

November 2023 update on Climate Change, Infrastructure and Environment Committee recommendations and progress to date

Recommendation 2: We must see demonstrable progress from NRW on its work to bring ‘unpermitted’ storm overflows within the regulatory regime. We expect NRW to report back to the Committee on progress no later than 6 months of the publication of this Report.

On 26th October 2023 NRW issued 2 pieces of guidance to Water companies in Wales on classifying and assessing storm overflows and the process for permitting unpermitted overflows (those currently without an EPR permit).

Assessing Storm Overflows (GN066) The guidance outlines the criteria, process and methodology Water and Sewerage Companies should use to classify the performance of permitted and unpermitted storm overflows.

The classification will be used to plan and prioritise improvements to bring all storm overflows up to satisfactory status. We expect Water Companies to prioritise those assets causing harm first with a programme for improving all other assets to satisfactory over the coming investment cycles.

Under our new guidance, water companies must classify all their storm overflows as 'satisfactory', 'sub-standard,' or 'unsatisfactory'.

This will allow us as the regulator to better identify where assets may be causing environmental harm and help the water companies to better focus their maintenance and investment.

The guidance also sets clear definitions about the conditions under which a storm overflow is permitted to spill within its environmental permit.

This includes definitions for what constitutes a 'dry day discharge' and the required rainfall totals to justify a spill during 'heavy rainfall' using definitions set by the Met Office.

Unpermitted Storm Overflow guidance (GN021) sets out the steps that you must take when you intend to apply for an EPR permit. The information submitted with a permit

application is dependent on the classification of the storm overflow (SO) performance and whether the SO discharges directly or indirectly into a protected site.

Recommendation 3. NRW and water companies should publish annual data and/or information on the proportion of sewage spills that are not within permit conditions, which category of pollution incidents these resulted in, and whether enforcement action was taken.

In July 2023 we published our 2022 annual water company environmental performance reports for [Dŵr Cymru Welsh Water](#) and [Hafren Dyfrdwy](#). For 2022 Dŵr Cymru's performance dropped from 3 star to 2-star status.

As we continue to progress through the EPA reporting period (2021-25), we expect Dŵr Cymru to make positive progress across all seven metrics. The EPA metrics will continue to tighten over this EPA reporting period (2021-25) ensuring targets are challenging for the company. We expect them to implement measures to regain and maintain high company status. Specifically:

- reduce the total number of sewerage incidents year on year – aiming for zero.
- stop all serious pollution incidents (both sewerage and water supply) in the short-term.
- improve numeric water quality compliance – to achieve 100%.
- reverse the decline in self-reporting of pollution incidents, with a specific focus on significantly improving self-reporting at Pumping Stations and Sewage Treatment Works.
- maintain performance on satisfactory sludge use and disposal
- maintain 100% of AMP National Environment Programme scheme delivery.
- maintain performance on the SDBI.

In line with the storm overflow roadmap actions we also issued for the first time our report for spill data from storm overflows, NRW will continue to develop the annual report for future years looking to match the committee recommendations as well as setting targets for data quality as part of our reporting.

Recommendation 4. NRW, water companies and other relevant stakeholders should develop enhanced monitoring arrangements with a view to better understanding the impact of sewage spills on receiving water. In taking this work forward, consideration should be given to the potential role of citizen science within enhanced arrangements.

NRW will publish its evidence findings in December 2023 as part of the storm overflow action plan. The review will inform the development of a monitoring programme which will both support the evidence base and be used in conjunction with the recently published NRW guidance for storm overflows noted above.

A requirement of companies within the National Environment Programme within PR24 Programme is for water companies and Ofwat to ensure monitoring and funding for monitoring is in place for water companies to monitor storm overflows at agreed locations to provide both greater evidence and understanding of the impact of storm overflows on the environment.

At present we do not intend to instruct water companies to monitor every asset across Wales, our monitoring and evidence programme will look at strategic locations initially and consider the findings before agreeing any additional requirements.

Recommendation 8. NRW should report back to the Committee on action taken as a result of the findings of Ofwat and the Environment Agency's investigations, as soon as practicable. This should include details of any review of NRW's compliance approach, and any work undertaken with, or enforcement action taken against, water companies as a result of those findings.

NRW is in close contact with both Ofwat and Environment Agency on the current status of both investigations. NRW is aware of the developments but recognises the sensitive and confidential nature of any investigation.

NRW will continue to develop our approach to regulation of intermittent discharges as outlined in the storm overflow action plan but will not hesitate to react to the findings of both investigations as information regarding Welsh companies are shared and reserves the right to take enforcement action whenever necessary.

Unpermitted storm overflows

Guidance note

Reference number: GN021

Document Owner: Head of Business, Regulation and Permitting

What is this document about?

This guidance note should be used in conjunction with GN066 How to classify storm overflow performance. It outlines the steps a Water and Sewerage Company should take when a storm overflow does not have an environmental permit. The pre-application requirements may depend on the agreed SO classification.

Who is this document for?

Water and Sewerage Companies

Contact for queries and feedback

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1. Introduction

We expect Water and Sewerage Companies to design, construct and maintain sewerage systems to minimise pollution of the environment and provide long term sustainability in accordance with the Well-being of Future Generations (Wales) Act 2015 and other applicable legislation.

All storm overflows (SOs) are required to have an Environmental Permitting Regulations 2016 (EPR) permit to authorise water discharge activities. However, some SOs may not benefit from an EPR permit. This may be because some discharges were unknown at the time of privatisation. Since then, they may have been identified during water company survey work, regulatory compliance activity or brought to our attention by the public. They may also be identified for example, where a pumping station that has a permit to discharge during emergency conditions only, has been found to be responsive to rainfall.

Unpermitted SO discharges must either be brought into regulation (benefit from an EPR permit) within timescales specified in this guidance or be decommissioned.

This guidance note sets out the steps that you must take when you intend to apply for an EPR permit. The information submitted with a permit application is dependent on the classification of the SO performance and whether the SO discharges directly or indirectly into a protected site.

Guidance to classify an SO is provided in GN066 How to classify storm overflow performance.

2. Newly identified unpermitted storm overflows

When you identify a previously unknown SO that does not benefit from an EPR permit you should report it to us, via our Incident Communication Centre (ICC) as soon as is reasonably practical. Following the self-report, you should log the unpermitted SO and the date it was identified, on a tracking system agreed with us.

Water discharges that may contain polluting matter, from an asset that does not benefit from an EPR permit are considered unlawful. As such, we will follow our normal regulatory response and consider enforcement options in accordance with our Enforcement and Sanctions Policy.

If you are already aware of an unpermitted SO, you should confirm that it is recorded on the register we hold.

If you become aware of a [pumping station](#) emergency overflow that is responsive to rainfall and is not permitted as a storm overflow, you should [carry out the steps in section 5](#). We normally refuse permit applications for existing emergency overflows to operate as storm overflows that were not originally designed to include a SO.

3. Process overview

You will need to classify the SO asset as satisfactory, substandard, or unsatisfactory using the process described in GN066 How to classify storm overflow performance. This does not apply if it is your intention from the out-set to decommission it.

The environmental impact assessment, may take up to 24 months to complete. This timeframe allows sufficient time to carry out seasonal invertebrate sampling and complete sewer and river impact modelling.

The supporting information that determines the classification, should be submitted to us for agreement within 24 months of it being identified. The information we need to be able to agree the classification, is specified in GN066 How to classify storm overflow performance.

Where an SO is classified as substandard or unsatisfactory, an appropriate level of investigation must be undertaken to define the requirements necessary to bring the SO in line with satisfactory status.

Where a full Urban Pollution Management (UPM) study is required to identify a solution to a hydraulic issue, the investigation must be completed within 24 months from agreement of the classification status. If the root cause is not an hydraulic issue, we expect a solution to be identified no later than 12 months following agreement of the classification status. If these timeframes cannot be met, they must be agreed in writing with us.

Where an SO has been classified as substandard or unsatisfactory the permit application must contain details about how the SO will be brought into satisfactory condition. You are required to agree the timescale for delivery of the improvement scheme with us, as this will be incorporated into an improvement condition, when a permit is issued. A tracking system to monitor progress with the improvement condition, should be agreed with us.

After the classification has been agreed with us, you should apply for an EPR permit.

Habitat Regulations Assessment (HRA)

A permit application should include a Habitat Regulations Assessment (HRA) if the SO discharges into a European protected site, namely a Special Area of Conservation (SAC), Special Protection Area (SPA) or a Ramsar site.

You should consult with us for the purposes of the HRA before submitting a permit application.

A HRA should be carried out in accordance with the Conservation of Habitats and Species Regulations 2017 and Welsh Government Guidance on HRAs.

A HRA may be required irrespective of whether the SO discharges directly into a SAC, SPA, Ramsar designated waters or indirectly. Check with our permitting department to clarify if there is a need to carry out a HRA as early as possible.

We will review the HRA as part of the application in the permit determination process and will only grant one, if we are satisfied that adverse effects will be avoided to protected sites.

Decommissioning a storm overflow

If a SO is identified which is no longer required, you will not need to apply for a permit. You should still notify us when it has been identified.

Information about the proposals to decommission a SO should be supplied to us. We will need to agree them. A completion date must be provided, and proof of decommissioning supplied.

You should also advise us if the SO should have been removed during a previous Asset Management Programme (AMP) round, as part of a National Environment Programme (NEP) funded scheme.

4. Permit application requirements

Satisfactory storm overflows

Where the SO meets the satisfactory criteria set out in GN066 How to classify storm overflow performance, you should log the SO classification with us for agreement.

A permit application should be made no later than one month following agreement of the classification. You can apply for an EPR permit without further work required upfront.

The application should include a [HRA](#) where applicable. It should demonstrate that the continued operation of the SO will not have any adverse effects on a protected site. You should always consult with us for the purposes of the HRA.

You will need to carry out regular maintenance to ensure that the SO does not become substandard or unsatisfactory in the future.

Substandard storm overflows

When you have classified the SO as substandard, using the criteria set out in GN066 How to classify storm overflow performance, the following steps will need to be undertaken:

- Log the SO classification with us for agreement.
- If the overflow is substandard due to insufficient hydraulic capacity, a further 24-month period will be allotted following agreement of classification. You must carry out a study to define the requirements which will bring the SO in line with satisfactory status.
- If the overflow is substandard due to reasons other than insufficient hydraulic capacity, a further 12 months will be allotted following agreement of the classification. You must carry out a study to define the requirements which will bring the SO in line with satisfactory status.
- Consult with us if a HRA is required

- Apply for a permit
- If applicable, include the HRA in the application, provide evidence to demonstrate there will be no adverse effects
- Provide detail in the application about how the SO will be brought into satisfactory condition, including timescales.
- Agree timescales for delivery with us as they will be included in the permit as part of an improvement condition.
- Agree in advance with us, in writing, if there is likely to be any deviation from the above steps.

Unsatisfactory storm overflows

When you have classified the SO as unsatisfactory, using the criteria set out in GN066 How to classify storm overflow performance, the following steps will need to be undertaken:

- Log the SO classification with us for agreement.
- Investigate and identify an improvement scheme within 24 months of agreeing the classification with us.
- Undertake a suitable [urban pollution management](#) (UPM) investigation to define the required solution.
- Agree the scope of the investigation with us in advance.
- Ensure there are no knock-on impacts at other SOs or terminal Wastewater Treatment Works (WwTW) unless this has been agreed as part of a wider catchment solution.
- Consult with us if a HRA is required.
- Apply for a permit after the UPM investigation.
- Include detail in the permit application on how the SO will be improved to satisfactory condition.
- If applicable, include the HRA in the application, provide evidence to demonstrate there will be no adverse effects.
- The timescale for delivery must be agreed with us, as it will be included in the permit as part of an improvement condition.
- Confirm that the delivery of the scheme will be no more than 3 years from the date of permit issue.
- Agree in advance with us, in writing, if there is likely to be any deviation from the above steps.

Derogation requirements

If the SO is classified as unsatisfactory either wholly or partly because the [HRA](#) appropriate assessment is unable to rule out adverse effects on a SAC, SPA or Ramsar site, we may issue the permit as a derogation. We will only do this if we are satisfied that there are no alternative solutions and if there are imperative reasons of overriding public interest (IROPI) for the continued operation of the SO.

In the situation described above, permit applications for SOs classed as unsatisfactory wholly or partly due to impacts on a SAC, SPA, or Ramsar site, must also include the following information:

- Evidence to demonstrate that there are no alternative solutions to the continued operation of the SO.
- The reasons why decommissioning the SO is not an option.
- Evidence to show that the continued operation of the SO is necessary for IROPI.
- Information about how and when the proposed improvement plan (when implemented), will ensure that the SO will not adversely affect the SAC, SPA, or Ramsar site.

As part of the permit determination, we will review the HRA along with the information you provide, in support of a derogation. Before we can issue a permit of this nature, we are required to notify Welsh Government. They will either confirm that they have no objections to granting the permit or they may direct us, not to issue the permit pending further consideration. A decision will be made within 21 days.

Urban Pollution Management (UPM)

UPM is a procedure for managing wastewater discharges from sewer and sewage treatment systems in wet weather, to meet the requirements of the receiving water in a cost-effective way. Use UPM to plan all work affecting storm overflows.

A permit application for an unsatisfactory storm overflow must include a report summarising the UPM procedure undertaken. This procedure must be directed at achieving the relevant environmental quality targets. The objective of no deterioration at point of mixing, must be met by all schemes.

Relevant details of the study undertaken, should include:

- environmental standards
- requirements for no deterioration of WFD water body status
- no deterioration in wet weather of the quality of receiving water (any percentile including percentiles higher than 99 and, or fundamental intermittent standards)
- emission standards
- design standards
- the modelling approach used
- the solution

The modelling undertaken, should include:

- type of model(s) used
- statements about each model's purpose
- its limitations and range of use
- its reliability
- types of sensitivity testing required
- method for using model(s)
- statement of fitness for purpose of the overall modelling plan
- scope and source of data used
- other discharges included in the assessment and length of stretch or area extent used in assessment

The solution summary, should include but is not limited to:

- modelling results
- solutions investigation optimisation analysis
- solution conceptual design
- solution compliance results
- solution audits
- assessment of risk of non-compliance through sensitivity analysis

You must carry out modelling work according to the following modelling codes of practice. These codes supplement the UPM procedure and provide specific guidance on modelling and data collection:

- Chartered Institute of Water and Environmental Management (CIWEM) Urban Drainage Group (UDG) code of practice for the hydraulic modelling of urban drainage systems
- Wastewater Planning Users Group (WaPUG) guide to quality modelling of sewer systems
- WaPUG river data collection guide
- WaPUG river modelling guide
- WaPUG integrated urban drainage modelling guide
- CIWEM UDG rainfall modelling guide

These [modelling codes of practice](#) (and any updates) are published by the CIWEM UDG.

Where permit applications are based on the outline or conceptual design you may need to agree subsequent changes that are proposed during the detailed design, by applying for a variation of your permit if it has already been issued.

Improvement condition(s) with the agreed scheme delivery date, shall be included in the permit, based on the conceptual solution.

Solutions to unsatisfactory SOs

Traditionally, solutions to SOs classed as unsatisfactory, comprise one or more of the following elements:

- separation from combined system of sewers and drains carrying surface water flows only
- aesthetic controls (such as screens and scum boards)
- additional storm storage near the overflow (such as on-line, or off-line storage, upsized sewers)
- increased sewer capacity downstream (gravity sewer or pumped sewer)
- re-direction of upstream flows
- raising overflow levels or controlling flows through chamber to reduce spills
- reducing overflow outlet throttles
- preventing reverse flow from receiving water (non-return valves, relocated outfall)
- relocating point of discharge to less sensitive location
- green solutions to increase attenuation or as storage
- real time control of sewers to utilise more in sewer storage capacity

The option(s) selection should pay due regard to sustainability and to whole life carbon dioxide emissions.

5. Sewage pumping station discharges

You must [notify us](#) where you become aware that an emergency overflow is responsive to rainfall and operates as a storm overflow. If you do not intend to remove the hydraulic response to storms you must submit a report within 12 months of the notification, detailing the steps below. You must state the reason for retaining the storm overflow.

If a discharge from an emergency overflow indicates a hydraulic response to rainfall which is not covered by the conditions in the environmental permit, the following steps must be carried out:

- Provide details of the catchment's sewerage history and development.
- Provide the permitting history of the pumping station and the history of storm discharges.
- Provide evidence if the original design intent of the discharge was as an SO.
- Investigate the catchment to identify and quantify the cause of the storm discharges (such as connected to an impermeable area, infiltration, land drainage connections, shortfalls in pumping capacity, network deterioration, cross connections or growth).
- Provide the reason for any deterioration in performance.
- Construct a verified hydraulic model that predicts the observed storm discharges.
- Assess whether the sewerage system, including the pumping station, has been designed, constructed, and maintained according to best technical knowledge not entailing excessive costs (BTKNEEC)
- Develop a costed plan to deal with any shortfalls contributing to storm discharges for which you are responsible.
- Develop a plan to resolve inflows for which you are not directly responsible.
- Produce an action plan to implement this work together with relevant interested groups such as local authorities, householders, and landowners.
- Use the verified hydraulic model to predict the wet weather performance of the pumping station following the BTKNEEC improvements.
- Appraise options to resolve the need for residual storm discharges following the BTKNEEC improvements, including alternatives to a new SO.
- Provide evidence that pollution from the overflow will be limited according to BTKNEEC by following UPM procedure. You must meet all relevant water quality and aesthetic standards and minimise any deterioration in quality.

Where storm discharges are predicted to continue, we may consider permitting a new SO together with the BTKNEEC improvements.

We will normally refuse permits for existing emergency overflows to operate during storms where sewage pumping stations were not originally designed to include a SO.

If we accept there is no alternative following the steps carried out above, the SO must be classified and assessed against the criteria set out in GN066 How to classify storm overflow performance.

Abbreviations

AMP	Asset management programme
BTKNEEC	Best technical knowledge not entailing excessive costs
CIWEM	Chartered Institution of Water and Environmental Management
EPR	Environmental permitting regulations
GN	Guidance note
HRA	Habitats regulations assessment
IROPI	Imperative reasons of overriding public interest
MCERTS	Monitoring certificate scheme
NEP	National environment programme
SAC	Special area of conservation
SO	Storm overflow
SPA	Special protection area
UDG	Urban drainage group
UPM	Urban pollution management
UWWTR	Urban wastewater treatment regulations
WaPUG	Wastewater planning users group
WFD	Water framework directive

How to classify storm overflow performance

Guidance note

Reference number: GN066

Document Owner: Head of Business, Regulation and Permitting

What is this document about?

This guidance outlines the criteria, process and methodology Water and Sewerage Companies should use to classify the performance of permitted and unpermitted storm overflows. The classification will be used to plan and prioritise improvements to bring all storm overflows up to satisfactory status.

There is additional guidance for unpermitted storm overflows in GN021 Unpermitted storm overflows.

Who is this document for?

Water and Sewerage Companies

Contact for queries and feedback

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1. Introduction

This guidance sets out the [definitions \(Section 2\)](#), [classification criteria \(Section 3\)](#), assessment methodology ([summary in Section 4](#) and [detail in Annex 1](#)) and [data collection and submission requirements \(Annex 2\)](#). Water and Sewerage Companies (WaSCs) must use it to classify storm overflows (SOs) as either:

- Satisfactory
- Substandard
- Unsatisfactory

The guidance is applicable to all SOs, unpermitted and permitted. It should be used for SOs that discharge to rivers and Transitional and Coastal (TraC) waters. For unpermitted SOs, WaSCs should also use GN021 Pre-application requirements for unpermitted storm overflows.

This guidance replaces the relevant sections in 7.01 How to comply with your environmental permit. Methodologies and scoring set out in User Guide for Assessing the Impact of Combined Sewer Overflows FR 0466 (Foundation for Water Research, 1994) and the Storm Overflow Assessment Framework (SOAF) (Environment Agency, 2018) should no longer be used.

1.1. Requirements

This guidance is underpinned by the [Urban Wastewater Treatment Regulations \(UWWTR\) 1994](#). We expect WaSCs to design, construct and maintain sewerage systems to limit pollution of the environment and provide long term sustainability.

SOs should not discharge on a [dry day](#). When a discharge from an SO on a dry day has been identified, it should be self-reported as soon as is reasonably practicable, not at the end of the classification process.

We will consider the appropriate regulatory response for SOs that are substandard or unsatisfactory. We may take enforcement action and or vary permits to add improvement conditions or amend existing conditions as appropriate.

We require WaSCs to assess and understand how their sewerage system is operating. WaSCs should notify us where there is potential or actual pollution from a SO. This guidance does not alter the existing requirement for WaSCs to self-report pollution incidents to us. WaSCs should also self-report when an unpermitted overflow is identified.

We expect WaSCs to ensure that SO classifications are kept up to date to reflect current performance if new evidence shows a change in performance. WaSCs should submit an updated assessment as soon as reasonably practicable.

The classification assessment should be focused on identifying and assessing hydraulic and engineering design issues that will need investment and scheme planning/design to resolve. If the SO has maintenance issues (for example blockages, siltation, worn pump impellers) you should notify us as soon as is reasonably practicable and ensure the issues are rectified as soon as possible. We would expect these types of issues to be resolved within 12 months from the date they are identified.

Data affected by the issue should be excluded from the assessment. For example, the relevant Event Duration Monitoring (EDM) annual dataset where high spills were caused by a partial blockage can be excluded from Stage 1 of the assessment, but this should be made clear in your assessment submission and evidence should be available on request (AOR).

1.2. Good practice

WaSCs must use Urban Pollution Manual (UPM) version 3.1 (Foundation for Water Research, 2018): <http://www.fwr.org/UPM3/>

WaSCs should follow all relevant good practice guides and codes, including those produced by CIWEM: <https://www.ciwem.org/special-interest-groups/urban-drainage-group>

2. Definitions

2.1 Flow passed forward (FPF)

FPF is defined as the rate of flow (litres per second) of the wastewater arriving at the overflow from its upstream collection system and passed forward to the [continuation flow](#). FPF must be maintained for the duration of the spill event, or the hydraulic capacity of the downstream sewer shall be deemed to have been exceeded (as per the individual permit condition of the SO).

For Wastewater Treatment Works (WwTW) and Last In Line (LIL) Sewage Pumping Stations (SPS), FPF does not include any flows drawn from a continuation flow that has already been passed forward by the overflow and reintroduced to the incoming flow upstream of that SO.

Achievement of FPF rate can be demonstrated using monitoring certificate scheme (MCERTS) accredited flow monitors or pumping station rates, using the permitting conditions as standard. In the absence of these data sources within the sewer network, DWMP (Drainage and Wastewater Management Plan) network models should be used. FPF rates for the duration of spills can be assessed to ensure that the permitted rate is being achieved.

2.2 Continuation flow

As defined in [Urban Pollution Management \(UPM\) manual version 3.1](#) (Foundation for Water Research, 2018), the continuation flow is the rate at which flow is passed forward for treatment from the structure or device. It is expressed as a proportion of the design peak inflow rate for the structure or device.

2.3 Formula A

Formula A is the flow passed forward to a network or terminal SO.

A minimum retained flow in the sewer of Formula A is the normal minimum requirement for SOs on the sewer network and for Last in Line (LIL) unsettled SOs at the inlet to a WwTW.

It is calculated as:

- Formula A (litre/day) = DWF + 1360P + 2E

Where:

- DWF = total [dry weather flow](#) (litre/day) calculated from PG + I + E
- P = catchment population (number)
- G = per capita domestic flow (litre/head/day)
- I = infiltration (litre/day)
- E = trade effluent flow (litre/day)

Where Formula A equivalent storage is provided at an SO and in very large sewerage systems where significant smoothing of flows occur, this can be considered in defining the performance equivalent to Formula A, subject to agreement with us.

Where there are significant areas within the catchment that were designed, and remain, separately drained, an allowance for separately drained areas may be made. You will need to provide evidence that the storm response in these sewers is minimal (less than or equal to 3DWF). Consequently, the minimum FPF required from those populations served by separately drained areas is:

- $3PsG + Is + 3Es$

Where:

- Ps = population in areas served by a separate system
- G = per capita domestic flow (litre/head/day)
- Is = infiltration flow from separately drained areas (litre/day)
- Es = trade flow from separately drained areas (litre/day)

Formula A becomes:

- Formula A (litre/day) = DWF + 2PsG + 1360 Pc + 2Et

and:

- $DWF \text{ (litre/day)} = PtG + It + Et$

Where:

- Pc = population in areas served by combined and partially separate sewers
- Pt = total population
- It = total infiltration (litre/day)
- Et = total trade flow (litre/day)

2.4 Flow to full treatment (FFT)

The WwTW must be designed to treat peak dry weather flow ([DWF](#)) and additional flows from light rainfall.

The normal minimum FPF is set as:

- Flow to full treatment (FFT) = $3PG + I_{max} + 3E$

Where:

- P = catchment population (number)
- G = per capita domestic flow (litre/head/day)
- E = trade effluent flow (litre/day)

This FFT setting is also known as 3DWF.

I_{max} is the maximum infiltration rate over the whole year. In certain circumstances you will need to consider the infiltration for summer and winter separately.

To find the maximum infiltration (I_{max}), calculate infiltration for every dry day as:

- $I_{dry\ day} = \text{measured TDV} - PG - E$

The value of I within this calculation includes all flow above PG and E , thereby encompasses, groundwater infiltration, water entering a sewer, drain, or manhole chamber due to leaking joints, cracks, or faults or via purpose formed routes such as land drains and illegal connections. Where I_{max} exceeds 40% (typical rate as set out in [Future Impacts on Sewer Systems in England and Wales, report prepared for Ofwat by Mott MacDonald, June 2011](#)) of domestic flow an infiltration study needs to be undertaken to understand how to reduce this flow. A reduction plan which includes justification for not reducing infiltration, should be provided. This will include a definition of the extent of infiltration, identifying any point source discharges, along with a plan detailing the solutions and timescales for implementation.

2.5 Dry weather flow (DWF)

Dry weather flow (DWF) is the average daily flow to a WwTW during a period without rain.

The flow in a combined sewerage system will increase when it rains. This flow may vary seasonally due to changing levels of sewer infiltration and population numbers. You need to design your WwTW with enough capacity to treat the flows from the sewerage collection systems it serves.

It is calculated as the total daily flow value that is exceeded by 80% of the total daily flow values in any period of twelve months.

2.6 Dry day and dry day discharges

A “dry day” is a day (midnight-midnight) with total rainfall accumulation not exceeding 0.25 millimetres.

“One dry day” is one whole calendar day (midnight-midnight) after cessation of rainfall.

A “dry day discharge” is any discharge that occurs or continues on a “dry day”, allowing “one dry day” after rainfall ends. This provides allowance for network drain-down for the first dry day after rainfall or snowmelt.

For example, if rainfall ceases at 5pm on 10 December, a dry day discharge is where an overflow discharges any time after midnight on 12 December.

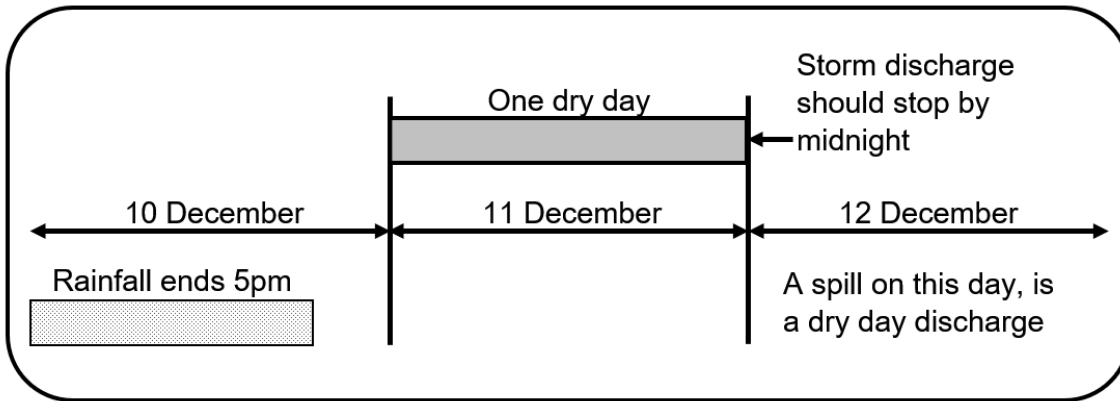


Figure 1. Diagram showing a dry day and a dry day discharge

Scenario	24-48 hours prior to spill	0-24 hours prior to spill	Spill	If spill occurs on dry day 0-24 hours after spill, classify spill as:	If spill occurs on dry day 24-48 hours after spill, classify spill as:
1	Dry day	Dry day	Yes	Unsatisfactory	Unsatisfactory
2	Dry day	Not dry day or heavy rain (>0.25 mm/day but less than 4 mm during any 1 hour)	Yes	Substandard	Unsatisfactory
3	Dry day	Heavy rain during any 1 hour	Yes	Satisfactory	Unsatisfactory

Table 1: Storm overflow spill rainfall assessment

2.7 Heavy rainfall

The Met Office classify rainfall above 4 millimetres per hour, as “heavy rainfall”. Where a rainfall event totalling 4 mm or more in any one-hour period has been recorded (at a representative rain gauge or triangulated rain gauge in the previous 24 hours), then the spill can be considered as “due to heavy rainfall”. Radar data may be used in the absence of representative rain gauge data where the approach is agreed with us.

2.8 Drain down time

SOs may operate, or continue to operate, after rainfall or snowmelt has ceased. This is due to the time it takes for water to enter the sewer system and the time it takes to travel

along the sewers to the relevant SO. We expect the allowable drain down time, in even the largest sewerage catchments, from directly and or positively drained areas (roofs, roads, pavements, drives, patios, yards), is highly unlikely to exceed 24 hours.

24 hours drain-down time is the minimum allowance for any given event when applying the one calendar day criterion, so the actual allowance may be higher depending on when the rainfall ceased.

Drain down times more than 24 hours are likely to be due to one or more of the following:

- run-off from indirectly drained (remote) areas
- land drains
- excessive infiltration

These are all unacceptable causes for a storm overflow to operate. They should be reduced, or the excess flow accommodated with the sewer system and WwTW treatment capacity.

2.9 Mixing zone

The mixing zone is defined as the location downstream from a discharge point where the discharge is adequately mixed with the waterbody. Typically, a distance equivalent to seven river widths can be used, but local conditions may mean it is less or more than this.

3. Criteria to classify a storm overflow

3.1 Satisfactory

There are specific criteria which must be met for a SO to be classified as satisfactory. The SO must:

- meet all minimum design standards
- be compliant with permit conditions
- have no environmental impact (includes aesthetic, biological, water quality, protected sites and groundwater).

3.2 Substandard

If the SO is compliant with the permit and does not have an environmental impact, but at least one of the following minimum design standards are not achieved, the SO will be classified as substandard, if it does not:

- discharge on a dry day
- contain flows up to heavy rainfall
- screen to 6 mm
- have adequate settled storm storage (storm tank only)
- have a FPF equal to FFT (storm tank only)
- pass forward Formula A (SO or SPS (Sewage Pumping Station) only).

3.3 Unsatisfactory

If any of the tests confirm unsatisfactory performance, the asset will be classified as unsatisfactory overall. The tests include:

- discharging on a dry day
- causing at least a low environmental impact (includes aesthetic, biological, water quality, protected sites and groundwater) as defined in [Annex 1](#)
- non-compliance with permit conditions.

4. Classification methodology summary

4.1 Overview

There are four stages in the Storm Overflow Classification Methodology, as summarised below. Detail on how to carry out the tests, score the assessment results and determine if any results confirm substandard or unsatisfactory status, are provided in [Annex 1 – Classification methodology](#).

The methodology has been developed from the User Guide for Assessing the Impact of Combined Sewer Overflows FR 0466 (Foundation for Water Research, 1994) and Storm Overflow Assessment Framework (SOAF) (Environment Agency, 2018) methodologies. This Guidance Note methodology replaces these documents. They should no longer be used or referenced.

If an SO has already been through the SOAF assessment, the WaSC can reuse the assessment results if they are still representative of the SOs current performance. However, the scoring and classification set out in this guidance must be used.

Stage 1: Minimum design standards

This stage has six tests:

1. [Dry day discharges](#)
2. [Heavy rainfall spills](#)
3. [6 mm screening](#)
4. [Settled storm storage](#) (storm tank only)
5. [FPF equal to FFT](#) (storm tank only)
6. [Passing forward Formula A](#) (SO or SPS only)

Stage 2: Permit compliance

This stage has four tests to check if the SO is compliant with permit conditions related to:

1. [FPF rate](#)
2. [Screen requirements](#)
3. [Storage requirements](#)
4. [Discharging only due to rainfall/snowmelt](#)

Stage 3: Environmental impact assessment

This stage has three tests:

1. Stage 3a: Aesthetics, comprising of 6 elements:
 - [Pollution incidents](#)
 - [Substantiated public complaints](#)
 - [Sewage litter](#) (separate methodology for rivers and TraC waters)
 - [Sewage fungus on outfall](#) (separate methodology for rivers and TraC waters)
 - [Sewage fungus on substrate](#) (separate methodology for rivers and TraC waters)
 - [Amenity value](#)
2. [Stage 3b: Invertebrate \(biological\)](#) (separate methodology for rivers and TraC waters)
3. [Stage 3c: Water quality \(WQ\) modelling](#) (separate methodology for rivers and TraC waters)

Stage 4: [Other evidence](#)

The WaSC should consider any other available sources of known information. If a SO causes an environmental impact which has not been evidenced in any other stage of the classification assessment, the information should be summarised in the submission to us.

4.2 The stages required

To ensure there is a robust assessment of SO performance that can be used for planning and prioritisation, for:

- permitted SOs you must complete stages 1, 2, 3a, 3b and 4. If 3b is not possible you must do 3c
- unpermitted SOs you must complete stages 1, 3a, 3b and 4. If 3b is not possible you must do 3c.

4.3 How to determine the overall classification

An unsatisfactory classification can be determined during any of the four stages.

A substandard classification can only be determined in Stage 1 (minimum design standards). But if any of the other tests are unsatisfactory, the final classification will be unsatisfactory.

A satisfactory classification can only be given if all four stages are passed.

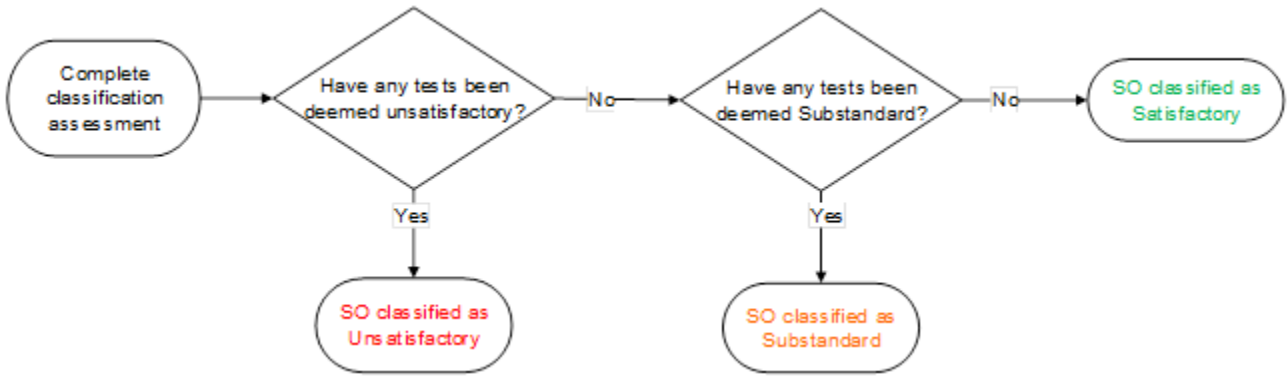


Figure 2: Flow chart for determining overall asset classification

4.4 Submission and confirmation of classification

Once the WaSC has completed the assessment, they should submit the assessment findings (specified in [Annex 2](#)) and evidence to us with a proposed classification. We will review the submission and once any queries or requests for further information have been resolved, we will confirm the classification.

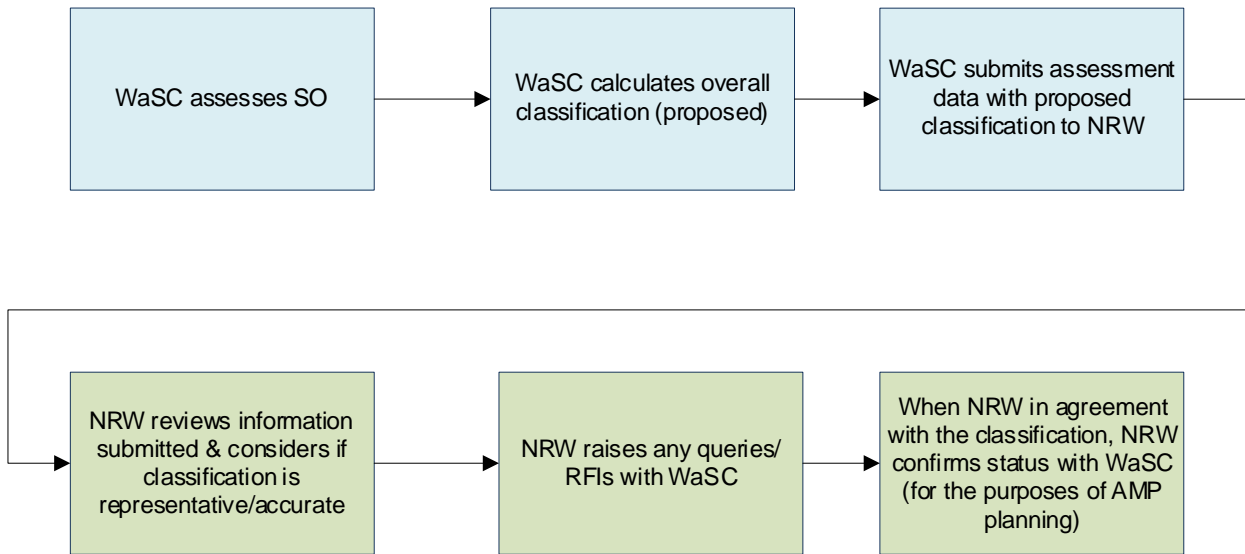


Figure 3: Flow chart showing how classification is confirmed

Annex 1 – Classification methodology

Stage 1 – Minimum Design Standards

Test 1: Dry day discharges

WaSCs should use EDM recorded spills and rainfall data to assess:

“Does the SO have any dry day discharges in the last 3 years (minimum) that are due to hydraulic reasons?”

Yes = Unsatisfactory; No = Indicates satisfactory; N/A = EDM data not available

EDM recorded spills can be compared to rainfall records. For SOs where you have less than 3 years EDM data, provide what is available. Where maintenance issues, such as blockages, lead to dry day discharges, these can be excluded from the assessment if the WaSC can demonstrate that these have been fully investigated and rectified. The WaSC should make this clear in the assessment submission and provide evidence on request.

Where a dry day discharge is due to hydraulic reasons the SO will be classified as unsatisfactory.

Use rain gauge data that is the most representative for the SO. Where there is no nearby rain gauge, the three closest gauges can be triangulated. Radar data can be used where the approach is agreed with us.

Additional factors, as reported by the Met Office, will be considered as evidence for snow melt. Factors include the extent of snow cover and how quickly it thaws across the catchment served by the SO.

Test 2: Heavy rainfall spills

“In the last 3 years (minimum) is the SO only spilling due to heavy rainfall?”

Yes = Indicates satisfactory; No = Substandard; N/A = EDM data not available

This assessment can be carried out using EDM recorded spills and comparing with the preceding rainfall. The assessment will need to be carried out against all spills. For SOs where you have less than 3 years EDM data, provide what is available.

Where discharges occur that are not because of heavy rainfall, the SO should be investigated to determine the cause of the discharge(s). The outcome of the investigation should be provided to us with the assessment submission.

Test 3: 6 mm screening requirements

“Are the minimum 6mm screening requirements (described below) achieved?”

Yes = indicates satisfactory; No = substandard

All SOs should meet the following screening criteria and provide 6 mm solids separation. This should provide separation from the effluent, of a significant quantity of persistent material and faecal and organic solids, greater than 6 mm in any 2 dimensions. The discharge shall not be comminuted or macerated. All screenings shall be removed from the discharge.

The screen shall be adequately maintained and included within regular maintenance works. Where a mechanically cleaned screen is provided, a telemetry alarm system shall be installed and maintained, to give the operator immediate notification of a failure of the screen cleaning mechanism, unless otherwise agreed in writing by us. The operator must return the screen cleaning mechanism to normal operation as soon as reasonably practicable.

Flows up to and including the 1 in 5-year storm return period must be screened as a minimum. You must provide a bypass weir to prevent flooding due to flows greater than the 5-year screen design flow, or if the screen becomes fully blinded. Screens and chambers must not increase flood risk. The 5-year return period design should consider forecast development and make a suitable allowance for partial screen blinding during spills.

Where 6 mm solids separation is not already in place but the SOs are otherwise performing satisfactorily the SO can be upgraded at end of screen life or whenever other upgrade works are carried out. Where there is currently no screening in place the SO will need to upgrade within a timescale agreed with us.

Test 4: Settled storm storage (storm tank only)

“Is the storm overflow dealing with either:

- 3DWF is allowed in combination with storm storage which must settle out solids and have a minimum capacity of 68 litre per head served, or
- a storage equivalent of 2 hours at the maximum flow rate to the storm tanks?”

Yes = indicates satisfactory; No = substandard

The capacity and availability of storage needs to be assessed and compared with the requirements. This assessment should be based on the total population that could be served within the existing WwTW design horizons, so that the storm storage provision is in line with the [DWF](#) permitted volume.

Test 5: FPF equal to FFT (storm tank at a WwTW only)

“Is [FPF](#) equal to [FFT](#)?”

Yes = indicates satisfactory; No = substandard

This test will assess whether the WwTW is passing forward the correct amount of flow to treatment.

Test 6: Passing forward Formula A (SPS and SOs only)

“Is the SO passing forward [Formula A](#)?”

Yes = indicates satisfactory; No = substandard

Stage 2 – Permit Compliance

Where non-compliances are readily addressed through maintenance or quick wins and compliance restored then they are unlikely to contribute to a classification of unsatisfactory. If a maintenance issue is identified, we would expect these to be resolved within 12 months from the date they are identified.

Test 1: Flow Passed Forward (FPF) permitted rate

“Is the SO meeting permitted [FPF](#)?”

Yes = indicates satisfactory; No = unsatisfactory; N/A = not specified in permit

Test 2: Screen requirements

Assess all relevant screening permit conditions.

“Is the SO compliant with its permitted screen requirements?”

Yes = indicates satisfactory; No = unsatisfactory; N/A = not specified in permit

Test 3: Storage requirements

“Is the SO compliant with its permitted storage requirements?”

Yes = indicates satisfactory; No = unsatisfactory; N/A = not specified in permit

The volume of storage specified in the permit must be available. Effluent returned from the storm tank to the continuation flow must be adequately managed to prevent loss of volume (for example by sediment build up or debris). Ensure efficient emptying of the storm tank. Storage capacity should not be unduly compromised from a failure to adequately empty the tank from a previous storm event.

Test 4: Rainfall/snowmelt condition

“Is the SO compliant with the rainfall/snowmelt condition?”

The discharge shall only occur when, and only for as long as, the flow passed forward is equal to or greater than the overflow setting indicated due to rainfall and/or snowmelt

Yes = indicates satisfactory; No = unsatisfactory; N/A = not specified in permit

To comply with this permit condition:

- a discharge shall only occur when the FPF is equal to or greater than the overflow setting due to rainfall or snowmelt, and
- all offline storage (storm tanks):
 - must be fully utilised before a discharge can occur, and
 - should only fill when the FPF is equal to or greater than the overflow setting indicated due to rainfall and/or snow melt, and
 - should be emptied and its contents returned to the continuation flow as soon as reasonably practicable.

To ensure clarity on how we will regulate this permit condition, we will use the following principles:

- Using our definition of drain down time of a sewer catchment, we will consider any overflow operating after “[one dry day](#)” as non-compliant with this permit condition.
- For the purposes of UWWTR, we consider rainfall or snowmelt to be that which has fallen on hardstanding in the urban catchment (for example including roofs, pavements, roads, yards, drives). Run-off from indirectly drained areas such as fields and hills, and inflow from field drains, rivers and streams is not included.
- Significant infiltration of groundwater is excluded for the purposes of assessing the rainfall and/or snowmelt condition. UWWTR requires that infiltration through ground and soil shall be minimised in accordance with best technology knowledge not entailing excessive cost (BTKNEEC). Groundwater is ultimately due to rain or snow melt that has percolated through the soil, but the precipitation event may have occurred many days, weeks or even years previously. It is not appropriate to drain significant groundwater flows via a foul sewer and for this flow to be included in achieving the permitted FPF rate if the infiltration rate exceeds the infiltration rate used in the calculation of the permitted FPF.
- Infiltration encompasses groundwater, water entering a sewer, drain, or manhole chamber due to leaking joints, cracks, or faults or via purpose formed routes such as land drains and illegal connections.

Stage 3 – environmental impact assessment

Stage 3a – aesthetic impact assessment

There are two different methodologies to use to assess aesthetic impact: one for [discharges to rivers](#) and one for [discharges to TraC waters](#).

Discharges to rivers

Two site surveys and an assessment of incident and complaint records are required to complete an aesthetics impact assessment. This is due to the potential effects of bankside vegetation on access, visibility, and the potential for litter to collect. You should separate the two site surveys with a reasonable time span, by at least three months and ensure that one of the visits is when bankside vegetation is minimal (late autumn-spring). You should submit the data for both surveys, but the worst score from the two surveys must be used as the element score.

The assessment is split into six aesthetic elements, which are scored separately and then a combined score is used to categorise the aesthetic impact as per Table 2 below:

Total score of 6 elements	Aesthetic impact	Aesthetic impact classification
0	No impact	Indicates satisfactory
1 – 10	Very low	Indicates satisfactory
11 – 25	Low	Unsatisfactory
26 – 50	Moderate	Unsatisfactory
51 – 75	High	Unsatisfactory
Greater than 75	Severe	Unsatisfactory

Table 2: Aesthetic impact and classification

Element 1: Pollution incidents

“Has the SO had any substantiated pollution incidents (category 1-3) that are attributed to hydraulic causes in the last 3 years (minimum)?”

Take the highest category and score this element as follows:

- If highest category of incident/s is Category 1, score 100
- If highest category of incident/s is Category 2, score 60
- If highest category of incident/s is Category 3, score 20

You should request information from us as part of this check. Pollution incidents with an environmental impact of category of 1, 2 or 3 are considered to have an adverse impact on the receiving water environment, so the SO would be classed as unsatisfactory.

Where an incident has been investigated and the root cause resolved these can be excluded from the assessment, but they should be made clear in the data submission as detailed in [Annex 2](#). These could include maintenance issues such as blockages and tree roots that have since been resolved.

Element 2: Substantiated complaints

“How many substantiated public complaints (to the WaSC, local authority or NRW) has the SO had, in the last 3 years (minimum), which have been attributed to hydraulic causes?”

Calculate a score for this element as follows:

- 0 complaints, score 0
- 1-4, score 10
- 5-9, score 20
- 10-14, score 30
- >=15, score 40

Element 3: Sewage litter

Sewage derived litter includes hygiene products, contraceptives, toilet paper, faeces, wet wipes, and earbuds.

At each SO, estimates should be made of the number of identifiable items of sewage derived litter at three locations (see Figure 4: Diagram showing three locations to count sewage litter):

1. In the immediate vicinity of each SO
2. Along a stretch of river extending 50 m upstream of each SO or SO group
3. Along a stretch of river extending 50 m downstream of each SO or groups of SO.

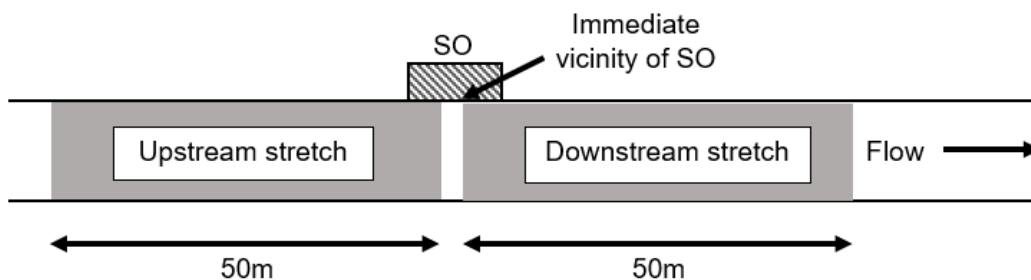


Figure 4: Diagram showing three locations to count sewage litter

When estimating items in the immediate vicinity of the SO, include any on the external structure (screen, flap valve, apron etc) and, for SOs set back from the water's edge, on the bank immediately in front of the SO. Do not include items in the river immediately in front of the SO as these will be counted in the downstream assessment.

For the upstream and downstream stretches select, where possible, a 50 m stretch starting at the SO. These should be as similar as possible. If, for example, there is a bridge adjacent to the SO, choose a stretch starting beyond the bridge. If the nature of the banks or watercourse changes such that a relatively uniform 50 m stretch cannot be found, then shorter but equal length stretches should be selected. For example, if the river enters a canalised section 30 m downstream, then stretches extending 0-30 m downstream and 0-30 m upstream of the SO should be selected (see Figure 5).

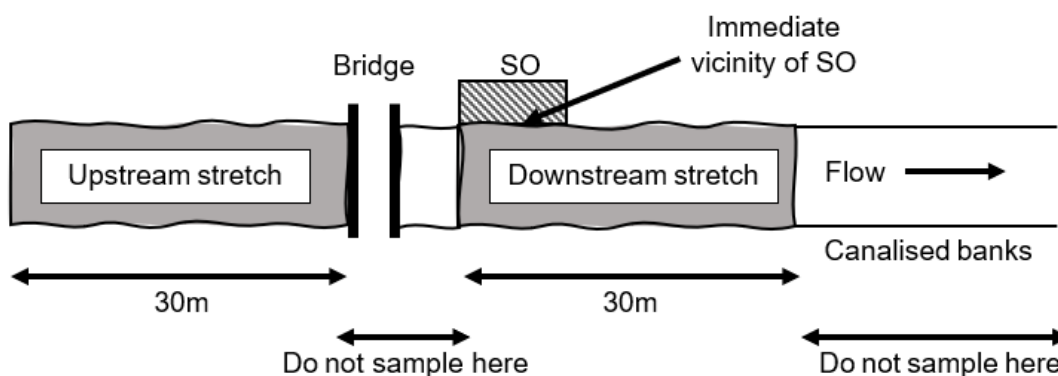


Figure 5: Diagram showing how to select upstream and downstream sewage litter sampling stretches to avoid non-uniform river sections

If it is not possible to identify similar upstream and downstream stretches, then this part of the assessment should be abandoned.

To assess the number of sewage-derived litter items, walk the length of each stretch once, counting visible items. Wherever possible, assess the stretch by wading in the water (ensuring that safety regulations/guidelines are met). Include items in the water, on the bank or beach and on overhanging vegetation. When a large amount of sewage litter is present, the number of items can be estimated to save time.

Where it is foreseeable that litter may be stranded and visible in areas downstream of the notional 50 m survey area, the survey should be extended to include this area. This will be important where the amenity class increases downstream of the immediate 50 m reach. For example, where there is a park alongside the watercourse 300 m downstream of the outfall, then this would be included in the aesthetics assessment.

Where the upstream-downstream assessment of sewage derived litter has been made, the number of items of sewage derived litter attributed to the SO should be calculated by subtracting the upstream count from the downstream count. Compare this count with the immediate vicinity count and the higher of the two to determine the score as described below.

Where multiple SOs discharge into a stretch of river, sewage litter should be assessed upstream and downstream if the group of SOs and the highest 'immediate vicinity' count should then be compared with the difference between the upstream and downstream count and the highest of the count used to determine the score as described below.

Separately score the immediate vicinity count and the difference between the upstream and downstream count as follows:

- 0 items, score 0
- 1-10, score 5
- 11 – 25, score 10
- 26 – 50, score 15
- >50, score 20

Use the highest score for the element score.

Element 4: Sewage fungus on outfall

“Is sewage fungus present on the outfall?”

Present = score 5, absent = score 0

Element 5: Sewage fungus on substrate

“Is sewage fungus present on substrate downstream of mixing zone?”

Yes = score 25, No = calculate the mean % cover within mixing zone and score as follows:

- 0% mean cover, score 0
- >0% but <2%, score 5
- 2-10%, score 10
- 11-25, score 15
- 26-50, score 20
- >50, score 25

Where possible, assess the percentage cover of sewage fungus on the substrate (riverbed) at three locations, explained below and illustrated in Figure 6: Diagram showing where to sample stones to assess sewage fungus.

At each site, pick up ten cobble-sized stones (usually defined as >64 millimetre – <256 millimetre) and estimate the percentage cover of sewage fungus over the whole stone, including top and bottom to the nearest 10%. Ensure that the stones are taken from locations at each site that are similar in terms of flow, depth, and riverbed composition. Record the value for each stone separately.

Three sites:

1. A suitable site within about 50 m upstream of the SO.

The percentage cover of sewage fungus upstream of the SO is not used for scoring purposes, but if present, the site should be investigated further to ascertain the cause.

2. Within the [mixing zone](#), immediately downstream of the SO and adjacent to the bank on which the SO is situated.
3. After the mixing zone downstream of the SO.

If sewage fungus is present assign a score of 25.

If it is not present downstream, then average the percentage cover for the ten stones assessed within the immediate mixing zone.

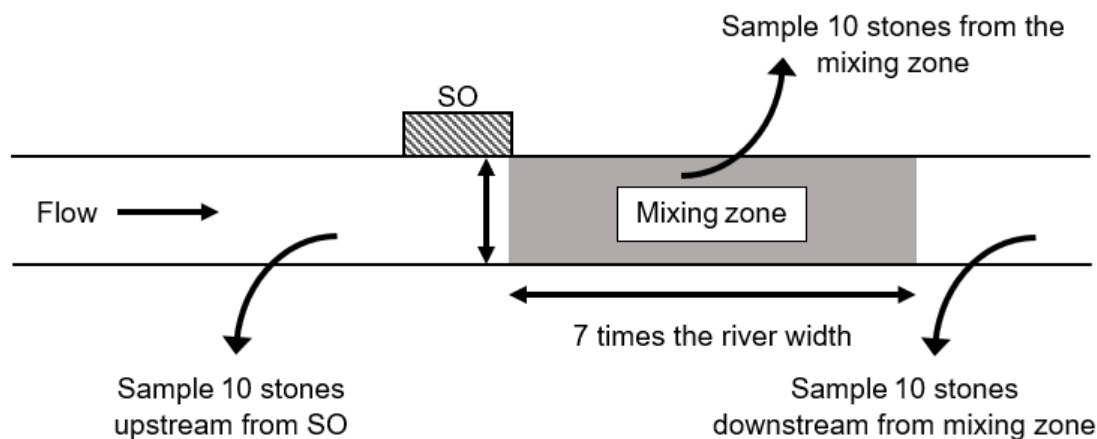


Figure 6: Diagram showing where to sample stones to assess sewage fungus

Element 6: Amenity value

“What is the highest amenity value within 1 km downstream of the overflow?” Use judgement as appropriate.

Determine the amenity value and score using Table 3 below.

Moderate and high amenity sites will always trigger, as a minimum, a ‘very low impact’ aesthetic impact category (as per Table 3) even where there is no evidence of debris, public complaint, or pollution incidents. This is because two seasonal aesthetics surveys may not be sufficient to identify a problem. The SO will always pose a risk of aesthetic impact and complaint in areas of moderate to high amenity.

Amenity value	Examples	Score
High	<ul style="list-style-type: none"> • Influences an area where bathing and water contact sport (immersion) is regularly practised (for example wind surfing, sports canoeing) • Receiving watercourse passes through formal public park • Formal picnic site • Designated shellfish waters • Designated bathing waters • Waters designated under the Conservation of Habitats and Species Regulations 2017 that are Sensitive Areas 	10
Moderate	<ul style="list-style-type: none"> • Boating on the receiving water • Popular footpath/coastal path adjacent to waterbody • Recreation and contact sport (non-immersion) areas • A watercourse that passes through a housing development or frequently used town centre area (for example bridge, pedestrian area, shopping area) • It is linked, through substantiated “reasons for failure”, to an element of the Water Framework Directive classification being less than Good 	5
Low	<ul style="list-style-type: none"> • Basic amenity use only • Casual riverside access on a limited or infrequent basis, such as a road bridge in a rural area, footpath adjacent to watercourse 	0
None	<ul style="list-style-type: none"> • Seldom or never used for amenity purposes • Remote or inaccessible area 	0

Table 3: Amenity value example criteria

Discharges to Transitional and Coastal (TraC) Waters

The methodology for assessing impact on aesthetics from discharges to TraC waters is in development – this guidance will be reissued as soon as its available.

Stage 3b – invertebrate (biological) impact assessment

Discharges to rivers

Introduction

Where it is possible to collect representative benthic invertebrate samples immediately upstream and downstream of the overflow, impact will be assessed using abundance weighted Whalley Hawkes Paisley Trigg (WHPT) indices with the River Invertebrate Classification Tool (RICT). This is the method used for WFD assessments ([River Assessment Method Benthic Invertebrate Fauna: Invertebrates \(General Degradation\) UKTAG, 2014](#)). The method is designed to detect impacts due to organic pollution and is also sensitive to toxic pollutants. The RICT was developed by the three UK environmental agencies to classify the ecological quality of rivers.

Invertebrate sampling is only appropriate in simple scenarios where there is a single storm overflow discharging to that reach of the river. You should not carry out an invertebrate assessment (instead go to [Stage 3c](#) and model the water quality impact) if any of the following apply:

- multiple outfalls in close proximity
- there are other sources of pollution which could account for differences in invertebrate quality between sampling sites upstream and downstream of the outfall
- if the SO discharges into a degraded urban watercourse where background / upstream invertebrate quality has a WFD status of Poor or Bad then this method should also not be used
- there are physical constraints that prevent sampling.

If none of the above apply you must carry out an invertebrate impact assessment.

A minimum of two separate seasonal samples are required – one taken in the spring (March – May), and one taken in the autumn (September – November). These should be consecutive but could either be the spring and autumn of the same calendar year or autumn and the following spring. You should also visit in the summer to record the environmental variables (habitat information), but if this is not possible, then you may be able to use 'Model 44' in RICT which allows you to input the NGR grid reference and it will use GIS to assign site base data for you.

Methodology

1. Record observed NTAXA and calculate ASPT scores

The number of abundance weighted WHPT scoring families found during sampling (WHPT NTAXA), and their individual abundance weighted scores for sensitivity to organic pollution are recorded. An average score per taxon (ASPT) for the sample is then calculated.

2. Predict scores if site undisturbed (or reference scores) using RICT

The observed abundance weighted WHPT NTAXA and ASPT values are compared to the values that might be expected under undisturbed or reference conditions for that site.

These undisturbed or reference scores are predicted by statistical models in the RICT software.

3. Calculate Environmental Quality Ratio using the observed and predicted scores

The observed values of WHPT ASPT and WHPT NTAXA are compared to the predicted values to generate an Environmental Quality Ratio (EQR). EQRs close to 1.0 indicate that invertebrate communities are close to their natural state. Use Table 4: EQR ratios for different WFD invertebrate status classes to assign an invertebrate status class.

EQR values for WHPT NTAXA	EQR values for WHPT ASPT	Invertebrate status class
>=0.8	>=0.97	High
>=0.68	>=0.86	Good
>=0.56	>=0.72	Moderate
>=0.47	>=0.53	Poor
<0.47	<0.53	Bad

Table 4: EQR ratios for different WFD invertebrate status classes

4. Calculate a mean EQR for the two seasons (spring and autumn)

A mean EQR is then calculated for the two seasons.

5. Estimate confidence of status class difference using RICT Compare Module

The RICT uses Monte Carlo processes to simulate uncertainty in observed and expected EQRs due to factors such as sampling variation, error in measuring environmental variables, and laboratory processing errors (bias). The software typically uses 10,000 'shots' to build up a distribution of potential EQRs to estimate confidence of status class.

Use the RICT Compare Module's 'Compare – At a Glance' report to compare the quality of the upstream and downstream sampling sites. The report shows the percentage number of simulations where the downstream sample is in a different status class to the upstream sample for both WHPT NTAXA and ASPT. Use the scoring system in Table 5 and Table 6 below for both indices (WHPT NTAXA & ASPT):

Percentage of simulations the downstream sample is one or more classes worse than upstream (%)	Score	Multiply score by no. of classes the downstream sample is worse than upstream
1-4	1	Yes
5-9	2	Yes
10-29	4	Yes
30-49	6	Yes
50-70	8	Yes
71-90	10	Yes
>90	12	Yes

Table 5: Invertebrate impact scoring for WHPT NTAXA & ASPT

Total score	Invertebrate impact	Overall SO classification
1	No impact	Indicates satisfactory
2 – 3	Very low	Indicates satisfactory
4 – 5	Low	Unsatisfactory
6 – 7	Moderate	Unsatisfactory
8 – 9	High	Unsatisfactory
10 – 11	Very high	Unsatisfactory
12 – 15	Severe	Unsatisfactory
16 – 19	Very severe	Unsatisfactory
20 or more	Extremely severe	Unsatisfactory

Table 6: Invertebrate impact for WHPT NTAXA & ASPT

6. Calculate overall classification

As shown in Table 6, if there is evidence of at least a ‘Low impact’ on invertebrates, the SO will be classified as unsatisfactory.

Overall classification is based on the worst status class assigned for the multi – season mean WHPT NTAXA and WHPT ASPT.

The worst score for WHPT NTAXA and ASPT should be used to assign impact. The scoring process will be repeated for each of the individual spring and autumn samples, and the overall mean of the seasons to produce a short-term and long-term impact assessment (Table 7).

Type	Description	Impact
Short-term	Worst single season impact result for WHPT NTAXA and ASPT	No impact – extremely severe
Long-term	Worst of WHPT NTAXA and ASPT for the overall multi season (spring & autumn impact)	No impact – extremely severe

Table 7: Short-term and long-term impact assessment

7. Check existing data

Where available, existing biological monitoring data for fish and invertebrates used for WFD classification may be used to provide additional evidence that the overflow is not causing an environmental impact. For example, where representative sampling points are present downstream of the overflow, in close proximity, or in locations likely to be sensitive to discharges from the overflow, and these consistently record good or high status, then this may be used as evidence to support no impact classifications.

Discharges to Transitional and Coastal Waters (TraC)

The methodology for assessing impact on invertebrates (biology) from TraC discharges is in development – this guidance will be reissued as soon as its available.

Stage 3c – Water quality (WQ) impact assessment

Introduction

You do not need to complete a WQ impact assessment if you have carried out an invertebrate impact assessment as specified in [Stage 3b](#).

If you wish to carry out a WQ impact assessment you can submit this with the classification assessment evidence, but the invertebrate impact assessment will take precedence.

If it was not possible to carry out an invertebrate impact assessment for one of the reasons specified in Stage 3b, you must carry out the water quality impact assessment methodology as detailed below.

This stage assesses whether the SO is likely to cause an environmental impact using WQ modelling.

You should explain the risk-based approach to the level of modelling you have used to determine the impact.

Discharges to rivers

Carry out initial screening

Determine if the overflow is likely to cause water quality issues and jeopardise water quality standards, by checking the following:

“Does the SO meet all three dilution criteria below?”

- the SO must pass forward a retained flow of Formula A over the full duration of spills
- the dilution in the receiving water must be >8:1 (Q95 river flow: sewer DWF)
- there is no potential for interaction with other discharges”

Yes = assign a water quality classification of ‘very low’ and no need to use a water quality model

No = water quality modelling is required to assess the impact of the overflow

WQ assessment overview

The assessment should quantify the impact of the storm overflow on either:

- the duration of 99 percentile exceedance, or
- 99 percentile quality for total ammonia and BOD, and the number of exceedances of the fundamental intermittent standards (FIS) for dissolved oxygen and un-ionised ammonia.

This should be undertaken as a relative assessment by comparing the impact of the urban drainage system on downstream river quality with and without the discharge from the SO.

New models are not required in all cases. Where they are 'fit for purpose', existing sewer and river impact models from recent drainage planning or UPM studies should be used.

Model complexity levels

Although a verified sewer model is required to assess impact, it is not expected that complex sewer quality and dynamic river quality modelling is carried out in all cases. The [Urban Pollution Management \(UPM\) manual version 3.1](#) (Foundation for Water Research, 2018) provides guidance on modelling the impact of storm discharges.

The level of complexity involved depends on the complexity of the problem and the potential cost of any solutions. A complex problem, for example where many storm overflows discharge into a river channel which contains structures such as weirs or sluices likely to affect quality, will need more detailed models and data collection. In contrast, simplified impact approaches will be sufficient for simple scenarios, for example where a single or very small number of overflows discharge into a simple river reach and dilution levels are relatively high.

There are four levels of complexity:

1. Level 1 is the simplest form of impact assessment. Time series outputs from the verified sewer model are mixed with random picks of upstream river flow and quality selected from statistical distributions. Default or sampled values for storm sewage BOD and total ammonia concentrations can be used and applied as an event mean concentration. The river reach is simplified to a trapezoidal channel. Hydraulic equations are used to estimate the depth and velocity of the mixed flow of river and storm sewage. A simplified water quality model usually representing the main oxygen demand processes (BOD decay and nitrification) and re-aeration is used to predict levels of dissolved oxygen and un-ionised ammonia at the end of the reach. Checks against 99 percentile standards and initial un-ionised ammonia can be made at the point of mixing.
2. Level 2 is similar to level 1. However, instead of a stochastic approach to representing upstream river flow, a river flow time series is used. This allows the flow, and therefore dilution available in the river at the time of a spill, to be better represented. As in level 1, simplified river hydraulics and water quality are still used to predict the time of travel for pollutants along the reach, and the depth and velocity of flow used to predict re-aeration rates.
3. Level 3 studies use calibrated flow routing models to predict time of travel along longer and more complex water bodies more accurately. This allows better representation of advective pollutant transport. More complex water quality simulation can be used with the model calibrated for the key parameters – BOD, ammonia, and dissolved oxygen – using observed event sampling and water quality sonde data. Storm sewage quality is represented using observed sampling data or calibrated sewer quality models.

4. Level 4 is the most complex form of impact model. Calibrated hydrodynamic river models used to simulate the varying depth and velocity of flow within the watercourse. Advection and dispersion is calibrated against observed data (e.g., dye tracing). Various levels of water quality simulation are possible with calibration and verification against event sampling and water quality sonde data.

For all levels, a long (minimum 10 year) historic or synthetic rainfall time series representative of the catchment is required.

Further on potential modelling approaches and levels of complexity is provided below.

Potential modelling approaches and the four levels of complexity

Urban drainage inputs

- SO flow:
 - Levels 1-4: verified sewer model
- Storm sewage quality:
 - Levels 1 & 2: Event mean concentrations using default values (e.g., Dempsey, 2005) or sampled values
 - Levels 3 & 4: Sampled values or calibrated sewer quality model
- WwTW flow:
 - Level 1: Statistical distribution from MCertified data
 - Levels 2-4: Predicted flow time series from verified sewer model
- WwTW quality:
 - Levels 1-4: Statistical distribution from sampled effluent quality

Boundary river conditions

- Upstream river flow
 - Level 1: Statistical distribution from gauged data or ungauged estimate
 - Levels 2-4: 10-year historic flow time series from EA gauging station or calibrated rainfall runoff model
- Upstream river quality
 - Levels 1-4: Statistical distribution from EA routine samples

River model

- Hydraulic
 - Levels 1&2: Simplified channel, steady & uniform
 - Level 3: Calibrated flow routing model
 - Level 4: Calibrated hydro-dynamic model
- Water quality
 - Levels 1&2: Simplified WQ processes & re-aeration using default values for rate coefficients
 - Level 3: Advective pollutant transport, WQ simulation calibrated from event sampling & sonde data
 - Level 4: Calibrated advection – dispersion model, WQ simulation calibrated from event sampling & sonde data

Rainfall series

- Levels 1-4: 10-year representative historic or synthetic time series.

Impact scoring

The worst water quality score from the two types of assessment (99 percentile quality and FIS) should be used as follows:

(1) 99 percentile quality

Two approaches are available depending on the type of modelling tool used:

i. Estimate of 99 percentile

Select the relevant 99 percentile BOD and total ammonia standards for the receiving water according to WFD water body typology. These standards can be obtained from the [Urban Pollution Management \(UPM\) manual version 3.1](#) (Foundation for Water Research, 2018). As an example, Table 8 below shows the 99 percentile classes for water body types 3, 5 and 7. Where there is a drop in 99 percentile status class between the modelled upstream and downstream assessment points assign a score of 45.

WFD status for water body types 3, 5 and 7	99 percentile for biological oxygen demand (BOD) (mg/l)	99 percentile for total ammonia (mg/l)
High	9.0	0.7
Good	11.0	1.5
Moderate	14.0	2.6
Poor	19.0	6.0

Table 8: 99 percentile standards for WFD water body types 3, 5 and 7

Where the overflow does not cause a drop in status class but causes a degree of within class deterioration, assign a score according to the percentage within class deterioration as shown in Table 9 below. Use the worst score returned for the BOD and total ammonia assessments.

Percentage within class deterioration	Score
1 – 10	5
11 – 25	15
26 – 50	25
51 – 75	35
>75	45

Table 9: 99th percentile within class deterioration scores

ii. Duration of exceedance

Where modelling tools are used which do not calculate a 99th percentile, but instead estimate the duration for which a 99th percentile standard is exceeded, then use the scoring system in Table 10 below in conjunction with the 99th percentile BOD and total ammonia standards for good status. The impact duration with the worst score should be used.

Impact duration	Allowable exceedances (number/year)	Score
1 hour	87.6	+ 0.5 points for every 1.0/year increase in exceedances
6 hours	14.6	+ 3.0 points for every 1.0/year increase in exceedances
24 hours	3.65	+ 12.0 points for every 1.0/year increase in exceedances

Table 10: Scoring system for duration / number of 99th percentile exceedances

(2) Fundamental intermittent standards (FIS)

Select the relevant fundamental intermittent standards for the receiving water according to fishery type (sustainable cyprinid, sustainable salmonid, and salmonid spawning). The FIS for dissolved oxygen and un-ionised ammonia are available in the [Urban Pollution Management \(UPM\) manual version 3.1](#) (Foundation for Water Research, 2018).

Compare the frequency of FIS exceedances in the receiving water with and without the storm discharge. For example, the FIS for dissolved oxygen in sustainable cyprinid waters (correction factors are also required) are shown in Table 11 below.

Frequency (return period)	DO concentration (mg/l) 1 hour	DO concentration (mg/l) 6 hours	DO concentration (mg/l) 24 hours
1 month	4.0	5.0	5.5
3 months	3.5	4.5	5.0
1 year	3.0	4.0	4.5

Table 11: Fundamental intermittent dissolved oxygen (DO) standards for sustainable cyprinid waters

Use the scoring system in Table 12 where the discharge causes a deterioration (increase) in the frequency of allowable exceedances:

Frequency (return period)	Allowable exceedances (number/year)	Score
1 month	12	+ 1.5 points for every 0.5/yr increase in exceedances
3 months	4	+ 4 points for every 0.5/yr increase in exceedances
1 year	1	+ 6 points for every 0.2/yr increase in exceedances

Table 12: Scoring system for increases in FIS exceedances for un-ionised ammonia and dissolved oxygen

Determine SO classification for WQ impact

The worst score obtained from the FIS and 99 percentile assessments should be used for the water quality impact classification set out in Table 13: Water quality impact and classification below.

Water quality score	Water quality impact	Overall SO classification
0 – 5	No impact	Indicates satisfactory
6 – 9	Very low	Indicates satisfactory
10 – 19	Low	Unsatisfactory
20 – 29	Moderate	Unsatisfactory
30 – 39	High	Unsatisfactory
40 or more	Severe	Unsatisfactory

Table 13: Water quality impact and classification

A score of 'Low impact' or worse results in the SO being classified as unsatisfactory.

Discharges to Transitional and Coastal Waters

The methodology for assessing the impact on water quality from discharges to TraC waters is in development – this guidance will be reissued as soon as its available.

Stage 4 – Other evidence

The WaSC should consider any other available sources of known information. If a SO causes an environmental impact which has not been evidenced in any other stage of the classification assessment, the information should be summarised in the submission to us.

“Is there any other evidence that demonstrates that the SO is having an environmental impact, alone or in combination with other discharges, on the following protected sites (but not limited to):

- a deterioration in biological or chemical status of the receiving water (Water Framework Directive) or a water body downstream
- a failure in bathing quality standards for a designated bathing water
- a failure in shellfish quality standards for designated shellfish water
- unfavourable conservation status of protected site features (including a Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, or Site of Special Scientific Interest (SSSI))
- an impact to an UWWTR sensitive area designation
- an impact to a drinking water protected area
- groundwater Source Protection Zones (SPZ)”?

Yes = provide a summary in your submission; No = confirm no other evidence known in submission

“Is any other information available for the SO (that has not already been used in Stages 1-3) that evidences environmental impact?”

Yes = provide a summary in your submission; No = confirm no other evidence known in submission

Other information could include, but is not limited to:

- Historic surveys of the SO or receiving water
- Sewer network model results that are likely to have been generated during the production of Drainage and Wastewater Management Plans (DWMPs) or other programmes that could be utilised to assist in the classification of SOs
- Other data that may have been gathered and assessed during the DWMP or other programmes, including but not limited to as-built drawings and/or surveys
- Any known intermittent issues impacting on chemical or biological water quality.

Annex 2 – data collection and submission requirements

General information on SO

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
1	Permit reference (or unique identifier if unpermitted)	No EPR or NPS prefix, no variation number suffix	Must match permit reference on public register	Submit
2	Site name		If permitted, must match public register	Submit
3	WaSC asset ID			Submit
4	Sewerage catchment			Submit
5	Storm discharge asset type	SO on sewer network / Storm discharge at pumping station / Inlet SO at WwTW / Discharge from storm tank at WwTW / Other storm discharge asset type (specify)	Same as used on EDM returns	Submit
6	NGR of SO location	Use 12 figure grid ref, for example SN5110064321		Submit
7	NGR of discharge point	Use 12 figure grid ref, for example SN5110064321		Submit
8	Receiving water category	River / TraC / Other (specify)		Submit
9	Permitted BW / SFW trigger no.	BW## / SFW## / N/A	e.g., BW5, SFW14	Submit
10	Has SO had a SOAF assessment	Yes / No		Submit
11	Any confirmed NEP schemes for this SO	Provide planned start and end dates with a short description of the scheme		
12	Representative rain gauge/s identification		Include station name and number	Submit
13	Approx river width (m)			Submit
14	Photos of SO, outfall and sampling locations	Must be date and time stamped		AOR
15	Outfall type	Bankside / Short sea outfall / Long sea outfall	Also state if permanently submerged	Submit
16	Outfall condition	Good / Damaged / Overgrown / Other (specify)		Submit

17	Does SO discharge directly or indirectly into a SAC catchment?	Yes / No		Submit
18	Name of receiving WFD waterbody			Submit
19	Waterbody ID of receiving waterbody			Submit

Event Duration Monitoring (EDM) data

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
20	EDM annual datasets used for assessment	State years		Submit
21	Excluded annual EDM datasets	State years	If any in last 3 years have been excluded due to maintenance issues that causes high spills	Submit
22	Reason for dataset exclusion	Free text		Submit
23	Any known issues with EDM data accuracy or operability	Yes / No	At least 90% monitor operability expected	Submit

Stage 1: Minimum design standards

Test 1: Dry day discharges

No.	Data field	Data/information validation	Submit / AOR?
24	Does the SO have any <u>dry day discharges</u> in the last 3 years (minimum) that are due to hydraulic reasons?	Yes / No / N/A	Submit
25	Analysis report	Demonstrate how the dry day definitions have been applied to the rainfall and EDM data, including deviations from overarching methodologies that you may refer to. Include description of assessment method and data sources. Provide a summary representation of outputs, using graphs as appropriate	Submit
26	Classification	Unsatisfactory / Indicates satisfactory	Submit

Test 2: Heavy rainfall spills

No.	Data field	Data/information validation	Submit / AOR?
27	In the last 3 years (minimum) is the SO only spilling due to heavy rainfall?	Yes / No / N/A	Submit
28	Analysis report	Demonstrate how the heavy rainfall definition have been applied to the rainfall and EDM data, including deviations from overarching methodologies that you may refer to. Include description of assessment method and data sources. Provide a summary representation of outputs, using graphs as appropriate	Submit
29	Classification	Substandard / Indicates satisfactory	Submit

Test 3: 6 mm screening requirements

No.	Data field	Data/information validation	Submit / AOR?
30	Are the minimum 6mm screening requirements achieved?	Yes / No	Submit
31	Type of screen present	4 mm 1D, 4 mm 2D, 6 mm 1D, 6 mm 2D, 10 mm 1D, 10 mm 2D, other, none	Submit
32	Classification	Substandard / Indicates satisfactory	Submit

Test 4: Settled storm storage (storm tank only)

No.	Data field	Data/information validation	Submit / AOR?
33	What can the settled storm storage deal with?	At least 3DWF / At least 2hrs equivalent storage / Neither	Submit
34	Classification	Substandard / Indicates satisfactory	Submit

Test 5: FPF equal to FFT (storm tank at a WwTW only)

No.	Data field	Data/information validation	Submit / AOR?
35	Is FPF equal to FFT?	Yes / No	Submit
36	Classification	Substandard / Indicates satisfactory	Submit

Test 6: Passing forward Formula A (SPS and SOs only)

No.	Data field	Data/information validation	Submit / AOR?
37	Is the SO passing forward Formula A?	Yes / No	Submit

38	Formula A (l/s)		Submit
39	Classification	Substandard / Indicates satisfactory	Submit

Stage 2: Permit compliance

Test 1: Flow Passed Forward (FPF) permitted rate

No.	Data field	Data/information validation	Submit/AOR?
40	Is the SO meeting permitted FPF?	Yes / No / N/A	
41	Permitted FPF (l/s)	Value or N/A	Submit
42	Actual FPF (l/s)		Submit
43	How is actual measured	Observed / Modelled	Submit
44	Classification	Unsatisfactory / Indicates satisfactory	Submit

Test 2: Is the SO compliant with its permitted screen requirements?

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
45	Is the SO compliant with its permitted screen requirements?	Yes / No / N/A		
46	Permitted screen requirement	4 mm 1D, 4 mm 2D, 6 mm 1D, 6 mm 2D, 10 mm 1D, 10 mm 2D, other, N/A		Submit
47	Screen present	4 mm 1D, 4 mm 2D, 6 mm 1D, 6 mm 2D, 10 mm 1D, 10 mm 2D, other, none		Submit
48	Screen replacement date	End of Life (EOL) / Upgrade required	Upgrade date needs to be agreed with us	Submit
49	Classification	Unsatisfactory / Indicates satisfactory		Submit

Test 3: Storage requirements

No.	Data field	Data/information validation	Submit / AOR?
50	Permitted storage requirement (m ³)	m ³ or N/A	Submit
51	Storage available (m ³)	m ³	Submit
52	Following cessation of rainfall how is storm tank contents returned to FFT?	Auto / Manual / None	Submit
53	Classification	Unsatisfactory / Indicates satisfactory	Submit

Test 4: Rainfall/snowmelt condition

No.	Data field	Data/information validation	Submit / AOR?
54	Is the SO compliant with the rainfall/ snowmelt condition?	Yes / No / N/A	Submit
55	If no, give reason	Free text	Submit
56	Classification	Unsatisfactory / Indicates satisfactory	Submit

Stage 3a: Aesthetics assessment

Site visit information

No.	Data field	Data/information validation	Submit / AOR?
57	Date of Spring assessment	DDMMYY	Submit
58	Date of Autumn/Winter assessment	DDMMYY	Submit
59	Discharging at time of visit?	Yes / No	AOR
60	Discharge colour/quality	Clear / Grey / Other (specify)	AOR
61	Weather at time of visit	Free text	AOR
62	Weather in last 24 hours	Free text	AOR
63	Are any of the following present: oil sheen, silt or sediment at outfall or downstream substrate, odour?	Free text	AOR
64	Is there a visible plume?	Yes / No	Submit

Element 1: Pollution incidents (hydraulic related)

No.	Data field	Data/information validation	Submit / AOR?
65	WIRS reference number/s		Submit
66	WIRS reference number/s excluded as due to maintenance issues		AOR
67	Highest environmental impact category of hydraulic WIRS	Cat 1 / 2 / 3 / 4 / None	Submit
68	Element score	100 / 60 / 20 / 0	Submit

Element 2: Substantiated complaints

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
69	No. received by WaSC		Include dates, details, references	AOR
70	No. received by Local Authority		Include dates, details, references	AOR
71	No. received by NRW		Include dates, details, references	AOR
72	Total no. of complaints			Submit
73	Element score	0 / 10 / 20 / 30 / 40		Submit

Element 3: Sewage litter

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
74	If assessment is for a group of SOs, provide all permit/unpermitted unique refs	Permit refs or N/A-single asset assessed		Submit
75	Stretch starts how many metres u/s of outfall (m)			AOR
76	Length of stretch (m)			AOR
77	No. of items of sewage litter upstream			Submit
78	Stretch starts how many metres d/s of outfall (m)			AOR
79	Length of stretch (m)			AOR
80	No. of items of sewage litter downstream			Submit
81	Difference between u/s and d/s count			Submit
82	Score for u/s d/s difference	0 / 5 / 10 / 15 / 20		Submit
83	No. of items of sewage litter in immediate vicinity & on structure			Submit
84	Score for immediate vicinity	0 / 5 / 10 / 15 / 20		Submit
85	Element score	0 / 5 / 10 / 15 / 20	Use worst score between u/s d/s difference & immediate vicinity	Submit

Element 4: Sewage fungus on outfall

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
86	Is there fungus on outfall	Present / Absent		Submit
87	Element score	0/5	0 for absent, 5 for present	Submit

Element 5: Sewage fungus on substrate

Upstream of SO

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
88	% Coverage on 10 stones u/s of SO	%	Not used for scoring, but should investigate cause	AOR
89	Average % coverage on u/s substrate	%		Submit

Within mixing zone 0-50 m downstream of SO

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
90	% Coverage on 10 stones d/s of SO	%	To nearest 10%	AOR
91	Average % coverage on d/s substrate	%		Submit
92	Score	0 / 5 / 10 / 15 / 20 / 25		Submit

Beyond mixing zone

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
93	% Coverage on 10 stones d/s of SO	%	To nearest 10%	AOR
94	Average % coverage on d/s substrate	%		Submit
95	Score	0 / 25	0 = absent, 25 = present	Submit
96	Element score	0 / 5 / 10 / 15 / 20 / 25	Use highest of two scores (92 and 95)	Submit

Element 6: Amenity value

No.	Data field	Data/information validation	Submit / AOR?
97	Amenity category	High / Medium / Low / None	Submit
98	Reason for category	Free text	Submit
99	Element score	0 / 5 / 10	Submit

Total aesthetics impact

No.	Data field	Data/information validation	Submit / AOR?
100	Total of 6 element scores		Submit
101	Aesthetic impact	None / Very low / Low / Moderate / High / Severe	Submit
102	Classification	Satisfactory / Unsatisfactory	Submit

Stage 3b: Invertebrate (biological) assessment

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
103	Assessment data and outputs		Includes WHPT indices, EQR, Sims	AOR
104	Worst short-term invertebrate impact (spring)	No impact / Very low / Low / Moderate / High / Very high / Severe / Very severe / Extremely severe		Submit

105	Worst short-term invertebrate impact (autumn)	No impact / Very low / Low / Moderate / High / Very high / Severe / Very severe / Extremely severe		Submit
106	Worst long-term invertebrate impact (spring and autumn)	No impact / Very low / Low / Moderate / High / Very high / Severe / Very severe / Extremely severe		Submit
107	Overall invertebrate classification	Unsatisfactory / Indicates satisfactory	Use worst out of three above	Submit

Stage 3c: WQ impact assessment

No.	Data field	Data/information validation	Additional guidance	Submit / AOR?
108	Does the SO meet all three dilution criteria?	Yes / No	Yes = Very low impact	Submit
109	If no, provide a summary report of WQ modelling undertaken and conclusions			Submit
110	Which parameters have failed			Submit
111	Overall WQ impact	No impact / Very low / Low / Moderate / High / Severe		Submit
112	Classification	Unsatisfactory / Indicates satisfactory		Submit

Stage 4: Other evidence

No.	Data field	Data/information validation	Submit / AOR?
113	Is there any other evidence that demonstrates that the SO is having an environmental impact, alone or in combination with other discharges, on any protected sites?	Yes / No	Submit
114	If yes, provide a summary report	Free text	Submit
115	Is any other information available for the SO (that has not already been used in Stages 1-3) that evidences environmental impact?	Yes / No	Submit
116	If yes, provide a summary report	Free text	Submit
117	Classification	Unsatisfactory / Indicates satisfactory	Submit

Overall proposed classification

No.	Data field	Data/information validation	Submit/AOR?
118	Overall proposed classification	Unsatisfactory / Substandard / Satisfactory	Submit
119	Submission date	Date submitted	Submit

Abbreviations

AOR	Available on request
DWMP	Drainage and wastewater management plans
EDM	Event duration monitoring
EOL	End of life
FFT	Flow to full treatment
FPF	Flow passed forward
HRA	Habitat Regulations Assessment
LIL	Last in line
MCERTS	Monitoring certificate scheme
RFI	Request for information
SAC	Special Areas of Conservation
SO	Storm overflow
SOAF	Storm overflow assessment framework
SPA	Special Protection Areas
SPS	Sewage pumping station
SSSI	Site of Special Scientific Interest
TraC	Transitional and coastal waters
TSR	Timeseries rainfall
UPM	Urban Pollution Manual
UWWTR	Urban Wastewater Treatment Regulations
WaSC	Water and sewerage company
WFD	Water Framework Directive
WIRS	Wales Incident Recording System
WWTW	Wastewater treatment works