

SuDS Treatment and Maintenance

for

St John's Phase 3 Link
Road, Hedge End



ARCH ASSOCIATES
CONSULTING CIVIL AND STRUCTURAL ENGINEERS

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for

St John's Phase 3 Link Road
Hedge End

Client:

Foreman Homes Ltd
Unit 1, Station Industrial Park
Duncan Rd, Park Gate
Southampton SO31 1BX

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CONTENTS

- 1.0 An introduction to sustainable drainage systems or SuDS
- 2.0 SuDS on Site
- 3.0 SuDS Treatment
- 4.0 SuDS Maintenance Schedule



1.0 An introduction to sustainable drainage systems or SuDS

SuDS are an environmentally friendly approach to managing rainfall that uses landscape features to deal with surface water. SuDS aim to:

- Control the flow, volume and frequency of water leaving a development area
- Prevent pollution by intercepting silt and cleaning runoff from hard surfaces
- Provide attractive surroundings for the community
- Create opportunities for wildlife

2.0 SuDS on Site

SuDS at this development have been designed to prevent flooding and to provide the adequate level of treatment for the receiving watercourse.

In line with the drainage strategy for the wider development in this location, infiltration is not viable due to the geology and groundwater levels. Reference should be made to the previous Drainage Strategy reports put forward by Paul Basham Associates and Baker Gilby Associates.

Surface water run-off from the road surface is collected by silt trapping gullies, from which it is piped by gravity into large balancing pond, which stores the attenuation volumes for storms up to and including the 1 in 100 year event plus 40% for climate change. The pond also provides further treatment.

The pond outfalls into a flow control manhole, after which there is a Downstream Defender filter manhole by Hydro International, which provides the final round of treatment before the system discharges into the watercourse



3.0 SuDS Treatment

Based on the guidance in CIRIA C753, the following analysis has been undertaken with the relative mitigation indices for the proposed levels of treatment taken from CIRIA C753 Tables 26.3 (surface waters) and Table 26.4. The resultant assessment is summarised within the Table below. A Downstream Defender filter manhole has been added to the design to provide the required mitigation indices, which were obtained directly from Hydro International.

Element	Pollution Hazard Indices			
	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Road	Medium	0.7	0.6	0.7
	Pollution Mitigation Indices			
Detention Basin		0.5	0.5	0.6
Downstream Defender		0.5	0.4	0.8
Total		0.75	0.7	>0.95
Sufficiency		Sufficient	Sufficient	Sufficient



4.0 SuDS Maintenance Schedule

The following tables are taken from the Ciria SuDS Manual (Report C753) and are relevant for the proprietary treatment systems, which include the Downstream Defender and sump catchpits, and the detention basin.

TABLE 14.2 An example of operation and maintenance requirements for a proprietary treatment system

Maintenance schedule	Required action	Typical frequency
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months



TABLE 22.1 Operation and maintenance requirements for detention basins

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	As required
	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

SuDS Maintenance Responsibility

The maintenance of the road drainage is to be provided by HCC Highways. However, discussion have been held on the maintenance for the balancing pond, which will either need to be adopted by HCC or taken as part of the open space Provision by Eastleigh BC.