

VISTRY HOMES LIMITED

THE LANDINGS, LAND AT FORD AIRFIELD, FORD

**MANAGEMENT & MAINTENANCE PLAN SURFACE
WATER DRAINAGE NETWORK & SUDS**

**REPORT REF.
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Document Control Sheet

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Distribution

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1. Introduction

- 1.1. This report details the management and maintenance requirements of the surface water sustainable drainage system (SuDS) for the residential-led mixed-use development on Land at Ford Airfield, Ford.
- 1.2. Outline (all matters reserved except access) permission (ref F/4/20/OUT) was granted in July 2023 for:

"...the development of up to 1,500 dwellings (Use Class C3), 60-bed care home (Use Class C2), up to 9,000 sqm of employment floorspace (Use Classes B1), local centre of up to 2,350 sqm including up to 900 sqm retail / commercial (Use Classes A1-A5) and 1,450 sqm community / leisure floorspace (Use Classes D1-D2), land for a two-form entry primary school (Use Class D1), public open space, allotments, new sports pitches and associated facilities, drainage, parking and associated access, infrastructure, landscape, ancillary and site preparation works, including demolition of existing buildings and part removal of existing runway hardstanding..."

2. Surface Water Drainage Summary

- 2.1. An overview of the surface water Drainage strategy for the site is identified in the Drainage Layout drawings shown in **Appendix A**.
- 2.2. The drainage proposals comprise a series of road gullies, adoptable pipes and associated infrastructure, lined swales, headwalls, Pozidrain collector pipes and manholes, permeable berms, 6 SuDS ponds and Hydrobrake flow control manholes.
- 2.3. The adoptable pipes and associated infrastructure comprise of:
- Section 104 adoptable surface water sewers and manholes
 - Perforated pipe with gravel trench surround
 - Aquaspira or similar approved large diameter pipe, including pipe bends and access chambers.
- 2.4. A network of road gullies, swales and adoptable pipes and associated infrastructure within the road/highway boundaries convey surface water runoff from the development.
- 2.5. Surface water from the road gullies, lined swales and adoptable pipes and associated infrastructure outfall via headwalls into the proposed SuDS pond. Permeable berms are also present within the northernmost pond (Pond 1) and southernmost pond (Southern Pond 3).
- 2.6. Contained within all ponds are Pozidrain collector pipes and manholes, used as a pressure relief system to stop uplift from groundwater, which outfall into adoptable pipes and Hydrobrake Flow Control Chambers downstream of the SuDS ponds.
- 2.7. Downstream of the Hydrobrake Flow Control Chambers, adoptable pipes and associated infrastructure discharge surface water off-site into existing drainage infrastructure, to be conveyed into a watercourse.
- 2.8. For the surface water drainage system to operate as originally designed, it is necessary to ensure that they are adequately maintained and managed throughout the lifetime of the development.

3. Stakeholders and Responsibilities

3.1. Outlined below are a list of the stakeholders involved in the maintenance and management of various surface water and SuDS drainage components:

- **Independent Water Networks Limited (IWNL)** is the New Appointments and Variations (NAV) appointed to oversee the operation and maintenance of all pipework, including:
 - Road gullies
 - Adoptable pipes and associated infrastructure
 - Pozidrain collector pipes
 - Hydrobrake Flow control manholes
- **Private Management Company** will be responsible for the operation and maintenance of all Sustainable Drainage Systems, including:
 - Headwalls
 - SuDS ponds
 - Lined swales
 - Permeable berms
- **Individual Residential and Commercial Property Owners** will be responsible for the maintenance of pipe work within their curtilage of their property which served their property alone.

3.2. This section identifies the stakeholders and their responsibility associated with each drainage component in terms of operational, maintenance and management requirements.

3.3. The sewer infrastructure is to be designed, constructed, operated, maintained, and managed in accordance with the "Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England" ("the Code") and "Sewerage Sector Guidance Appendix C". In addition, SuDS features to be implemented in line with the aforementioned and "The SuDS Manual C753".

- 3.4. It should be noted that no alterations should be made to the development, or works carried out, which may affect the surface water system operating as designed.

Infrastructure Operated and Maintained by IWNL

- 3.5. Independent Water Networks Limited (IWNL) is a statutory water and sewerage undertaker licensed by Ofwat to operate across England and Wales. IWNL operate under the New Appointment & Variation (NAV) process, from the Water Industry Act 1991, and are able to provide water and sewerage services in a heavily regulated market.
- 3.6. The components IWNL are responsible for are outlined at the beginning of **Section 3** and are identified on Drawing No. 2205773-ACE-XX-XX-DR-C-1221&1222 in **Appendix B**.
- 3.7. Maintenance, including the replacement of any features at the end of their design life will be funded directly by IWNL. Regular scheduled payments (e.g. a yearly management fee) will be made to IWNL by the site occupants to fund the operation and maintenance of the identified surface water drainage components.
- 3.8. There will be a pre-handover inspection as necessary prior to handover to management company from the contractor to ensure the management company can operate and maintain the SuDS components as required.
- 3.9. IWNL should be contacted directly if any of the components it manages, outlined at the beginning of **Section 3** and in further detail below, are not functioning correctly.

Road Gullies

- 3.10. Trapped gullies are to be inspected as required if there is thought to be a blockage. Any blockages within gullies and connection pipes are to be removed by rodding or high-pressure water jetting to clear the debris.
- 3.11. Key performance risks include:

- Blockages - if not properly maintained, the gully can become clogged with debris, which can lead to localised flooding.

Adoptable Pipes and Associated infrastructure

Section 104 pipes/Aquaspira pipes and associated infrastructure

- 3.12. The pipes are to be inspected as required if there is thought to be damage. Dig down or non-intrusive techniques (e.g. pipe lining) to secure repairs will be implemented

to ensure the pipe functions as designed. Any blockages within a pipe area to be removed by rodding or high-pressure water jetting to clear the debris.

3.13. The catch manhole's and access chambers are to be inspected annually and accumulated silt is to be removed from the sump and hosed down if required.

3.14. Key performance risks include:

- Blockages - if not properly maintained, the pipes can become clogged with debris, leading to subsequent water surcharging back up through the network.

Perforated pipe with gravel trench surround

3.15. The pipes are to be inspected as required if there is thought to be damage. Dig down or non-intrusive techniques (e.g. pipe lining) to secure repairs will be implemented to ensure the pipe functions as designed. Any blockages within a pipe area to be removed by rodding or high-pressure water jetting to clear the debris.

3.16. Regular inspection and maintenance is important for the effective operation of the gravel trenches as designed. Adequate access is provided for the gravel trench surface for inspection and maintenance.

3.17. Key performance risks include:

- Blockages - if not properly maintained, the pipe can become clogged with debris, leading to localised flooding as water cannot infiltrate into the perforated pipe.

Pozidrain Collector Pipes

3.18. Ensure that the collector pipes/outfalls are kept clear of silt and debris to maintain flow. The pipes are to be inspected as required if there is thought to be damage. Dig down or non-intrusive techniques (e.g. pipe lining) to secure repairs will be implemented to ensure the pipe functions as designed. Any blockages within a pipe area to be removed by rodding or high-pressure water jetting to clear the debris.

3.19. Key performance risks include:

- Blockages - if not properly maintained, the pipe can become blocked, leading to soil waterlogging and a Hydrostatic Pressure Buildup on the SuDS Pond.

Hydrobrake Flow Control Manholes

3.20. The Hydrobrake Flow Control Manholes are to be inspected annually in accord with manufactures recommendations. Accumulated sediment or debris buildup which could result in blockage is to be removed and hosed down if required.

3.21. Key performance risks include:

- Blockages - if not properly maintained, the pipe can become blocked, leading to soil waterlogging and a Hydrostatic Pressure Buildup on the SuDS Pond.

Infrastructure Operated and Maintained by the Private Management Company

3.22. A Private Management Company, appointed by the developer and subsequently by the residents of the development (via a yearly management fee) will be responsible for the maintenance and management of the SuDS Components.

3.23. Maintenance, inclining the replacement of any features at the end of their design life will be funded directly by the selected private management company. Regular scheduled payments (e.g. a yearly management fee) will be made by the site occupants to fund the operation and maintenance of the identified SuDS components.

3.24. The components the private management company are responsible for are outlined at the beginning of **Section 3** and are identified on Drawing No. 2205773-ACE-XX-XX-DR-C-1221&1222 in **Appendix B**.

3.25. There will be a pre-handover inspection as necessary prior to handover to management company from the contractor to ensure the management company can operate and maintain the SuDS components as required.

3.26. The private management company should be contacted directly if any of the components it manages, outlined at the beginning of **Section 3** and in further detail below, are not functioning correctly.

Headwalls

3.27. All headwalls within the SuDS Ponds are to be inspected annually and any blockage is to be removed if required.

3.28. Key performance risks include:

- Blockages - if not properly maintained, the headwall can become clogged with debris, leading to subsequent water surcharging back up through the network.

SuDS Ponds

3.29. There are 6 SuDS ponds which are fed by the runoff from the proposed development.

3.30. Regular inspection and maintenance is important for the effective operation of the SuDS ponds, including vegetation management, silt and debris removal and remedial work. Refer to **Section 4** for a detailed breakdown of management and maintenance requirements of the SuDS ponds.

3.31. Key performance risks include:

- Sediment build-up and excessive vegetation reduce storage capacity.
- Sediment build-up stops the filtration of pollutants and risks remobilising pollutants after heavy storm events.
- Increased environmental and physical hazards.

Swales

3.32. Regular inspection and maintenance is important for the effective operation of swales. Swale management involves regular inspections, vegetation upkeep, and sediment removal to ensure proper infiltration and conveyance of runoff. Refer to **Section 4** for a detailed breakdown of management and maintenance requirements of the SuDS ponds.

3.33. Key performance risks include:

- Sediment build-up and excessive vegetation reduce storage capacity.
- Sediment build-up stops the filtration of pollutants and risks remobilising pollutants after heavy storm events.
- Blockages when accumulated sediment is washed into pipes

Permeable Berms

3.34. Permeable berms are designed for stormwater management and erosion control which reduce water velocity while allowing water to pass through, filtering sediment.

3.35. Permeable berms should be visually inspected annually with sediment and debris removal as required. Inspect for heavy sediment buildup quarterly, particularly after intense storms. Consider surface restoration as required.

3.36. Key performance risks include:

- Sediment build-up reduces its ability to filter sediment.

4. Management & Maintenance Plan

- 4.1. The National Standards for SuDS were published in July 2025. They should be used in conjunction with the Planning Practice Guidance. The document outlined a number of requirements, however of particular relevance are the designing for maintenance considerations (Standard 7: design of drainage for construction, operation, maintenance, decommissioning and structural integrity). The SuDS Manual CIRIA 753 represents current best practice.
- 4.2. This plan defines the management and maintenance responsibilities for all proposed SuDS components to ensure their effective operation for the lifetime of the development.
- 4.3. Following construction of the proposed SuDS components and connection of drained surfaces to these components, the drainage system will enter the operational phase of its design life. Periodic monitoring and maintenance will be required during the operational phase as described within this document.
- 4.4. Maintenance requirements for the drainage system will be summarised in handover documentation provided to the operator(s) on completion of the development in the form of Health & Safety files and Operation and Maintenance (O&M) manuals.
- 4.5. As indicated in the Drainage Layout Drawings in **Appendix A**, the drainage system comprises of various SuDS and surface water infrastructure components for the effective interception, treatment, attenuation and conveyance of surface water runoff.
- 4.6. Management responsibilities for the surface water infrastructure components will fall to IWNL, whilst the management responsibilities for the SuDS components will belong to the private management company, appointed by the developer.

Ownership and Management

- 4.7. For the lifetime of the development the responsibility for ongoing management and maintenance of SuDS components will belong to the landowner or asset owner where ownership is transferred.
- 4.8. The following table summarises the SuDS components incorporated within the development and identifies their general location, ownership, and the maintenance duty holder.

Table 1: Ownership and maintenance matrix

Drainage Component	Location	Owner	Maintenance Duty Holder
Surface water Infrastructure components: • Road gullies • adoptable pipes and associated infrastructure • Pozidrain collector pipes • Hydrobrake Flow control manholes	Public highway, public open space	IWNL	IWNL
SuDS Components • Headwalls • SuDS ponds • Lined swales • Permeable berms	Public highway, public open space	Private Management Company	Private Management Company

- 4.9. The maintenance regimes developed by these organisations will incorporate the requirements of this document together with the specific/further requirements detailed within handover documentation.

Health & Safety Requirements

- 4.10. The design of the surface water drainage system shall comply with the Construction (Design and management) (CDM) Regulations 2015 in order that designers assess foreseeable risks during construction and maintenance and design to minimise them by the following (in order of preference):
- Avoid
 - Reduce
 - Identify and mitigate residual risks
- 4.11. Designer's risk assessments and maintenance statements will be contained with the handover information to make the contractors and others aware of risks associated with the management and maintenance of the system.

- 4.12. The Health and Safety at Work Act and Regulations under it apply to the maintenance and monitoring works required for the surface water drainage. These operations will be always subject to risk assessment.
- 4.13. The organisation responsible for maintenance and monitoring requirements outlined in this document shall take appropriate health and safety precautions in accordance with 2.3.2 and 2.3.3.

Suds Component Overview

4.14. This section provides an overview of maintenance requirements for the different SuDS components of the proposed drainage network. Increased focus has been given to the SuDS Components due to the increased complexity of the management & maintenance tasks required when compared to the surface water infrastructure components.

4.15. There are three main categories of maintenance activities:

1) Regular maintenance (including inspections and monitoring)

2) Occasional Maintenance

3) Remedial Maintenance

4.16. **Regular maintenance** consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections. More frequent monitoring is required in the first year of a SuDS component as it establishes itself:

4.17. **Occasional maintenance** comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the regular tasks (sediment removal is an example).

4.18. **Remedial maintenance** comprises intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design, construction and general maintenance. 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.

4.19. Remedial maintenance items can comprise items such as:

- inlet/outlet repairs
- erosion repairs
- reinstatement or realignment of edgings, barriers, rip-rap or other erosion control
- infiltration surface rehabilitation
- replacement of blocked filter fabrics
- construction stage sediment removal (although this activity should have been undertaken before the maintenance contract)
- system rehabilitation immediately following a pollution event.

4.20. **Table 2** below identifies the operation and management activity associated with the SuDS & Surface Water Infrastructure components:

Table 2: Required Surface Water Drainage operation and management activity

Operation & Maintenance Activity	SuDS Component			
	SuDS Pond	Swale	Permeable Berms	Headwalls
Regular maintenance				
Inspection	■	■	■	■
Litter/debris removal	■	■	■	■
Grass cutting	■	■	■	
Weed/invasive plant control	□	□	□	
Shrub management	□	□	□	
Occasional maintenance				
Sediment management (*)	■	■	■	■
Vegetation/plant replacement	□	□	□	
Remedial maintenance				
Structural rehabilitation	□	□	□	□
Surface Rehabilitation	□	□	■	

■ Will be required

□ May be required

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

Regular Maintenance Activities

4.21. The regular maintenance activities for the SuDS components on site are outlined below.

Inspections and Reporting

4.22. Regular SUDS scheme inspections are required to:

- Help determine optimum future maintenance activities
- Confirm hydraulic, water quality, amenity and ecological performance allow identification of potential system failures, e.g. blockage, poor infiltration, poor water quality etc.

4.23. Inspections can generally be required at monthly site visits (e.g. for grass cutting) for little additional cost, and should, therefore, be subsumed into regular maintenance requirements. During the first year of operation, inspections should

ideally be carried out after every significant storm event to ensure proper functioning, but in practice this may be difficult or impractical to arrange.

4.24. Typical routine inspection questions that will indicate when occasional or remedial maintenance activities are required, and/or when water quality requires investigation include the following checklist:

- are inlets or outlets blocked?
- does any part of the system appear to be leaking (especially ponds)?
- is the vegetation healthy?
- is there evidence of poor water quality (e.g. algae, oils, milky froth, odour, unusual colourings)?
- is there evidence of sediment build-up?
- is there evidence of ponding above an infiltration surface?
- is there any evidence of structural damage that requires repair?
- are there areas of erosion or channelling over vegetated surfaces?

Litter/Debris Removal

4.25. This is an integral part of SuDS maintenance and reduces the risks of inlet and outlet blockages, retains amenity value and minimises pollution risks. High litter removal frequencies may be required where aesthetics is a major driver, for example the public open space amenity.

Grass Cutting

4.26. It is recommended that the grass cutting regime around SuDS components is carefully specified to maximise the performance of the SuDS and meet visual requirements. In general, allowing grass to grow tends to enhance water quality performance. It is proposed that grass heights around the SuDS ponds be between 75mm to 150mm. However, for the swales grass heights of between 50mm and 75mm are proposed.

Weed/invasive plant control

4.27. Weeds are generally defined as vegetation types that are unwanted in a particular area.

4.28. For SuDS, weeds are often alien or invasive species, which do not enhance the technical performance or aesthetic value of the system, or non-native species and the spread of which is undesirable. In some places, weeding has to be done by

hand to prevent the destruction of surrounding vegetation (hand weeding should generally be required only during the first year, i.e. during plant establishment). However, over grassed surfaces, mowing can be an effective management measure. The use of herbicides and pesticides should be prohibited since they cause water quality deterioration. The use of fertilisers should also be limited or prohibited to minimise nutrient loadings which are damaging to water bodies.

Shrub Management

- 4.29. Shrubs tend to be densely planted and are likely to require weeding at the base, especially during the first year to ensure that they get enough water. Shrubs should be selected so they can grow to their maximum natural height without pruning.

Occasional Maintenance Activities

- 4.30. The occasional maintenance activities for the SuDS components on site are outlined in the following sections.

Sediment Removal

- 4.31. To ensure long-term effectiveness, the sediment that accumulates in SuDS component should be removed periodically. The required frequency of sediment removal is dependent on many factors including:
- design of upstream drainage system
 - type of system
 - design storage volume
 - characteristics of upstream catchment area (e.g., land use, level of imperviousness, upstream construction activities, erosion control management and effectiveness of upstream pre-treatment).
- 4.32. Sediment accumulation will typically be rapid for the entire construction period (including time required for the building, turfing and landscaping of all upstream development plots). Once a catchment is completely developed and all vegetation is well-established, sediment mobility and accumulation is likely to drop significantly.

Vegetation/Plant Replacement

- 4.33. Some replacement of plants may be required in the first 12 months after installation, especially after storm events. Dead or damaged plants should be

removed and replaced to restore the prescribed number of living plants per hectare. Inspection Programmes should identify areas where vegetation growth is poor and likely to cause a reduced level of system performance. Such areas can then be rehabilitated, and plant growth repaired.

Remedial Maintenance

- 4.34. The remedial maintenance activities for the SuDS components on site are outlined below.

Structure Rehabilitation/Repair

- 4.35. There will come a time with most SuDS components when a major overhaul of the system is required to remove headwalls serving SuDS ponds and control structures etc. This will typically be between 10 and 25 years, depending on the technique and factors such as the type of catchment and sediment load. The SuDS design allows for access to undertake this work and consider the need for the overhaul without causing major disruption.
- 4.36. Other SUDS techniques are unlikely to need major overhaul if routine maintenance is undertaken as required (for example ponds).

Surface Rehabilitation

- 4.37. In the event that grassed surface permeability has reduced, there are a number of landscape techniques that can be used.
- 4.38. Such activities are not commonplace and are likely to be required only in circumstances where silt has not been effectively managed upstream:
- Scarifying to remove “thatch”. Thatch is a tightly intermingled organic layer of dead and living shoots, stems and roots, developing between the zone of green vegetation and the soil surface. Scarifying with tractor-drawn or self-propelled equipment to a depth of at least 50 mm breaks up silt deposits, removes dead grass and other organic matter and relieves compaction of the soil surface.
 - Spiking or tining the soil, using aerating equipment to encourage water percolation. This is particularly effective if followed by top dressing with a medium to fine sand, and is best undertaken when the soil is moist. Spiking or tining with tractor drawn or self-propelled equipment penetrates and

perforates soil layers to a depth of at least 100 mm (at 100 mm centres) and allows the entry of air, water, nutrients and top dressing materials.

- As a last resort, it may be necessary to remove and replace the grass and topsoil by:
- removing accumulated silt and (subject to a toxicity test) applying to land or dispose of to landfill
- removing damaged turf which should be composted
- cultivating remaining topsoil to required levels
- re-turfing (using turf of a quality and appearance to match existing) or reseeded (to BS 7370: Part 3, Clause 12.6 (BSI, 1991) using seed to match existing turf) area to required levels. It may be necessary to supply and fix fully biodegradable coir blanket to protect seeded soil. Turf and seeded areas should be top dressed with fine sieved topsoil to BS 3882 (BSI, 1994) to achieve final design levels. Watering will be required to promote successful germination and/or establishment.

5. Operation and Maintenance Requirements

5.1. The following operating maintenance and management tasks for the surface water drainage infrastructure components are to be undertaken by IWNL.

Site Maintenance Supervisor: Date: / /

Road Gullies

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Inspection of silt accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every 6 months thereafter		
	Structural inspection of gully covers, frames and bedding for defects or damage	Every 6 months		
Regular Maintenance	Remove litter and debris	Every 6 months; or as required by monitoring		
Occasional Maintenance	Emptying of gullies and accumulated deposits by suction tanker	Yearly, or as required by monitoring		
Remedial Maintenance	Replacement of damaged gully tops	As required		

Adoptable Pipes and Associated Infrastructure and Pozidrain Collector Pipes

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Visually inspect manholes and access chambers for evidence of siltation, damage or blockage	Every 2 months first 12 months, then every 6 months		
Occasional Maintenance	CCTV survey pipes to periodically record structural pipe condition. Undertake survey recommendations as required	Every 5 years; or as required by monitoring		

Remedial Maintenance	Trimming of any roots that may be causing blockages	As required		
	Removal of blockage by rodding, jetting, hydraulic rams, suction tanker etc.	As required		
	Replacement of structurally damaged pipe sections	As required		

Hydrobrake Flow Control Chamber

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	General inspection of chamber covers for signs of damage, wear and rocking covers	Every 6 months		
	Structural inspection of chamber cover surrounds	Every 6 months		
	Inspection of manhole chamber internals for evidence of pipe surcharging	Every 6 months		
	Inspection of silt accumulation rates and establish appropriate removal frequencies	Monthly during first year of operation, then every 6 months thereafter		
	If a blockage occurs, operate the by-pass door to drain the chamber	As required		
Regular Maintenance	Removal of accumulated deposits	Every 6 months; or as required by monitoring		
Occasional Maintenance	Hose down the chamber and remove any sediment/debris to prevent blockage.	Every 6 months; or as required by monitoring		
Remedial Maintenance	Replacement of damaged chamber covers and chamber cover bedding	As required		
	Sealing repair of cracked/spalled concrete and benching	As required		

5.2. The following operating maintenance and management tasks for the SuDS components are to be undertaken by the appointed Private Management Company.

Site Maintenance Supervisor: Date: / /

Headwalls

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Inspect apron for debris or signs of blockage	Every 6 months		
	Inspect condition of security grille	Every 6 months		
	Inspect condition of inlet/outfall structure	Every 6 months		
Regular Maintenance	Remove accumulated litter, debris or vegetation from headwall and grille	Every 6 months		
Occasional Maintenance	Remove accumulated litter, debris or vegetation following high return period storm	As required		
Remedial Maintenance	Sealing repair of cracked/spalled concrete	As required		
	Repair or replacement of security grille components	As required		

SuDS Ponds

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Inspect/check all inlets, outlets and overflows to ensure that they are in good condition and free from blockages	Monthly		
	Inspect banksides, structures, pipework etc. for evidence of physical damage	Monthly		
	Inspect inlets and facility surface for silt	Monthly (for first year), then		

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
	accumulation. Establish appropriate silt removal frequencies	annually or as required		
	Check any mechanical devices, e.g. penstocks	Every 6 months		
Regular Maintenance	Remove litter and debris	Monthly (or as required)		
	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)		
	Tidy all dead growth before start of growing season	Annually		
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 by monitoring	Every 2 to 5 years, or as required (likely to be minimal requirement where treatment is provided upstream)		
Remedial Maintenance	Repair erosion or other damage by reseedling or returfing	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		

Swales

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Inspect filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (e.g. oils)	Monthly (at start, then half yearly)		
	Check flow spreader and filter strip surface for even gradients	Monthly (at start, then half yearly)		
	Inspect gravel flow spreader upstream of filter strip for clogging	Monthly (at start, then half yearly)		
	Inspect silt accumulation rates and establish appropriate removal frequencies	Monthly (at start, then half yearly)		
Regular Maintenance	Remove litter and debris	Monthly (or as required)		
	Cut grass – to retain grass height within specified design range (e.g. 75-150mm)	Monthly (during growing season), or as required		
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)		
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% of the filter strip area		
Remedial Maintenance	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	As required		

	improve infiltration performance break up silt deposits and prevent compaction of the soil surface			
	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 practises, undertake waste classification testing prior to disposal	As required		

Permeable Berm

Maintenance Schedule	Required Action	Required Frequency	Date	Comments
Monitoring	Inspect berm surface for evidence of erosion, bypass (water flowing around rather than through), or structural slumping.	Monthly (at start, then half yearly)		
	Check for "blinding" or surface sealing (evidence of standing water for >48 hours after rain).	Monthly (at start, then half yearly)		
	Inspect downstream face of berm for signs of piping (internal erosion) or scouring at the toe.	Monthly (at start, then half yearly)		
	Monitor sediment accumulation at the upstream face; establish removal depth (typically >50mm).	Monthly (at start, then half yearly)		
Regular Maintenance	Remove litter and debris	Monthly (or as required)		
	Remove accumulated silt to prevent clogging.	As required (based on monitoring)		
Occasional Maintenance	Replenish or replace filter layer if surface becomes compacted or heavily contaminated.	As required		

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Remedial Maintenance	Repair breaches or structural damage to the berm core (re-compacting and re-shaping).	As required		
	Relevel uneven surfaces and reinstate design levels	As required		

6. Waste and Sediment Management Plan

- 6.1. There are usually three types of waste arising from regular SuDS maintenance: litter, green waste (vegetation) and sediment.

Litter Waste

- 6.2. Litter will be disposed of as for any open space. Where litter or any waste is removed from site, it will be subject to the relevant waste management legislation for the country. In brief, this generally means that those responsible for generating waste must:

- I. Adequately characterise and describe the waste to allow for its safe disposal;
- II. Only allow the waste to be removed and transported by those who are licensed to do so; and
- III. ensure that it is disposed at a suitably licensed waste disposal or treatment facility

Green Waste

- 6.3. Green waste arises from mowing lined swales and the perimeter of SuDS Ponds, as well as tending planting around SuDS ponds. If space allows, non-invasive green waste can be composted on-site. This creates habitat for invertebrates and keeps the biomass within the local ecosystem. Conversely, if no space on site is suitable, green waste should be collected and transported to a licensed green waste composting facility.
- 6.4. If invasive species (e.g., Japanese Knotweed) are identified near the headwalls or watercourses, they must be disposed of at a specialized hazardous waste landfill in accordance with the Wildlife and Countryside Act.

Sediment Management

- 6.5. Silt/sediment collected from a SuDS component will often contain low levels of metals, hydrocarbons and other pollutants.
- 6.6. Any sediment removed from SuDS must meet the requirements of relevant waste management legislation.
- 6.7. The Environment Agency has adopted a risk-based approach in relation to removal of sediment from sites. To assess whether the silt/sediment collected in the system is likely to have a high risk of being defined as "hazardous waste" will mainly be based on the land use within the catchment (e.g., Residential, industrial or heavy

vehicle management areas or end-of-pipe ponds without source control; basins etc without source control.

- 6.8. However, sediments excavated from upstream pre-treatment devices that receive runoff from residential or standard road and roof areas are generally not toxic or hazardous material and can therefore be safely disposed of by either land application or landfilling.
- 6.9. However, consultation will take place by IWNL and the Private Management Company with the environmental regulator to confirm appropriate waste management protocols and compliance with legislation. Sediment testing may be required before sediment excavation to determine its classification and appropriate disposal methods. Where there is low risk of pollution, this will allow sediment removal and land application to suitable vegetated surfaces outside the SuDS design profile but still close by (e.g. within 20 m of the SuDS component).
- 6.10. For any adverse silt accumulation in SuDS ponds (this should be very low if effective source control/pre-treatment is in place), the material should be removed, allowed to de-water by the side of the SuDS component for 24–48 hours and then land applied in a similar manner.
- 6.11. If land application is not appropriate for low-risk sites, the sediment will have to be disposed off site. If material is removed off site, IWNL, the Private Management Company and those carrying out the work must comply with the required legislation and secure the relevant Environment Agency permits.
- 6.12. Final implementation of the sediment waste management strategy to be confirmed by IWNL and the Private Management Company.

7. Accidental Spillage Action Plan

7.1. Based on the CIRIA753 Simple Index Treatment Method, the development would have an associated pollution hazard level between 'Low' and 'Medium' (considering the level of traffic at the main access road). Conservatively, a 'Medium pollution hazard level has been used for the site.

7.2. Outlined below is an action plan for dealing with accidental spillages.

Accidental Spillage Response Action Plan

Step 1: Immediate Source Control (Point of Entry)

- Block Road Gullies: Use temporary clay mats or sandbags to seal gullies near the spill. Spillages will have a higher chance of occurring on the main spine road running north-south through the development, as well as outside the commercial/educational developments.
- Deploy Absorbents: Apply hydrophobic booms or absorbent granules directly to the surface spill to prevent it from entering the Pozidrain collector pipes or sub-base.

Step 2: Transmission Interception (Pipes & Manholes)

- Isolate the Network: Use inflatable pipe stoppers within the adoptable pipes at the nearest downstream manhole to contain the polluted runoff.

Step 3: Secondary Containment (Swales & Berms)

- Lined Swale Check Dams: In the lined swales, install temporary straw bales or baffles to slow the flow and allow pollutants to settle or be absorbed. The lining is critical here as it prevents the pollutant from leaching into the groundwater.
- Permeable Berm Monitoring: Check for "sheen" on the permeable berms. These acts as natural filters; if saturated with oil, the surface media may need to be excavated and replaced as hazardous waste.

Step 4: Final Defence (Ponds & Hydrobrake)

- **Pond Isolation:** If the pollutant reaches the SuDS pond, immediately block the inlet and outlet, allowing for specialized tankers to remove the contaminated runoff.
- **Hydrorake Flow Control:** Close the orifice plate within the flow control manholes, which utilises the upstream pipe volume as temporary storage for the contaminated water.

Step 5: Recovery

- Ensure all contaminated runoff is transported off-site to be treated and safely disposed of.
- Remove and replace any contaminated soil or filter media within the swales or berms.
- **System Flush:** High-pressure water jetting of the adoptable pipes and cleaning of the Hydrorake mechanism to ensure no residual oils remain.
- **Notification:** Inform the Environment Agency, West Sussex County Council as the LLFA if the spill has potentially escaped the sites drainage network and has entered the receiving watercourses.