



Cinders Nursery-Phase 2

Yapton

SuDS Operations & Maintenance Manual

Prepared by:

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KNC2006/SUDS

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Revision	Description	Date	Initials
O	Initial issue	October 2020	KHN

1.0 INTRODUCTION

1.1 The SuDS Philosophy

1.2 Sustainable Drainage Systems (SuDS) are a collection of water management practices that aim to align modern drainage systems with natural water processes. SuDS are designed to mimic the natural drainage regime of an area thus minimising impact on receiving watercourses. The SuDS philosophy has been applied to the proposed development to provide a natural approach to managing the surface water drainage from the site and preventing water pollution and flooding.

1.3 Infiltration testing has been undertaken and showed that the use of soakaways as a means of surface water disposal were not appropriate on this site.

1.4 SuDS Maintenance

1.5 Regular inspection and maintenance is important for the effective operation of the SuDS drainage features across the development.

1.6 The following SuDS features have been designed into the development to control the surface water run-off created through the construction of impermeable areas such as roofs, drives and roads.

- Attenuation Storage and Flow Control Device

1.7 In order to ensure the continued effective operation of the SuDS features maintenance regimes have been provided for the above features.

1.8 This document has been prepared at the design stage and should be considered as part of an evolving process. Following construction as built information and drawings should be included. The post construction information should include drawings

detailing the extent and location of SuDS features together with relevant manufacturer's details.

1.9 The following maintenance regimes should be amended/updated to suit specific manufacturer's requirements for the various components installed.

1.10 The following appendices have been included to allow for additional information and records to be included post construction.

- **Appendix A** As built Information
- **Appendix B** Manufacturer's Information
- **Appendix C** Inspection Records
- **Appendix D** Maintenance Regime Monitoring and Amendments

1.11 It should also be recognised that for a maintenance regime to continue to be appropriate and fit for purpose a constant monitoring ethos should be adopted and any corrective measures implemented to ensure that the correct maintenance regimes going forward are in place. Inspection records should be kept and used as a basis for the determining the suitability of the maintenance regimes and the areas of the development requiring attention.

1.12 As a reputable developer Crayfern Homes will set up a Maintenance Management Company for the site which will undertake the requirements and obligations to ensure that the SuDS facilities are adequately maintained. The obligations of the Management Company will be funded by an annual contribution from the residents of the development. This manual will form part of the brief provided to the Management Company, who will use it to calculate fees which will be paid by residents.

- 1.13 If the Management Company were to become insolvent or was dissolved then any former director or member of the company (which would in this case be the residents) can either apply to Companies House to get the Management Company restored or make a court application to do the same. Either option can be undertaken within 6 years from the date of dissolution of the company. The process would also involve applying to the Treasury Solicitor to give up their interest in the land (as assets of dissolved companies pass to the Crown).

Wording in the estate transfer will advise that if the management company was dissolved or struck off then the residents can join together in arranging for the estate service to be carried out, subject to each resident making a contribution. At the same time as doing this the residents can agree what course of action they wish to take with the dissolved company i.e. apply to Companies House or Court to restore it.

- 1.14 At the end of the manufacturer's recommended design life for all SuDS components they shall be replaced at the Management Company expense.

2.0 ATTENUATION STORAGE AND FLOW CONTROL DEVICES

- 2.1 Attenuation storage is provided within the granular sub base of the access road. All discharge from roofs and drives pass through a silt trap before being discharged into the granular sub base. Carriageway drainage is through trapped gullies which will discharge directly into the granular storage.
- 2.2 The granular attenuation storage will be wrapped in a permeable membrane which will allow the surface water to dissipate into the underlying ground should it prove to have sufficient porosity..
- 2.3 The flow control device being used is a Vortex Control, '*Hydro-Brake*' or similar, fitted within a concrete manhole prior to discharging into the adjacent watercourse at the agreed 'green field' run off rate.

Table 1: Operation and Maintenance Requirements – Attenuation Storage

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance.	Inspect all silt traps and gullies	At six monthly intervals, Autumn and Spring
Remedial actions.	Remove any sediment or deposits with vacuum suction.	At six monthly intervals, Autumn and Spring.
Monitoring.	Inspect/check all inlets, outlets and overflows to ensure that they are in good condition and operating as designed.	Annually

Table 2: Operation and Maintenance Requirements - Flow Control Device

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance.	Inspect and identify any areas that are not operating correctly, take remedial action.	Monthly for 3 months, then annually.
	Remove any sediment from flow control devices.	Annually (or as required).
Remedial actions.	Repair/rehabilitate inlets, outlet, overflows and vents.	As required.
Monitoring.	Inspect/check all inlets, outlet, and overflows to ensure that they are in good condition and operating as designed.	Annually
	Where fitted check operation of by-pass door.	Annually

3.0 DITCHES

- 3.1 Surface water from the development site discharges into the adjacent ditch network, these will also collect and divert overland flood flows from exceedance events or local network failures.
- 3.2 Maintenance of ditches is relatively straight forward and typically requires only a small amount of work.

Table 3: Operation and Maintenance Requirements for Ditches

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance.	Remove litter and debris.	Monthly, or as requested.
	Cut grass	Monthly (during growing season), or as required.
	Manage vegetation and remove growth.	Monthly at start, then as required.
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly.
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies.	Half yearly.

Appendix A

As Built Information

SURFACE WATER DRAINAGE SCHEDULE				
Item No.	Location	Quantity	Unit	Notes
101	101	1.00	m	101
102	102	1.00	m	102
103	103	1.00	m	103
104	104	1.00	m	104
105	105	1.00	m	105
106	106	1.00	m	106
107	107	1.00	m	107
108	108	1.00	m	108
109	109	1.00	m	109
110	110	1.00	m	110
111	111	1.00	m	111
112	112	1.00	m	112
113	113	1.00	m	113
114	114	1.00	m	114
115	115	1.00	m	115
116	116	1.00	m	116
117	117	1.00	m	117
118	118	1.00	m	118
119	119	1.00	m	119
120	120	1.00	m	120
121	121	1.00	m	121
122	122	1.00	m	122
123	123	1.00	m	123
124	124	1.00	m	124
125	125	1.00	m	125
126	126	1.00	m	126
127	127	1.00	m	127
128	128	1.00	m	128
129	129	1.00	m	129
130	130	1.00	m	130
131	131	1.00	m	131
132	132	1.00	m	132
133	133	1.00	m	133
134	134	1.00	m	134
135	135	1.00	m	135
136	136	1.00	m	136
137	137	1.00	m	137
138	138	1.00	m	138
139	139	1.00	m	139
140	140	1.00	m	140
141	141	1.00	m	141
142	142	1.00	m	142
143	143	1.00	m	143
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169	169	1.00	m	169
170	170	1.00	m	170
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175	175	1.00	m	175
176	176	1.00	m	176
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192	192	1.00	m	192
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194	194	1.00	m	194
195	195	1.00	m	195
196	196	1.00	m	196
197	197	1.00	m	197
198	198	1.00	m	198
199	199	1.00	m	199
200	200	1.00	m	200

TOTAL DRAINAGE SCHEDULE				
Item No.	Location	Quantity	Unit	Notes
201	201	1.00	m	201
202	202	1.00	m	202
203	203	1.00	m	203
204	204	1.00	m	204
205	205	1.00	m	205
206	206	1.00	m	206
207	207	1.00	m	207
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225	225	1.00	m	225
226	226	1.00	m	226
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Appendix B

Manufacturer's Information

Hydro International Warranty, Maintenance and COSHH Statement

This statement covers all Hydro International Hydro-Brake® Optimum, Hydro-Brake® and S-Type Vortex Flow Control units (hereafter referred to as "Flow Control").

Defects Liability Period Warranty

The standard Hydro International warranty covers products for one year from date of purchase and will only be considered for those defects or faults reported directly to Hydro International in writing. Warranties will not be considered for defects or faults caused by accident, acts of vandalism or unauthorised repair/rectification. Please Contact Hydro International for product specific details.

Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. The Flow Control (where applicable) is fitted with a pivoting bypass door, which allows the manhole chamber to be drained down should blockage occur. The smaller conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.

Following installation of the Flow Control it is vitally important that any extraneous material ie. building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced, please do not hesitate to contact the company so that an investigation may be made.

All Flow Control units are typically manufactured from grade 304 Stainless Steel, and if required they can also be manufactured in grade 316 Stainless Steel. Both materials have an estimated life span in excess of the design life of drainage systems.

COSHH

Flow Control units are manufactured from Stainless Steel, which is not regarded as hazardous to health and exhibits no chemical hazard when used under normal circumstances for the stated applications.

Manual Handling

The handling of Flow Control units should be in accordance with the current legislation and regulations:

- The Health and Safety at Work Act 1972
- The Management of Health and Safety at Work Regulations 1999
- The Manual Handling Operations Regulations 1992. All published and printed by the Health and Safety Executive.

Appendix C

Inspection Records

Appendix D

Maintenance Regime Monitoring & Amendments

Monitoring and Review Table

Revision	Revision Description	Date	Initials