Adoptable Highway Drainage and Sustainable Drainage Systems: Guidance for Developers

Introduction 1
Relationship to Other Guidance 1
Existing Highway Drainage 2
Adoptable Highway Drainage 2
Adoptable Highway Drainage Criteria 2
Permitted Adoptable Highway Drainage Components 3
SuDS Suitability Checklist 4
Water Treatment, Siltation & Pollution Control 5
Storage 5
Headwalls 5
Structures 5
Maintenance 5
Easements 5
Commuted Sums 5
Construction Phase 6
Construction Records 6
Other Public Sewers 6
Private Drains 6
Connection of Highway Drain into private outfall 6

Introduction

This guide gives advice to developers wishing to get highway drainage infrastructure adopted in West Sussex. The document outlines the highway drainage design principles and permitted Sustainable Drainage Systems (SuDS) features which may be acceptable for adoption under S278 and S38 agreements.

The use of SuDS to manage surface water has a number of benefits, such as improving water quality and the local environment. They also provide an important function in reducing the risk of flooding of homes and businesses, as well as adjacent or downstream properties, as a result of heavy rain.

For drainage schemes to be suitable for adoption and maintenance at public expense it must be demonstrated that the design has considered the future maintenance requirements, including inspection access points and measures to minimise maintenance requirements.

Where West Sussex County Council (WSCC) are adopting SuDS, our preference is for:

- SuDS using 'Open' soft engineering techniques:
  - storage ponds, balancing ponds, retention and infiltration basins;
  - swales, ditches, and infiltration strips.
- SuDS using hard engineering techniques:
  - attenuation of drainage by oversize pipework and throttles;
  - underground attenuation and storage tanks (provided adequate inspection and maintenance access is provided);
  - soakaways and filter drains with adequate infiltration design rates.

Permeable paving and underground cellular based systems are not preferred due to inherent difficulties with long term maintenance. However if it can be demonstrated that the system has been designed to minimise siltation then WSCC will consider adoption on a case by case basis.

It is recommended that all planning applications be accompanied by a site specific highway drainage strategy that demonstrates compliance with this document and other supporting information referenced therein. It is recommended that the detail of who is to going adopt drainage features is identified at planning stage to provide clarity and assist early discussion on drainage proposals.

It is recommended that developers apply for pre-application advice with WSCC prior to submitting planning applications where there is need to discuss and agree the drainage strategy.

Relationship to Other Guidance

The drainage strategy must comply with other national policies and WSCC policies, guidance and flood risk management measures.

This document shall be read in conjunction with the following, all of which are available on the West Sussex website:

- LLFA Policy for the Management of Surface Water (PDF);

- West Sussex LLFA Culvert Policy (PDF);
- West Sussex S278/S38 Highway Agreement Standard Details (PDF);
- West Sussex Commuted Sum Policy (PDF);
- West Sussex Guidance for the Design of Structures (PDF).

Existing Highway Drainage

Where development proposals impact the existing highway, the applicant shall contact WSCC to obtain drainage records.

Where drainage records are not available, the applicant shall undertake necessary site investigations in order to determine connectivity, line, level, and outfall.

WSCC reserve the right to request a CCTV investigation to determine connectivity and condition.

There will be a presumption against connections into existing highway drainage systems unless sufficient evidence is provided that the highway drainage system has capacity or that improvements can be made to accommodate the additional highway surface water run-off. Private surface water will not be allowed to discharge into a highway drainage system.

Failure to undertake necessary investigation will delay the technical approval process. Where detailed investigation is not undertaken in advance of works starting WSCC will not be in a position to fund repairs to existing highway drainage systems where damage to the system is identified at such a late stage in the delivery process.

Where development proposals result in an element of redundant highway drainage this shall be removed.

Adoptable Highway Drainage

Adoption of highway drainage will be subject to the completion of a Section 278/38 highway agreement.

Surface water from a private drive or private land must not discharge onto the public highway surface or into the public highway drainage system.

Adoptable Highway Drainage Criteria

The following table outlines the fundamental requirements.

Criteria	**Requirements**
Baseline Discharge	To greenfield rates (Preliminary rainfall run-off management for development ref: W5-074-A-TR-1 Rev E by H R Wallingford) **or** otherwise agreed with the ultimate governing body. Flow rates shall be controlled by way of suitable flow control device.
Highway Drain Standard Design Return Period	1:2yr Design 1:5yr Design (flood zones)

Criteria	Requirements
Exceedance Provision	The highway system must be designed not to flood (full containment) any part of the highway (or third- party land adjacent) in a 1:30 year return period.
Flood Flows and Climate Change	The highway system must be assessed in a 1:100yr return period plus an allowance for climate change. Where storage (full containment) below ground is not viable then above ground storage (SuDS) shall be provided. Utilising the highway assets as surface storage shall be considered on a case by case basis whereby the safety of the proposals shall be judged to accord with The Environment Agency pedestrian safe depth/velocity criteria.
Flood Flow Rates	Flow routes through the development/highway must be demonstrated as follows. 1. **Low flow routes.** Once surface water runoff has been collected, cleaned, and controlled in source control features it will either be stored where it fell as rain in permeable pavement, or flow onward to local storage structures. The day-to-day flows from these features should travel in low flow channels through the development in a controlled way contributing to landscape quality. 2. **Overflows.** In the event of local blockages or surcharge a simple overflow arrangement should allow water to bypass the obstruction and return to the management train sequence until conditions return to normal. 3. **Flood routes.** When SuDS are overwhelmed by exceptional rainfall, then flood routes are required to protect people and property, by providing unobstructed overland flow routes from the development and should be considered for all drainage schemes. The SuDS design must demonstrate that flow routes have been considered at each design stage to take into account the effect of proposed development on the natural flow pattern for the site. Flood routes should also be protected from future changes in land use.
Minimum Pipe Size	225mm diameter minimum for highway spine drain. 150mm diameter minimum for gully lateral.
Surcharged Outfalls	Where outfalls are tidal, have high water durations, or flood zone areas surface water design must take into consideration the scenario of the receiving network being partially or fully surcharged. The tide locked scenario should also take into consideration sea-level rise for the life of the development. See Future of the Sea: Impacts of Sea Level Rise on the UK.

Permitted Adoptable Highway Drainage Components

WSCC will adopt drainage infrastructure required for the drainage of the publicly maintainable highway. WSCC will only adopt drainage infrastructure where it is demonstrated that the designer has considered the future maintenance of the

asset and where appropriate commuted sums are secured for the future maintenance of the asset.

The following table establishes the permitted drainage components that are suitable for adoption.

Component	Commuted Sum Payable?	S278/38 Standard Detail Reference
Precast concrete gully	NO	S278/38/11
225mm pipe	NO	S278/38/33
Catchpit	NO	S278/38/13
Combined Kerb Drainage systems	NO	S278/38/02
Precast concrete Ring Soakaway	YES	S278/38/12
Lateral Connections	NO	S278/38/36
Hydro-brakes	YES	S27/38/14
Trench Soakaway	YES	S278/38/28
Cellular Storage (Tanks and/or Soakaways)	YES	S278/38/34-35
Filter Strips	YES	-
Swales/Ditches	YES	S278/382/25 - 26 - 27
Filter Drains	YES	S278/38/29
Permeable Paving	YES	S278/38/30-31
Underground Storage Oversized Pipes and/or In-situ Storage Tanks	YES	-
Petrol Interceptors	YES	-
Concrete Bagwork Headwall	YES	S278/38/23
Brick Headwall	NO	S278/S38/32
Dry & Wet Ponds	YES	-

SuDS Suitability Checklist

The following should be considered when determining which SuDS technique is suitable for a site. There are a number of site conditions and constraints which may prohibit the use of certain SuDS features being utilised for adoptable highway drainage; other constraints may restrict the use of the SuDS.

- Flood plain
- Groundwater
- Soils and geology
- Contaminated land
- Space constraints
- Maintenance

Water Treatment, Siltation, and Pollution Control

All highway drainage systems shall be assessed in accordance with CIRIA SuDs Manual C753 to determine the level of treatment required to ensure that the quality of run-off being discharged is suitable.

All highway drain manholes shall be catchpits; refer to WSCC standard detail S278/S38/13.

All gully and/or kerb-drain outlets shall include sumps; refer to WSCC standard detail S278/S38/11.

In some circumstances additional measures may be required to enhance the quality of the run-off where the receiving water feature is particularly sensitive to pollution.

Storage

The preference is that the storage features shall not be located on-line of the main spine run. In addition the arrangement of the storage feature shall be designed to minimise the ingress of siltation/debris without relying solely on catchpits.

Headwalls

Refer to WSCC standard detail S278/S38/23 and S278/S38/24.

Structures

Information must be submitted to WSCC if a drain, culvert or watercourse spanning structure has a diameter of 0.9m or greater and/or a headwall or underground structure is proposed within the 45deg load line of the Public Highway.

The minimum permitted culvert size shall be 450mm diameter.

Maintenance

All proposals must demonstrate the life expectancy of various components of the drainage system can be maintained/replaced over their design life.

All proposals must demonstrate suitable unfettered access is provided for routine maintenance, remedial maintenance, and maintenance activities which may require specialist plant.

Easements

Any proposal using land outside the existing/proposed adoptable extents will require a legal easement to ensure WSCC uphold a right for use and maintenance. The owner of that land will be required to enter into a deed of grant of easement.

Commuted Sums

Commuted sums are applied to cover future maintenance associated with the risk of the system failing, risk of subsidence induced by the system and reduced performance due to siltation.

Non-standard drainage assets and SuDS features will attract a commuted sum to cover future maintenance.

Construction Phase

The applicant is responsible for managing run-off at all times during the construction phasing to ensure that uncontrolled run-off and/or siltation does not occur to areas of existing Public Highway and/or watercourses and/or drainage features. Any temporary drainage proposals and/or run-off management proposals shall be agreed with WSCC and/or the Local Drainage Engineer (LPA).

Construction Records

All works associated with a S278/38 Legal Agreement dictate that 'as built' drawings are to be supplied to WSCC in digital format to enable all new assets to be logged.

Other Public Sewers

The site may also dictate a requirement for new Public Foul & Storm Sewers that will be adopted by the Local Water Authority (LWA). These are permitted within the Public Highway areas and will be subject to a Section 104 agreement. Section 38 agreements will not be signed until the Section 104 agreement is signed.

Evidence of the Section 106 connection agreement (LWA) and Section 50 road opening licence (WSCC) being required before the S278/S38 agreement is signed.

Private Drains

WSCC will not accept highway gullies being connected into private surface water sewers which are not subject to S104 Agreements.

Private sewers are not permitted within the public highway area and should be designed to be outside the highway.

Private drainage crossings are permitted and shall be designed to minimise acute angle and crossing distance. Private drainage crossings will require a Section 50 road opening licence.

Private drainage is not permitted to communicate with the highway drain.

Connection of Highway Drain into Private Outfall

WSCC may accept a scenario where a highway drainage system outfalls to a privately maintained SuDs system where it is demonstrated that robust future maintenance regimes are in place and subject to agreement of suitable clauses in the S278/38 agreement.