

Drainage Maintenance & Management Statement

Angels Nursery, Yapton Road, Barnham

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Schedule of Appendices

A	Drainage Ownership Plan
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Issue	Issue date	Compiled	Checked
Planning Issue	6 March 2020	MR	GO
Second issue	5 June 2020	MR	GO

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Checked by: Gavin Owens

1 Introduction and Description of system

- 1.1 The drainage system has been designed to drain positively to a single point of discharge to the local ditch to the southern boundary via an open pond which provides water treatment and storm water storage.
- 1.2 The final rate of discharge to the ditch is restricted via a flow control device situated downstream of the outfall headwall to the pond in a manhole. This will require regular maintenance as outlined in the following sections to ensure the site is freeflowing and to prevent flooding.
- 1.3 Upstream of the pond water is collected from roofs via traditional rainwater pipework and gullies, draining into either a piped system to the pond or adopted surface water sewer, or to 'distribution tanks' into the stone sub-base of the permeable paved driveways. Distribution tanks are cellular plastic tanks which allow water to permeate into the stone.
- 1.4 Water from the permeable driveways is collected in cellular tanks, then into a small 600mm diameter plastic control catchpit chamber on the drainage layouts. These have a small orifice flow control inside which also needs to be regularly checked as per the following schedule. These then discharge to the main surface water sewer in the road.
- 1.5 The main loop road water is collected via traditional road gullies, which drain into a water authority adopted surface water sewer under the road, which then drains into the pond.
- 1.6 Foul drainage is collected by gravity from each plot via small 450mm diameter plastic inspection chambers, which then drain into a main water authority owned foul sewer in the loop road. This drains north to connect to a Southern Water sewer close to the northern boundary.
- 1.7 The following sections detail the main drainage items used within the scheme and details the maintenance requirements for each item.
- 1.8 To ensure ongoing compliance with the requirements of the maintenance schedule, an Estate Management Company will be set up by the Client to maintain the private elements of the drainage system.

- 1.9 The Estate Management Company will seek financial contributions (in the form of service charges), at regular intervals, from the leaseholders/owners of the development to include for the regular costs of the maintenance of the site drainage. A separate sinking fund will be maintained to provide for the anticipated replacement cost of the major components at the end of the manufacturer's design life. These funds are to be held in bank client accounts kept separate from the bank account of the Estate Management Company.

2 Permeable Paving

- 2.1 The Regular inspection and maintenance is important for the effective operation of pervious pavements. Maintenance responsibility for the pervious pavements and its surrounding area will be for the Management Company.
- 2.2 Before handing over the facility to the client, it should be inspected for clogging, litter, weeds and water ponding and all failures should be rectified. After handover, the facility should be inspected regularly, preferably during and after heavy rainfall to check effective operation and to identify any areas of ponding.
- 2.3 Pervious surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. Experience in the UK is limited, but advice issued with permeable precast concrete paving has suggested a minimum of three surface sweepings per year. Manufacturers' recommendations should always be followed.
- 2.4 A brush and suction cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:
- 1 End of winter (April) – to collect winter debris.
 - 2 Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
 - 3 After autumn leaf fall (November).
- 2.5 Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material. Any lost material should be replaced.
- 2.6 The likely design life (or period before pavement rehabilitation is required) has yet to be established for the UK. However, it should be no different from standard paving

assuming that an effective maintenance regime is in place to minimise risks of infiltration clogging.

2.7 If reconstruction is necessary, the following procedure should be followed:

1. Lift surface layer and laying course.
2. Remove any geotextile filter layer.
3. Inspect sub-base and remove, wash and replace if required.
4. Renew any geotextile layer.
5. Renew laying course, jointing material and concrete block paving.

2.8 Permeable paving maintenance and monitoring requirements

Maintenance Schedule	Action	Frequency
Regular Maintenance	Brushing and vacuuming.	Three times per year at end of winter, mid-summer, after autumn leaf fall, or as required based on specific observations.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required.
Remedial Actions	Remedial work to any depressions, rutting and cracked or broken blocks or deformations in the permeable paving (if applicable) considered detrimental to the structural performance.	As required.
	Rehabilitation of surface and upper structure.	As required
Monitoring	Initial Inspection	Monthly for 3 months after installation.
	Inspect for evidence of poor operation and / or weed growth.	3 monthly & 48hrs. after large storms.
		Annually.

	Inspect silt accumulation rates and establish appropriate brushing techniques	
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3 Drains, Sewers Manholes, Gullies, Silt Pits

- 3.1 Regular inspection and maintenance is required to ensure the effective long-term operation of private drains, manholes, gullies & silt pits.
- 3.2 Prior to construction: a CCTV survey to be carried out on all existing sewer systems (not being demolished as part of the scheme) and any downstream receiving systems, prior to connection with adopted sewers.
- 3.3 Post Completion: a CCTV survey to be carried out on all new and retained existing drainage systems and any downstream receiving systems, prior to connection with adopted sewers.
- 3.4 The report will be used to prove the integrity of the as-built drainage system prior to issue of practical completion certificate and will be handed over to the Client & Management Company for future reference.
- 3.5 Ongoing maintenance responsibility for all Section 104 sewers will be the responsibility of Southern Water (marked SWS and FWS on the drainage layout)
- 3.6 Highway drainage (marked HWD on plan) will be the responsibility of West Sussex County Council under the Section 38 highway adoption agreement.
- 3.7 Foul and surface water drainage within the conveyance boundary of an individual house will be the responsibility of the homeowner.
- 3.8 The outfall from the pond and hydrobrake control manhole is the responsibility of the management company to maintain. This is the most important manhole to maintain as the small orifice in the hydrobrake may become easily blocked. This should be checked every 6 months.
- 3.9 All other private drainage outside of individual house owners conveyance will be the responsibility of the Management Company. Operation and maintenance requirements for all sewers manholes, gullies and silt pits are described in the following table.

Maintenance Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action. Especially outfall manhole to pond with hydrobrake. Common yard & car park & other hard standing areas to be swept clear of debris, to prevent possibility of blockages to the receiving drainage systems. Debris removal from gullies & silt pits, channel drains (where may cause risks to performance). Lift and inspect receiving manholes to check for any blockages.	6 Monthly intervals. Weekly. 6 Monthly intervals, after autumn leaf fall, or as required based on specific observations. Monthly.
Remedial Actions	Repair any damaged gully gratings or silt pit covers. Replace / fix any loose channel drain covers.	As required. As required.
Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all gullies and silt pits & drainage channels during the survey.	10-yearly intervals.

In all instances, inspection and cleaning should be carried out only by a specialist contractor and in accordance with the guidelines given in 'Safe Working in Sewers and at Sewage Works' published by National Joint Health and Safety Committee for the Water Services.

4 Catchpits

4.7 Inspection Frequency: Annually

4.8 Function: Allow silt to settle out of runoff prior to discharge to sewer.

4.9 Maintenance Requirements: The sumps within the catchpits should be emptied of silt on each inspection.

5 Control manholes/chambers.

5.7 Inspection Frequency: 6 months

5.8 Function: To restrict surface water flows

5.9 Maintenance Requirements: Open all control chambers every 6 months and check that each orifice plate and hydrobrake is clean and free of debris. Clean out as necessary. Check hydrobrake bypass door opens and closes smoothly and the control wire can be secured just below the manhole cover.

6 Eastern Boundary French Drain

6.7 Inspection Frequency: 12 months

6.8 Function: To convey land drainage in the location of a previous boundary ditch.

6.9 Maintenance Requirements: Check outfall from land drain into ditch in south eastern corner of the site is freeflowing and clear of debris and undergrowth.

7 Pond

7.7 Function: water treatment and storm water storage

7.8 The pond has a lower section in the base set 250mm lower than the outfall. This is to provide a wet area for reed bed planting to provide water treatment and an area for siltation so the outfall doesn't block regularly.

7.9 Inspection Frequency and Maintenance Requirements: as per table below.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass- public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (Spring, before nesting season, and Autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May - October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay	Every 1-5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required

Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. every 25-50 years
Remedial Actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Remove any tree saplings which may take root in the pond	As required
	Aerate pond when signs of eutrophication are detected	As required
	Repair / rehabilitate inlets, outlets and overflows	As required

8 On Site Ditches

8.1 Function: water conveyance from on and off site.

8.2 Responsibility: The management company has legal riparian responsibility for ensuring the ditches on site are freeflowing. The ditches within the management company responsibility are the southern boundary ditch and the south eastern boundary ditch and land drain.

8.3 Inspection Frequency and Maintenance Requirements: as per table below. NOTE: Take note of bird nesting season when carrying out these maintenance items – some may need to be postponed until after this.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect vegetation coverage	Monthly for six months, quarterly for two years, then half yearly
	Inspect inlets/outlets and ditch base for silt accumulation, establish appropriate silt removal frequencies	Half yearly

Occasional Maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
Remedial Actions	Repair erosion or other damage by re-turfing or reseeded	As required
	Remove silt in the ditch base	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

9 Contamination or Dilution of Spillage

9.7 In the event of a spillage it is the responsibility of the resident to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

9.8 Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is 0800 80 70 60 (Freephone 24hrs).

- End of Report -

Appendix A

Site Drainage Ownership Plan

Legend

Section 104 adoptable foul water sewer maintained by Southern Water

Section 104 adoptable surface water sewer maintained by Southern Water

Foul Water Drainage maintained by management company

Surface Water Drainage maintained by management company

Highway Drain maintained by West Sussex County Council highways

Private foul Drain maintained by homeowner

Private Surface Water Drainage maintained by homeowner

Existing Foul Sewer

Site Boundary

Attenuation Pond maintained by management company

Location of flow control to be regularly maintained

Existing Ditch to be maintained by management company where within site boundary

Permeable paving maintained by management company

GENERAL NOTES:

- DIMENSIONS ON THIS DRAWING SHALL NOT BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE. ALL DETAILS AND DIMENSIONING RELATING TO SUB-CONTRACTOR'S OR SUPPLIER'S WORK MUST BE CHECKED AND AGREED BETWEEN THE SUB-CONTRACTOR OR THE SUPPLIER AND THE GENERAL CONTRACTOR.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEERS DRAWINGS AND SPECIFICATION.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL SITE DIMENSIONS BEFORE COMMENCING WORK.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STABILITY OF THE STRUCTURE WHILST THE WORKS ARE IN PROGRESS.
- DIFFERENCES BETWEEN THIS DRAWING AND THE SITE CONDITIONS ENCOUNTERED MUST BE REPORTED TO THE ENGINEER.

NOTATION:-
T.O.S. - TOP OF STEEL
F.S.L. - FINISH GROUND LEVEL
T.O.C. - TOP OF CONCRETE
F.L. - FORMATION LEVEL
S.S.L. - STRUCTURAL SLAB LEVEL
F.F.L. - FINISHED FLOOR LEVEL

2	05.06.20	Updated to LFPA comments	SDL	MR	GO
1	06.03.20	INITIAL ISSUE	SDL	MR	GO
REV	DATE	DESCRIPTION	BY	CHK	APP

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ARCHITECT	RH PARTNERSHIP
JOB TITLE	ANGELS NURSERY YAPTON ROAD BARNHAM

DRAWING TITLE	DRAINAGE MAINTENANCE RESPONSIBILITIES LAYOUT
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JOB No.	SCALE @ A1	DATE	
H19377	1:500	JULY 2018	
DRAWN	ENGINEER	CHECKED	APP
SDL	S.LAMPRELL		

STATUS	DRAWING SUBMITAL	-	-
A1			
REVISION	RBA STATUS	2	STAGE 3 - DEVELOPED DESIGN
DRAWING No.			19377-GS-Z1-XX-DR-C-1025

PRELIMINARY

APR 2018 DISTRICT COUNCIL ENGINEERING