component(s) should be developed by the designer or appointed landscape architect and provided as part of the submission. CIRIA C753 does state that “designers should develop an appropriate plant list which may vary dependent on the design and landscape objectives for the scheme”. **Planting should not be around any access/egress points for maintenance.**

## Information to be displayed on the Landscape Plan (Please see appendix 1 – Example Landscaping and Planting plan)

Key/legend, North point & scale bar
Existing & proposed contours
Hard landscaping (footpaths & fencing)
Existing planting & trees
New planting (including trees)
Planting schedule to include common & Latin name(s)
Seeding, grasses & wildflower
Soil types
Areas of significant habitats & species (See ‘Habitats in SuDS’ section below for further information)

## Information requirements to support the Landscape Proposals

- Planning conditions (application reference and condition numbers) pertinent to landscape and biodiversity **relating to the SuDS component**. We will need to confirm if the SuDS component forms part of any planning condition or section 106 agreement in relation to biodiversity offsetting or net gain.
- Long term landscape and biodiversity management plan including maintenance actions required and any constraints to maintenance activities such as breeding birds, amphibians or protected species requirements.
- CIRIA health and safety risk assessment should contain any recommendations for safe landscape maintenance of the SuDS component.

## General considerations for SuDS components

- Vegetation can have a strong influence on the amenity and biodiversity value of the system. Vegetation selection is very site specific and requires the input of landscape architects and/or ecologists
- Use plants appropriate to design characteristics: soil types; drainage; slope and orientation; and available light. Select a mix of species suitable for flow velocities and extremes of weather conditions. Consider how quickly and how large plants will grow and how they are likely to be managed in the long term and routing (i.e. highway visibility for safety)
- Design for access, management and maintenance along with routine landscape maintenance
- Design and incorporate appropriate structures and details to prevent clogging of the SuDS component and reduce the need for maintenance downstream.
- Include gently shelving slopes to allow safe access for maintenance and minimise erosion whilst allowing people contact with landscape features.
- Consider beneficial reuse of inert organic arising’s and sediments in or close to the SuDS component to support biodiversity potential.
- Appoint an appropriately qualified professional during construction to ensure accurate implementation of the required design. Also manage surface water run-off, avoidance of soil compaction.
- Designers and contractors need to be aware of legislation relating to the protection of wildlife and their habitats and Invasive Non Native species (INNS).
- Consideration is required when using topsoil and mixed seeding on SuDS components as it could result in being too nutrient rich for both seed mixes. Furthermore, if there is a permanently wet feature included within the design (i.e. vegetated basin), this will be high in nitrate and phosphate runoff, so ideal for algae (which blocks out sunlight for submerged aquatics and kills them off, along with the high level of nutrients).
- There may be limited value in planting into a permanently wet area, which if it’s too nutrient rich will naturally pick up some plants from the environment. Some native submerged aquatics may be worthwhile considering. However, too many plants may be a negative as the plants may not last too long as local habitat such as ducks or geese may use this for feeding.
- Once operational, checks for the presence of protected species by a suitably qualified ecologist may need to be undertaken to ensure that planned maintenance does not present a harm. Also, to ensure that advice is taken about licensing requirements.

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## Specific considerations for components (including maintenance)

### Basin

- Incorporate benches at edges to stabilise soil & prevent erosion
- Bioretention/wetlands/micro pools at outlets are desirable to enhance pollution control
- Inspection frequency - at regular intervals (twice a year) and after severe events (to check bank stability, vegetation growth, debris and erosion)
- Regular mowing along access and amenity areas
- Sediment removal from forebay or micro-pools from September onwards when 50% full or if volume reduced by >25% (3-10 years)
- Where used for dual purpose, e.g. playground, provide an indication that the area is liable to flooding
- If used for temporary storage during construction, reinstate afterwards

### Swales

- <1:3 side slopes, ideally 1 in 4-5 to maximise contact with vegetation thus enhance treatment, reduce erosion risk and facilitate mowing.
- Do not route water through until grass established.
- Mow in first year to prevent establishment of weeds.
- Ideal grass height: 100mm.

### (Bio-retention Swales)

Vegetation influences the performance of the system through direct uptake of pollutants and by facilitating physical and chemical processes in the soil that remove nutrients. It also prevents erosion of the surface soil layers and helps maintain the permeability of the filter medium - see chapter 18.1 (figure 18.1) of CIRIA C753 for further guidance.

- Plant selection for different bio-retention zones (grasses vs. woody/herbaceous)
- Soil type (to infiltrate; clay to absorb hydrocarbons; as planting medium)
- Soil depth (minimum 1.0m)
- Mulch layer (max 75mm depth – for infiltration)
- Careful considerations need to be made regarding grass cutting, cutting back or removing plants
- Any inspection point/overflow chamber/pipe should be clear, accessible and securely capped to prevent vandalism

### Ponds

- Plant to enhance biodiversity
- Profile of woodland, shrub, fringing, emergent, floating, submerged. (Introduce adjacent vegetation native to area)
- Avoid dense planting to allow natural colonisation
- Plant to allow visibility of water's edge especially in amenity areas
- Removal of dead vegetation before start of growing season

### Wetlands

- Incorporation of sediment forebays – eliminate need to dredge main wetland (likely every 25 years or less). Sediment may have to be removed from forebay every 7-10 years or when half full with sediment
- Carefully select plants that are not invasive are capable of pollutant removal, adapted to saturated soils conditions, tolerant of inundation and can withstand dry periods
- Cut back aquatic vegetation after flowering and thin when necessary (every 7-10 years, after September is recommended)
- Inspect quarterly during first two years for nuisance vegetation
- Inspect inlets and outlet quarterly or after large storms for evidence of clogging and accumulation of debris/litter. Inspect also for evidence of erosion and subsidence. Consider context and potential for contamination when identifying disposal options as well as ecological timing (newts, voles, aquatic spawning etc.) as appropriate

### Filter Drains

- Design appropriately to prevent clogging.
- CIRIA recommends a 0.5m width of grass to deal with pollutants.
- Regular inspections; litter, debris, weed and root removal to prevent blockages.

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## Choosing the right plants - See CIRIA C753 Chapter 29.6

United Utilities will not specify the particular planting to be utilised within SuDS component(s) as this can differ dependant on the component and the site. However, CIRIA C753 table 29.1 'Plant tolerances & constraints in SuDS' will provide an indication of the considerations for wet and non-wet components.

## Planting to be avoided - See CIRIA C753 sections 29.6.1 & 29.6.2

White, grey poplar other hybrid poplar clones or cultivars
White, crack willow or other large species of willow
Greater reed mace
Common reed
Greater spearwort
Reed canary grass
Soft rush or hard rush

## Invasive None Native Species (INNS)

Making damp and wet habitat has the potential to support a range of Invasive None Native Species (INNS). It is essential to control and put in place plans (biosecurity) to prevent their further spread to the natural environment and ensure that isolated or in train SuDS components do not support nor enable transit of species, seeds or vegetative spread from INNS within them.

It is important during design and development that all INNS are controlled and removed from the location and that they do not enter the SuDS component. A SuDS component containing INNS may not be suitable for adoption until eradicated by the developer. The species in this table are used as an indicator to inform of some of the INNS for which evidence of absence and biosecurity control measures and long term proposals will be required.

Giant rhubarb
Australian swamp stonecrop
Water fern
Curly waterweed
Water hyacinth
Water lettuce
Skunk cabbage
Water primrose
Parrot's feather
Japanese knotweed
Giant hogweed
New Zealand pygmy weed
Canadian/Nuttalls pondweed
Himalayan balsam
Floating pennywort
None native crayfish
None native fish
None native mussels
None native frogs, toads and newts
Killer shrimp
Chinese mitten crab
Terrapins

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## Habitats and species in SuDS

SuDS can be a great way to help support a range of native species habitats whilst achieving responsibilities to deliver biodiversity, carbon efficiency, surface water management, ecosystem services and natural capital benefits. Where suitable habitats are made or have the potential to establish within the SuDS component, we need to be informed to ensure these values lead to fully informed landscape maintenance of the habitats and the species that could use them, for example :-

Common toad
Common frog
Smooth and palmate newt
Great crested newt
Water vole
Grass snake
Mallard
Moorhen
Mute swan
Reed bunting
Sedge warbler
Grey or pied wagtail
Otter

## Post construction guidance

### **Establishment period requirements: 1-3 years**

- Carry out landscape and soiling work at the optimum time of year e.g. plant trees and shrubs in winter, also carry out seeding in spring and autumn
- Ensure all geotextiles, liners erosion control mattings etc. are securely in place
- Allow plant roots to establish before drainage is allowed to enter the system
- Maintain soft landscape elements including wetlands and marginal areas and continue to control or eradicate INNS
- Maintain hard landscape features, such as access routes, gabions, etc. free from vegetation

### **Medium and long term appropriate operations: 3 years after installation**

- Inspections. Designers recommendations for inspection of each component in relation to its expected design life
- Mowing frequency appropriate to intended function, aesthetics and biodiversity e.g. short grass, meadow cut
- Maintain soft landscape elements including wetlands, marginal areas, amenity grass, meadows and scrub or other planting
- Removal of vegetative plant growth, root matt and colonisation by large perennials (e.g. hard and soft rush, willow herb) and woody species (e.g. willows, birches) and silt build up from conveyance features
- Continue to control or eradicate INNS species
- Monitor for biodiversity and ensure that any species moving in such as amphibians or water voles can be accommodated by adjustments to the maintenance and management and that breeding bird activities are protected from disturbance
- Replacement of dead plants
- Mulch replenishment
- Removal of litter
- Erosion repair
- Unclogging of subsurface drains (frequency)
- Repair of hard landscape elements including access paths, fences gates.

## Landscaping Information requirements for Final Adoption

- Updated health and safety risk assessment containing any recommendations for safe landscape maintenance of the SuDS component.
- Updated long term landscape and biodiversity management plan including maintenance actions required and any constraints to maintenance activities such as breeding birds, amphibians or protected species requirements.
- Copies of pre-adoption landscaping maintenance records.
- Evidence of fully discharged / ongoing planning conditions relating to landscaping.

