SuDS Guidance

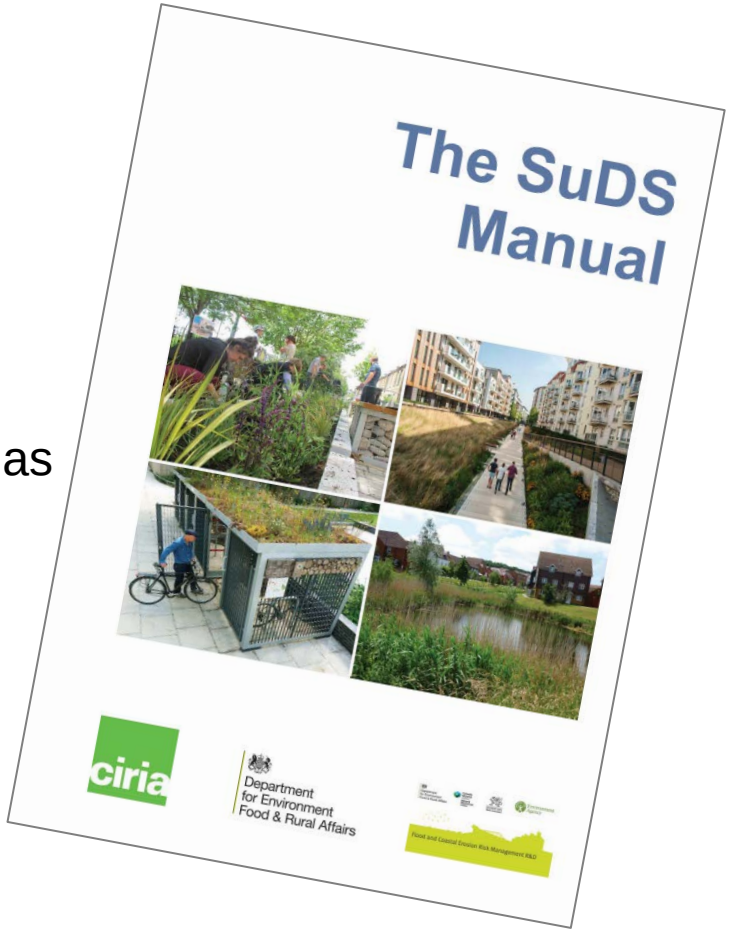
- There are many different pieces of guidance relating to SuDS
- Many from CIRIA alone with “The SuDS Manual” on its third version

Focus on 4 Recent & Forthcoming Documents

1. The SuDS Manual – C753
   - CIRIA, 2015
2. Water Assessment & Drainage Assessment Guide (WADAG)
   - SUDSWP (Sustainable Urban Drainage Scottish Working Party), 2016
3. Regulatory Method 08 (RM-08)
   - SEPA, to be updated before May 2016
4. Sewers for Scotland 3rd Ed'n
   - Scottish Water, 2015

The SuDS Manual 2015 - C753

- Recognised by most as the go-to guide
- SEPA have an expectation that all SuDS installations will be built to this guide
- Full revision and released November 2015
- Very comprehensive at 968 pages!
- “High level” guide
- Probably not a cover to cover read but excellent as reference
- Supersedes older “SuDS Manual” of 2007
- Covers Scottish legislation, policy and best practice, although more emphasis on E&W



SuDS Manual (2015) C753

- Part A
  - Introduction
- Part B
  - Philosophy & Approach
- Part C
  - Applying the Approach
- Part D
  - Technical Detail
  - Includes 13 chapters on different types of SuDS
- Part E
  - Supporting Guidance
  - Hydrology & hydraulics
  - Water Quality
  - Inlets & Outlets
  - Maintenance
  - Etc.

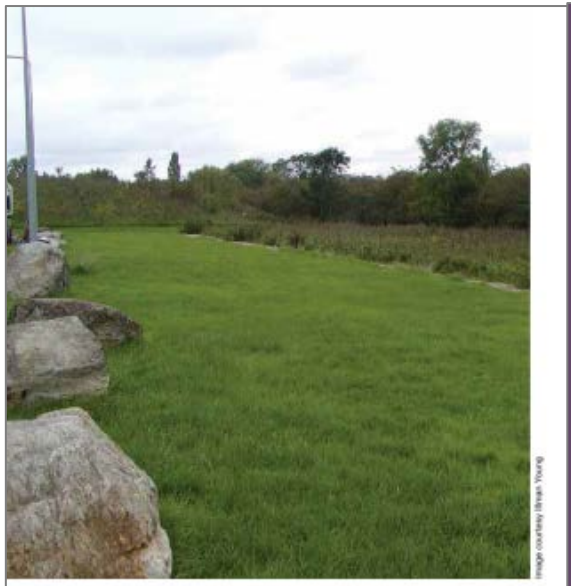


Image courtesy Illman Young

15 FILTER STRIPS

Contents

Chapter 15

Filter strips

This chapter provides guidance on the design of filter strips – vegetated areas of gently sloping ground designed to drain runoff evenly from impermeable areas, filtering out silt and other particulates.

► *Appendix C, Section C.5.4 demonstrates how to design a filter strip for an industrial area.*

15.1 GENERAL DESCRIPTION

Filter strips (Figure 15.1) are uniformly graded and gently sloping strips of grass or other dense vegetation that are designed to treat runoff from adjacent impermeable areas by promoting sedimentation, filtration and infiltration (where acceptable).

The runoff is designed to flow as a sheet across the filter strip at sufficiently low velocities that treatment processes can take place effectively. They are often used as either a pre-treatment component before swales, bioretention systems and trenches (to extend the life of these components by capturing sediment) or as a treatment component (where the flow path length across the strip is sufficient).

At low to moderate velocities, filter strips effectively reduce particulate pollutant levels by removing sediments, organic materials and heavy metals. Settling-out of sediment that contains clay particles also removes absorbed nutrients and other pollutants. Some removal of free soluble pollutants in filter strips is accomplished when pollutants infiltrate into the soil, where they are subsequently taken up by rooted vegetation.

Where infiltration is possible and permitted, its extent tends to be limited during intense storms as only a small proportion of the runoff is lost (the "initial" loss), but where there is some subsoil permeability it will be the dominant mechanism for small rainfall events, and filter strips can therefore contribute effectively to the delivery of Interception.

Figure 15.1 Filter strip at motorway ervices draining to filter drain, Hopwood (courtesy Illman Young)

The SuDS Manual (2015) - C753

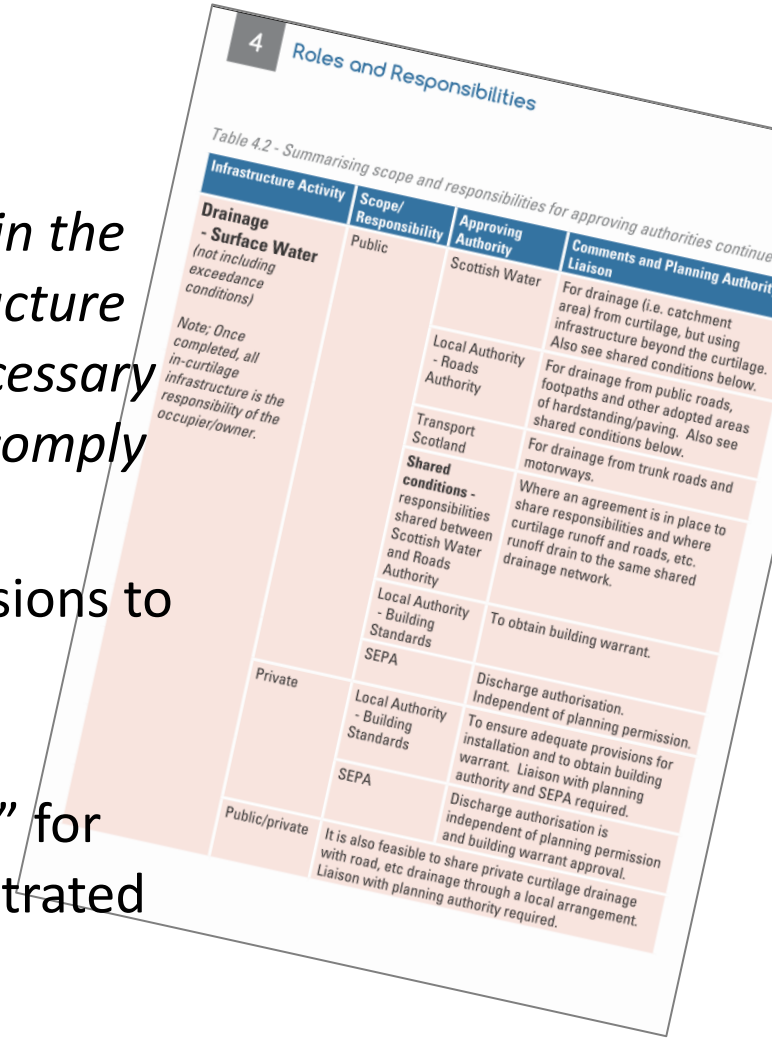
- Can be downloaded from http://www.ciria.org/Memberships/The_SuDs_Manual_C753_Chapters.aspx
- Registration required, but otherwise free to access
- 2 versions – low resolution and high
- CIRIA operate the “SusDrain” programme

Water Assessment & Drainage Assessment Guide (WADAG)

- Produced by SUDS (Scottish) Working Party (SUDSWP)
- Multi-stakeholder partnership
  - SEPA
  - Scottish Water
  - Scottish Government
    - Planners
    - Transport Scotland
    - Flooding
    - Building Standards
  - Architects (RIAS, LIS), Planners (HoPS), Roads (SCOTS), Flooding (SCOTS), Developers (HfS, Scot Ent), Building Standards (LABSS)

WADAG

- Released Jan 2016
- Aimed at developers and planners
- "*…is intended to help guide those involved in the installation of water and drainage infrastructure (both new and retrofitting) through the necessary stages to obtain relevant permissions and comply with standards and policies.*"
- Guidance for gaining the necessary permissions to install water and drainage assets and infrastructure.
- Introduces an expectation "where possible" for first 5mm of rainfall to be contained or infiltrated



4 Roles and Responsibilities

Table 4.2 - Summarising scope and responsibilities for approving authorities continue

Infrastructure Activity	Scope/ Responsibility	Approving Authority	Comments and Planning Authorit Liaison
Drainage - Surface Water *(not including exceedance conditions)* *Note; Once completed, all in-curtilage infrastructure is the responsibility of the occupier/owner.*	Public	Scottish Water	For drainage (i.e. catchment area) from curtilage, but using infrastructure beyond the curtilage. Also see shared conditions below.
		Local Authority - Roads Authority	For drainage from public roads, footpaths and other adopted areas of hardstanding/paving. Also see shared conditions below.
		Transport Scotland	For drainage from trunk roads and motorways.
		Shared conditions - responsibilities shared between Scottish Water and Roads Authority	Where an agreement is in place to share responsibilities and where curtilage runoff and roads, etc. runoff drain to the same shared drainage network.
		Local Authority - Building Standards	To obtain building warrant.
		SEPA	Discharge authorisation. Independent of planning permission.
	Private	Local Authority - Building Standards	To ensure adequate provisions for installation and to obtain building warrant. Liaison with planning authority and SEPA required.
		SEPA	Discharge authorisation is independent of planning permission and building warrant approval.
	Public/private	It is also feasible to share private curtilage drainage with road, etc drainage through a local arrangement. Liaison with planning authority required.	

WADAG

- Can be downloaded from https://www.sepa.org.uk/media/163472/water_assessment_and_drainage_assessment_guide.pdf
- Other information about SUDSWP at https://www.sepa.org.uk/regulations/water/diffuse-pollution/diffuse-pollution-in-the-urban-environment/#Information

FOREWORD

This document is produced by the Sustainable Urban Drainage Scottish Working Party (SUDSWP): a multi-stakeholder group established to promote the use of sustainable drainage in Scotland.

Members of the SUDSWP represent the following groups

- Scottish Environment Protection Agency (SEPA)
- Scottish Water
- The Scottish Government
  - Planning and Architecture Division
  - Building Standards Division
  - Transport Scotland
- Homes for Scotland
- Scottish Enterprise
- Society of Chief Officers for Transportation in Scotland (SCOTS)
- Royal Incorporation of Architects in Scotland (RIAS)
- Landscape Institute Scotland (LIS)
- Heads of Planning Scotland (HOPS)

Main Author: Neil McLean

Contributing authors: Kelvin Limbrick, Chris Digman

Steering group members

Brian Fotheringham	SEPA, Planning
Doug Buchan	Scottish Water
Clyde Ashby	Scottish Government, building standards
Bill Gladstone	Scottish Enterprise
John Thomson	SCOTS, Roads Group (Perth & Kinross Council)
James Travers	Homes for Scotland & Taylor Wimpey

In addition, the following stakeholders have been consulted and their input is gratefully acknowledged:

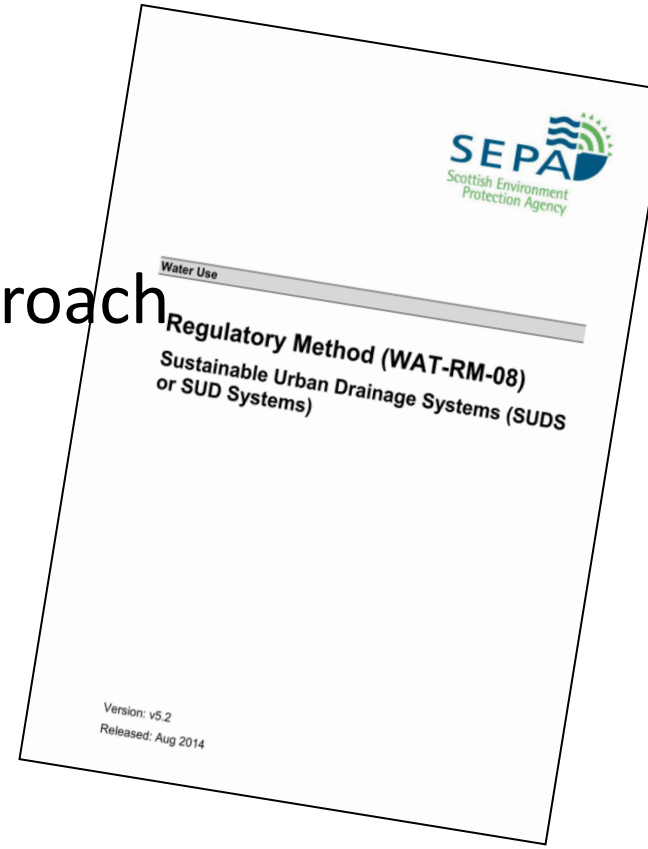
Willie Burns	Homes for Scotland &Taylor Wimpey
Simon Pallant	Scottish Government, Planning
Stephen Dunn	Perth and Kinross Council
Stuart Cullen	Clackmannanshire Council
Julie Waldron	Landscape Institute, Scotland
Neil Young	SCOTS Floods Group

Water Assessment and Drainage Assessment Guide

Regulatory Method - 08

Sustainable Urban Drainage Systems

- SEPA's guide to their own officers and external applicants
- Emphasis on water quality & pollution
- Current version (Aug 2014) will be updated to accommodate new approach to SuDS provisions
- Will use pollution indices of hazard and mitigation
- More details in final session – Tools



RM-08

- SEPA's standing Advice to local authorities;
  - Expectation from SEPA that CIRIA's SuDS manual will be used
  - Also an expectation for interception of first 5mm, i.e. source control

RM-08

- Can be downloaded from https://www.sepa.org.uk/media/152740/wat_rm_08.pdf
- Transition acceptable through to May '16

Existing Approach

	Number of houses / car park spaces				
Receiving Water Type	**<25**	**25-50**	**>50-100**	**100-1000**	**>1000**
Normal sensitivity watercourse	1 level	1 level	2 levels	2 levels	2 levels
Low sensitivity watercourse	1 level	1 level	1 level	2 levels	2 levels
Transitional waters	Minimal	Minimal	Minimal	Minimal	Section 4.5
Coastal waters	None	None	None	None	Section 4.5
GBR applies	*Standing planning advice* Local Authority checks source control design				
GBR applies	*SEPA provides site-specific planning advice* LA checks source control design				
GBR applies	*SEPA provides site-specific planning advice* LA checks source control design, Scottish Water checks pond/basin design if Sewers for Scotland 2				
Licence required	*SEPA provides site-specific planning advice* LA, Scottish Water, SEPA may check design				

New Approach

Table 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices [1]		
Type of SuDS component	**TSS**	**Metals**	**Hydro-carbons**
filter strip	0.4	0.4	0.5
filter trench	0.4 [2]	0.4	0.4
swale	0.5	0.6	0.6
bioretention system	0.8	0.8	0.8
permeable pavement	0.7	0.6	0.7
detention basin	0.5	0.5	0.6
pond [4]	0.7 [3]	0.7	0.5
wetland	0.8 [3]	0.8	0.8
proprietary treatment systems [5, 6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Sewers for Scotland (S4S) - 3rd Edition

- Scottish Water will vest (adopt) SuDS if built to their standards
- 3rd edition is now mandatory standards
- Standards are detailed in S4S
- Fairly strict about vesting new SuDS!

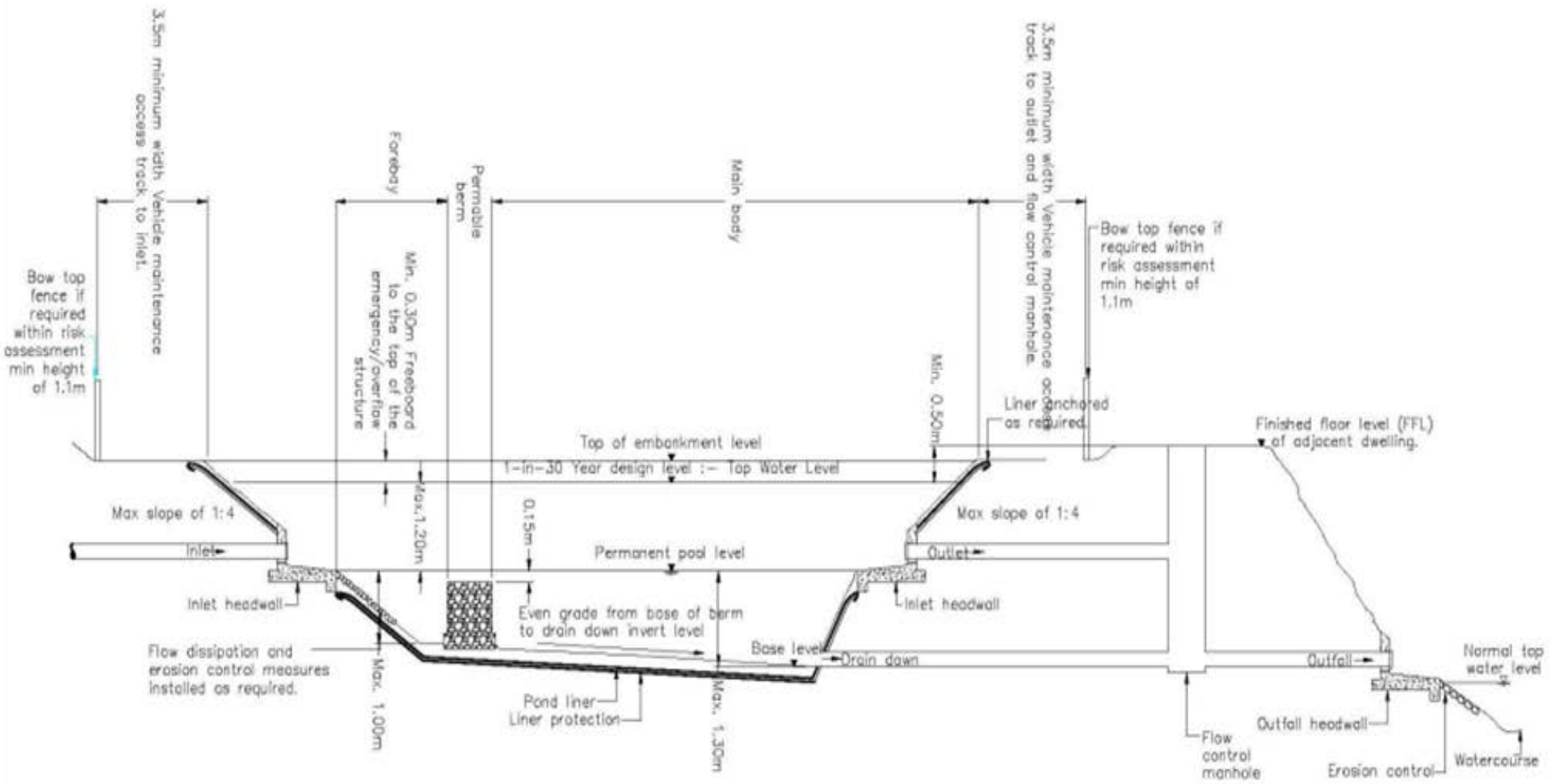
Sewers for Scotland 3

- Presently Scot Wat will only vest;
  - Ponds ☺
  - Basins ☺
  - Underground storage ☹
- "Waiver" required if alteration from standards

- Sewers for Scotland 4th (3a?) Ed'n is already drafted
  - Likely to be more flexible and may contain further end-of-pipe arrangements

S4S3

Example section through pond



Any questions?