Department
for Environment
Food & Rural Affairs

# Draft information and guidance on storm overflows

November 2024

We are the Department for Environment, Food and Rural Affairs. We are responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming and fishing industries.

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.



This publication is available at www.gov.uk/defra

Any enquiries regarding this publication should be sent to us at stormoverflows.consultation@defra.gov.uk.

# Contents

# 1. Introduction

## 1.1 Objectives

The objectives of this information and guidance are to provide advice to the sector on the management and regulation of storm overflows, including:

- reflecting the evolution in the understanding of storm overflows legislation and developments in policy since the Urban Waste Water Treatment (England and Wales) Regulations 1994 (UWWTR 1994)
- providing additional information on how to implement measures identified in the Storm Overflow Discharge Reduction Plan (SODRP)

The intention is to support water and sewerage companies and the regulators in carrying out their responsibilities in relation to storm overflows. We want to ensure a clear planning framework, to support the significant forward investment needed from water and sewerage companies as well as a robust oversight and enforcement regime. We also want to ensure transparency and accountability, recognising the significant public interest in tackling sewage pollution.

Since 1994, understanding of the legal requirements surrounding storm overflows has evolved. There have been updates to:

- the interpretation of legal requirements, such as through the Court of Justice of the European Union in *European Commission v UK (Re Storm Water Overflows)* [2013] 1 CMLR 24
- policy and regulatory tools that contribute to bringing these requirements into effect, for example via:
    - the Environment Agency (EA)'s Storm Overflow Assessment Framework (SOAF) (2018)
    - the Environment Act 2021, which introduced requirements such as the need for the Secretary of State to prepare a SODRP and for annual reports on discharges from storm overflows

Alongside this, the SODRP, first published in 2022 and expanded in 2023, sets out an investment and improvement programme to 2050 with the aim of reducing harm to public health and the environment from storm overflows. The SODRP contains 3 headline targets that water and sewerage companies will deliver over the next 25 years.

As the legal and policy landscape has developed, so has technological capability. All storm overflows operated by water and sewerage companies wholly or mainly in England are now fitted with event duration monitors (EDM), allowing water and sewerage companies to report on the frequency and duration of storm overflow discharges in near

real time. This data provides greater insight into the operation of storm overflows than ever before and should be utilised by water and sewerage companies and regulators to inform daily operation, maintenance of and required upgrades to the sewerage system.

Monitoring data can also be used to help identify possible compliance issues with legal requirements. This information and guidance seeks to provide greater clarity on how monitoring data may be used to inform investigations and storm overflow improvements.

On 23 October 2024, the UK and Welsh governments launched an independent commission to recommend reforms to reset the water sector regulatory system. The commission aims to build consensus for a resilient and innovative water sector and a robust regulatory framework that will deliver long-term benefits, restore rivers, lakes and seas to good health, provide a reliable and efficient water supply in a changing climate, and ultimately serve both customers and the environment. Once the commission has made recommendations, both governments will respond and consult on proposals, including potential legislation.

## 1.2 Scope and how we expect this information and guidance to be used

The contents of this document are intended to provide information and strategic guidance for the management and regulation of storm overflows, from the point of assessment to the delivery of improvements and enforcement of regulatory requirements.

This document does not impose any new legal requirements on regulators or water and sewerage companies. It is instead restating and clarifying the current position on storm overflows regulation and management to support preparations for future price reviews.

### 1.2.1 Scope

This information and guidance applies to water and sewerage companies and regulators in respect of storm overflows operated by water and sewerage companies wholly or mainly in England. In this context, ‘regulators’ refers to the applicable of Ofwat and the Environment Agency.

There are approximately 14,500 storm overflows in England, both on the network and at wastewater treatment works. This information and guidance also applies to storm overflows at pumping stations which serve combined systems (both rainfall runoff and foul flow), acting as hydraulic control for flows in excess of the designed pump rate to treatment. It does not apply to other types of assets or overflows, due to the different applications of these assets and the different regulatory schemes which apply to these.

### 1.2.2 Areas of focus

This document opens with a focus on advancements in relation to the monitoring of storm overflows, and how resultant data can be used to support the delivery of storm overflow improvements and compliance with legal and policy requirements.

It then provides a summary of the legislative and policy requirements for storm overflows, under the UWWTR 1994 and the SODRP. It sets out how the 'best technical knowledge not entailing excessive costs' (BTKNEEC) test should be implemented in practice, taking into account relevant case law and developments, and provides further detail on how the targets under the SODRP should be met.

Moving onto implementation, this document explains how investigations should be carried out, and how improvements should be delivered. This section of the document seeks to provide advice for regulators in carrying out their statutory duties, as well as considerations for water and sewerage companies to support them in planning and delivering the substantial forward investment programme required.

This document then summarises the Department for Environment, Food and Rural Affairs (Defra), the EA and Ofwat's enforcement responsibilities.

Finally, this document updates elements of previous Defra guidance on storm overflows. Draft guidance on the UWWTR 1994 was issued to dischargers and regulators in July 1997 (the 1997 guidance). It was intended as a working document for dischargers and regulators on the implementation and interpretation of the UWWTR 1994. Information in respect of storm overflows was largely found in Annex 8 of the 1997 guidance, which covered: the definition of unsatisfactory overflows, consenting for satisfactory and unsatisfactory overflows, and the procedure for reviewing overflows to freshwaters and discharges into coastal waters and estuaries.

With the exception of a limited update in 2009, the 1997 guidance has not been revised since it was published. This document now supersedes parts of Annex 3 and all of Annex 8 for storm overflows operated by water and sewerage companies wholly or mainly in England (but not for storm overflows operated by water and sewerage companies wholly or mainly in Wales). Those parts of the 1997 guidance are withdrawn and replaced by Section 7 of this document. The rest of the 1997 guidance is still applicable.

This document signposts other technical and regulatory guidance where appropriate, such as the EA's Storm Overflow Assessment Framework (SOAF) version 2. The SOAF version 2 sets out technical details and processes for prioritising the investigation and improvement of individual assets and should be read in conjunction with the UWWTR 1994 and the requirement to provide and maintain the sewerage network under section 94 of the Water Industry Act 1991 (WIA 1991).

### 1.2.3 How this information and guidance should be used

This information and guidance is non-statutory and is not intended to replace or amend existing legislative requirements. In addition, while every effort has been made to ensure that explanations included in this document are accurate, only the courts can give authoritative interpretation of the law. There may also be legal obligations to which this document does not refer, but which must be complied with. Water and sewerage companies should seek legal advice and consult with regulators where they are unclear about the scope and effect of applicable legislation. It is ultimately water and sewerage companies' responsibility to ensure that they comply with their legal requirements.

This information and guidance will be kept under review and updated as needed, including in advance of PR29 (2030 to 2035).

# 2. Monitoring and advancements in data

This section reflects key developments in monitoring and data since the UWWTR 1994. It does not provide an exhaustive list of storm overflow monitoring requirements.

## 2.1 Event duration monitoring

All storm overflows now have monitors installed recording the frequency and duration of their operation. The programme to install event duration monitors (EDM) on storm overflows was completed in December 2023.

The EA will continue to oversee EDM installation, operation and reporting by way of their functions under the Environmental Permitting (England and Wales) Regulations 2016 (the EPR 2016).

Water and sewerage companies should refer to industry best practice on EDM, such as the Chartered Institution of Water and Environmental Management (CIWEM) Event Duration Monitoring Good Practice Guide, and ensure that monitors are appropriately accredited and perform in line with EA and Ofwat guidance.

### 2.1.1 Annual EDM reporting

The EA has a duty under section 141D of the WIA 1991 (inserted by the Environment Act 2021) to publish an annual summary of measured EDM data by the end of March each year for the preceding calendar year.

Water and sewerage companies should present EDM data for annual reporting and compliance purposes using the 12 hour and 24 hour block spill counting method, as described in Section 3.2 of this document. Information from EDMs regarding start and stop

times of a discharge should be maintained by water and sewerage companies and made available to regulators on request.

For storm overflows determined as having potential to impact on designated bathing waters, water and sewerage companies should provide a report to the EA on EDM and storm overflow performance for the period of the bathing season (May to September).

### 2.1.2 Near real time reporting of EDM data

From 1 January 2025, water and sewerage companies will be required to publish storm overflow data in near real time, pursuant to the requirement introduced by section 81 of the Environment Act 2021.

That section introduced a duty for water and sewerage companies to publish information on when a storm overflow discharge begins and the location of the storm overflow (within an hour of the discharge beginning), and when the discharge ends (within an hour of the discharge ending). This information should be published in a way which is readily accessible and understandable to the public.

Ofwat, is responsible for overseeing compliance with this duty. Ofwat's 2024 price review (PR24) common performance commitments for storm overflows will incentivise water and sewerage companies to maintain EDM and record discharges. The performance measure calculation takes monitored spills and unmonitored storm overflows into consideration.

### 2.1.3 Use of EDM data for regulatory purposes

The EA will use EDM to data to:

- inform its enforcement duties in the regulation of storm overflows
- assess compliance with the targets laid out in the SODRP

Ofwat will utilise EDM data to:

- inform its enforcement duties in the regulation of storm overflows
- inform its policy and decisions in relation to water and sewerage companies' investment programmes to ensure their sewerage assets are and continue to be built and operated to meet their environmental obligations

The EA and Ofwat will continue to review any technological advancements in monitoring. Where appropriate, advancements may inform specific EA permit conditions, which may result in enhanced obligations for water and sewerage companies to implement additional data monitoring requirements. Examples of possible advancements include:

- new monitoring intervals
- reporting frequencies

- requirements for telemetry
- assurance and certification schemes

## 2.2 Continuous water quality monitoring of the receiving water environment

Water and sewerage companies are beginning to install continuous water quality monitoring (CWQM) monitors at 25% of storm overflows in the PR24 period (2025 to 2030), focusing on high priority assets.

Water quality metrics measured by the CWQM programme are specifically aligned to those required to assess receiving water quality against the urban pollution management (UPM) fundamental intermittent standards (FIS) for levels of ammonia, dissolved oxygen, temperatures, pH values and turbidity.

Data collected in accordance with the CWQM programme will be used by regulators and water and sewerage companies to inform the development of schemes to deliver the SODRP requirements, particularly the ecological target (see Section 3.2). The data will also support the successful delivery of improvement schemes to meet storm overflow legal requirements and targets and EA river basin planning work in assessing reasons for not achieving good status (RNAGS). The regulators will also use this data alongside EDM data to inform their policy and enforcement activities, for example to check for permit breaches.

# 3. Basis for storm overflow improvements

## 3.1 Legal requirements

This section outlines key legal requirements which apply to the use and maintenance of storm overflows, and to associated enforcement action. Of central importance here are the UWWTR 1994, which include (among other things) requirements for the design and operation of sewers, treatment works and storm overflows, whilst also setting out the treatment standards to be applied.

This section should not be treated as an exhaustive list of the applicable legal requirements in this area, and water and sewerage companies should continue to refer to relevant legislation and case law. Regulators can also be consulted for advice.

### 3.1.1 Statutory requirements

Section 94 of the WIA 1991 imposes a duty on water and sewerage companies to provide, improve and extend such a system of public sewers, and so to cleanse and maintain those sewers, as to ensure that the area continues to be effectually drained. Companies are also required to make provision for the emptying of those sewers as necessary for dealing with (by means of sewage disposal or otherwise) the contents of those sewers. The UWWTR 1994 transposed the Urban Waste Water Treatment Directive (the UWWTD) with respect to England and Wales. They supplement section 94 of the WIA 1991. Together, the WIA 1991 and the UWWTR 1994 impose obligations on water and sewerage companies, the Secretary of State, and regulators. In this context, 'regulators' refers to Ofwat, and the applicable of the EA or Natural Resources Wales.

Where obligations are not complied with, regulators can take enforcement action, relying on powers conferred under the WIA 1991 or the EPR 2016.

### 3.1.2 Duties on water and sewerage companies

Regulation 4 of the UWWTR 1994 sets out mandatory requirements for water and sewerage companies when carrying out their duties to provide and maintain adequate sewerage systems under section 94 of the WIA 1991. Regulation 4 contains obligations in respect of both collecting systems and treatment plants. Key obligations include that companies must:

1. Ensure collecting systems meet the requirements set out in Schedule 2 (regulation 4(2)). Paragraph 2 of Schedule 2 provides that collecting systems should be designed, constructed and maintained in accordance with the 'best technical knowledge not entailing excessive costs' (BTKNEEC) test, particularly in relation to the:
   a) volume and characteristics of urban waste water
   b) prevention of leaks
   c) limitation of pollution of receiving waters due to storm water overflows

   To note, the Court of Justice of the European Union (CJEU) clarified at [63] of *European Commission v UK (Re Storm Water Overflows)* [2013] 1 CMLR 24 that the BTKNEEC test extends to treatment plants as well as collecting systems.

2. Ensure that treatment plants are designed, constructed, operated and maintained to account for seasonal variations in waste water load, to ensure sufficient performance under all normal local climatic conditions (regulation 4(4)(a)).

3. Ensure disposal routes identified for treated waste water and sludge minimise adverse effects on the environment (regulation 4(4)(c)).

The term collecting system refers to a system of sewers for collecting and conducting urban waste water.

### 3.1.3 Duties on regulators

Regulation 6 of the UWWTR 1994 imposes a duty on the EA, when exercising their functions under the EPR 2016 (such as in granting, varying or revoking environmental permits), to secure 'the limitation of pollution of receiving waters due to storm overflows' in respect of discharges from collecting systems and treatment plants (regulation 6(2)(c)). [1]

Ofwat also has responsibility for enforcing regulation 4 UWWTR 1994, as it supplements the duty in section 94 WIA 1991 which Ofwat also enforces.

### 3.1.4 Case law and the BTKNEEC test

The requirements under the UWWTR 1994 were considered by the Court of Justice of the European Union (CJEU) in *European Commission v UK (Re Storm Water Overflows)* [2013] 1 CMLR 24. The CJEU's findings were summarised by the High Court at [63]-[70] of *R (on the application of WildFish Conservation and Marine Conservation Society and others) v Secretary of State for Environment, Food and Rural Affairs* ('WildFish') [2023] EHWC 2285 (Admin).

The CJEU identified that all urban waste water must be collected and treated under usual climatic and seasonal conditions, and a failure to treat urban waste water can only be tolerated where the circumstances are 'out of the ordinary'. At the same time, the CJEU acknowledged footnote 1 to Annexes 1(A) and 1(B) of the UWWTD, which recognises that it is not possible in practice to construct collecting systems and treatment plants so that all waste water is capable of being treated. Such situations can be tolerated in "situations such as unusually heavy rainfall" which the CJEU characterised as "exceptional situations" or "exceptional circumstances". However, in those situations the state must decide on "measures to limit pollution from storm water overflows".

In practice, this means that discharges of untreated waste water from collecting systems and treatment plants should only be occurring in exceptional circumstances, unless remedial intervention would not satisfy the BTKNEEC test. Per the summary of the CJEU's findings in WildFish, the BTKNEEC test involves weighing the best technology and its estimated costs against the benefits, or avoidance of harm, that a more effective water collection or treatment system may provide. This involves taking into account the effects of discharges of untreated waste on the environment to see whether the costs that must be

[1] Natural Resources Wales is the responsible regulatory authority for Wales under the EPR 2016.

incurred or the works necessary to treat all waste water, would be proportionate to the environmental benefit that would result.

Storm overflow discharges should therefore be assessed via the following two-stage test:

1. Is the storm overflow discharging outside of 'exceptional circumstances'?
2. If the discharge is not due to exceptional circumstances, is there a solution to improve the storm overflow which satisfies the BTKNEEC test?

The two-stage test should be applied on a case-by-case basis.

Defra expects the two-stage test to be applied in a robust and consistent manner across all storm overflows and water and sewerage companies.

Regulators and water and sewerage companies are expected to have regard to any relevant updates in case law on storm overflows when exercising their legal obligations.

### 3.1.5 Implementation of the two-stage test

The EA's SOAF version 2 (when published), and guidance on valuing the benefits of storm discharge improvements (CBA process and Practitioners' guide are subject to review ahead of updating in 2025) provide a framework to support water and sewerage companies in identifying storm overflows which need remediation, in order to comply with their legal requirements. This includes setting out guidance for how companies should carry out the BTKNEEC test.

Where there is no solution which satisfies the BTKNEEC test, water and sewerage companies should communicate this to the regulators as soon as practicable. They should also keep these assessments under review as new technical knowledge and information on the benefits of reducing environmental harm is developed. This should ensure that:

- the design, build, operation and maintenance of each asset remains consistent with BTKNEEC as knowledge develops
- the changing costs and benefits at each site are reflected as they evolve
- the network is maintained, improved and extended as needed

### 3.1.6 Unusually heavy rainfall events

As set out above, 'unusually heavy rainfall' was characterised as an 'exceptional circumstance' by the CJEU in the 'UK' case. The SOAF version 2 sets out a methodology for identifying 'unusually heavy' rainfall events for the purpose of prioritising investigations to assets which spill frequently in more typical years.

## 3.2 Policy – storm overflows discharge reduction plan

This section provides further information on the implementation of the targets contained in the SODRP. It does not add to the requirements on water and sewerage companies outlined in the SODRP but provides additional guidance on delivery against the SODRP's targets.

The SODRP, published in accordance with section 141A of the WIA 1991, set 3 ambitious targets for water and sewerage companies: an ecological target and public health target (with these being the main drivers for improvement), as well as a rainfall target (interpreted as a maximum of 10 recorded spills on average per year as reported in the statutory EDM return). The targets in the SODRP were augmented by the 2023 update to the SODRP, which included a greater spread of high priority sites. High priority sites are defined in the 'Ecological target' sub-section (3.2.2).

The SODRP aims to increase ambition on reducing the harm caused by storm overflows, going further than the UWWTR 1994 in most circumstances, because improvements to meet its targets are not subject to a cost-benefit style assessment.

While the SODRP has a statutory basis by virtue of its being required by the amendments made to the WIA 1991 by the Environment Act 2021, the contents of the SODRP are not legally binding. Water and sewerage companies have, however, committed to delivering against these targets. Compliance with the SODRP targets at an asset level will be implemented by way of environmental permits.

An update on delivery against the SODRP targets will be published in Defra's 2025 progress report, as required by the Environment Act 2021.

### 3.2.1 Implementation of the targets

Water and sewerage companies should use the technologies, data, and modelling available to them to ensure their sewer networks are operated to meet their legal obligations and the targets set out in the SODRP. Considerations that apply to particular SODRP targets are outlined in sections 3.2.2 to 3.2.4.

There are also some general considerations applicable to achievement of all of the SODRP targets, which are detailed in this section.

These considerations have been developed in conjunction with the EA, as the expert organisation responsible for the regulatory implementation of the SODRP.

#### 3.2.1.1 Length of period to assess average spill performance

The SODRP spill frequency targets for storm overflows (ecological, bathing and rainfall targets) are defined as an average over 10 consecutive years.

In parallel with the consultation on this information and guidance, the EA is consulting on a proposal to assess compliance with appropriate spill frequencies via permits. We will consider the outcome of that consultation when finalising this information and guidance.

#### 3.2.1.2 Spill counting methodology

There is a distinction between ‘discharges’ and ‘spills’.

When a signal from an EDM device is verified, this means that a storm overflow discharge has taken place. For the purposes of EDM on storm overflows that discharge to the environment, spills (or spill count) is the discharge count with the 12 and 24 hour block spill counting methodology applied.

Further detail on how this counting methodology works in practice, including when assessing against spill targets, can be found in the EA’s SOAF version 2.

#### 3.2.1.2 Counting and discounting spills

When assessing against spill targets, the 12 and 24 hour block spill count of the individual assets should be assessed in isolation against the applicable SODRP target. Spills from multiple discharges into a common receiving water should not be aggregated together when assessing against a spill count threshold.

If assessing against an ecological or environmental quality standard in the receiving waters, such as a shellfish water, then the combined effects of multiple storm overflows will be assessed.

No discharges or calculated spills (which are spills counted using the 12 and 24 hour block spill count method) shall be discounted or removed from the counting process or spill count on the basis of small volume or due to being considered likely to have no or small impact on the receiving waters.

#### 3.2.1.3 Design horizons for improvement schemes

When designing spill performance against a spill target, it is recommended that a rainfall series of up to 25 years is used, due to the annual variability of rainfall.

Recognising that this will not always be possible, a minimum of 10 years’ data should be assessed.

If insufficient historical rainfall is available, a synthetic rainfall series will need to be developed. The CIWEM Rainfall Modelling Guide should be followed.

The rainfall series should be typical over the duration of the series and wet or exceptionally wet years should not be removed.

#### 3.2.1.4 Using sewer hydraulic models to design against spill targets

Storm overflow improvements to meet spill frequency targets should make use of sewer hydraulic modelling.

Models should be built, verified, applied and maintained in accordance with the CIWEM Code of Practice for the Hydraulic Modelling of Urban Drainage Systems.

#### 3.2.1.5 Strategic planning and allowing for climate change and other pressures on sewerage in the design

Capacity pressures on sewerage systems include climate change (rainfall), population growth, and urban creep, as well as ageing assets.

Water and sewerage companies should design their storm overflow improvements using planning horizons over the longer term (to 25 years) to address complex environmental issues and account for a range of future climate change scenarios and other pressures.

It is the water and sewerage companies' responsibility to achieve and maintain storm overflow performance against the spill frequency targets. Failure to do so could result in permit non-compliance.

Water and sewerage companies should manage the risk of increasing pressures on their sewerage network through their Drainage and Sewerage Management Plans (DSMP), also known as drainage and wastewater management plans (DWMP), updated every 5 years and reviewed every year. These plans are required under section 94A of the WIA 1991 (inserted by section 79 of the Environment Act 2021).

#### 3.2.1.6 Assessing performance against the average spill targets

When assessing spill performance against design targets, the spill performance should be assessed as an average over 10 years to ensure equivalence against the design target of using a minimum of 10 years' rainfall to design the storm overflow performance.

#### 3.2.1.7 Assessing compliance

The EA will secure the spill performance of storm overflow improvement schemes, and the performance of storm overflows which already meet design targets, through spill limit conditions within permits issued under the EPR 2016.

Non-compliance with limits in permit conditions could result in water and sewerage company investigations and enforcement action.

## 3.2.2 Ecological target

The SODRP sets out that water and sewerage companies will only be permitted to discharge from a storm overflow where they can demonstrate that there is no local adverse ecological impact, by the deadlines set out in section 3.2.2.1. This target will ensure that no water body in England fails to achieve good ecological status due to storm overflow discharges. Good ecological status is described in the Water Framework Directive 2000/60/EC (WFD), Annex V, 1.2, table 1.2, as follows:

“The values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with the surface water body type under undisturbed conditions.”

### 3.2.2.1 Timelines for the ecological target

Water and sewerage companies will only be permitted to discharge from a storm overflow where they can demonstrate that there is no adverse ecological impact by the following target dates:

- 2035 for at least 75% of storm overflows discharging into or near ‘high priority sites’
- 2045 for all overflows discharging into or near ‘high priority sites’
- 2050 for all remaining storm overflows

The timeframes for improvements are also dependent on the sensitivities of the receiving waters and any known impacts, such as to bathing waters and ecological ‘high priority sites’.

### 3.2.2.2 Definition of ecological ‘high priority sites’

In the SODRP, ‘high priority sites’ are defined as:

- sites of special scientific interest (SSSIs)
- special areas of conservation (SACs)
- special protected areas (SPAs)
- Ramsar sites – wetlands of international importance designated under the Ramsar Convention
- chalk streams
- UWWTR 1994 sensitive areas
- marine conservation zones (MCZs)
- waters currently failing ecological standards due to storm overflows
- shellfish water protected areas

#### 3.2.2.3 Assessing whether a storm overflow qualifies for the 2035 and 2045 SODRP targets

The EA has provided the criteria in this section, which identify whether discharges into or within a certain distance of any of the 'high priority sites' listed above would typically qualify for the associated 2035 and 2045 SODRP targets. Any questions regarding specific assets should be directed to the EA.

**Criteria for 'high priority sites' for the ecological target**

A storm overflow qualifies as a 'high priority site' under the SODRP if it discharges:

- into or within 50m (inland) or 1km (transitional and coastal waters) of an SSSI water feature – regardless of whether the water body has favourable or unfavourable status
- into or within 50m (inland) or 1km (transitional and coastal waters) of an SAC, SPA or Ramsar water feature – regardless of whether the water body has favourable or unfavourable status
- into or within 50m (inland) or 1km (transitional and coastal waters) of a chalk stream
- into or within 1km from the hydraulic continuity of an MCZ

**Waters currently failing ecological standards due to storm overflows**

The SODRP requires water and sewerage companies to demonstrate that their storm overflows are having no adverse ecological impact. To identify sites which are having an adverse impact, water and sewerage companies should refer to the river basin planning RNAGS (Reasons for Not Achieving Good Status) category, which is made up of RNAGS and SOAF version 2 environmental impact assessments.

Storm overflows should be prioritised to meet the 2035 and 2045 targets if:

- an assessment finds that storm overflow discharges are a confirmed or probable 'reason for not achieving good status'
- an assessment finds that there is an environmental impact through Stage 2 of the SOAF version 2

**Shellfish water protected areas**

A storm overflow qualifies as a high priority site under the SODRP in relation to 'designated shellfish waters', if the discharge is into, or within 1km of hydraulic continuity of, a designated Shellfish Water.

**Ecological standard for inland waters**

Inland waters or freshwaters are defined as those upstream of the tidal limit in estuaries.

‘No local adverse ecological impact’ means achieving the urban pollution management (UPM) fundamental intermittent standards (FIS) or 99 percentile standards for ammonia and dissolved oxygen downstream of the storm overflow discharge point.

Achievement of UPM FIS and 99 percentile standards is considered sufficient to prevent harm that would cause a water body to not achieve good ecological status resulting from storm overflow impact. If a storm overflow is resulting in these standards being breached, then improvements should be secured in line with the timeframes set out in the SODRP.

**Applying the UPM framework to inland waters**

All work affecting storm overflows should be planned using the UPM procedure outlined in section 3 of the UPM manual. The UPM procedure is used to ensure that wastewater discharges from sewer and sewage treatment systems in wet weather meet the ecological requirements of the receiving water in a cost-effective way.

The water sector’s good practice guides, such as the guidance notes and codes of practice published by the CIWEM Urban Drainage Group, should be used to inform the detail of how to build, verify and apply UPM modelling techniques.

**Ecological standards for coastal and estuarine waters**

Due to the technical challenges of developing an ecological standard for coastal and estuarine waters, a standard is not currently available. Until a suitable standard is developed and confirmed, water and sewerage companies should plan improvements to storm overflows discharging to coastal and estuarine waters based on the target of not more than an average of 10 spills per annum. This is equivalent to the SODRP rainfall target and mirrors the long-established surrogate for the environment quality standards to protect shellfisheries.

### 3.2.3 Public health target

The SODRP set an objective to protect the health of water users through the public health target:

"Water companies must significantly reduce harmful pathogens from storm overflows discharging near designated bathing waters, by either: applying disinfection; or reducing the frequency of discharges to meet EA spill standards by 2035."

#### 3.2.3.1 EA bathing water spill standards

EA spill standards are different for inland and coastal bathing waters.

For designated inland (rivers, lakes, and estuaries) bathing waters, storm overflows discharging directly into, or within 5km upstream of the upper limit of the inland bathing water reach must be designed to achieve no more than an average of one spill per bathing season.

For coastal waters, storm overflows discharging within 1km upstream (and in hydraulic continuity) of designated bathing sites, must be designed to achieve:

- no more than 3 spills per bathing season on average for ‘good’, ‘sufficient’ or ‘poor’ status
- no more than 2 spills per bathing season on average for ‘excellent’ status

‘Average’ for design purposes should be assessed over a minimum of 10 years.

Designated bathing waters in estuaries should be designed to the same standards as those for coastal bathing waters, with the exception that where there is evidence that the designated bathing water is near the upstream freshwater limit and low salinities are observed, then these waters should be given the same protection as rivers (one spill per bathing season). Water and sewerage companies should design to meet the coastal standards unless advised otherwise by the EA.

Marine or river impact modelling is not required unless it is found that the investigation triggers are insufficient for a specific receiving water that does not meet bathing water standards due to continued operation of storm overflows once the required spill standard has been achieved.

In addition to the criteria above, the following apply:

- if there is substantive evidence that concludes that bathing water quality is limited by the discharges from storm overflows that are located further away from the designated bathing water site than the distances set out above, the relevant investigation triggers listed above apply

- disinfection of discharges should be used to enhance bathing water quality over and above spill reduction targets – disinfection schemes shall only be proposed in lieu of spill reduction where spill reduction is considered not to satisfy the BTKNEEC test

See section 7 of this document for spill standards in relation to soffit level (the level corresponding to the top of the outfall pipe).

#### 3.2.3.2 Requirement for additional works

Following completion of the spill reduction works, it may be found that the receiving water is not achieving its target public health quality as a result of storm overflow discharges. In this situation, the Environment Agency should consider requiring the water and sewerage companies to undertake an investigation and remedial scheme to secure no adverse ecological impact. In the first instance this should be based on achieving the bathing water standards applying marine impact modelling to meet:

**Table: EQS for faecal bacteria in coastal bathing waters**

| Bathing water class (2006 Bathing Water Directive) | E. Coli standard (colony forming unit (CFU) per 100ml) | Intestinal enterococci standard (CFU per 100ml) | Standard type | Maximum exceedance threshold (% of bathing season duration) |
|---|---|---|---|---|
| Sufficient | 500 | 185 | 90-percentile | 1.8 |
| Good | 500 | 200 | 95-percentile | 1.8 |
| Excellent | 250 | 100 | 95-percentile | 1.8 |

These standards apply to any location within the coastal water, not just the monitoring point. For standards for rivers and lakes, contact the EA.

Water and sewerage companies should not use these approaches to justify increasing spills above the default spills thresholds or existing levels.

### 3.2.4 Rainfall target

The SODRP rainfall target will ensure improvement of all storm overflows:

“Storm overflows will not be permitted to discharge above an average of 10 rainfall events per year by 2050.”

The maximum average 10 rainfall events target should be implemented as a 10 spills target. This target translates to water and sewerage companies designing, operating and maintaining their storm overflows and associated sewerage systems to ensure there are no more than 10 spills per annum on average over a 10 year period.

# 4. Assessing storm overflows

As set out in Section 2, water and sewerage companies must return event duration monitoring data annually to the EA for every storm overflow operated by a sewerage undertaker whose area is wholly or mainly in England, containing the frequency and duration of all storm overflow spills. This is a key step in water and sewerage companies and regulators being able to identify which storm overflows should be investigated and subsequently where improvements are required.

This section provides an overarching approach to storm overflow investigations as agreed with the EA and Ofwat. Where needed this may be complemented by further guidance from the regulators outlining technical detail on investigations. It is ultimately the responsibility of water and sewerage companies to understand the obligations they need to meet and deliver action to achieve these. There may be circumstances in which ensuring compliance requires water and sewerage companies to go further than guidance set out by government or regulators.

## 4.1 Investigation triggers

A number of requirements need to be considered by water and sewerage companies when evaluating their assets. Assets can include storm overflows on the network or at wastewater treatment works.

Investigations are a common mechanism through which water and sewerage companies and regulators can evaluate an asset, consider which requirements might apply and determine whether action is required to deliver improvements.

There are currently around 14,500 storm overflows in England. Given the number of assets, it is reasonable for regulators to establish triggers for investigations in order to ensure that resources are used efficiently and to assist water and sewerage companies with prioritising the work which needs to be completed to achieve compliance with requirements in the most effective manner.

In the SOAF version 2, the EA sets triggers based on the frequency of spills to prioritise investigations in respect of the highest spilling storm overflows.

Through its enforcement proceedings, Ofwat has suggested a series of performance indicators, including spill levels, which should act as triggers for water and sewerage

companies to proactively consider whether there may be compliance issues now or in the foreseeable future. Such consideration is part of water and sewerage companies' obligations to ensure their assets are performing sufficiently.

Following the revision of the EA's SOAF, the EA and Ofwat investigation triggers will align to form a complementary regulatory framework. If a storm overflow met or exceeded an investigation trigger set by the regulators, the water and sewerage company would be responsible for navigating the investigation process in Section 4.2 and the EA's SOAF version 2.

It is important to note that there is no single spill trigger set in law at which an investigation is required. While investigations can be triggered by meeting or exceeding a threshold, this is not the only route for identifying the need for improvements to be made to a storm overflow. Water and sewerage companies have a responsibility to investigate a storm overflow discharging outside of 'exceptional circumstances', regardless of whether the asset has exceeded a spill trigger, as set out in Section 3.1.

Regulators may also decide to investigate water and sewerage companies and take enforcement action in circumstances other than those described in this document. For example, a storm overflow may not meet an investigation trigger, but if a permit condition were breached then the EA could investigate and take enforcement action in line with the EA's enforcement and sanctions policy.

## 4.2 Investigation process

The investigation process involves gathering information and using this to understand the factors that have contributed to a storm overflow discharging and the impacts that the discharges are having. To determine whether improvements may be required, water and sewerage companies should consider all relevant legal requirements, targets in the SODRP and any other non-legislative requirements for their assets and do so on a case-by-case basis. Water and sewerage companies should also consider whether there are deadlines by which these requirements must be met.

Through Ofwat's price review business plan cycle, water and sewerage companies allocate funds for investigations against their statutory and non-statutory requirements, which they will then schedule during the asset management plan (AMP) period in the most efficient way.

Where requirements for investigations emerge outside of the price review business planning process, such as mid-AMP, water and sewerage companies should aim to carry these out as soon as feasibly possible. Where relevant, priority must be given to scheduling investigations which are linked to statutory requirements.

The SOAF version 2 outlines in detail the investigation process to be followed for storm overflows under the UWWTR 1994 for both EA and Ofwat investigation triggers.

## 4.3 Identifying improvements

As part of the investigation process, water and sewerage companies should develop and assess their options for improving a storm overflow, taking a number of different factors into consideration, as set out in this Section and in the EA's SOAF version 2. If an appropriate improvement is identified, the EA will include improvement conditions in the permit to meet appropriate standards as soon as practicable.

### 4.3.1 Optioneering

Water and sewerage companies should be able to demonstrate to regulators that they have considered a range of options when identifying and designing their schemes to improve storm overflows. This could include:

- grey infrastructure
- green infrastructure
- grey and green hybrid improvements
- improvements to reduce demands on sewerage
- improvements that increase capacity
- innovative alternative improvements

Water and sewerage companies should consider not only the Capital and Operational (Totex) costs of improvements, but also the carbon (embedded and operational) and additional societal and nature-based benefits of each option.

It is important that standards, assessments and upgrades focus on the site or specific overflow under consideration. However, when deciding on options, water and sewerage companies should consider a catchment approach alongside an asset-by-asset approach where appropriate. For example, by considering the benefits that storm overflow improvements may offer on a wider level than just the individual asset, particularly where there are significant environmental issues which cannot be improved in a cost beneficial way simply by remediating one asset. The appropriate scale of the assessment will be agreed with the EA.

### 4.3.2 Optioneering based on wastewater supply and demand modelling

Water and sewerage company optioneering of storm overflow improvements should consider demand- as well as supply-based options within the context of wastewater supply demand.

Supply-based options**,** such as increasing capacity of the sewerage network or increased treatment capacity, usually rely upon grey infrastructure, or in some cases a grey and green infrastructure, such as constructed wetlands.

Demand-based options, including surface water diversion away from combined sewers or its attenuation, are considered more sustainable as they relieve pressure on sewerage systems now and in the future, whereas supply-based options often require upgrading as pressures increase in the future. Demand-based options also reduce the ongoing costs of treatment and conveyance (such as pumping), so have smaller revenue costs and smaller operational carbon over their lifetime.

### 4.3.3 Green infrastructure

The SODRP promotes and encourages low carbon and green improvements to addressing storm overflow spills. Green infrastructure and other nature-based improvements can be an effective option to reduce the harm caused by storm overflows and can provide multiple co-benefits for the environment and society. For example, separating surface water so that it does not mix with sewage and is diverted to water gardens or wetlands improves water quality, creates new habitats for species and acts as a carbon sink.

Defra expects the adoption of green infrastructure, either wholly or partly, to be encouraged by the regulators in line with their own legal duties, where this is evidenced as being more sustainable with added societal benefits, and where it can be shown to meet water and sewerage companies' legal requirements.

Water and sewerage companies should investigate and introduce green infrastructure at the upstream end of catchments. Upstream improvements often provide greater societal benefits and have lower carbon cost compared to green infrastructure implemented in the downstream area of a catchment.

If a green infrastructure project is started before 2027 and delivered as quickly as possible, in order to facilitate the promotion of these approaches, it will count towards completion of the targets set out in the SODRP, subject to review. As the environmental benefits of these projects may take some time to be realised, and so may not be achieved before the target dates specified in the SODRP, these projects can still be counted towards achieving the targets.

Green infrastructure improvements to storm overflows can be both supply- and demand-based. These improvements have advantages in that they can in some cases lead to lower embedded carbon and have lower operational carbon emissions than typical grey infrastructure improvements.

# 5. Delivering storm overflow improvements

Once a storm overflow has been assessed under SOAF version 2, and if it has been determined that there is an appropriate solution for improvement, water and sewerage companies must plan and deliver these improvements so that they comply with relevant legal and policy requirements.

Defra and the regulators understand the need to take into account the deliverability, affordability and financeability of investment required to improve storm overflow performance over time. While meeting regulatory requirements, including fixed regulatory deadlines, must be a water company's priority, consideration should be given by regulators where appropriate to the timing of improvements being phased over multiple asset management periods. This will support delivery, ensure affordability to customers, and ensure water and sewerage companies can attract the necessary investment in alignment with AMP cycles.

This section suggests considerations for regulators and water and sewerage companies to help ensure improvement plans are affordable, financeable and deliverable.

## 5.1 Improving storm overflows under the UWWTR 1994 and the SODRP

The UWWTR 1994 and the SODRP share the same overall ambition: to reduce the harm caused by storm overflow discharges. Despite a shared ambition, the action that water and sewerage companies would need to take to meet UWWTR 1994 requirements may sometimes differ from what is needed to meet SODRP targets.

In order to identify which of the drivers requires the most environmentally beneficial results, a storm overflow improvement required under UWWTR 1994 (having satisfied the BTKNEEC test) should be considered alongside other improvements to meet legal requirements and action to meet the SODRP targets.

For example, an assessment under the EA's SOAF version 2 could find that in order to satisfy UWWTR 1994 requirements, a particular storm overflow should be improved so that it spills no more than 13 times per year.

If that same storm overflow was discharging into or near a Site of Special Scientific Interest (SSSI), this would be classed as a 'high priority site' under the SODRP. Under the SODRP the storm overflow would need to be improved to meet both the ecological target, and the rainfall target. This might result in the storm overflow needing to be improved so that it spills fewer than 10 times on average per year, or a lower spill frequency to eliminate ecological harm. Its 'high priority site' status would also influence the timing of the improvement.

In this case the SODRP requirements would be more stringent than the UWWTR requirements. Taking action in line with the most stringent requirements would result in greater benefits for the environment and public health.

Where possible, Defra recommends that water and sewerage companies design improvement options which fulfil all the relevant requirements for the storm overflow being assessed, minimising situations where multiple improvements are made to the same asset.

There may be circumstances in which this approach is not feasible or would result in unacceptable delays to compliance with the legislation, and so a more modular approach may therefore be more appropriate.

In all circumstances, water and sewerage companies must fulfil their legal obligations on storm overflows, and as such prioritise the delivery of storm overflow improvements which are required in law.

Ultimately, it is for water and sewerage companies to determine the most effective way of complying with their legal requirements and meeting the targets set out in the SODRP.

## 5.2 Timeframes for delivering

Government expects water and sewerage companies to achieve compliance by delivering improvements as fast as possible, with regulators incentivising and monitoring this delivery. Given the challenges associated with the scale and complexity of investment on storm overflows, with some improvements needing to be delivered over several price review periods, it is important that the EA and Ofwat retain some flexibility when working with water and sewerage companies on the timeframe for improvements. When regulators engage with water and sewerage companies on the planning and sequencing of storm overflow improvements, they should give consideration to the following factors:

- prioritisation of storm overflow improvements (for example, meeting legal requirements or target achievement dates)
- environmental and public health outcomes
- deliverability, affordability, and financeability of improvements at a project and programme level

When fulfilling their statutory duties on storm overflows, regulators will take all appropriate factors into consideration.

## 5.3 Distinguishing between maintenance improvements and longer-term improvements

In many cases, compliance issues can be addressed through basic operational changes, repairs and maintenance. These types of improvements have been provided for and continue to be provided for through water and sewerage companies' base revenue allowances.

Water and sewerage companies should not delay the implementation of such improvements in favour of a longer-term build solution.

## 5.4 The role of government and regulators in overseeing planning and delivery of improvements

Government and regulators have responsibilities in relation to the planning and delivery of improvements and work together to support each other in delivery of their respective remits, consistent with their statutory duties. However, they have different areas of primary focus, reflective of their areas of expertise:

The EA takes the lead in:

- identifying the obligations for water and sewerage companies in the Water Industry Strategic Environmental Requirements (WISER) guidance. This guidance covers the issues and opportunities water and sewerage companies should consider when meeting their environmental obligations, including, but not limited to, improvements on storm overflows. Obligations identified in the WISER guidance for storm overflows then translate into measures and actions identified through the WINEP. The EA works with water and sewerage companies to identify suitable schemes to meet these obligations and reviews draft WINEP measures ahead of final determination of price review allowances by Ofwat
- assessing the progress of these storm overflow improvements by tracking delivery of the WINEP measures, and where changes are made, effecting these changes in the applicable permits
- overseeing the delivery of the most cost-beneficial solution as identified through the SOAF in order to reduce environmental impact, frequency of discharges, or both, subject to appropriate prioritisation

Ofwat takes the lead in:

- setting revenue allowances through its price review for the efficient investment companies need to fulfil their legal obligations and service commitments to customers, including in relation to storm overflows. This process is informed by business plans put forward by water and sewerage companies, which are then reviewed by Ofwat as part of their Final Determination process

- continuing to take into account the affordability, financeability and deliverability of these plans, working with the EA and government as necessary to ensure water and sewerage companies have clarity on their long-term investment requirements and funding landscape
- incentivising water and sewerage companies to deliver against their commitments, through performance commitments, price control deliverables, and returning money to customers if these are not delivered. PR24 includes performance commitments with financial consequences based on the average number of storm overflow spills, to encourage water and sewerage companies to address high spilling sites. Through this process, Ofwat will identify works which are funded through base spend, such as operational and maintenance, and those spill reduction improvements which are funded through enhancement expenditure. The storm overflows performance commitments definition was published in June 2023

Among other things, Defra has responsibility for setting the overall direction of storm overflows policy, including targets and legislation. This includes issuing strategic policy statements to Ofwat, outlining Defra's priorities for the regulation of the water industry ahead of price reviews. Through this process, Defra seeks to ensure clarity and predictability for the sector, consulting on any significant changes at the earliest stage, to ensure water and sewerage companies have the stability they need for their long-term planning and to secure a pipeline of investment for the required improvements. Defra also signs off the Water Industry Strategic Environmental Requirements (WISER).

# 6. Enforcement

Where there are legal requirements in relation to storm overflows or the discharges from them, it is the responsibility of water and sewerage companies to understand those requirements, assess whether the design and operation of their assets comply with them, and take necessary action in an appropriate timeframe to ensure that they are and remain in compliance with those requirements.

If there are concerns about non-compliance, it is for the EA and Ofwat to take appropriate steps to investigate further and take enforcement action where appropriate.

## 6.1 The Environment Agency's role in relation to enforcement

The EA's role in relation to enforcement includes:

- exercising its duty under regulation 6 of the UWWTR 1994 to carry out its functions under the EPR 2016 to secure limitation of pollution of receiving waters due to

storm water overflows – this duty is applicable when the EA is exercising its enforcement functions
- implementing, reviewing and varying permit conditions in such a way as to reflect UWWTR and other legislative requirements
- taking enforcement action where it is satisfied that a permit condition has been breached, in accordance with its Enforcement and Sanctions policy – enforcement action may result in enforcement notices, civil sanctions or criminal prosecutions

## 6.2 Ofwat's role in relation to enforcement

Ofwat's role in relation to enforcement includes the following points.

Ofwat fulfilling its duty under section 18 of the WIA 1991 to impose an enforcement order on a company where it is satisfied that there is or is likely to be a breach of section 94 of the WIA 1991, or regulation 4 of the UWWTR 1994. Such an enforcement order is to secure the company's compliance.

Section 19 of the WIA 1991 provides exceptions to Ofwat's duty under section 18, where the breach is of a trivial nature. It also provides an exception where the company has given and is complying with an undertaking to secure its compliance or where an enforcement order would be inconsistent with its duties under Chapter 2 of Part 1 WIA 1991. If a company fails to comply with such an undertaking, Ofwat has a duty under section 18 of the WIA 1991 to impose an enforcement order to secure compliance.

Section 22A of the WIA 1991 allows Ofwat to impose financial penalties, where it is satisfied that a company has breached or is breaching a relevant legal obligation. Ofwat will consider a number of factors in determining the appropriate level of such a penalty in the circumstances of each breach. Financial penalties imposed in accordance with this provision cannot exceed 10% of a company's relevant turnover in the preceding business year.

On a case-by-case basis, and where its powers allow it to do so, Ofwat will consider regulatory settlement. Where accepted, this would require an undertaking to be agreed, setting out the remedial steps Ofwat considers appropriate to secure compliance, together with appropriate financial and non-financial commitments, such as a redress package for customers or remediation of harm caused by the identified breach. Such regulatory settlement may be accepted in lieu of all or part of a proposed financial penalty.

Before making an enforcement order or imposing a financial penalty, Ofwat is required to consider whether it would be more appropriate to proceed using its powers under the Competition Act 1998.

## 6.3 Defra's role in relation to enforcement

Defra's role includes:

- responsibility for setting the overall direction of storm overflows policy, including targets and legislation
- general strategic oversight of the storm overflows regulatory system
- establishing the strategic policy direction and the overarching legislative framework within which regulators operate and ensuring these remain up to date with the best available information on environmental needs and the water industry
- this includes issuing Strategic Policy Statements to Ofwat outlining Defra's priorities for the regulation of the water industry ahead of Price Reviews. Ofwat has a legal duty to carry out its functions in accordance with a strategic policy statement, as set out in section 2A of the WIA 1991

Defra also meets regularly with the EA and Ofwat to retain an understanding of water and sewerage company performance, and how the regulators are exercising their enforcement duties more generally. This is while ensuring that the regulators retain required independence on individual cases and enforcement proceedings

Defra recognises the jurisdiction of the regulators in enforcing compliance with relevant statutory or non-statutory requirements.

As an example, Defra expects the regulators to utilise data on storm overflows obtained via EDM (and other relevant monitoring programmes as they become available) to inform their assessment of water company performance and compliance. However, it is for the regulators to decide which other sources of information are necessary in order to form a view on these matters, how any investigation processes should be carried out, and ultimately what the outcome of these investigations are.

# 7. Replacing sections of the 1997 guidance

Draft guidance on the UWWTR 1994 was issued to dischargers and regulators in July 1997 (the 1997 guidance). It was intended as a working document on the implementation and interpretation of the UWWTR 1994.

Except for a limited update in 2009, the 1997 guidance has not been revised since it was published. As discussed throughout this document, there have been considerable changes in the storm overflows policy landscape in recent years, including the issuance of the SODRP and increased awareness and evidence due to 100% storm overflow EDM coverage. In addition, technical knowledge relating to water quality has progressed.

Within the 1997 guidance, information related to storm overflows is largely contained within Annex 8, entitled 'Framework for Consenting Intermittent Discharges'. Annex 3, entitled 'Design, Construction and Operation of Collecting Systems and Treatment Plant', also refers to the operation of storm overflows (as part of the wider sewerage system).

All of Annex 8 to the 1997 guidance, to the extent that it had not already been superseded, is revoked in respect of storm overflows operated by water and sewerage companies wholly or mainly in England (but not for storm overflows operated by water and sewerage companies wholly or mainly in Wales) and superseded by the publication of information and guidance in 2025. We have also provided updated references for the design, construction and operation of collecting systems, in place of the references found in Annex 3 of the 1997 guidance. The rest of the 1997 guidance is not being revoked at this stage but may be updated in future.

The following sections have been provided by the Environment Agency, as the technical expert on storm overflows regulation. Further updates to the sections below may be provided by the Environment Agency as appropriate.

## 7.1 Helpful references for the design, construction and operation of collecting systems

The principal document that defines current practice for the design, construction and operation of collecting systems is BS EN 752:2017 “Drain and sewer systems outside buildings – sewer system management”. Other relevant supporting documentation includes:

- Urban Pollution Management 3rd Edition (2018)
- CIWEM Event Duration Monitoring Good Practice Guide
- Review of urban pollution management standards against WFD requirements
- guidance notes and codes of practice published by the CIWEM Urban Drainage Group

A number of documents deal with storm overflows and use of rainfall time series for sewer system modelling. These include the following:

- CIWEM Rainfall Modelling Guide
- CIWEM Code of Practice for the Hydraulic Modelling of Urban Drainage Systems
- UKWIR Rainfall Intensity for Sewer Design - Technical Guide
- UKWIR Climate Change Rainfall for use in Sewerage Design – Design Storm Profiles, Antecedent Conditions, RED-UP Tool Update and Seasonality Impacts Guidance

The EA uses the UKWIR RED-UP tool for creating climate perturbed rainfall time series in the SOAF version 2, and eFLaG for guidance on flow. Separate guidance will be available for surface water temperature uplifts once published.

Reference should be made to the CIWEM UDG guidance ‘WaPUG Guide: The Design of CSO Chambers to Incorporate Screens’ and any future updates of this.

## 7.2 Framework for permitting storm overflows

### 7.2.1 Introduction

This section sets out criteria for the EA's permitting of those overflows that are unsatisfactory, as per section 3.1.1.

Unsettled storm overflows at sewage treatment works will be considered in the same manner as network storm overflows under the SODRP. Clearly, if one is unsatisfactory according to the criteria below, it should be treated in the same way as any other storm overflow, but this may need to be tied in with a review of the permit for the whole works.

### 7.2.2 Definition of 'unsatisfactory' and 'at risk' storm overflows

The following table is to be used by the EA in deciding which storm overflows are unsatisfactory and, therefore, subject to permit review to drive improvements.

The criteria given in the table below are largely objective, although some subjectivity may apply. In particular, some discretion must be left for local interpretation of the significance and contribution of an overflow to a particular problem.

Criteria to identify 'at risk storm overflows' are set out in the table in this section. These overflows are not yet unsatisfactory but are at risk of becoming unsatisfactory if action is not taken as they currently cross accepted performance thresholds, however the timeframe to improve them to meet these thresholds set out in plans is not yet passed. Examples of situations where a storm overflow could be considered 'at risk' of becoming unsatisfactory include:

- does not meet set standards of engineering and aesthetic control for storm overflows, for example no screen yet installed, but not yet passed the date specified in the SODRP for all storm overflows to be screened
- current spill performance exceeds thresholds set in the SOAF, but investigation not yet concluded that spill reduction is required
- current spill performance exceeds thresholds set in the SODRP, but not yet passed the date specified in the SODRP for all storm overflows to meet these thresholds
- confirmed local adverse ecological impact, but not yet passed the relevant date in the SODRP for the storm overflow to meet these thresholds
- do not have sufficient hydraulic capacity compared to accepted minimum design standards

If an overflow becomes unsatisfactory, the EA can review the water and sewerage company's permit or take enforcement action if there is a breach of the existing permit.

The EA can include an improvement condition in permits for unsatisfactory storm overflows to meet the appropriate standards as soon as practicable.

WINEP investigations and improvements should be aligned to achieve the targets set out in the SODRP through the EA's WINEP guidance prior to each AMP cycle.

| Requirement | Unsatisfactory storm overflow: criteria | Unsatisfactory storm overflow: evidence of criteria (not exhaustive) | At risk storm overflow: criteria | At risk storm overflow: evidence of criteria (not exhaustive) |
|---|---|---|---|---|
| Dry weather operation | Operates in dry weather conditions | Regulator compliance assessment | Not applicable | Not applicable |
| Permit compliance | Operates in breach of permit conditions | Regulator compliance assessment | Not applicable | Not applicable |
| Aesthetic impact | Causes significant visual or aesthetic impact due to solids or sewage fungus<br><br>or<br><br>Post 2050 – does not have a 6mm screen | FR0466 Survey<br><br>Evidence from water and sewerage companies and EA permit requirement for 6mm screen. | Does not have a 6mm screen prior to 2050. | Evidence from water and sewerage companies and EA permit requirement for 6mm screen. |
| UWWTR | Is evidenced to spill in contravention of the 2-stage test set out in Section 3. | Water and sewerage companies' SOAF version 2 outcome. | Spills in excess of UWWTR 1994 SOAF version 2 investigation triggers. | Annual EDM return |

| Requirement | Unsatisfactory storm overflow: criteria | Unsatisfactory storm overflow: evidence of criteria (not exhaustive) | At risk storm overflow: criteria | At risk storm overflow: evidence of criteria (not exhaustive) |
|---|---|---|---|---|
| Ecological impact (inland waters) | After 2050: Causes or significantly contributes to local adverse ecological impact of the receiving water.<br>or<br>After 2045 (for high priority sites): Causes or significantly contributes to local adverse ecological impact of the receiving water. | Water and sewerage companies-led investigation following EA guidance concludes UPM FIS and 99percentile standard breached.<br>or<br>Confirm reason for not achieving good (RNAG) ecological status as 'sewage intermittent' assigned to storm overflows.<br>or<br>CWQM as conducted by water and sewerage companies concludes UPM FIS and 99percentile standard breached. | Causes or significantly contributes to local adverse ecological impact of the receiving water. | Water and sewerage companies-led investigation following EA guidance concludes UPM FIS and 99percentile standard breached.<br>or<br>Confirm reason for not achieving good (RNAG) ecological status as 'sewage intermittent' assigned to storm overflows.<br>or<br>CWQM as conducted by water and sewerage companies concludes UPM FIS and 99 percentile standard breached. |

| Requirement | Unsatisfactory storm overflow: criteria | Unsatisfactory storm overflow: evidence of criteria (not exhaustive) | At risk storm overflow: criteria | At risk storm overflow: evidence of criteria (not exhaustive) |
|---|---|---|---|---|
| Ecological impact (coastal or transitional waters) | After 2050: causes or significantly contributes to local adverse ecological impact of the receiving water.<br>or<br>After 2045 (for high priority sites): causes or significantly contributes to local adverse ecological impact of the receiving water. | Annual EDM data shows spills in excess of 10 per annum, following guidance from the EA.<br>or<br>Water and sewerage companies-led investigation following EA guidance concludes environmental quality standard breached.<br>or<br>Confirm reason for not achieving good (RNAG) ecological status as 'sewage intermittent' assigned to storm overflows.<br>or<br>CWQM concludes environmental quality standard breached. | Spills in excess of 10 per annum.<br>or<br>Causes or significantly contributes to local adverse ecological impact of the receiving water. | Annual EDM data shows spills in excess of 10 per annum, following guidance from the EA.<br>or<br>Water and sewerage companies-led investigation following EA guidance concludes environmental quality standard breached.<br>or<br>Confirm reason for not achieving good (RNAG) ecological status as 'sewage intermittent' assigned to storm overflows.<br>or<br>CWQM concludes environmental quality standard breached. |

| Requirement | Unsatisfactory storm overflow: criteria | Unsatisfactory storm overflow: evidence of criteria (not exhaustive) | At risk storm overflow: criteria | At risk storm overflow: evidence of criteria (not exhaustive) |
|---|---|---|---|---|
| Public health | Discharges near designated bathing waters: contributes to failure of bathing water quality standards.<br><br>After 2035, frequency of discharge exceeds:<br>• 3 spills per season for good, sufficient or poor status<br>• 2 spills per season for excellent status<br>• 1 spill per season for inland bathing waters | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA<br><br>'near':<br>• storm overflows that discharge directly into, or less than 1km upstream in hydraulic continuity of, designated coastal bathing waters<br>• storm overflows directly into, or within 5km upstream of, the inland bathing water designated site | Discharges near designated bathing waters: contributes to failure of bathing water quality standards.<br><br>At any date, frequency of discharge exceeds:<br>• 3 spills per season for good, sufficient or poor status<br>• 2 spills per season for excellent status<br>• 1 spill per season for inland bathing waters | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA<br><br>'near':<br>• storm overflows that discharge directly into, or less than 1km upstream in hydraulic continuity of, designated coastal bathing waters<br>• storm overflows directly into, or within 5km upstream of, the inland bathing water designated site |
| Spill frequency | Discharges above an average of 10 spill events per year by 2050. | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA | Discharges above an average of 10 spill events per year | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA |

| Requirement | Unsatisfactory storm overflow: criteria | Unsatisfactory storm overflow: evidence of criteria (not exhaustive) | At risk storm overflow: criteria | At risk storm overflow: evidence of criteria (not exhaustive) |
|---|---|---|---|---|
| Shellfish | Discharges near designated shellfisheries,<br><br>After 2030: causes or significantly contribute to failures in shellfish quality standards for identified shellfish waters<br><br>After 2050: frequency of discharge exceeds 10 spills per year | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA<br><br>'near' – overflows discharging within 1km hydraulic continuity of designated shellfish waters | Discharges near designated shellfisheries:<br>• causes or significantly contribute to failures in shellfish quality standards for identified shellfish waters<br>• frequency of discharge exceeds 10 spills per year | Annual EDM data shows spills in excess of target spills per annum, following guidance from the EA<br><br>'near' – overflows discharging within 1km hydraulic continuity of designated shellfish waters |
| Groundwater impact | Cause pollution of groundwater | Not applicable | Not applicable | Not applicable |
| Asset standard | None | Not applicable | Does not have sufficient hydraulic capacity compared to accepted minimum design standards | Formula A<br>3PG+ I + 3E<br>Groundwater inundated sewerage system |

## 7.2.3 Definitions to inform the permitting of storm overflows

The following definitions are relevant for storm overflows discharging into freshwater, coastal waters and estuaries.

**Dry weather flow (DWF)**

For design purposes DWF is calculated by the equation 'DWF = PG + $I_{MAX}$ + E', where:

- P = population served
- G = water consumption per head per day
- $I_{MAX}$ = maximum infiltration rate over the whole year
- E = trade effluent flow to sewer as applicable

**Formula A**

Formula A is a storm overflow setting as defined in the Report of the Technical Committee on Storm Overflows and the Disposal of Storm Sewage (1970). The Formula should be amended, as described in the Report, for any separate areas within the sewer catchment. Where storage is provided at a storm overflow, and in very large sewerage systems where significant smoothing of flows occurs, this will be taken into account in defining the performance equivalent to 'Formula A' without storage. The standard 'Formula A' is DWF + 1360P + 2E, where flows are expressed in litres per day, but minor local variations have been developed and are acceptable provided they are fully documented.

**Soffit level**

Soffit level is the level of the top inner surface of the outfall pipe.

**MLWS**

MLWS is the level of 'mean low water spring tides' as given in the Admiralty Tide Tables and corrected, where necessary, for the actual location of the outfall.

**Estuarine waters**

Estuarine waters are all waters defined as estuarine in regulation 2(1) of the UWWTR 1994.

**Coastal waters**

Coastal waters are all marine waters up to the 3 nautical mile limit, excluding estuaries.

## 7.2.4 Normal requirements for storm overflows discharging into freshwaters

The following requirements will normally apply to water and sewerage companies with storm overflows which discharge into freshwaters. The EA will assess whether companies are complying with these requirements. This list is non-exhaustive.

The sewerage system must be designed so that discharges are not made until the incoming flow exceeds that calculated from ‘Formula A’, as defined above.

The discharge should not create any visual or aesthetic impact caused by solids, paper, plastic or fungus as demonstrated by a history of justified public complaints or concern.

As set out in the SODRP, water and sewerage companies should install 6mm screens on every storm overflow when making improvements to meet SODRP targets.

Screening controls are defined as 6mm solids separation: separation from the effluent, of a significant quantity of persistent material, and faecal and organic solids, greater than 6mm in any 2 dimensions. Screens should be designed to operate effectively up to the 1 in 5-year flow rate.

Screens should be installed into a chamber which meets the latest design guidance available.

The normal minimum design requirement is for all sewage flows up to 3PG. + $I_{MAX}$ + 3E to be fully treated (flow to full treatment FFT). Flow between FFT (normally designed at 3PG + $I_{MAX}$ + 3E) and 6PG + $I_{MAX}$ + 3E or Formula A should normally have tank treatment provided by storm tank capacity of 68 l per hd or 2 hours at 3PG + $I_{MAX}$ + 3E as appropriate or by a process giving equivalent performance. Flows greater than 6PG + $I_{MAX}$ + 3E should be dealt with as storm overflows.

Permits issued must include necessary conditions such as overflow location, type, weir setting, storage requirements, and aesthetic performance standards. Permits may also contain spill frequency performance targets. The EA will not normally consider it necessary to apply chemical and bacteriological quality conditions in the permit unless the solution relies upon treatment.

## 7.2.5 Normal requirements for storm overflows discharging to coastal and estuarine waters

Control of combined sewage overflows to coastal and estuarine tidal waters is needed to ensure that, where waters are identified under the provisions of the Bathing Water Directive, compliance with the requirements of that directive is not compromised by the adverse effect of such discharges.

It is recognised that there are distinct variations in the nature of receiving coastal and estuarine waters. This information and guidance is therefore designed to take into account local conditions and provide a framework for issuing permits which reflect the local needs and benefits to the environment.

The need to limit the operation of tidal storm overflows and provide emission control of sewage solids through the use of appropriate solids retention techniques is also described.

In general, subject to specified exceptional circumstances, the following requirements will apply as a minimum:

Minimum retained flow: The sewerage system should be designed so that the storm overflow will not spill until the incoming flow exceeds that calculated from 'Formula A', or equivalent. The Formula is to be amended as described in the report of the Technical Committee on Storm Overflows and the Disposal of Storm Sewage (1970) for any separate areas within the sewered catchment.

The paragraphs in relation to the normal minimum design requirement and necessary permit conditions in section 7.2.4, also apply here.

Location: The outfall soffit level of all storm overflows must be located below the level of low water mark of mean spring tides (MLWS).

Where there are particular local extenuating circumstances which either prevent or render it impractical to locate the outfall in accordance with the minimum requirement, then the following guidance should be applied, appropriate to the receiving water category.

A spill frequency standard should be applied as follows:

| Soffit level | Operational setting |
|---|---|
| Storm overflow soffit above MLWS but below the level of high water of mean springtides (MHWS) | Spill frequency should be set between 3 spills per season and 1 spill in every 5 bathing seasons based on local considerations and the actual location of the storm overflow soffit. |
| Storm overflow soffit at MHWS | Spill frequency should be limited to 1 spill in every 5 bathing seasons. |
| Storm overflow soffit above MHWS | Spill frequency should be limited to 1 spill in every 5 years. |

Where the water and sewerage company intends to extend the outfall of the storm overflow some distance offshore of MLWS to achieve improved dispersion of the discharge of storm sewage, the following criterion may be adopted:

Achievement of the water quality standards of the Bathing Water Directive should be achieved in not less than 98.2% of the bathing season.

The impact criterion should only be used in those circumstances where extensive studies, including field exercises, can be undertaken and the regulatory authority with responsibility for auditing such information provided by the water and sewerage company can be

reasonably satisfied with the validity of the assumptions made and the predictions produced.

### 7.2.6 Categories of receiving water aesthetic amenity/value

The categories of amenity use outlined in section 7.3 should be used.

When assigning the amenity category, account should be taken of the affected receiving waters for a reasonable distance downstream as well as those in the immediate vicinity of the discharge.

## 7.3 Categories of receiving water aesthetic amenity and value

Below are the categories used to describe the aesthetic amenity and value of receiving waters with examples of criteria used to define its amenity and value.

### 7.3.1 High amenity

Influences area where bathing and water contact sport (immersion) is regularly practised (such as 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 as special areas of conservation (SACs).

Sites designated under the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat.

### 7.3.2 Moderate amenity

Boating on receiving water.

Popular footpath adjacent to watercourse**.**

Watercourse passes through housing development or frequently used town centre area (such as a bridge, pedestrian area, or shopping area).

Recreation and contact sport (non-immersion) areas.

It is linked through substantiated reasons for failure work to determine why the Water Framework Directive water body status classification is less than good.

### 7.3.3 Low amenity

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.

### 7.3.4 Non-amenity

Seldom or never used for amenity purposes.

Remote or inaccessible area.