



DO NOT SCALE FROM THIS DRAWING

Notes

- GENERAL**
- This drawing is to be read in conjunction with all relevant Engineers, Architects and Specialists drawings, models and specifications.
 - No dimensions are to be scaled from this drawing.
 - All dimensions are in millimetres and levels are in metres unless noted otherwise.
 - The Engineer is not responsible for dimensional information except where shown on the drawings. All setting out information, dimensions etc. shall be calculated from the Architects drawings.
 - All drawings issued in CAD/Revit format are provided solely as a supplement to the information shown on the equivalent PDF drawing only.
 - The contractor shall verify all site dimensions and existing details, setting out dimensions and levels with the Architect. Engineer to be informed of any discrepancies before proceeding with work.
 - Existing details are assumed and are to be confirmed on site with any discrepancies recorded and reported to the Engineer so that any adjustments required to the scheme can be considered.
 - The contractor is responsible and liable for ensuring the stability of the works, adjoining structures and services at all stages of construction. Any temporary works are to be designed and detailed by the contractor.
 - All existing services are to be located prior to commencement of the work on site. Unless shown we have no knowledge of any underground obstructions or services. These are to be determined prior to the commencement of the works on site.
 - Refer to the Architect's/Fire Consultant's drawings and specifications for the overall fire strategy and protection requirements of the building and structure.

HAZARDS LEADING TO UNUSUAL OR SIGNIFICANT RISKS DURING THE CONSTRUCTION PROCESS ARE IDENTIFIED ON THIS DRAWING AS:

NOTE: THE LIST BELOW IDENTIFIES CERTAIN RISKS WHICH ARE DEEMED TO BE UNUSUAL, ABNORMAL OR UNEXPECTED TO A COMPETENT CONTRACTOR CARRYING OUT WORK OF THIS NATURE BUT DOES NOT COVER ALL POSSIBLE SITUATIONS WHICH MAY BE ENCOUNTERED DURING THE CONSTRUCTION PROCESS. IT IS THEREFORE THE MAIN CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ANY FURTHER RISKS/HAZARDS AND TAKE APPROPRIATE ACTION.

RISKS/HAZARDS SPECIFIC TO THIS DRAWING:

- Existing tree routes
- Existing buried utilities and drainage
- Existing overhead electrical cables

PRELIMINARY - NOT FOR CONSTRUCTION

P01	Preliminary Issue	RD	TK	RH	26.01.24
Rev.	Amendment	Dim.	Chkd.	Appd.	Date

Project
**Birdworld and Haskins Garden Centre
Farnham**

Drawing

Section Markings

Client
Birdworld and Haskins Garden Centre

Scott White and Hookins
Structural Engineering | Civil Engineering | Sustainability and BREEM | CDM Consultancy

Harman House, Andover Road, Winchester, Hampshire SO23 7BS
T: +44 (0)1962 844855 W: www.swh.co.uk E: info@swh.co.uk

Scale at A1 - 1:500
303708-SWH-XX-XX-DR-C-0510-P01
Project | Originator | Zone | Level | Type | Role | Number | Rev.

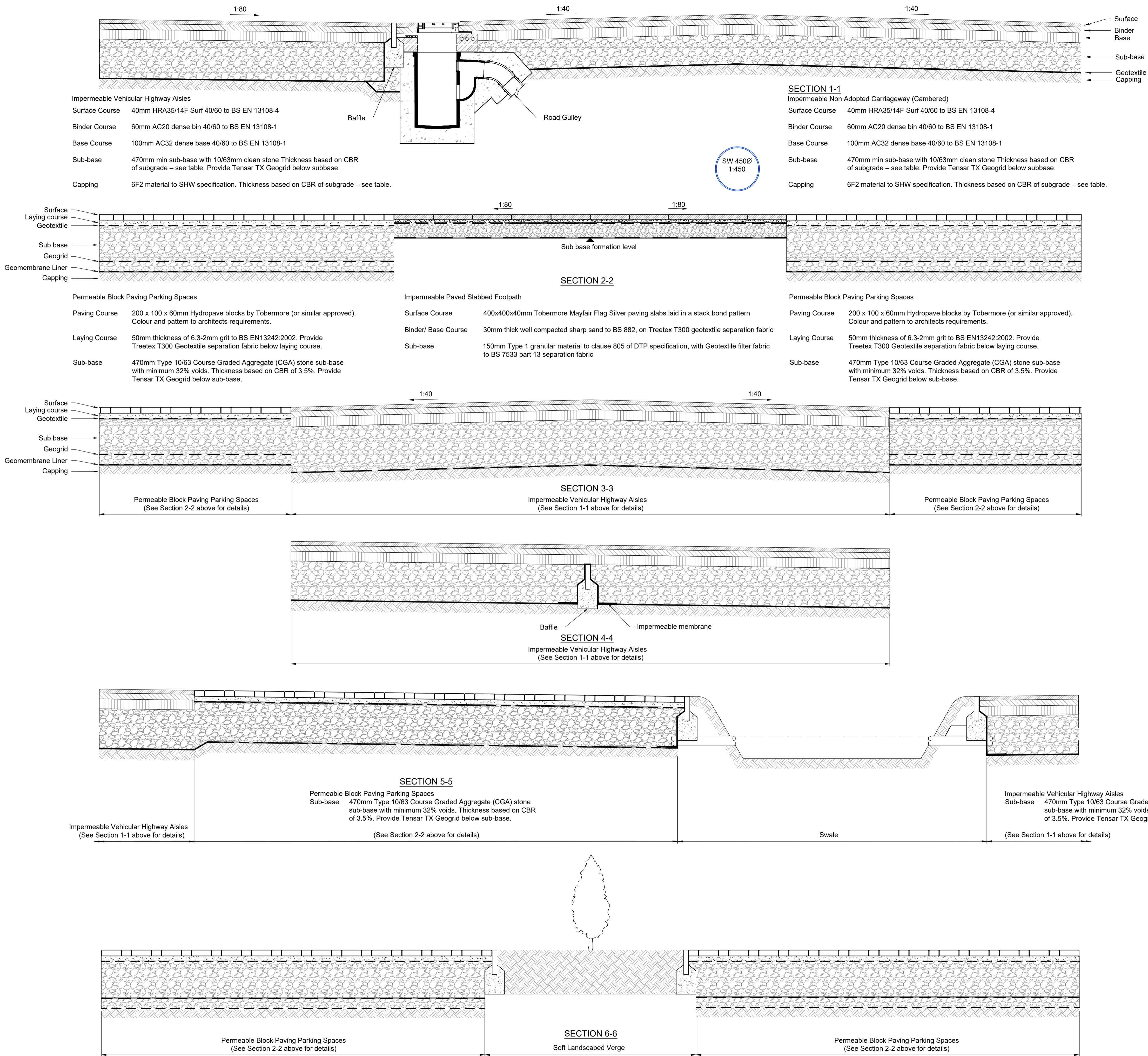
KEY:
1 Section Markings

- KEY: (Statutory Services)
- Reference should be made to individual statutory services drawings for additional services information including pipe sizes and manhole levels etc.
- BT Cables (s)
 - Water Services
 - Gas Services - Low Pressure
 - Electricity Cable(s) - 11kV HV High Voltage

Notes

GENERAL

- This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and with the Specification.
- For setting out refer to Architects drawings.
- All dimensions are in millimetres and levels are in metres unless noted otherwise.
- Contractor to take all relevant dimensions on site. Any discrepancies to be advised to the Engineer.
- Contractor to check/scan for services prior to construction to avoid any damage during works.
- Topographical survey carried out by Digital Terrain Surveys LLP dated November 2018



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Project
Birdworld and Haskins Garden Centre Farnham

Drawing

Section Details

Client
Birdworld and Haskins Garden Centre

Scott White and Hookins
Structural Engineering | Civil Engineering | Sustainability and BREEAM | CDM Consultancy

Harman House, Andover Road, Winchester, Hampshire SO23 7BS
T: +44 (0)1962 844855 W: www.swh.co.uk E: info@swh.co.uk

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Appendix M

SW Drainage Maintenance Schedule

This schedule sets out the inspection and maintenance requirements for long term management of the development's surface water drainage system. This work is to be undertaken by the Client.

All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The site's infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on to maintenance operatives through task specific risk assessments.

There are three types of maintenance activities associated with surface water drainage systems.

The SuDS Manual, CIRIA C753, defines these as:

- Regular Maintenance – *'basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections.'*
- Occasional Maintenance – *'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).'*
- Remedial Maintenance – *'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.'*

SuDS Components Operation and Maintenance Activities

Operation and Maintenance activity	SuDS component												
	(Components shown thus ' <i>Wetland</i> ' are not relevant to the project for which this schedule has been compiled.)												
	Pond	<i>Wetland</i>	Detention-basin	Infiltration-basin	Soakaway	Infiltration-Trench	Filter-Drain	Modular Storage	Pervious Pavement	Swale/bioretention/trees	Filter-Strip	Green-Roofs	Proprietary-Treatment-Systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■		□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■		
Weed and invasive plant control	□	□	□	□		□	□		□		□	■	
Shrub management (including pruning)	□	□	□	□					□	□	□		
Shoreline vegetation management	■	■	□										
Aquatic vegetation management	■	■	□										
Occasional maintenance													
Sediment management ¹	■	■	■	■	■	■	■	■	■	■	■		■
Vegetation replacement	□	□	□	□						□	□	■	
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□	
Infiltration surface reconditioning				□	□	□	□		□	□	□		

■ Will be required □ May be required

¹ Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

Piped Network / Chambers

Piped Network/Chambers Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then six monthly
	Debris removal from catchment surface / gratings (where may cause risks to performance)	Monthly (and after large storms)
	Remove sediment from trapped sumps, manholes and catchpits.	Annually or as required
Remedial Maintenance	Repair / rehabilitation of gratings, inlets and outlets	As required
Monitoring	Inspect / check all gratings, trapped sumps, manholes and catchpits to ensure that they are in good condition and operating as designed	Annually and after large storm events
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of features or pipework is required.	As required

Cellular/modular Storage

Cellular Storage Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then annually.
	Remove debris from catchment surface (where may cause risks to performance)	Monthly
	Remove debris from catchment surface (where may cause risks to performance)	Annually or as required
Remedial Maintenance	Repair / rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect / check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storm events
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of storage units is required.	As required
The SuDS Manual Table 21.3: Operation and maintenance requirements for attenuation storage tanks		

Permeable Pavements

Permeable Pavement Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over the whole surface). Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material if present. Any lost material should be replaced.	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers' recommendations – pay particular attention to areas where water runs from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weed or management using glyphosate applied directly to the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements
Remedial Maintenance	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structured performance or a hazard to users, and replace lost jointing material.	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 year or as required (if infiltration and filtration 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, forty-eight hours after large rainfall events in the first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

The SuDS Manual Table 20.15: Operation and maintenance requirements for pervious pavements

Oil Separator

Oil Separator Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Removal of litter and debris	Six monthly
Occasional maintenance	Replacement of any filters.	As required.
	Removal of sediment, oil, grease and floatables	As required.
Remedial actions	Replacement of malfunctioning parts	As required.
Monitoring	Inspection for evidence or poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspection sediment accumulation rates and establish appropriate removal frequencies.	Monthly during first half of operation, then every six months.

Ponds and Wetlands

Pond Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Litter removal.	As required
	Grass cutting – public areas.	Monthly (during growing season)
	Grass cutting – meadow grass.	Half yearly (spring, before nesting season, and autumn)
	Inspect vegetation to pond edge and remove nuisance plants (for first 3 years).	Monthly (at start, then as required)
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base. Include max 25% of pond surface).	Annually
	Remove 25% of bank vegetation from waters edge to a minimum of 1 m above water level.	Annually
	Tidy all dead growth before start of growing season.	Annually
	Remove sediment from forebay.	1–5 years, or as required.
	Remove sediment from one quadrant of the main body of ponds without sediment forebays.	2–10 years.
Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%.	>25 years (usually).
Remedial actions	Repair of erosion or other damage.	As required.
	Aerate pond when signs of eutrophication are detected.	As required.
	Realignment of rip-rap or other damage.	As required.
	Repair/rehabilitation of inlets, outlets and overflows.	As required.
Monitoring	Inspect structures for evidence of poor operation.	Monthly/after large storms.
	Inspect banksides, structures, pipework etc for evidence of physical damage.	Monthly/after large storms.
	Inspect water body for signs of eutrophication.	Monthly (May–October).
	Inspect silt accumulation rates and establish appropriate removal, frequencies.	Half yearly.

	Check penstocks and other mechanical devices.	Half yearly.
The SuDS Manual Table 23.1: Operation and maintenance requirements for ponds and wetlands.		

Rainwater Harvesting System

Rainwater Harvesting Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris.	Annually (or following poor performance)
Occasional maintenance	Replacement of any filters.	As required.
Remedial actions	Repair of erosion damage, or damage to tank.	As required.
	Pump repairs.	As required.
Monitoring	Inspection of the tank for debris and sediment build up.	Annually (or following poor performance)
	Inspection of inlets, outlets and withdrawal devices	Annually (or following poor performance)
	Inspection of areas receiving overflow, for evidence of erosion.	Annually (or following poor performance)
	Inspection of any pumps – check function and wiring.	Annually.
	Inspection of roof drain filters.	Annually (or following poor performance)
The SuDS Manual Table 11.6: Operation and maintenance requirements for RWH systems.		

Water Butt

Water Butt Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris.	Annually (or following poor performance)
Occasional maintenance	Replacement of any filters.	As required.
Remedial Actions	Repair of erosion damage, or damage to tank.	As required.
Monitoring	Inspection of the tank for debris and sediment build up.	Annually (or following poor performance)
	Inspection of inlets, outlets and withdrawal devices.	Annually (or following poor performance)
	Inspection of areas receiving overflow, for evidence of erosion.	After extreme storms.
	Inspection of roof drain filters.	Annually (or following poor performance)

Swale

Swale Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Litter and debris removal	
	Grass cutting – 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)
Occasional maintenance	Check for poor vegetation growth due to lack of sunlight or dropping of leaf litter, and cut back adjacent vegetation where possible	Annually
	Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, if required	Annually, or if bare soil is exposed over 10% or more of the filter strip area
Remedial actions	Repair erosion or other damage by re-turfing or reseedling	As required.
	Re-level uneven surfaces and reinstate design levels	As required.
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required.
	Remove build up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required.
	Remove and dispose of oils or petrol residues using safe standard practices	As required.
Monitoring	Inspect filter strip surface to identify evidence of erosion, compaction, ponding, sedimentation and contamination (eg oils)	Half yearly
	Check flow spreader and filter strip surface for even gradients	Half yearly
	Inspect gravel diaphragm trench upstream of filter strip for clogging	Half yearly
	Inspect silt accumulation rates and establish appropriate removal frequencies	Half yearly
The SuDS Manual Table 17.1: Operation and maintenance requirements for swales.		

Appendix L

Local Drainage Planning Policy applicable to the development

National Guidance

- 2.1** The frequency and severity of river flooding is perceived to have increased in recent years and in an attempt to mitigate the flood risk the Government published Planning Policy Statement Note 25: Development and Flood Risk (PPS25) in December 2006. PPS25 detailed the importance of the effective management and reduction of flood risk in the land use planning process and attempted to address the issue of climate change. This has since been superseded by the National Planning Policy Framework and the supporting technical guidance.
- 2.2** Traditionally surface water runoff from developments has been conveyed by pipe systems to the nearest watercourse or sewer. This tends to increase the rate and volume of the run off often leading to flooding downstream of the new development. Latest policy promotes the use of sustainable urban drainage systems (SuDS) whereby the control of run off is to be as close to source as possible. This can be achieved by utilising techniques which mimic the natural drainage processes, the use of direct infiltration for example. The Environment Agency will, in general, seek to restrict the allowable discharge from a new development to that previously expected from the undeveloped land.
- 2.3** The requirements of the revised Building Regulations which came into force on 1st April 2002 are that adequate provision should be made for dealing with rainwater from the roofs of buildings and certain paved areas providing access to the buildings. Run off from such drainage systems are to be discharged to one of the following systems listed in order of priority:-
- A soakaway or other infiltration system
 - A watercourse
 - A sewer or drain
- 2.4** The revised Building Regulations were drafted to reinforce the requirements for SuDS wherever possible.
- 2.5** The Requirements of a Flood Risk Assessment:
- 2.5.1 A Flood Risk Assessment is required in order to ascertain whether a development will exacerbate the risk of flooding elsewhere in the catchment or is at risk of flooding itself.
- 2.5.2 A site specific FRA is required for: -
- Proposals of 1 Hectare or greater situated in Flood Zone 1
 - New development (including minor development and change of use) located in areas of Flood Zone 1 that have critical drainage problems

- New development (including minor development and change of use) located in areas of Flood Zones 2 & 3.

Local Policies

2.6 The East Hampshire District Local Plan: Joint Core Strategy document outlines the different requirements of new developments.

2.6.1 The requirements of the Local Plan relating to flood risk states:

CP25 FLOOD RISK

Development in areas at risk of flooding, now and in the future, as identified on the latest Environment Agency flood risk maps and the Council’s Strategic Flood Risk Assessment will be permitted provided that:

- a) it meets the sequential and exception test (where required) as outlined in Government guidance;
- b) a site-specific flood risk assessment demonstrates that the development, including the access, will be safe without increasing flooding elsewhere, and where possible, will reduce flood risk overall;
- c) the scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site;
- d) appropriate flood warning and evacuation plans are in place; and
- e) new site drainage systems are designed taking account of events which exceed the normal design standard.

All development will be required to ensure that there is no net increase in surface water run off. Priority will be given to incorporating SUDs (Sustainable Drainage Systems) to manage surface water drainage, unless it can be demonstrated that SUDs are not appropriate. Where SUDs are provided, arrangements must be put in place for their whole life management and maintenance.

Specific areas in the District, which overlay the Chalk geology, can be prone to groundwater flooding as shown on the Council’s Strategic Flood Risk Assessment maps. Rivers in East Hampshire which are sourced in the chalk area are the River Meon, River Wey and Lavant Stream, and thus groundwater fed. Development should be avoided in areas at risk from, susceptible to, or have a history of groundwater flooding. If this is not possible then the development should be designed to incorporate flood resistance and resilience measures.

2.6.2 The requirements of the Local Plan relating to Water Resources/Water Quality states:

CP26 WATER RESOURCES/WATER QUALITY

Development will be required to protect the quality and quantity of water, and make efficient use of water. Development will be permitted provided that:

- a) it protects and enhances the quality and quantity of groundwater, surface water features and controls aquatic pollution to help to achieve the requirements of the European Water Framework Directive;
- b) it has an adequate means of water supply (even in a drought), sufficient foul and surface water drainage and adequate sewage treatment capacity. Development must be phased to take into account the timing of any water and/or wastewater infrastructure required which must be in place prior to the occupation of development. The developer must show that additional provision or improvement of local infrastructure is required and demonstrate that adequate funding is available for that infrastructure in advance of development taking place;
- c) demand management technologies are incorporated to meet the appropriate levels of the Code for Sustainable Homes as set out in Policy CP24.

Development within Groundwater Source Protection Zones will only be permitted provided that it has no adverse impact on the quality of the groundwater source or a risk to its ability to maintain a public water supply.

Proposals by service providers for the delivery of wastewater services to meet the needs generated by new development and by existing communities will be encouraged and/or permitted, subject to other relevant policies.

The Council and National Park Authority have a duty to take account of the Water Framework Directive (WFD) objectives. Any development which will impact on a known water body will be required to seek out opportunities to introduce mitigation and enhancement measures to help ensure the objectives of the WFD are met. The site identified for the Havant Thicket reservoir will be safeguarded from development (see Map 3).