

The SuDS Life-Cycle

Building Control or Scottish Water

Question;

1. Will SuDS be vested (adopted) by Scottish Water?

If yes, *Building Standards Surveyors still* have a part to play – any in-curtilage drainage forming part of the overall design still needs to be checked by Building Standards.

If no, Building Standards will be the checking and approving body regardless of final adopting arrangement (local authority, Factor, developer)

Quote from SBS

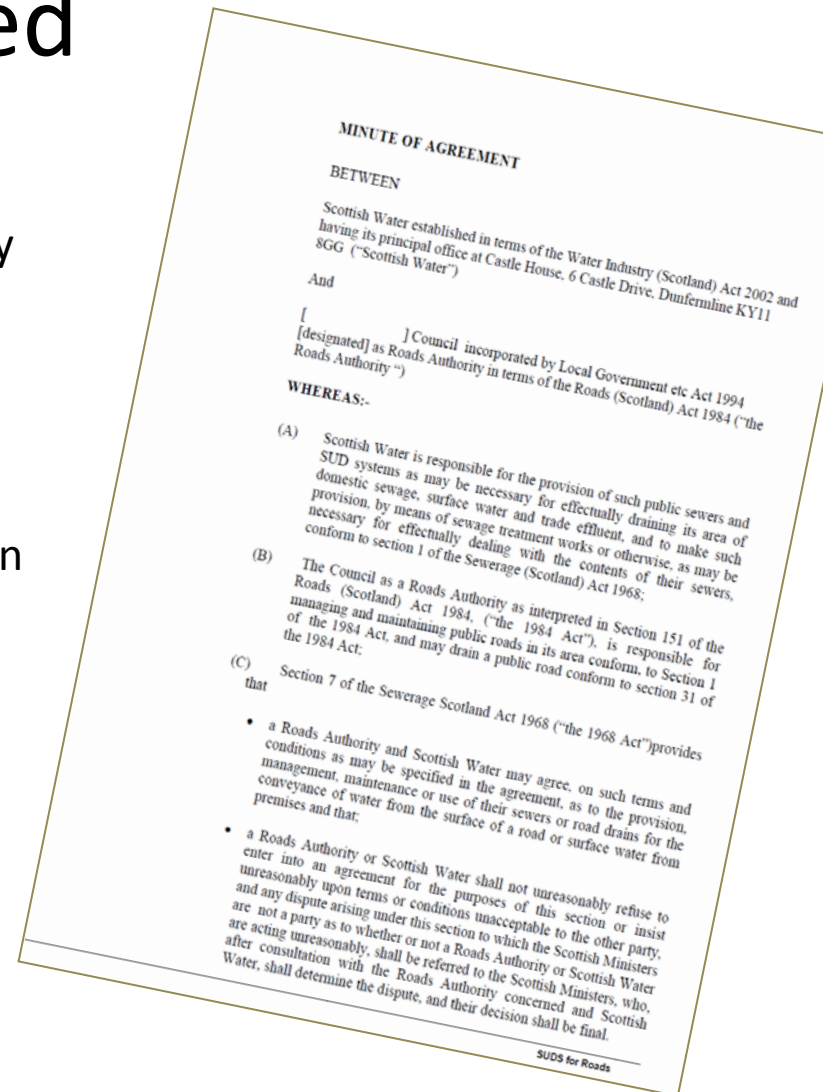
“Like all other aspects of building warrant approval and completion certificate acceptance, it is the Building Standards Surveyors, not some third party that ultimately has responsibility for the adequacy of the design and construction of the [SuDS] installation.”

SBSD - “Legacy” SuDS

- Around 1500 un-adopted SuDS in Scotland
- Currently the *Building (Scotland) Act 2003* excludes buildings where “any sewer or water main which is, **or is to be**, vested in Scottish Water”, but it is likely that this will change and that BS will become responsible.
- Need for robust understanding of SuDS design and construction, either directly or through an agent.

Sewerage (Scotland) Act 1968 – As Amended

- Section 7 of Sewerage (Scotland) Act
- Allows a roads authority and a drainage authority to share assets by agreement
- Initially no agreements were in place due to old County Councils sharing duties; roads and drainage in the same office
- 2007 “Minute of Agreement” attempted between Scottish Water and LAs (S4Rds Appendix)
- Discussions still “*In progress*”
- New MoU now drafted for SCOTS approval
 - Legals still to be sorted
 - Then 32 local authority agreements
 - Then “schedules” for all new developments



Sewers for Scotland – 3rd Edition

- Design guide for developers
- Build to these standards and Scottish Water will adopt – in theory...
- Contains a chapter on SuDS
- First in UK through S4S2 2007
- Only Ponds, Basins & Underground Storage
- Fairly strict details required
- Any guesses how many SuDS Scot Water have adopted since 2007?

Scottish Water Vested Pond

DEX – Dunfermline East Expansion



The Same Pond Today



Maintenance

Long-term Maintenance

Example of Maintenance Schedule and Considerations

See file;

[Example Maint Schedule - Colquhoun Square Swale](#)

Maintenance Schedule

The swale design is simple and will require basic and straightforward maintenance. It is intended that all maintenance will be performed by responsible authority personnel or appointed agent/s. The following is a schedule of necessary maintenance for the continuing efficient service of the swale.

Maintenance Schedule	Required Action	Frequency
Inspections & checks	<ul style="list-style-type: none"> • Inspect inlet and outlet for blockages and clear as required • Inspect inlet for signs of erosion and repair as necessary • Inspect hydraulic throttle for normal operation including bypass arrangement • Inspect swale for contamination and repair as required • Inspect swale floor for standing water and remediate as required 	<ul style="list-style-type: none"> • Monthly/ as required • Monthly/ as required • Monthly/ as required • Monthly/ as required • Monthly/ as required
Regular maintenance	<ul style="list-style-type: none"> • Litter and debris removal • Grass cutting*; <ul style="list-style-type: none"> ○ Mowing banks ○ Strimming swale floor to maintain grass height to 100 – 150 mm • Manage other vegetation and remove nuisance plants <ul style="list-style-type: none"> *All grass cuttings must be removed from the swale to eliminate blockages 	<ul style="list-style-type: none"> • Monthly • Monthly during growing season • Monthly for first year, then as required
Occasional maintenance	<ul style="list-style-type: none"> • Re-seed areas of sparse vegetation or where nuisance vegetation has been removed • Remove build-up of sediment 	<ul style="list-style-type: none"> • Annually for first three years at the beginning of the growing season, then as required • As required
Remedial actions	<ul style="list-style-type: none"> • Replace or repair damaged turf • Repair erosion on side slopes 	<ul style="list-style-type: none"> • As required • As required

Maintenance Schedule	Required Action	Date											
		J	F	M	A	M	J	J	A	S	O	N	D
Inspections & checks	<ul style="list-style-type: none"> Inspect inlet and outlet for blockages and clear as required Inspect inlet for signs of erosion and repair as necessary Inspect Hydro-Brake for normal operation including bypass arrangement Inspect swale for contamination and repair as required Inspect swale floor for standing water and remediate as required 												
Regular maintenance	<ul style="list-style-type: none"> Litter and debris removal Grass cutting*; <ul style="list-style-type: none"> Mowing banks Strimming swale floor to maintain grass height to 100 – 150 mm Manage other vegetation and remove nuisance plants <p>*All grass cuttings must be removed from the swale to eliminate blockages</p>												
Occasional maintenance	<ul style="list-style-type: none"> Re-seed areas of sparse vegetation or where nuisance vegetation has been removed Remove build-up of sediment 	<ul style="list-style-type: none"> Annually for first three years at the beginning of the growing season, then as required As required 											
Remedial actions	<ul style="list-style-type: none"> Replace or repair damaged turf Repair erosion on side slopes 	<ul style="list-style-type: none"> As required As required 											

Return Periods

- Return period relates event to time using statistics
e.g. 50YRP= 50 Year Return Period
 - = 2% AEP
 - = 2% Annual Exceedence Percentage
 - = 50:1 chance of that event occurring in any year
- Rainfall & river return periods are different
50 rainfall YRP ~~≠~~ 50 river YRP
- Unlike river flow return period, rainfall includes duration e.g. M5-60 Storm;
 - 60 minute rainfall storm with 5 year return period
- Varies according to location;
 - typically 12mm to 18mm for Scotland

Rainfall – Critical Storm

- Run various durations 15 min, 1 hour, 2 hour, etc.
- Significant short storms are heavier/more intense;
5mm in 15 mins → 20mm/hour intensity
- Longer storms are less intense;
30 mm in 2 hours → 15mm/hour intensity
- Determine critical storm

Rainfall – Critical Storm ⁽²⁾

Duration (mins)	M5- (mm)	M100 (mm)	Intensity (mm/hr)	Flow (l/sec/Ha)	Outlet control (l/sec)	Volume Req'd (m ³)
30	12.6	24.8	49.6	77.0	5.25	129.2
60	16.6	32.7	32.7	50.6	5.25	163.3
120	21.2	41.7	20.8	32.3	5.25	194.6
240	27.6	51.8	12.9	20.1	5.25	213.4
360	32.4	59.2	9.9	15.3	5.25	217.1
600	38.5	69.3	6.9	10.7	5.25	197.8

Capex & Opex Tool

- SuDS for Roads Whole Life Cost Tool
- See next presentation