Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.600
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SW01	0.017	4.00	144.625	450	486564.004	299947.313	0.750
SW02	0.017	4.00	144.700	450	486580.147	299945.960	1.062
SW03			144.750	450	486583.660	299949.160	1.140
SA01	0.003		144.750		486583.849	299951.403	1.153
SW05	0.017	4.00	144.810	450	486571.082	299925.170	0.750
SW06	0.017	4.00	144.810	450	486561.727	299925.945	0.844
SA02			144.900		486561.511	299923.362	0.960
PP01	0.021	4.00	144.840		486585.893	299920.309	0.350
SW10	0.022	4.00	144.100	450	486608.388	299925.308	0.750
SW11	0.003	4.00	143.300	450	486602.117	299958.681	0.750
SW12	0.002	4.00	143.350	450	486606.428	299958.319	0.843
SA03	0.000		143.350		486606.260	299956.326	0.863
PP02	0.010		144.500		486593.284	299937.115	0.300

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	SW01	SW02	16.200	0.600	143.875	143.713	0.162	100.0	150	4.27	50.0
2.001	SW02	SW03	4.752	0.600	143.638	143.610	0.028	170.0	225	4.35	50.0
2.002	SW03	SA01	2.251	0.600	143.610	143.597	0.013	170.0	225	4.39	50.0
1.000	SW10	SW11	33.957	0.600	143.350	142.550	0.800	42.4	150	4.37	50.0
3.000	SW05	SW06	9.387	0.600	144.060	143.966	0.094	99.9	150	4.16	50.0
3.001	SW06	SA02	2.592	0.600	143.966	143.940	0.026	99.7	150	4.20	50.0
1.001	SW11	SW12	4.326	0.600	142.550	142.507	0.043	100.6	150	4.44	50.0
1.002	SW12	SA03	2.000	0.600	142.507	142.487	0.020	100.0	150	4.47	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	1.005	17.8	3.1	0.600	0.837	0.017	0.0	42	0.751
2.001	1.000	39.7	6.1	0.837	0.915	0.034	0.0	59	0.727
2.002	1.000	39.7	6.1	0.915	0.928	0.034	0.0	59	0.727
1.000	1.549	27.4	4.0	0.600	0.600	0.022	0.0	38	1.104
3.000	1.005	17.8	3.1	0.600	0.694	0.017	0.0	42	0.752
3.001	1.006	17.8	6.1	0.694	0.810	0.034	0.0	61	0.914
1.001	1.002	17.7	4.5	0.600	0.693	0.025	0.0	52	0.841
1.002	1.005	17.8	4.9	0.693	0.713	0.027	0.0	54	0.858

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.000	16.200	100.0	150	Circular	144.625	143.875	0.600	144.700	143.713	0.837
2.001	4.752	170.0	225	Circular	144.700	143.638	0.837	144.750	143.610	0.915
2.002	2.251	170.0	225	Circular	144.750	143.610	0.915	144.750	143.597	0.928
1.000	33.957	42.4	150	Circular	144.100	143.350	0.600	143.300	142.550	0.600
3.000	9.387	99.9	150	Circular	144.810	144.060	0.600	144.810	143.966	0.694
3.001	2.592	99.7	150	Circular	144.810	143.966	0.694	144.900	143.940	0.810
1.001	4.326	100.6	150	Circular	143.300	142.550	0.600	143.350	142.507	0.693
1.002	2.000	100.0	150	Circular	143.350	142.507	0.693	143.350	142.487	0.713

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	SW01	450	Manhole	Adoptable	SW02	450	Manhole	Adoptable
2.001	SW02	450	Manhole	Adoptable	SW03	450	Manhole	Adoptable
2.002	SW03	450	Manhole	Adoptable	SA01		Junction	
1.000	SW10	450	Manhole	Adoptable	SW11	450	Manhole	Adoptable
3.000	SW05	450	Manhole	Adoptable	SW06	450	Manhole	Adoptable
3.001	SW06	450	Manhole	Adoptable	SA02		Junction	
1.001	SW11	450	Manhole	Adoptable	SW12	450	Manhole	Adoptable
1.002	SW12	450	Manhole	Adoptable	SA03		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW01	486564.004	299947.313	144.625	0.750	450	0	2.000	143.875	150
SW02	486580.147	299945.960	144.700	1.062	450	1	2.000	143.713	150
						0	2.001	143.638	225
SW03	486583.660	299949.160	144.750	1.140	450	1	2.001	143.610	225
						0	2.002	143.610	225
SA01	486583.849	299951.403	144.750	1.153		1	2.002	143.597	225
SW05	486571.082	299925.170	144.810	0.750	450	0	3.000	144.060	150
SW06	486561.727	299925.945	144.810	0.844	450	1	3.000	143.966	150
						0	3.001	143.966	150
SA02	486561.511	299923.362	144.900	0.960		1	3.001	143.940	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PP01	486585.893	299920.309	144.840	0.350					
SW10	486608.388	299925.308	144.100	0.750	450	0	1.000	143.350	150
SW11	486602.117	299958.681	143.300	0.750	450	1	1.000	142.550	150
						0	1.001	142.550	150
SW12	486606.428	299958.319	143.350	0.843	450	1	1.001	142.507	150
						0	1.002	142.507	150
SA03	486606.260	299956.326	143.350	0.863		1	1.002	142.487	150
PP02	486593.284	299937.115	144.500	0.300					

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Node SA01 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07700	Safety Factor	2.0	Invert Level (m)	143.450
Side Inf Coefficient (m/hr)	0.07700	Porosity	0.95	Time to half empty (mins)	536

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	31.5	31.5	0.800	31.5	51.5	0.801	0.0	51.5

Node SA02 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.12740	Safety Factor	2.0	Invert Level (m)	143.600
Side Inf Coefficient (m/hr)	0.12740	Porosity	0.95	Time to half empty (mins)	311

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	24.0	24.0	0.800	24.0	41.6	0.801	0.0	41.6

Node PP01 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07700	Safety Factor	2.0	Invert Level (m)	144.490
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	23

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	100.8	100.8	0.280	100.8	100.8	0.281	0.0	100.8

Node SA03 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07700	Safety Factor	2.0	Invert Level (m)	142.050
Side Inf Coefficient (m/hr)	0.07700	Porosity	0.95	Time to half empty (mins)	465

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	17.0	17.0	0.800	17.0	33.8	0.801	0.0	33.8

Node SW11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07700	Safety Factor	2.0	Invert Level (m)	142.550
Side Inf Coefficient (m/hr)	0.07700	Porosity	0.30	Time to half empty (mins)	132

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	7.2	7.2	0.600	7.2	22.0	0.601	0.0	22.0

Node PP02 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07700	Safety Factor	2.0	Invert Level (m)	144.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	23

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	100.0	100.0	0.225	100.0	100.0	0.226	0.0	100.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SW01	10	143.921	0.046	3.4	0.0279	0.0000	OK
15 minute summer	SW02	10	143.707	0.069	6.8	0.0332	0.0000	OK
15 minute summer	SW03	10	143.677	0.066	6.8	0.0106	0.0000	OK
360 minute summer	SA01	248	143.627	0.030	1.7	5.2915	0.0000	OK
15 minute summer	SW05	10	144.104	0.044	3.4	0.0272	0.0000	OK
15 minute summer	SW06	10	144.035	0.069	6.8	0.0387	0.0000	OK
360 minute summer	SA02	232	143.775	-0.165	1.6	3.9957	0.0000	OK
120 minute summer	PP01	72	144.535	0.045	1.9	1.4014	0.0000	OK
15 minute summer	SW10	10	143.391	0.041	4.4	0.0303	0.0000	OK
15 minute summer	SW11	10	142.609	0.059	5.0	0.1408	0.0000	OK
15 minute summer	SW12	10	142.566	0.059	5.1	0.0121	0.0000	OK
360 minute summer	SA03	240	142.277	-0.210	1.1	3.6583	0.0000	OK
60 minute summer	PP02	39	144.222	0.022	1.2	0.6596	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	SW01	2.000	SW02	3.4	0.765	0.191	0.0718
15 minute summer	SW02	2.001	SW03	6.8	0.674	0.171	0.0478
15 minute summer	SW03	2.002	SA01	6.8	0.721	0.170	0.0212
360 minute summer	SA01	Infiltration		0.4			
15 minute summer	SW05	3.000	SW06	3.4	0.559	0.191	0.0574
15 minute summer	SW06	3.001	SA02	6.8	0.903	0.382	0.0195
360 minute summer	SA02	Infiltration		0.5			
120 minute summer	PP01	Infiltration		1.0			
15 minute summer	SW10	1.000	SW11	4.4	0.902	0.161	0.1738
15 minute summer	SW11	1.001	SW12	4.7	0.738	0.266	0.0276
15 minute summer	SW11	Infiltration		0.1			
15 minute summer	SW12	1.002	SA03	5.0	0.829	0.283	0.0122
360 minute summer	SA03	Infiltration		0.2			
60 minute summer	PP02	Infiltration		0.5			

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	SW01	232	143.998	0.123	2.8	0.0753	0.0000	OK
240 minute summer	SW02	232	143.998	0.360	5.6	0.1726	0.0000	SURCHARGED
240 minute summer	SW03	232	144.001	0.390	5.3	0.0621	0.0000	SURCHARGED
240 minute summer	SA01	228	143.997	0.400	5.5	16.3847	0.0000	OK
180 minute winter	SW05	172	144.213	0.153	2.3	0.0935	0.0000	SURCHARGED
180 minute winter	SW06	172	144.213	0.247	4.6	0.1387	0.0000	SURCHARGED
180 minute winter	SA02	172	144.213	0.273	4.6	13.9705	0.0000	OK
60 minute summer	PP01	51	144.684	0.194	8.7	6.0855	0.0000	OK
15 minute summer	SW10	10	143.429	0.079	14.8	0.0586	0.0000	OK
240 minute winter	SW11	224	142.746	0.196	2.7	0.4711	0.0000	SURCHARGED
240 minute winter	SW12	224	142.746	0.239	2.8	0.0493	0.0000	SURCHARGED
240 minute winter	SA03	224	142.746	0.259	2.8	11.2455	0.0000	OK
60 minute summer	PP02	42	144.278	0.078	4.2	2.3893	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	SW01	2.000	SW02	11.5	1.040	0.648	0.1791
15 minute summer	SW02	2.001	SW03	23.0	0.902	0.578	0.1211
15 minute summer	SW03	2.002	SA01	23.0	0.997	0.578	0.0607
240 minute summer	SA01	Infiltration		0.5			
15 minute summer	SW05	3.000	SW06	11.3	0.687	0.637	0.1567
15 minute summer	SW06	3.001	SA02	22.8	1.294	1.280	0.0445
180 minute winter	SA02	Infiltration		0.7			
15 minute summer	PP01	Infiltration		1.1			
15 minute summer	SW10	1.000	SW11	14.8	1.157	0.541	0.4527
15 minute summer	SW11	1.001	SW12	15.9	0.944	0.897	0.0725
240 minute winter	SW11	Infiltration		0.1			
15 minute summer	SW12	1.002	SA03	17.0	1.098	0.956	0.0309
240 minute winter	SA03	Infiltration		0.3			
15 minute summer	PP02	Infiltration		1.1			

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	SW01	344	144.203	0.328	1.8	0.2010	0.0000	SURCHARGED
360 minute winter	SW02	336	144.204	0.566	3.6	0.2710	0.0000	SURCHARGED
360 minute winter	SW03	360	144.204	0.594	3.4	0.0945	0.0000	SURCHARGED
360 minute winter	SA01	344	144.203	0.606	3.6	22.5569	0.0000	OK
240 minute winter	SW05	228	144.548	0.488	2.4	0.2988	0.0000	FLOOD RISK
240 minute winter	SW06	228	144.548	0.582	4.8	0.3272	0.0000	FLOOD RISK
240 minute winter	SA02	228	144.548	0.608	4.5	18.2514	0.0000	OK
60 minute winter	PP01	59	144.770	0.280	8.1	8.8002	0.0000	OK
15 minute summer	SW10	10	143.443	0.093	19.3	0.0693	0.0000	OK
180 minute winter	SW11	176	143.203	0.653	4.4	1.4531	0.0000	FLOOD RISK
180 minute winter	SW12	176	143.203	0.696	4.7	0.1434	0.0000	FLOOD RISK
180 minute winter	SA03	176	143.202	0.715	4.4	12.9281	0.0000	OK
60 minute summer	PP02	44	144.312	0.112	5.5	3.4279	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	SW01	2.000	SW02	14.9	1.091	0.839	0.2211
15 minute summer	SW02	2.001	SW03	29.8	0.951	0.749	0.1806
15 minute summer	SW03	2.002	SA01	29.8	1.054	0.749	0.0894
360 minute winter	SA01	Infiltration		0.5			
15 minute summer	SW05	3.000	SW06	14.8	0.843	0.835	0.1653
15 minute summer	SW06	3.001	SA02	29.7	1.688	1.671	0.0452
180 minute summer	SA02	Infiltration		0.7			
15 minute summer	PP01	Infiltration		1.1			
15 minute summer	SW10	1.000	SW11	19.3	1.218	0.705	0.4932
15 minute summer	SW11	1.001	SW12	20.2	1.145	1.139	0.0762
180 minute winter	SW11	Infiltration		0.2			
15 minute summer	SW12	1.002	SA03	21.8	1.243	1.231	0.0342
120 minute summer	SA03	Infiltration		0.4			
15 minute summer	PP02	Infiltration		1.1			

conisbee

APPENDIX F - SUDS MAINTENANCE PLAN

conisbee
Consulting Structural Engineers
Consulting Civil Engineers

Cambridge
16 Signet Court Swann Road
Cambridge CB5 8LA
Telephone 01223 656 058

London
1–5 Offord Street
London N1 1DH
Telephone 020 7700 6666

Norwich
6 Upper King Street
Norwich NR3 1HA
Telephone 01603 628 074

Colchester
35 Mayfly Way
Colchester CO7 7WX
Telephone 01206 581 950

design@conisbee.co.uk
www.conisbee.co.uk

Uppingham School - Meadhurst Refurb

Sustainable Drainage Maintenance Plan

Ref: 230021/A Marshall

Approved By: A. Marshall

Date: 8 Dec 2023

Version: 1

Table of Contents

1.0 INTRODUCTION

The purpose of this document is to outline the proposed maintenance schedule for the drainage system and all SuDS features for the proposed new boarding house at Uppingham School.

The maintenance schedule set out here complies with the CIRIA SuDS Manual (C753), which is identified as providing current best practice in the industry. The report does not replace manufacturers' requirements and these should be followed for each product in addition to the information in this document.

For the proposed extents of SuDS features on a plan drawing, please refer to the separate drainage layout plans and drainage strategy report.

2.0 ORGANISATION RESPONSIBLE

The client, Uppingham School, will be responsible for undertaking maintenance of the proposed drainage for the whole life of the site.

3.0 CONVENTIONAL DRAINAGE SYSTEMS

3.1 Gullies, Silt Traps, Manholes, Catchpits & Pipework

On completion of construction, the internal surfaces of the sewers and manholes shall be thoroughly cleansed to remove all deleterious matter, without such matter being passed forward into the existing sewers.

All trapped gullies, silt traps, manholes and catchpits are to be regularly inspected every three months and cleared out on a regular frequency for the first nine months. After this period, the frequency can be reduced to every six months.

All drainage runs will be inspected once a year. The system is to be jetted clear if/when necessary.

4.0 SUDS FEATURES

4.1 Introduction

The following SuDS measures are proposed for the proposed new boarding house at Uppingham School.

- Permeable Paving
- Soakaway
- Filter drains

During the first year of the operation of all types of SuDS should be inspected at least monthly and after significant storm events to ensure that the system is functioning as designed and that no damage or faults are evident.

It is recommended that a report on the condition of the SuDS is undertaken further to an inspection at least once annually.

4.2 Permeable pavements

The pavement should be inspected regularly for clogging, litter, weeds and water ponding, preferably during and after heavy rainfall to check effective operation. Permeable pavements need to be regularly cleaned of silt and other sediments to preserve their infiltration capacity. The SuDS Manual indicates that sweeping once per year is sufficient for most sites, however the sweeping frequency should be adjusted to suit site specific conditions and should also be informed by annual inspection reports.

Care should be taken in adjusting vacuuming equipment to avoid removal of joining material. Any lost material should be replaced.

Table 1 outlines the proposed operation and maintenance regime for permeable pavements. This is adapted from The SuDS Manual (C753).

Table 1: Operation and maintenance requirements for permeable pavements

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall or reduced frequency as required, based on site-specification observations of clogging - pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediments
Occasional maintenance	Stabilise and mow contributing and advancement areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required –once per year on less frequently used pavements
Remedial actions	Remediate any landscaping which through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper structure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth- if required, take remedial action	Three-monthly, 48h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

4.3 Soakaway

The useful life and effective operation of an infiltration component is related to the frequency of maintenance and the risk of sediment being introduced into the system.

Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/ debris removal for large systems. If maintenance is not undertaken for long periods, deposits can become hard-packed and require considerable effort to remove.

Replacement of the geocellular units will be necessary if the system becomes blocked with silt. Effective monitoring will give information on changes in infiltration rate and provide a warning of potential failure in the long term.

Roads and/or parking areas draining to infiltration components should be regularly swept to prevent silt being washed off the surface. This will minimise the need for maintenance.

Table outlines the proposed operation and maintenance regime for soakaways. This is adapted from The SuDS Manual (C753).

Table 2: Operation and maintenance requirements for soakaway

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

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4.4 Filter Drains

Filter drains are shallow trenches filled with stone/gravel that create temporary subsurface storage for the attenuation, conveyance and infiltration, of surface water runoff. Filter drains will require ongoing regular maintenance to ensure continuing operation to design performance standards.

Litter (including leaf litter) and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter should be removed from site.

The main risk to the performance of a filter drain is from sediment clogging the filter drain. This is dealt with by an upstream treatment train removing the sediment first. However if, due to unforeseen reasons, exception sediment loads affect the filter drain then this could necessitate digging out and replacing the gravel fill in a filter drain.

Table3 outlines the proposed operation and maintenance regime for swales. This is adapted from The SuDS Manual (C753). Specific maintenance needs of the bioretention area should be monitored, and maintenance schedules adjusted to suit requirements.

Table 3: Operation and maintenance requirements for filter drains

Maintenance Schedule	**Required Action**	**Typical Frequency**
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG,2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

5.0 SUDS PROGRAMME

The proposed SuDS for the site will come on-line approximately Summer 2025.

The contractor should ensure that during the construction phase (or in any other phasing associated with the site coming on line) that SuDS are not damaged by construction works.

6.0 OPERATION AND MAINTENANCE MANUAL RECORDS

6.1 Documents to be handed over

Conisbee will provide this document to Uppingham School, who will provide the document to the construction contractor, and Uppingham School will also include it in the Operation and Maintenance Manual.

Uppingham School will have copies of the drainage design drawings which show locations of the proposed SuDS and any 'as-builts' provided by the contractor.

6.2 Maintenance Records

Uppingham School will be provided with the standard proforma in Appendix B of The SuDS Manual to enable them to record the outcomes of inspections.