Curtins | Building a better future

Project Name

SuDS Operation & Maintenance Manual

Curtins Ref: 081617-CUR-ZZ-XX-T-C-92003

Revision: P01

Issue Date: 07 April 2025

Client Name: Cumberland Council via Story Contracting

Client Address: Parkhouse Building, Kingmoor Business Park, Carlisle, Cumbria CA6 4SJ

Site Address: Hodbarrow Nature Reserve, Millom, Cumbria

Curtins
51-55 Tithebarn Street
Liverpool
L2 2SB
Tel: 0151 726 2000
www.curtins.com

Control Sheet

Rev	Description	Checked	Issued	Date
P01	First Issue	GW/PT	GW	07 April 2025

Author	Signature	Date
Glen Watson BSc (Hons) Principal Civil Engineer	[redacted]	07/04/2025

Reviewed	Signature	Date
Glen Watson BSc (Hons) Principal Civil Engineer	[redacted]	07/04/2025

Authorised	Signature	Date
Peter Thomas MEng (Hons) CEng MICE Design Director	[redacted]	07/04/2025

Contents

Tables

1.0 Introduction

1.1 Project Background

Curtins has been appointed by Cumberland Council via Story Contracting to prepare a SuDS Operations and Maintenance Manual for the proposed development, located at Millom Iron Line, Millom, Cumbria. The nearest site postcode is LA18 4LB and the site is centred on National Grid Reference (NGR) 317429mE 478489mN. What3Words reference: rebounder.named.graphic.

Reference is paid to the inspection, aftercare and maintenance of SuDS features as part of this manual to demonstrate to the Lead Local Flood Authority (LLFA) or adopting authority the effectiveness and longevity of the SuDS features designed within the scheme as opposed to the standard Building Regulations, local and domestic drainage and/or the main discharge drainage connections to 'Code for Adoption' standards.

This report is based on current best practice guidance.

Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material derivation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

In accordance with the FRA the surface water network has been designed to accommodate the 1 in 100-year storm rainfall event plus an allowance for climate change. It may be that the exceedance flows above the 1 in 30-year storm rainfall event are stored within the site partially above ground, on non-habitable external landscaping, parking or other space. As the flows are generally being attenuated on site and within SuDS features there will be a period after storm events where the network will still be partially or fully surcharged and draining down. Where this surcharging is still present after 48 hours appropriate action should be taken as noted below. As such the responsibility for maintaining the features will be clearly defined, and consistency is carried through from conception to maintenance.

1.2 Scope of O&M Manual

This manual is intended to give an overview of the operation and maintenance for the range of SuDS features included within the drainage strategy and in relation to the typical details only. Unless otherwise noted in this report SuDS locations are shown on the drainage strategy plan drawing ref: 081617-CUR-01-ZZ-DR-C-92001, 92002, 92003, and details are shown on construction details drawing ref: 081617-CUR-XX-XX-D-C-92200 and 92201.

Where proprietary products are specified the manufacturers' instructions and recommendations should be followed in priority to this document unless specifically noted otherwise due to project constraints.

The recommended operations and frequencies are typical only and should be more frequent initially to ensure that there are no unforeseen issues with the operation and then adjusted to suit the site requirements.

1.3 Maintenance Responsibility

Maintenance responsibility for all drainage should be placed with Cumberland Council (as land/facility owners), with the exception of adopted sewers (where/if applicable) which will remain the responsibility of the water company.

2.0 Pipes and Manholes

2.1 Description

Pipes are proprietary products, and the materials can vary across the site and as such where used the manufacturer's recommendations should be followed. Regardless of the product used the pipes will be fully compliant with the Curtins' drainage specification.

Access points should be located at the head of each run, at a change in direction and at a change of pipe size in accordance with Building Regulations Part H.

The appropriate health and safety equipment must be used when accessing manholes. Confined space certificates must be held by any personnel entering a manhole and the appropriate permits should be obtained from the Maintenance Manager prior to any access.

2.2 Operation

Pipes are intended to be the main conveyance system across the development and where oversized they form the attenuation volume required by the limitation of the discharge rate. They are intended to be dry except for during rainfall events. These have been designed to be self-cleansing where possible for smaller diameter pipes, and for larger diameters the risk is reduced due to the overall pipe size.

Access for maintenance is provided through access chambers, manholes, rodding plates and rodding eyes.

2.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important to identify areas which may have been obstructed/clogged and may not be draining correctly, thus exposing the development to a greater level of flood risk.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, as run-off is taken from potentially contaminated areas such as car parks/service yards.

Table 1: Operation and Maintenance Requirements for Pipes

Schedule	Required Action	Frequency
Monitoring	Initial Inspection should be provided as post construction CCTV survey.	N/A
	Inspect for evidence of poor operation via water level in chambers. If required, take remedial action.	Quarterly and 48 hours after large storms.
Regular Maintenance	Check and remove large vegetation growth near pipes.	Monthly or as required.
Remedial Action	Rod through poorly performing runs as initial remediation.	As required.
	If continued poor performance jet and CCTV survey poorly performing runs.	As required.
	Seek advice as to remediation techniques suitable for the type of performance issue and location.	As required If above does not improve performance.

3.0 Drainage Channels and Gullies

Channels and gullies should be inspected and cleaned in accordance with the manufacturer's details. Channel units can be cleaned using a high-pressure hose; this can be fed into the channel system through access units strategically placed along the channel run. The throat section of channel units should be always kept clear to ensure uninterrupted flow of surface water into the drainage channel and any debris within the throat should be removed.

Locking bolts should be replaced and sufficiently tightened, taking care that the bolt heads do not stand above the top surface of the cover or grate. If covers are allowed to move within their frame, this may cause damage to the frame or seating.

Sediment\material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols; especially where run-off is taken from potentially contaminated areas such as the car park channels.

Table 1: Operation and Maintenance Requirements for Drainage Channels and Gullies

Schedule	Required Action	Frequency
Monitoring	Initial Inspection including channel outlet boxes.	Half yearly and after large storms.
Regular maintenance	Litter and debris removal.	Monthly or as required.
	Check and remove large vegetation growth near channel runs.	Monthly or as required.
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action. Inspect silt accumulation rates and establish appropriate brushing frequencies. Silt can also be caused by adjacent landscaping areas which should be reprofiled to provide a flat area or berm adjacent to the paving.	3-monthly, 48 hours after large storms.
Remedial Action	Inspect access/outlet boxes and rod through poorly performing channels and outlets as initial remediation.	As required.

4.0 Filter Drains

The filter drain is intended to provide a means of surface water disposal from the service yards / lorry parking. Outflow is by infiltration through granular material to a perforated collector pipe below, discharging to the new off-site drain. The filter drains also provide a level of water quality treatment.

The filter drains will require little in the way of routine maintenance, primarily only a small amount of extra work over and above what is necessary for standard public open space.

Table 1: Operation and Maintenance Requirements for Filter Drains

Schedule	Required Action	Frequency
Monitoring	Inspect surface for ponding, and clear if required. CCTV survey may be required followed by jetting.	Monthly and after large storms.
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
	Litter and Debris removal from catchment surface and within swale area above the filter (where may cause risks to performance).	Monthly
	Remove sediment from pre-treatment structures, catchpits and filter chambers.	Annually (or as required after heavy rainfall events)
	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3995:2010)	As part of regular site maintenance.
Remedial Actions	Repair/rehabilitation of inlets/outlets.	As required.
	Rehabilitation of surface and sub-structure. This could include replacement of the stone or impermeable / permeable membrane. Geotextiles layer may also need replacing if clogged and Terram 1000 has a life span of 25 years.	As required (if performance is reduced as a result of significant eroding).
	Clear perforated pipework of blockages	As required

5.0 Pervious Pavements

5.1 Description

The permeable pavements have/will be designed in accordance with CIRIA C753 and BS7533-13.

Permeable pavements contain proprietary products and as such where used the manufacturer's recommendations should be followed.

5.2 Operation

The permeable pavements are intended to be water quality and attenuation storage features. These features are intended to be dry except during rainfall events. The permeable pavements may also be utilised as an infiltration area or soakaway for other areas of the development.

The surface has been designed to be porous or to contain gaps where rain can flow through the upper construction layers into the voided stone which makes up the sub-base. Where these features are intended to be used as infiltration devices or soakaways any capping also needs to be permeable to permit the flows to the formation.

Access for maintenance is not provided as this is a surface feature only.

5.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important for the effective operation of the pervious pavement.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, as run-off is taken from potentially contaminated areas such as car parks/service yards.

Table 1: Operation and Maintenance Requirements for Filter Drains

Schedule	Required Action	Frequency
Monitoring	Inspect surface for ponding, and clear if required. CCTV survey may be required followed by jetting.	Monthly and after large storms.
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
	Litter and Debris removal from catchment surface and within swale area above the filter (where may cause risks to performance).	Monthly
	Remove sediment from pre-treatment structures, catchpits and filter chambers.	Annually (or as required after heavy rainfall events)
	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3995:2010)	As part of regular site maintenance.
Remedial Actions	Repair/rehabilitation of inlets/outlets.	As required.
	Rehabilitation of surface and sub-structure. This could include replacement of the stone or impermeable / permeable membrane. Geotextiles layer may also need replacing if clogged and Terram 1000 has a life span of 25 years.	As required (if performance is reduced as a result of significant eroding).
	Clear perforated pipework of blockages	As required

6.0 Attenuation Storage Tanks

6.1 Description

The tank has been designed in accordance with CIRIA C753 and the product specific requirements.

Geo-cellular units are proprietary products and therefore manufacturer's recommendations should also be taken into consideration. Additionally, different manufacturers may have different connection types and arrangements which will need to be taken into consideration.

6.2 Operation

The attenuation tank is intended to be the surface water storage feature to attenuate the discharge from the site up to and including the 1 in 100-year plus event with an allowance for climate change. As such during rainfall events the basin will fill completely. The tank is intended to be empty between rainfall events.

Access for maintenance has been provided through the central filter drain with the units being effectively sealed laterally preventing the ingress of deleterious material. The main maintenance of this central filter drain should be undertaken in accordance with the filter drain section.

6.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important for the effective operation of attenuation tanks as designed. As the feature is buried a regularly inspection regime is very important to ensure the correct functionality of the surface water drainage network.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, especially where run-off is taken from potentially contaminated areas such as car parks/service yards.

Table 1: Operation and Maintenance Requirements for Attenuation Storage Tanks

Schedule	Required Action	Frequency
Monitoring	Inspect inlets for blockages, and clear if required. If faults persist jetting and CCTV survey may be required.	Monthly and after large storms.
	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
Regular maintenance	Litter and Debris removal from catchment surface (where may cause risks to performance).	Monthly
	Remove sediment from pre-treatment structures, catchpits and filter chambers.	Annually (or as required after heavy rainfall events)
Remedial Actions	Repair/rehabilitation of inlets/outlets.	As required.
	Rehabilitation of surface and upper sub-structure. This could include replacement of the jointing and bedding material. The upper geotextiles layer may also need replacing if clogged and Terram 1000 has a life span of 25 years.	As required (if performance is reduced as a result of significant eroding).
	Reconstruct sub-base and or replace or clean void area / fill, if performance deteriorates or failure occurs	As required
	Replace clogged geotextile (will required reconstruction of soakaway). Terram 1000 has a life span of 25 years.	As required
Monitoring	Inspect inlets for blockages, and clear if required. If faults persist jetting and CCTV survey may be required.	Monthly and after large storms.
	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
Regular maintenance	Litter and Debris removal from catchment surface and within swale (where may cause risks to performance).	Monthly
	Remove sediment from pre-treatment structures, catchpits and filter chambers.	Annually (or as required after heavy rainfall events)
	Grass Cutting should be undertaken as part of the regular site maintenance of other areas of soft landscaping. Mowing should ideally retain grass lengths of 75-150mm across the main “treatment” surface to assist in filtering pollutants and retaining sediments.	As part of regular site maintenance.
Remedial Actions	Repair/rehabilitation of inlets/outlets.	As required.
	Rehabilitation of surface and upper sub-structure. This could include replacement of the vegetation or impermeable / permeable membrane. Geotextiles layer may also need replacing if clogged and Terram 1000 has a life span of 25 years.	As required (if performance is reduced as a result of significant eroding).
	Reconstruct sub-base and or replace or clean void area / fill, if performance deteriorates or failure occurs	As required

7.0 Ponds and Wetlands

Table 1: Operation and Maintenance Requirements for Ponds and Wetlands

Schedule	Required Action	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 pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options.	Half yearly.
	Check any mechanical devices, e.g. penstocks.	Half yearly.
	Hand cut submerged and emergent aquatic plants (as 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 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.	
	Aerate pond when signs of eutrophication are detected.	
	Realign riprap or repair other damage.	
	Repair/rehabilitate inlets, outlets and overflows.	

8.0 Flow Control Units

The flow control units are intended for flood control and flow restriction. The flow control specification is subject to detailed design. The manufacturer's recommendations should also be taken into consideration.

Access for maintenance has been provided by locating within manhole chambers.

Table 1: Operation and Maintenance Requirements for Flow Control Units

Schedule	Required Action	Frequency
Monitoring	Inspect inlets for blockages, and clear if required. If faults persist jetting and CCTV survey may be required.	Monthly and after large storms.
	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly.
Regular maintenance	Debris removal from catchment surface (where may cause risks to performance).	Monthly
	Remove sediment from pre-treatment structures and flow control chambers.	Annually (or as required after heavy rainfall events)
Remedial Actions	Repair/rehabilitation of inlets.	As required.

9.0 Vortex Separators

9.1 Description

Vortex separators are proprietary products so the manufacturer's recommendations should be followed.

9.2 Operation

Vortex separators use gravity and centrifugal forces to separate out sediments, oils and floatable pollutants.

9.3 Maintenance

Regular inspection and maintenance is important for the effective operation of separator as designed. As the feature is buried a regularly inspection regime is very important to ensure the correct functionality of the surface water drainage network.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, especially where run-off is taken from potentially contaminated areas such as car parks/service yards.

Table 2: Operation and Maintenance Requirements for vortex separators

Schedule	Required Action	Frequency
Monitoring	Inspect for evidence of poor operation.	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies.	Monthly for half year of operation, then every six months
Regular maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation.	Six monthly
	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.