

Richer Road, Badwell Ash, Suffolk. SuDS Maintenance Plan

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1 INTRODUCTION

- 1.1 The use of SuDS is proposed within the surface water drainage strategy for the development of 14 dwellings off Richer Road, Badwell Ash in order to serve several functions:
- Control of runoff water rates and volumes, thereby reducing downstream flood risk
 - Reducing pollutant concentrations and act as a buffer for accidental spills to improve runoff water quality
 - To enhance the amenity value of the site and promote biodiversity
- 1.2 The range of SuDS will be described in this document and recommended maintenance regimes to be applied to each and who it is envisaged will be responsible for implementing the maintenance.

2 THE SUDS FEATURES AT BADWELL ASH

- 2.1 The SuDS features proposed on the Badwell Ash development consists of:
- **Permeable Pavements** – in this case permeable block paving, allowing rain to percolate through the surface into underlying drainage layers. It should be protected from silt, sand, compost, mulch etc. Maintenance of the permeable paving will be carried out by individual owners for driveways and site maintenance company for the shared access ways.
 - **Attenuation Basins** – are landscaped depressions that are normally dry except during and immediately following storm events. These can be off-line components where surface run-off from regular events is not routed through the basin and only in more severe events, when the flows rise, the basin fills and provides storage of run-off and flow attenuation. Seeding with a native wildflower/grass seed mix will enhance water treatment. Maintenance of the attenuation basin will be by the site management company.
 - **Roadside Swales** – are shallow, flat bottomed, vegetated open channels designed to convey, treat, and attenuate surface water runoff. Surface water runoff from the road during all events will be collected and treated by the swales. The swales are under-drained with a perforated pipe collecting runoff after it has percolated through open graded aggregate situated above. This aggregate should be kept free of silt, sand and debris in order to allow optimum treatment and storage in severe events. The flush kerbs allowing runoff to enter the swale channel should also remain unobstructed. Check dams constructed of coarse aggregate are to be situated approximately every 10m along the length of the swales.

2.2 Within individual dwelling curtilages surface water drainage will consist of rainwater guttering, downpipes, yard gullies and below ground plastic pipework, all designed and installed in compliance with Building Regulations.

The responsibility for maintaining this drainage will lie with the individual householders and consist of routine clearance of guttering, gullies and inspection chambers and occasional jetting of obstructions if they occur.

Outside of dwelling curtilages surface water pipework will connect to main drains consisting of larger pipes laid within the development access roads. These pipes will have been designed and installed in accordance with Sewers for Adoption where below adoptable standard roads.

The responsibility for maintaining these pipes and chambers will therefore rest with Anglian Water where adopted under Section 104, or the site Management Company elsewhere.

Surface water runoff from the main access roads will be collected through a combination of roadside swales and road gullies which are connected to the main pipework described above. Maintenance of these features will be the responsibility of the Site Management Company where the access road is not adopted but lies outside the boundaries of individual dwellings.

The site outfall is a restricted discharge to an existing watercourse. Maintenance of the existing watercourse at point of outfall, the headwall and the flow restriction device will all be required and will be the responsibility of the Site Management Company.

Watercourse maintenance is expected to consist of litter picking and clearance, and annual cutting back of hedges and vegetation and clearance of silt in the invert of the ditch if obstructing clear flow from the outfall.

Hydrobrake maintenance is expected to consist of annual clearance of silt from the sump and the inlet and flushing through, as well as checks to confirm effective operation of the bypass plate.

3. MAINTENANCE OF SUDS

3.1 **Permeable Pavement** - will require regular maintenance to ensure continuing operation to design performance standards.

Maintenance schedule	Required action	Typical 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-specific observations of clogging or manufacturer's recommendations – 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 sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate 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 substructure 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, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

3.2 Attenuation Basin - The attenuation basin will require ongoing regular maintenance to ensure continuing operation to design performance standards. Maintenance of attenuation basins is relatively straightforward for landscape contractors, and typically there should only be a small amount of extra work (if any) required for a SuDS attenuation basin over and above what is necessary for standard public open space.

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	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 banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
	Occasional maintenance	Reseed areas of poor vegetation growth
Prune and trim any trees and remove cuttings		Every 2 years, or as required
Remove sediment from inlets, outlets, forebay and main basin when required		Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

3.3 Roadside Swales – Swales will require regular maintenance to ensure continuing operation to design performance standards. The treatment performance of swales is dependent on maintenance. Maintenance of swales is relatively straightforward for landscape contractors, and typically there should only be a small amount of extra work (if any) required for a swale over and above what is necessary for standard public open space.

Operation and maintenance requirements for swales		
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 infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface 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 reseedling	As required
	Relevel 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