

North West SuDS Pro-forma

Template for Supporting Guidance

Document Authors

Kevin Baker (Sefton Council)
Philip Carter (Environment Agency)
Francis Comyn (Rochdale Council)
Laura Makeating (Merseyside FCERM Partnership) – Technical Lead
Graham Perry (United Utilities)
Helen Renyard (Cumbria County Council)
Adam Sugden (Fylde Council)
Dianne Taylor (Lancashire County Council)
Sophie Tucker (United Utilities) - Technical Lead
Sally Whiting (North West RFCC)

Document Change Log

Version	Date Agreed	Changes made
Version 1	April 2020	Initial version issued
Version 2	July 2020	<ul style="list-style-type: none">Page 3 – ‘Online tools and information’ section – Para 3 – word ‘approved’ changed to ‘appropriate’
Version 3	August 2020	<ul style="list-style-type: none">Document Change Log addedPage 1 - Para 3 - words ‘of 0.5 hectares’ removed
Version 4	July 2021	Cover page amended and branding removed. No changes to template content.
Version 5	May 2022	Pro-forma guidance updated to take account of the new climate change allowances published on 10 May 2022.

Website: [The Flood Hub](#)

This website is an online resource which has been funded by the North West Regional Flood and Coastal Committee as a one stop shop for flood advice and information across the North West.

© North West Regional Flood & Coast Committee 2020

All rights reserved. This document may be reproduced with prior permission.

North West SuDS Pro-forma

Guidance for completing your pro-forma

[Add Local Authority branding/logo as required]

Endorsed by the Lead Local Flood Authority, Highways Authority, United Utilities and Environment Agency.

CONTENTS

What do I need to submit with my Planning Application?	1
Completing your Sustainable Drainage Strategy and SuDS Pro-forma	2
Further Help and Advice	4
Section 1. Application and Development Details	5
Section 2: Impermeable Area and Existing Drainage	7
Section 3: Peak Runoff Rates	8
Section 4: Discharge Volume	11
Section 5: Storage	13
Section 6: Water Quality Protection	15
Section 7: Details of your Sustainable Drainage System	17
Section 8: Operation and Maintenance	21
Glossary	23

WHAT DO I NEED TO SUBMIT WITH MY PLANNING APPLICATION?

It is important that your application can demonstrate the site can be sustainably drained; this is a principle of development. This should be demonstrated at the earliest opportunity.

If your development proposal is for major development¹, or in a Critical Drainage Area, regardless of your type of planning application, you must submit the following with your application for planning permission:

- 1. Site Specific Flood Risk Assessment (FRA)** - Where one is required under the [National Planning Policy Framework](#) and applicable Local Plan policies. In some cases, these also require you to submit a Sequential Test and/or Exception Test.
- 2. Sustainable Drainage Strategy** – This will include your overall approach and is where you will evidence your approach to surface water management. E.g. plans, drawings, calculations etc. It will also take account of any requirements identified in the FRA.
- 3. Sustainable Drainage Strategy: Pro-forma** – The pro-forma summarises and confirms the details contained within your Sustainable Drainage Strategy and Site Specific Flood Risk Assessment. It is intended to ensure all aspects of sustainable drainage have been considered. The information supplied should be appropriate and proportionate to the planning stage, further information can be gained from contacting your Local Planning Authority or Lead Local Flood Authority.

This document may form part of the Local Planning Authority's 'Planning Validation Checklist.' Planning applications for major development and for sites in Critical Drainage Areas that are not submitted with the above information will not be regarded as a 'valid' application.

This document contains information and guidance about what you need to submit in support of your major planning application.

¹ Major development is defined in Section 2 of [Statutory Instrument 2015 No. 595](#).

COMPLETING YOUR SUSTAINABLE DRAINAGE STRATEGY AND SUDS PRO-FORMA

What is a Sustainable Drainage Strategy?

The purpose of a Sustainable Drainage Strategy is to set out how surface water from a development site will be managed sustainably under both current and future conditions, and to support your proposed approach with appropriate evidence, such as drainage calculations and relevant plans and drawings.

The Sustainable Drainage Strategy must also set out how all sustainable drainage components are intended to be managed and maintained over the lifetime of the development to ensure that the sustainable drainage system will continue to perform throughout its design life.

How is a Sustainable Drainage Strategy different to a Site-Specific Flood Risk Assessment (FRA)?

A Site-Specific FRA assesses all sources of flood risk to and from the site and elsewhere, as a result of the development.

A Sustainable Drainage Strategy demonstrates how surface water from the development will be managed in line with national and local requirements for sustainable drainage systems and should incorporate the findings and address risks identified in the site specific FRA.

What is the purpose of the Pro-forma?

The pro-forma will support your planning application by ensuring that your sustainable drainage design, contained within your Sustainable Drainage Strategy, has considered and appropriately evidenced everything it needs to, reducing the risk of delays or refusal of your application as a result of a lack of information about sustainable drainage proposals.

What if I don't submit the pro-forma with my application?

The pro-forma may be a requirement of the planning validation checklist in the Local Planning Authority area your development proposal is in. This means if you do not submit a completed pro-forma your application will not be 'valid' and therefore will not be processed by the Local Planning Authority until a completed SuDS pro-forma has been received.

Where this pro-forma is not a requirement of the planning validation checklist it is strongly advised that a completed pro-forma is submitted as this will help to ensure that the minimum required information regarding your drainage proposals has been provided.

How do I complete the pro-forma?

You must fill in all white boxes in the pro-forma for the document to be accepted as complete. This guidance note will support you in completing the pro-forma.

FURTHER HELP AND ADVICE

It is advised that you employ an appropriately qualified drainage engineer to design all aspects of your site drainage, including taking account of in perpetuity maintenance of the system.

We would also encourage your drainage engineer to work with the landscape architect for the site.

Online tools and information

The [UK SuDS](#) and [Susdrain](#) websites are helpful in answering common questions on sustainable drainage design and also provide a range of tools, guidance and examples.

[UK Sustainable Drainage Guidance & Tools website](#), supported by HR Wallingford Ltd, provides a comprehensive list of frequently asked questions (FAQs).

The pro-forma can be completed using freely available tools such as [Tools for Sustainable Drainage Systems](#) or appropriate Industry Standard surface water management design software.

Pre-application service

Many Local Authorities offer a 'pre-application' service which enables applicants to obtain guidance and feedback from planning and other specialist officers before submitting their planning application, including from the Lead Local Flood Authority.

This service provides an opportunity for applicants to identify and discuss potential issues before submitting planning applications reducing the risk of applications being refused or delayed. There may be a charge for this service.

SECTION 1. APPLICATION AND DEVELOPMENT DETAILS

What is meant by 'Drained Area' of Development'?

Any area that may contribute to flows within the proposed drainage system. They may be either from permeable or impermeable areas and can also include areas from outside the proposed development area.

Do I need to submit a Site-Specific Flood Risk Assessment (FRA)?

Under **Footnote 50 of Paragraph 163 of the [National Planning Policy Framework](#)** a Site-Specific FRA is required if your development is:

- in Flood Zones 2 and 3 (this applies to all development types)
- in Flood Zone 1, for proposals involving: sites of 1 hectare or more
- on land which has been identified by the Environment Agency as having critical drainage problems
- on land identified in a strategic flood risk assessment as being at increased flood risk in future
- on land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use

If your development proposal meets any of these criteria, there are no exemptions to a Site-Specific FRA and you must submit one in order for your planning application to be validated by the Local Planning Authority.

What information does my Flood Risk Assessment need to include?

The information your Site-Specific FRA needs to include is contained within ['Flood risk assessment for planning applications'](#) and the [Planning Practice Guidance](#).

Reference should also be made to the Local Planning Authority's Strategic Flood Risk Assessment for locally specific guidance and information.

The detail and technical complexity of any Site-Specific FRA will reflect the scale, nature and location of your development proposal.

What if I am unable to complete a Site-Specific Flood Risk Assessment?

It is recommended that someone appropriately qualified is employed to undertake an FRA. If you meet the requirements for a Site-Specific FRA and you must submit one for your planning application to be validated by the Local Planning Authority.

How do I work out the expected lifetime of the development?

The [Planning Practice Guidance](#) states all residential developments have an expected minimum lifetime of 100 years, unless there is specific justification for considering a shorter period.

For non-residential development, you need to specify how long you expect the development to last taking account of the advice given in the [Planning Practice Guidance](#).

Development Type - What is classified as 'Greenfield' and 'Previously Developed'?

It is important that you are clear on the difference between 'Greenfield' and 'Previously Developed' sites in the context of drainage – not planning – and therefore the surface water drainage design standard expected for your development site.

Previously Developed / Brownfield

If you are proposing to use an existing drainage system for surface water management on your development site, your drainage system can be designed to 'previously developed' standards. For sites covered by buildings or impermeable hard surfaces this may require a reduction to existing rates to be applied in order to satisfy local planning policies – please check with your Local Planning Authority (LPA).

For the avoidance of doubt, 'use of an existing drainage system' means utilising the **entirety** of the existing drainage system on site and does not refer to simply the point of discharge.

- **Example:** If you are proposing to demolish an existing building and replace it with a new building but will use the existing means of surface water removal in entirety, this would be classified as 'previously developed.'

Greenfield

If you are proposing to install a new drainage system for surface water management on your development site then your drainage system must be designed to 'greenfield' standards, even if the land has been previously developed. It may be worth checking your Local Planning Authority's Local Plan for a local policy position.

- **Example 1:** If you are proposing to construct buildings on land which has been previously developed (i.e. brownfield) but are installing a new surface water drainage system connecting to the existing outfall, this would be classified as 'greenfield.'
- **Example 2:** If you are proposing to construct buildings on unbuilt 'green' land and will be installing a new surface water drainage system connecting to a new or existing outfall, this would be classified as 'greenfield.'

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

How do I work out the impermeable area?

Anything that has, or will have, impermeable surfaces within the curtilage of your development site must be included here. This includes impermeable roads, footpaths and buildings.

What should be considered as existing flow routes and flood risks?

Any flows that will enter and cross the development site. The catchment area above the site should also be considered and details of how these existing flow routes will be managed through the site so that flooding is not increased either within or outside the site.

Do I need to consider flows coming onto the site?

Yes, any flows that are likely to flow onto the site need to be considered as part of the planning submission. Details on how the flows enter the site and how they will be managed once the development is complete should be included.

For example, surface water from adjacent land may run overland across the development site. You must assess how best to deal with this runoff and ensure you do not block its path with the new development. You may need to mitigate against this potential flood risk by creating a flow path through the site or diverting the flow around the site

What areas should be considered for the contributing areas in hydraulic models?

Any areas flowing into the drainage system should be considered as part of the contributing areas. These can be either permeable or impermeable areas. You should consider how you will achieve this if your software package only assumes runoff from impermeable areas.

SECTION 3: PEAK RUNOFF RATES

Why is this information required?

[Defra's Technical Standards for Sustainable Drainage Systems](#) require peak runoff rates from development sites to be restricted in line with Technical Standards S2, S3 and S6, unless S1 applies.

What is the 'peak runoff rate'?

This is the maximum flow rate at which surface water runoff leaves the site during the critical storm event.

How do I calculate Existing Runoff Rates from Previously Developed / Brownfield sites?

The available methods of calculating runoff rates from previously developed sites are outline in **Chapter 24.5 of [The SuDS Manual \(C753\)](#)**. Discuss with the LLFA if you are unsure.

How do I calculate Greenfield Runoff Rates?

The available methods of calculating Greenfield runoff rates are outline in **Chapter 24.3 of [The SuDS Manual \(C753\)](#)**. Discuss with the LLFA if you are unsure.

What about watercourses discharging to estuarial waters that are tidally affected?

Where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges without any impact on flood risk from that surface water body (e.g. the sea or a large estuary) the peak flow control standards and volume control technical standards need not apply.

Confirm with your LLFA prior to planning application submission.

Which methodologies should be used to calculate discharge rates?

Methodologies listed in **Chapter 24 of [The SuDS Manual \(C753\)](#)** are considered appropriate.

What values do I use for Qbar?

Qbar is the peak rate of flow from a catchment for the mean annual flood, a return period of approximately 1:2.3 years. $Qbar_{rural}$ should be used for this value.

What must I limit proposed post-development surface water discharge rates to?

That depends on the approach you take to limiting the amount of surface water discharged from the site.

Approach 1 (Long Term Storage) controls discharge rate and discharge volume by providing long-term storage, allowing an attenuated volume equivalent to the 1:100 year 6 hour greenfield event to be discharged at the greenfield 1:100 year rate for the 1 in 100 year 6 hour event (plus an allowance for climate change). Additional post-development runoff volume should be infiltrated into the ground or released at a rate no greater than 2 l/s/ha.

Therefore, in accordance with Standard S2 and S3 of [Defra's Technical Standards for Sustainable Drainage Systems](#) the following discharge rates from the development to any highway drain, sewer or surface water body must be achieved:

Greenfield Site: For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event **and** the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.

Previously Developed Site:

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event **and** the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

Approach 1 is the preferred approach but is only appropriate when the volume of surface water discharged from the site for the 1 in 100 (plus climate change) 6 hour event is limited to the greenfield equivalent. This is achieved through the use of long-term storage (if the actual greenfield volume cannot be achieved) which will either be infiltrated into the ground or released at a rate no greater than 2 l/s/ha.

Approach 2 (Attenuation Only) provides an alternative where the greenfield runoff volume cannot be achieved/it can be demonstrated that long term storage is unachievable. In accordance with S6 of [Defra's Technical Standards for Sustainable Drainage Systems](#), which requires runoff volume to be discharged at a rate that does not adversely affect flood risk, rainfall events up to and including the 1:100 year (plus climate change) event should be attenuated and released at the greenfield Q_{bar} rate.

For more information you can refer to the following:

- **Chapter 3.3 of [The SuDS Manual \(C753\)](#)**
- [Rainfall runoff management for developments](#) (Environment Agency)
- [Assessing attenuation storage volumes for SuDS](#) (CIRIA)

To mitigate for climate change the proposed 1 in 100 year (plus climate change allowance) rainfall event must be no greater than the existing 1 in 100 year rainfall event runoff rate. If this cannot be achieved, surface water flood risk increases under climate change.

To avoid delays or refusal it is advisable to confirm with your LLFA that your proposed discharge rate is acceptable prior to submission if the rate of discharge is higher than the greenfield equivalent. The proposed

rate must be justified and appropriately evidenced as there is a presumption that greenfield rates are achievable for the majority of sites.

What volumetric and routing coefficients should I use?

You should not assume software package default values will be acceptable – you must be able to justify the parameters you have used. Refer to **Chapter 24 of [The SuDS Manual \(C753\)](#)** for more information

How can I restrict flow rates?

It is recommended that you refer to [The SuDS Manual \(C753\)](#) for options of how to restrict your flow rate(s), essentially the options available are:

- vortex control systems
- inlets, outlets and flow control systems

SECTION 4: DISCHARGE VOLUME

What is 'discharge volume' and why must I consider it?

Discharge volume is the total volume of water leaving the development site for a particular rainfall event.

Introducing new impermeable surfaces increases surface water runoff and therefore can increase flood risk within and outside the development. By understanding the increase in surface water runoff volume measures can be taken to attenuate flows and mitigate any potential flood risk outside of the development.

[Defra's Technical Standards for Sustainable Drainage Systems](#) require runoff volume from development sites to be restricted in line with Technical Standards S4, S5 and/or S6, unless S1 applies.

What must proposed post-development surface water discharge volume be limited to?

In line with Standard S4 and S5 of [Defra's Technical Standards for Sustainable Drainage Systems](#) the following discharge volumes from the development to any highway drain, sewer or surface water body must be achieved:

Greenfield Site: For greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.

Previously Developed Site: For developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with the above, the runoff volume must be discharged at a rate that does not adversely affect flood risk (usually Q_{bar}). Discuss with your LLFA pre-application if this is not achievable.

Why do I need to calculate the runoff volume for the 100 year 6 hour storm event?

This is a simple method of calculating the volume of surface water discharging from a development site to determine whether there will be an increase in runoff volume discharging to the downstream catchment and subsequently whether there will be an increase in flood risk

By using a single specific storm event such as the 100 year 6 hour storm event, we are able to compare the volumetric runoff response from the existing site and the developed site.

The greenfield runoff volume generated by the 100 year 6 hour storm is the maximum volume that can be attenuated and discharged at the 1:100 year greenfield discharge rate. Additional volume generated as a result

of development for the 1:100 (plus climate change event) 6 hour storm should utilise long-term storage and either infiltrate into the ground or discharge at a rate of 2 l/s/ha.

For more information, refer to the FAQ section on uksuds.com.

How can I demonstrate that the proposed post-development surface water discharge volume has taken account of climate change?

To mitigate for climate change, the volume discharge from site during the 1:100 year + climate change event should be no greater than the greenfield_1 in 100 year event.

The appropriate climate change allowance must be applied. **See guidance under Section 5** for what climate change allowance you need to apply.

SECTION 5: STORAGE

Why is this information required?

[Defra's Technical Standards for SuDS](#) requires flood risk within the development to be considered and the sustainable drainage system designed to ensure flooding doesn't occur on-site or elsewhere during certain rainfall events in line with Technical Standards S7, S8 and S9.

How can I provide storage for surface water?

To slowly release surface water at a restricted (attenuated) rate you will need to provide storage where excess flows can be held.

Paragraph 165 of the [National Planning Policy Framework](#) encourages multifunctional benefits of sustainable drainage systems and opportunities to achieve this are encouraged, for example through the use of detention basins, ponds, wetlands and swales.

It can be more cost effective to store volumes of water across a site in sub-catchments as part of the SuDS management train rather than storing at one location prior to discharge ([Assessing attenuation storage volumes for SuDS, CIRIA fact sheet](#)).

Please note that regardless of the approach used, it is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site.

What climate change allowance do I need to provide?

The capacity of SuDS must provide effective drainage for the development, taking account of the likely impacts of climate change and the likely changes in impermeable area within the site over the lifetime of the development.

New [climate change allowances](#) were published on 10 May 2022. You will need to ensure you incorporate the new allowances into your flood risk assessment and sustainable drainage design.

When determining what climate change allowance to apply, two variables must be considered:

1. [Location and size of the drainage catchment](#)

- **Urban/Small (flashy) Catchments:** Use the [peak rainfall allowances map](#) for small catchments (less than 5 sq km), or urbanised drainage catchments. A drainage catchment is urban if the land use is a town or city.
- **Rural/Large Catchments:** For large rural drainage catchments use the [peak river flow allowances](#).

2. [Lifetime of the development](#)

- For all residential development, the development lifetime is 100 years.

- For all other development types, a 100-year lifetime is to be applied unless the development has a time limited planning condition OR a shorter development lifetime is agreed in writing with the Local Planning Authority.

For flood risk assessments and strategic flood risk assessments the upper end allowance must be assessed for **both** the 1% and 3.3% annual exceedance probability events for the 2070s epoch (2061 to 2125).

Discuss with the Lead Local Flood Authority if you are unsure what climate change allowance to apply.

What rates should I use for Urban Creep?

Urban creep is the conversion of permeable surfaces to impermeable over time e.g. surfacing of front gardens to provide additional parking spaces, extensions to existing buildings, creation of large patio areas.

The appropriate allowance for urban creep should be included in the design of the drainage system over the lifetime of the proposed development.

In accordance with Section 24.7.2 of [The SuDS Manual \(C753\)](#) and Section 8.3 of [BS 8582:2013 Code of practice for surface water management for development sites](#), to allow for future urban expansion within the development an increase in paved surface area of 10% is to be applied if there is no specified value stipulated by the Lead Local Flood Authority or Local Planning Authority.

SECTION 6: WATER QUALITY PROTECTION

Why do I need to consider water quality in my proposal?

All surface water runoff is, to some degree, contaminated. You are asked to identify the pollution hazard level associated with the proposed development. This is the first stage in identifying an appropriate surface water SuDS treatment train as part of your drainage design to consider the risks of pollution to controlled waters.

This information is required to satisfy **Paragraph 170 of the [National Planning Policy Framework](#)** and is therefore necessary to consider before a surface water drainage strategy can be agreed.

Why do I need to consider if the ground is contaminated?

The previous use of the site will also influence the type of sustainable drainage system proposed. For example, if the ground is contaminated the use of infiltration would not be appropriate.

This is acknowledged within Section 7b of the pro-forma as a reason why infiltration has been discounted '*Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality*'.

How can I demonstrate that I have considered water quality?

You can take measures to reduce contamination and therefore negative impacts on the water quality of receiving water bodies by including an appropriate treatment train as part of your sustainable drainage system in accordance with [The SuDS Manual \(C753\)](#).

The level of treatment required in the surface water drainage system will be dependent on the nature and scale of the proposed development. This is called the 'pollution hazard level' and once this is known [The SuDS Manual \(C753\)](#) provides detailed technical guidance on how to quantify which SuDS features will provide an appropriate level of treatment for a given land use.

What if my development poses a medium or high pollution hazard level?

For all high pollution hazard level developments, a more detailed assessment of the pollution risks from surface waters will be required as an appropriate surface water SuDS treatment train cannot be established without it. This information will be required before a surface water drainage strategy can be agreed.

For some medium pollution hazard level developments, further detailed assessment will be required to consider the risks of pollution to controlled waters and determine what SuDS features would be most appropriate. This information will be required before a surface water drainage strategy can be agreed.

Developments with a High and / or Medium pollution hazard potential may also require an [Environmental Permit from the Environment Agency](#). For proposals of this nature, it is advisable to undertake pre-application discussions with the Environment Agency. The Environment Agency charge for providing detailed planning guidance through their discretionary advice service. More information is available [here](#).

On contaminated sites, sufficient information should be submitted to demonstrate that the SuDS components proposed will not increase the risk of pollution to controlled waters through the mobilisation of contaminants and/or the creation of new pollution pathways.

What if my development poses a low pollution hazard level?

For low pollution hazard level developments, you should incorporate an appropriate surface water SuDS treatment train into the design of your sustainable drainage system. [The SuDS Manual \(C753\)](#) provides detailed technical guidance on how to quantify which SuDS features will provide an appropriate level of treatment for your given land use.

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

Functions of your Sustainable Drainage System

Development often alters natural drainage by replacing free draining and/or vegetated ground with impermeable surfaces, gullies, pipes and channels. These changes result in an increase in the total volume and flow of runoff from a site.

For this reason, it is encouraged for applicants to consider how they can first utilise rainwater as a resource within their proposals, and to promote source control (managing rainfall close to where it falls) which promotes natural losses through soakage, infiltration and evapotranspiration.

This will help to reduce discharges of surface water from site in the smaller rainfall events, helping to retain it onsite similar to the pre-developed condition.

What is the SuDS Hierarchy?

The hierarchy of drainage options is outlined in the [Planning Practice Guidance](#).

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

- 1. into the ground (infiltration);**
- 2. to a surface waterbody;**
- 3. to a surface water sewer or highway drain;**
- 4. to a combined sewer.**

Applicants must submit robust justification and appropriate evidence, to demonstrate how each level has been discounted. The evidence required at each stage of the hierarchy is specified in the 'Evidence Required' column of the pro-forma.

When can infiltration be used in drainage design?

Infiltration allows surface water runoff to infiltrate into the ground and should be used wherever possible. Infiltration is encouraged to be used alongside and in addition to other SuDS techniques, for example, to deliver interception for the upstream hardstanding areas, and can help reduce the amount of attenuation required for a site and replicate greenfield conditions for frequent rainfall events. Where ground conditions allow, discharge to ground via infiltration can be used as the effective outfall for surface water disposal (as per the above hierarchy).

Maximising infiltration, for example through source control measures, reduces the volume of runoff and can therefore reduce the volume of attenuation you need to provide as part of your sustainable drainage system.

Infiltration can also:

- be effective at pollutant removal via filtering through the soils
- be simple and cost-effective to construct and maintain

Why do I need to submit a 'Plan B' sustainable drainage design?

For proposals, particularly outline applications, where the effective outfall is to ground (via infiltration) the applicant should consider an alternative 'Plan B' sustainable drainage design utilising an alternative discharge method, for the event that infiltration proposals are not feasible upon site specific ground investigation.

What minimum evidence do I need to provide in this section for an outline application?

For both your Plan A and Plan B SuDS designs, the minimum information you should provide is a desktop study of the ground conditions on your development site.

If you have also undertaken ground investigations e.g. a geotechnical survey and/or infiltration testing you should also submit these in support of your application, in accordance with the 'evidence checklist'.

Where can I find information on indicative ground conditions?

British Geological Survey offers a 'SuDS Infiltration Map' service which will provide a comprehensive indication on whether infiltration will be feasible on your development site. This information can be submitted in support of your application and will support you in designing your sustainable drainage system:

<https://www.bgs.ac.uk/products/hydrogeology/infiltrationSuds.html>

Your Local Planning Authority may also have more local information on ground conditions in the area.

What level of detail do I need to provide in my Plan B SuDS design?

As this is an alternative SuDS design, the design should be based on assumptions that key variables (e.g. ground conditions) of your 'Plan A' design are unfeasible and provide:

- a description of how and where you intend to store and discharge surface water.
- a map showing where you intend to store and discharge surface water.

NOTE: The volume of storage and rate of surface water discharge for your Plan B design will remain unchanged.

What is a Watercourse Survey Report?

This survey and report details the condition of the watercourse to which the site drains including cross-sections of any adjacent watercourses for appropriate distance upstream and downstream of the discharge point (as agreed with the Lead Local Flood Authority and/or Environment Agency).

In cases of culverted watercourses a CCTV survey may be required to demonstrate its structural condition.

Under what circumstances will I need watercourse permission?

If your development proposals are within 8 metres of the top of the banks of a watercourse (16 metres of a main river if it involves quarrying or excavation or if it is a tidal main river) or make changes to a watercourse, you may need a Consent or Permit **in addition to** planning permission.

The requirement for a Consent or Permit is **separate to and independent of** any planning permission given by the Local Planning Authority. This means that the grant of planning permission does not guarantee that Consent or a Permit will be given.

What type of watercourse permission do I need and how do I apply?

Watercourses have two classifications – ‘ordinary’ and ‘main river’ – and this determines what type of permission you require.

- **Main Rivers** are watercourses which **have** been designated as a ‘Main River’ on the Environment Agency's ‘Main River’ map. Works near to or on these watercourses may require a [Permit](#) from the Environment Agency.
- **Ordinary Watercourses** are watercourses which **have not** been designated as a ‘Main River’ on the Environment Agency's ‘Main River’ map. Works to these watercourses require consent from the LLFA.

You can identify whether a watercourse is classified as a ‘main river’ or ‘ordinary watercourse’, by viewing the Environment Agency's [‘Main River Map’](#).

When do I need to apply for watercourse permission?

It is strongly advised that you obtain any required Consent or Permit **before or concurrently** as you apply for planning permission to avoid delays. This is supported by **Paragraph 42 of the [National Planning Policy Framework](#)** which encourages parallel processing of other required consents.

You **must** obtain your Consent or Permit before undertaking any work on site. You are breaking the law if you carry out activity without one and may be subject to enforcement action if you do not obtain the necessary permission.

How can I obtain agreement to discharge to the sewer from the Water and Sewerage Company?

You must have written approval from the Water and Sewerage Company before you can connect to a public sewer.

United Utilities will advise a maximum rate of discharge. However, the final discharge rate is to be agreed with the Lead Local Flood Authority and is unlikely to be greater than greenfield runoff rates. Any discharge

to the public sewer is on the condition that the other options, as outlined within the surface water hierarchy of discharge options (in order of priority) have been discounted.

Proposed SuDS component types

In this section, the applicant should identify the SuDS components proposed as part of their sustainable drainage system design that are:

- Within the property boundary
- Within the development site boundary
- Not within the boundary of the proposed development (off site).

[Susdrain website](#) provides a useful overview of different SuDS components.

What if part of the proposed SuDS is outside the curtilage of the development site?

If any part of your proposed sustainable drainage system is outside of the curtilage of the development site **AND** the applicant owns the land, you must submit a plan showing the amended curtilage of the development site to the Local Planning Authority.

If your point of discharge for your sustainable drainage system is through/via land that is **NOT** owned by the applicant, you must secure an appropriate legal agreement with the land owner for construction works, access, ownership and in perpetuity maintenance of the asset. Evidence of this must be supplied to the LLFA.

When would I need a Third Party Landowner Agreement?

If you are constructing any part of your sustainable drainage system on land that is **NOT** owned by the applicant i.e. 'off site' as indicated in Section 7c of the pro-forma.

You must secure an appropriate agreement with the landowner for construction works, access, ownership and in perpetuity maintenance of the asset. Evidence that this has been secured must be provided **before** the approval of your final confirmed sustainable drainage design.

What are the 'types' of pervious pavements?

You can find details of this in **Chapter 20** of [The SuDS Manual C753](#).

Where can I find guidance on designing for exceedance?

[CIRIA Designing for exceedance in urban drainage - good practice \(C635\)](#).

SECTION 8: OPERATION AND MAINTENANCE

Why do I need to consider operation and maintenance of the sustainable drainage system?

Operation and maintenance of the SuDS system should be considered at an early stage. The Designer has an obligation to design for maintenance under The Construction (Design and Management) Regulations 2015.

Paragraph 165 of the [National Planning Policy Framework](#) requires maintenance arrangements to be put in place to ensure an acceptable standard of operation for the lifetime of the development.

[Sustainable Drainage Systems: Written Statement - HCWS161](#) states that ‘in considering planning applications, local planning authorities should consult the relevant lead local flood authority on the management of surface water; satisfy themselves that the proposed minimum standards of operation are appropriate and ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development’.

[Defra's Technical Standards for Sustainable Drainage Systems](#) state:

***S10** Components must be designed to ensure structural integrity of the drainage system and any adjacent structures or infrastructure under anticipated loading conditions over the design life of the development taking into account the requirement for reasonable levels of maintenance.*

***S11** The materials, including products, components, fittings or naturally occurring materials, which are specified by the designer must be of a suitable nature and quality for their intended use.*

What do I need to provide to demonstrate maintenance arrangements are or can be put in place?

Applicants must provide the information listed within the ‘Evidence Required’ columns of the pro-forma to demonstrate to the Local Planning Authority (LPA) that clear arrangements will be in place for on-going management and maintenance over the lifetime of the development.

What are the maintenance options for sustainable drainage systems?

There are a range of viable maintenance options for the ownership and adoption of sustainable drainage systems, therefore the applicant should clearly state their proposed maintenance and management arrangements.

The applicant should identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption.

What about SuDS components that are within a property boundary (e.g. roof garden)?

The applicant may be required to enter into a Section 106 agreement prior to the grant of planning permission, requiring that any sustainable drainage components on private property (e.g. individual houses) are maintained in perpetuity by the landowner enforced by a Deed of Grant and applied to the freehold title.

For any SuDS components proposed within the curtilage of a private property (e.g. individual houses) the developer should clearly set out any maintenance responsibilities for those SuDS components and potential implications of non-maintenance, and ensure this is communicated to the purchaser of such properties.

Developers are encouraged to provide details of SuDS components on the development site, both communal and private (property level), for inclusion within the Home Information Pack.

GLOSSARY

Combined Sewer	A sewer that drains both rainwater and foul water.
Curtilage	Land area within property boundaries
Culvert	A covered structure under a road, embankment etc, to direct the flow of water.
Evapotranspiration	The process by which the Earth's surface or soil loses moisture by evaporation of water and by uptake and then transpiration from plants.
Exceedance design	Designing a system to manage effectively events that exceed (i.e. are bigger and rarer than) the drainage system's required level of service.
Exceedance event	A rainfall or flow event that exceeds (i.e. is bigger and rarer than) the design event, not to be confused with an extreme event.
Exceedance flows	Flows in excess of those for which a system is designed
Four pillars of SuDS	The types of benefits that can be achieved by SuDS will be dependent on the site, but fit broadly into four categories: water quantity, water quality, amenity and biodiversity. These are also referred to as the four pillars of SuDS design.
Flood routing	Design and consideration of above-ground areas that act as pathways permitting water to run safely overland to minimise the adverse effect of flooding. This is required when the design capacity of the drainage system has been exceeded
Geohazard	A geologic hazard. In the case SuDS, this is particularly relevant for infiltration. See Chapter 25.2.3 of The SuDS Manual (C753) for more information.
Greenfield runoff	The surface water runoff regime from a site before development.
Home-zone	As a residential street where people and vehicles share the whole of the street space safely, and on equal terms, where quality of life takes precedence over the ease of traffic movement.
Infiltration	The passage of surface water though the surface of the ground / the entry of groundwater to a sewer.
Interception	The capture and retention on site of the first 5mm (or other specified depth) of the majority of all rainfall events

Management train	The sequence of drainage components that collect, convey, store and treat runoff as it drains through the site.
Modified flow routes	Flow routes that have been modified as a result of the development.
Ordinary Watercourse	Any watercourse that does not form part of a main river and is not classified as a main river.
Peak flow	The point at which the flow of water from a given event is at its highest.
Riparian landowner	A riparian landowner is the owner of land that is next to a watercourse or has a watercourse running through or beneath it. Riparian landowners have discrete legal rights and responsibilities in relation to the watercourse and its banks.
Source control	The control of runoff at or near its source, so that it does not enter the drainage system or is delayed and attenuated before it enters the drainage system.
SuDS component	An individual element of the drainage system that conveys, stores and/or treats surface water runoff. Susdrain website provides an overview of different SuDS components.
Treatment	Improving the quality of water by physical, chemical or biological means
Treatment train	Improving the quality of water by physical, chemical or biological means via a sequence of drainage components (see management train).
Urban creep	The increasing density of development, due to extensions, paving over of gardens and other permeable areas, and the addition or extension of roads or buildings, which increases the impermeability of developed areas and causes rates and volumes of runoff to rise.