

WORSHIPFUL COMPANY OF WATER CONSERVATORS

RESPONSE TO THE DEFRA CONSULTATION ON GUIDANCE ON STORM OVERFLOWS

JANUARY 2025

PROLOGUE

1 The Worshipful Company of Water Conservators ('WCWC') is a City of London Livery Company focussed on the long-term health of our water resources and the broader environment. Our members include senior professionals from water, environmental and related industries and regulators, along with others who share our concern for water and the environment. Our experience and knowledge ranges from the complexities of environmental sciences, through the application of engineering to deliver the goals identified by those sciences, and the subsequent management of the assets created. The WCWC's purpose is *promoting a diverse and sustainable environment*.

2 As part of that purpose, the WCWC has been responding to relevant consultations particularly on matters relating to water conservation. These are archived on its website.

<https://waterconservators.org/policies-and-practices/>

It has produced several responses and think pieces relevant to the management of storm overflows as a contribution to the evolution of national water conservation policy and practice. This response follows those practices. It looks forward to being able to make further inputs as the opportunity arises in the future. This consultation raises some fundamental issues beyond its strict remit. In preparing this response, the WCWC provides a background explanation of those for the wider constituency of readers of its response, whilst recognising that this will not be essential in the response to Defra. So, much of this response constitutes a 'think piece' on the role of regulation of storm overflows into environmental water planning in future. The WCWC stands ready to make further contributions.

3 In late 2023 the government published the final Storm Overflows Discharge Reduction Plan (SODRP). This is in effect an extension of the existing regulatory system. More detail is given subsequently:

https://assets.publishing.service.gov.uk/media/6537e1c55e47a50014989910/Expanded_Storm_Overflows_Discharge_Reduction_Plan.pdf

4 The draft guidance, which is the subject of this consultation, is intended to assist the implementation of that Plan:

<https://www.gov.uk/government/consultations/draft-information-and-guidance-on-storm-overflows>

5 The UK Water Report provided an excellent summary

The guidance is non-statutory and will not introduce any new legal requirements on water companies or regulators, rather support a common understanding of what is expected on storm spills in England. Defra said: “We want to ensure a clear planning framework, to support the significant forward investment needed from water companies, as well as a robust oversight and enforcement regime.”

In particular, the documents cover how storm overflow improvements are expected to meet the standards set out in the Government’s Storm Overflows Discharge Reduction Plan (SODRP), and in existing legal requirements, including obligations under the Urban Waste Water Treatment Regulations 1994 (UWWTR). Technical, supplementary information is provided in a version 2 of the Environment Agency’s Storm Overflows Assessment Framework and Spill Frequency Threshold Permitting proposals, which the Agency is consulting on alongside the main guidance.

Defra noted that the scale of activity in storm overflow management proposed is huge: water companies are targeting a 27% spill reduction by 2025, with £8.5bn allowed under the PR24 draft determination to reduce spills by 44% by 2029. It said: “We are well aware of the challenges with delivering this scale of investment, given supply chain constraints and the ability of water companies to scale up delivery to the required rate. This is why we have included a section in the draft guidance to support the prioritisation of investigations and improvement work.”

There has been much debate about how compliance with UWWTR regulations should be defined, plus many relevant developments since 1994, including:

- *The interpretation of legal requirements, such as through the European Court of Justice in European Commission v UK (Re Storm Water Overflows) [2013] C- 301/1*
- *Policy and regulatory tools that contribute to bringing these requirements into effect, such as via the EA’s SOAF (2018).*
- *The SODRP, first published in 2022 and expanded in 2023, which sets out an investment and improvement programme to 2050 based around three headline targets.*
- *Event Duration Monitors being installed on all English storm overflows.*

Final documents are expected in early 2025, ahead of PR24 implementation in April.

[Defra tries to get everyone on the same page on storm overflows](#)

6 The Consultation itself has an interesting insight.

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.

SUMMARY

7 The WCWC has found it challenging to understand the positioning of this draft guidance and its content in the context of all the existing guidance, so it has set this out as background to provide fundamental understanding in an Appendix. **It cannot locate a copy of the original draft 1997 Guidance in the public domain, nor the promised parallel Environment Agency Consultation on the Storm Overflow Assessment Framework SOAF.**

8 The focus on the 1997 Draft Guidance for the 1994 UWWTD Regulations seems misplaced. The WCWC recognises that it is helpful to have guidance on all regulations, but the focus of delivery of the SODRP is the execution of the 2016 Permitting Regulations, which make no reference to the Draft UWWTD Regulations Guidance. **In the current circumstances it would seem more logical to take all of the technical advice out of the draft 1997 Guidance and incorporate it into updated 2018 Guidance (which should also assimilate the separate Guidance on DWF etc). This would leave the bare principles of applying the UWWTD in the updated and 'dedrafted' 1997 Guidance with cross reference to the updated 2018 Guidance.** Defra should consider the interests of the users of the Guidance and ensure that when non-professionals seek to understand what the application of regulations should be.

9 The WCWC notes that Guidance issued in 2018 referred to Emergency Overflows as well as Storm Overflows. But this proposed Guidance does not. Which is surprising, bearing in mind that the high profile Water (Special Measures) Bill is going through Parliament now which extends the statutory provision of EDMs to Emergency Overflows. **Emergency Overflows must be included.**

10 Since 2018 the concepts of risk management in the control of storm overflows need to be more clearly articulated. The WCWC set out these principles in its response on the Bathing Water Regulation consultation. **This consultation does not mention risk. And there needs to be a much better articulation of how this**

guidance would integrate into the principles of catchment management as set out again in the response on Bathing Waters.

11 The consultation does not elaborate enough on the steps necessary to ensure the crucial role of monitoring for which there are several programmes and which the WCWC have suggested should be integrated under one focus of quality assurance governance in Water Companies.

12 The WCWC does not intend this submission to be a lengthy treatise on all the components of sewage, it does want to highlight aspects which are bypassed by the Consultation and which will impact on the SODRP. Of course, Water Companies have control over trade effluent, subject to the rights of appeal by dischargers. The Companies have very little, if any, control over the amount of domestic wastewater or its contents added to sewers which may cause problems with overflows. Nor do they have any control over the amount of rainwater which is added to systems. Several of these lie within the remits of government and regulators which have not been addressed yet.

13 There is much else to be included. The maintenance of sewers is absolutely crucial, so every effort has to be made to avoid blockages which are dealt with by costly sewer cleaning programmes and by regulating what is put into sewers. Each Water Company has conducted its own 'bag it and bin it' and grease / fat / oil campaigns with customers. There is no coordinated national effort, as has been proposed by Ofwat to coordinate water efficiency messaging and innovation. The previous, and present, governments have done nothing about the disposal of used sanitary and cleaning ware beyond the banning of single use wet wipes in 2025, which even SORDP refers to. The WCWC has repeatedly suggested the need for a wider, deeper programme, including mandatory labelling.

14 As explained at length, the presence of surface water in combined sewage from new- build properties should be regulated. Even more important is the failure of this, and the previous, government to carry through implementation of Schedule 3 of the 2010 Floods and Water Act requiring the installation of Sustainable Drainage Systems for new properties in England (Wales has already done this) in spite of a commitment to do so in the SODRP plan, which stated that this was necessary and would be done. This would help with the hydraulic impacts of the new plans by the current government for an extended housing programme. No reference is made to the revision of the NPPF, the latest edition being published in December 2024. The SDS, whether mandatory or voluntary, should include blue/green solutions, wherever practical.

15 There is for a need for a commentary on S106 of the Water Industry Act which gives developers automatic right of connection of domestic sewage to sewer with a complex appeal process. Whilst reduction of domestic water consumption will have a small but welcome impact, there is no connection in the proposed Guidance to the work intended to reduce consumption through the Water Efficiency Road Map and consideration needs to be given to the design targets for new build which would require the 2010 Building Regulations and the 1999 Water Fitting Regulations to be revised.

16 The design of bathrooms, water fittings, sewer connections of domestic wastewater and surface water must be dealt with by the Government initiative, the Future Homes Hub. The WCWC poses the question; should sink disposal units for food waste be banned?

17 The WCWC recognises that the inclusion of this information whilst highly relevant is beyond the scope of the proposed guidance, even if the approach of incorporating most of the proposals into updated 2018 were to be adopted. The guidance is focused on the regulation of delivery of the SODRP by Water Companies.

18 The reduction of infiltration is also essential to managing overflows. Of course, the reverse might happen with leaky sewers during dry weather and that is equally undesirable, which might eventually collapse with blockages and emergency overflows. Sewers may deteriorate by fracturing, due to soil movement for a variety of meteorological reasons. So, climate change affects groundwater as well. The nature of this problem is highlighted in the discussion after the BBC report and needs particular attention, for example by Wessex Water in its infiltration reduction plan. But it may not bring the benefits planned.

19 The WCWC has offered comments all of these aspects. **Once again sorting them out in an integrated approach seems vital.** The WCWC also recognises that even if a way could be found to include these aspects, it might take some while to achieve, so there may need to be a plan for a series of future updates as the issues get resolved, possibly in accompanying Guidance to the main Guidance on the implementation of the formal statutory requirements, or by widening the focus of the main Guidance. When a topic such as 'dry discharges' gets headlines in the popular news stories, **the WCWC suggests very strongly that all the aspects it has referred to need drawing together to enable everyone to understand that achieving the goals needs more than just telling water companies what designs they should use for overflows. That requires Government itself to take swift action on several matters.**

20 There also needs to be some recognition of the fact that dry day discharges may occur for unavoidable reasons even with the best investment and management. Negligent management and inadequate investment may well be contributing factors, apart from that there are many reasons why this might occur. Emergencies happen, which are a fact of life in sewers and treatment works such as power outages or third-party damage to sewers. How are these to be incorporated to avoid unnecessary accusations of culpability?

21 The WCWC is not certain that this draft Guidance will be the best response to the challenge by the Office of Environment Protection issued in December 2024 but suggests that updating the Guidance of 2018 might be a better way forward.

22 The 2018 Guidance needs updating, to reflect issues like the SODRP and changes to DWF profiling and the WCWC suggests that the whole topic needs to be reviewed, updated and clarified; and this Guidance redrafted as an update of the 2018 Guidance, as suggested.

RESPONSE

Background of how systems are designed and regulated now

23 A fuller explanation of the background and current guidance and regulation is given in an Appendix, while key parts are included, for ease of reference, in this section of the response. The last formal Guidance was provided in 2018 and in 2019 (mostly 2018), this is now in need of an update, particularly to reflect the SORDP.

<https://assets.publishing.service.gov.uk/media/5a78afd940f0b632476995e7/pb13561-ep2010waterdischarge-101220.pdf>

<https://www.gov.uk/government/publications/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works>

<https://www.gov.uk/government/publications/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows>

<https://www.gov.uk/government/publications/waste-water-treatment-works-treatment-monitoring-and-compliance-limits/waste-water-treatment-works-treatment-monitoring-and-compliance-limits>

<https://www.gov.uk/government/publications/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows>

<https://www.gov.uk/government/publications/waste-water-treatment-works-treatment-monitoring-and-compliance-limits/waste-water-treatment-works-treatment-monitoring-and-compliance-limits>

24 The Environment Agency has considered that storm overflows are unsatisfactory when they:

- operate in dry weather conditions
- operate in breach of permit conditions
- or cause a series of defined environmental impacts

25 Various supporting documents have been cited, and the Consultation refers to a principal document that defines current practice for the design, construction and operation of collecting systems being BS EN 752:2017 “Drain and sewer systems outside buildings – sewer system management”. These are included in the Appendix

26 There is the Environment Agency’s Storm Overflows Assessment Framework ref, (SOAF), in need of update referred to in the consultation, which states that a review is being conducted in parallel, consultation on this does not seem to have been published yet.

27 The SODRP, as referred to earlier, state that it will address the harm to human health from storm overflows discharging near designated bathing waters, where people are most likely to use water bodies for recreation. *This target applies to both inland, coastal and estuarine areas. It will require all storm overflows near existing, or any newly designated, bathing areas to comply with a rigorous standard for bathing, which sets a limit of 3 or fewer discharges per bathing season, with some bathing waters having tighter limits. 8% of storm overflows are close to designated bathing waters. We expect this target to reduce discharges from storm overflows close to designated bathing waters by over 70% during the bathing season and for reductions to also occur outside of the bathing season. These first two targets (ecology and public health) and their sub-targets will ensure that the storm overflows causing the most harm, to public health or the environment, are addressed first. This target will also be supported by the government's work to promote the designation of more bathing waters and rivers (Section 3.4), and to ensure that users are informed in near real time of any storm overflow activity or impacts on water quality in bathing waters (Section 3.1).*

28 In this Plan, Defra states *that it is setting new targets which will revolutionise our sewer system and generate the most significant investment and delivery programme ever undertaken by water companies to protect people and the environment:*

- *By 2035, water companies will have: improved all storm overflows discharging near every designated bathing water; and improved 75% of storm overflows discharging into or near 'high priority sites' (as defined in Annex 1).*
- *By 2045, water companies will have improved all remaining storm overflows discharging into or near 'high priority sites'.*
- *By 2050, no storm overflows will be permitted to operate outside of unusually heavy rainfall or to cause any adverse ecological harm.*

29 The formal regulation of event duration of discharges in the Storm Overflows Discharge Reduction Plan SODRP requires monitors. Event Duration Monitors had been required in the 2018 Guidance.

30 The PR24 performance commitment for combined sewer overflows (CSOs) stated by Ofwat *is based on a company's average annual spills, which is calculated by dividing the number of spills by the number of storm overflows. The spills are counted using the 12/24 method, which counts each spill that lasts longer than 12 hours as more than one spill. For example, a spill that lasts 60 hours would be counted as three spills.*

The PR24 performance commitment is intended to incentivize companies to reduce spills beyond any statutory obligations. The goal is to challenge companies to go beyond the proposed annual average target of 20 spills per overflow by 2025.

<https://www.ofwat.gov.uk/wp-content/uploads/2023/05/updated-storm-overflows-performance-commitment-definition-for-PR24-our-decision-1.pdf>

<https://www.ofwat.gov.uk/wp-content/uploads/2024/07/PR24-DD-sector-summary.pdf>

31 At the heart of these processes is an understanding of what baseline flows are (called dry weather flows, DWF) for design and permitting (the latter only for sewage treatment works). And this is explained in more detail in the Appendix.

32 All these documents affirm the close correlation between permitting policies and practices and the management of combined sewage. The one piece of evidence which the WCWC cannot locate is the Draft Guidance in 1997 for the implementation of the 1994 Regulations implementing the 1991 UWWT. Several early documents refer to it and the consultation is on its revision. This is explored in more detail later.

<https://www.legislation.gov.uk/ukxi/1994/2841/contents>

33 What can be stated is that, if the UK system is applied, as set out in permitting regulations and Guidance, this is more than enough to satisfy the requirements of the 1991 UWWTD, although the 2018/19 guidance does not state that explicitly and does not refer to the draft 1997 Guidance on those Regulations. This consultation does however refer to the 2016 Environmental Permitting Regulations yet fails to refer to the 2018/19 Guidance.

34 No discharge can be made to UK waters without a permit issued under UK law, irrespective of the transferred commitments of any EU Directive. The flows of treated sewage effluent occur all the time and are regulated on this basis, while storm flows only occur occasionally either from sewers or from excess flows at treatment works. It is impossible to impose quality conditions on sewer storm overflows and difficult on excess flows from treatment works and so they are now regulated by duration and impact on the controlled waters.

35 So a distinction can be made, one is quality based permitting and monitoring, and the other event duration permitting and monitoring. A modern evolution of storm overflow regulation was to link the duration impact of storm overflows on receiving environment by a series of criteria linked to the receiving water quality be at risk and the discharge being deemed unsatisfactory. This is set out in the 2018 Guidance, which also required provision of Event Duration Monitors. The SODRP is an evolution of this approach.

36 The WCWC recognises that at the focus of the current systems is acceptance that the inexactitudes of the past are no longer acceptable. The demands to meet more stringent receiving water quality criteria coupled with changes in rainfall patterns since 1970 and the impact of increased domestic wastewater discharge to sewers has contributed to the paradigm that storm overflows are a major problem which must be resolved as quickly as possible. As explained earlier, the Appendix refers to the concepts of dry weather flows, DWF, and the need for further revision of these.

37 For both sewage treatment works and sewers the design formulae are no more than standardised methods for reaching a result. In both cases they have to be planned for allowing future growth. In the USA the growth horizon is usually 25 years

because that was stated in the Superfund provisions back in the 1960s. In the UK application of discounted cash flow usually means that for items that can be phased a 12-year horizon is adopted, while for things like sewers a longer 25-year horizon might be used.

38 Irrespective of once the infrastructure is constructed the hydraulic capacity is fixed, since it will contain provision for future growth there should be no problems complying with the DWF conditions of permits. It is only as time passes that flows increase and DWF levels may be exceeded. What is almost certain is that the increases may not be in line with initial predictions, but it is the overall hydraulic capacity which is fixed not the components.

39 Changes in rainfall patterns might cause unplanned fluctuations in combined flows, thus resulting in more discharge events than is allowed by the SORDP. This must be taxing the designers working in the new systems. A major way of coping is to follow the practices established for treatment works which provides for storage facilities for flows that the sewers cannot cope with for a proscribed period of time and flow rates and then feeding the stored overflows back into the system after the storm has passed. But there are issues around planning permission for such sites.

40 In 1970, the data used showed that 6 DWF design horizon should cope with most meteorological events. But in recent decades the patterns have changed. Data collected from various sources shows that:

Winter: much variability year on year with an increase of 15% in winter accumulations, attributable to climate change. Every year there is a one in three chance for unprecedented rainfall in one region of UK. The signal is concentrated in North-West England and Scotland, while the picture is less clear in South-East England.

Summer: no detectable climate change signal because of variation. Now expect summers to be drier, with episodes of more intense rainfall.

Observable increases in evaporation, particularly in spring.

Hot summers are now driving leakage outbreaks.

Overall annual rainfall is increased. There is an increase in intensity, significant variation in local effects, and a risk of compound effects.

There are longer dry spells with more intense rainfall at other times. Current hydrology models are not well designed for this.

<https://www.gov.uk/government/publications/future-of-rainfall-capture-in-the-uk/what-do-we-know-about-the-future-of-rainfall-capture-in-the-uk-how-it-affects-general-hydrology-and-the-consequences-for-supply-html>

41 So the simple model of 1970 has to be made more complex. Even the current guidance needs to be updated to reflect this. As with localised rainfall it is possible that there can be surge effects in networks causing overflows in apparently dry

locations. The focus of compliance has now led to a question as to where the DWF definition applies. And this becomes even more valid when the compliance with DWF (or whatever flow criterion) in treatment plant permits, becomes an issue.

42 The BBC happened upon this earlier in 2024 in its investigations of dry spills in 2022 .It used a model in which a sewer spill site was matched to its nearest 1 km grid square and the nearest eight squares of rainfall data .All nine squares were checked for rain on the spill day and three days before ; a dry day was one in which the rainfall was less than 0.25mm of rain on all four days in all nine squares . The start times of the companies' spills were matched to daily rainfall data from the Met Office, which is produced from a network of automatic rainfall gauges and observation stations.

43 The detail of the model was contested but it raises an important facet of the DWF criteria regarding location which needs to be addressed in guidance, and this is missing from the Consultation and should part of any review of the concepts of dry weather flow criteria.

What is in Sewage

44 The WCWC does not intend this submission to be a treatise on the components of sewage, it does want to highlight aspects which are bypassed by the Consultation, and which will impact on the SODRP. Of course, Water Companies have control over trade effluent, subject the rights of appeal by dischargers. What will be the obligations to receive extra trade discharges if they are made in pursuance of the Government's growth strategies, as set out by the Department of Business and Trade a year ago?

45 The companies have very little, if any, control over the amount of domestic wastewater or its contents added to sewers which may cause problems with overflows. Nor do they have any control over the amount of rainwater which is added to systems.

46 Even the SODRP itself recognises that there are other influences which must be attended to, and which lie beyond the engineering and operational remits of the Water Companies. Several of these lie within the remits of government and regulators which have not been addressed yet.

47 There is much to be included. Maintenance of sewers is absolutely crucial, so every effort has to be made to avoid blockages which are dealt with by costly sewer cleaning programmes and by regulating what is put into sewers. Each Water Company has conducted its own 'bag it and bin it' and grease / fat / oil campaigns with customers. There is no coordinated national effort, as has been proposed by Ofwat to coordinate water efficiency messaging and innovation. The previous, and present governments have done nothing about the disposal of used sanitary and cleaning ware beyond the banning of single use wet wipes in 2025, which even SORDP refers to. The WCWC has repeatedly suggested the need for a wider, deeper programme, including mandatory labelling.

48 As explained at length the presence of surface water in combined sewage from new build properties should be regulated. Even more important is the failure of this and the previous government to carry through implementation of Schedule 3 of the 2010 Floods and Water Act requiring the installation of Sustainable Drainage systems for new properties in England (Wales has already done this) in spite of a commitment to do so in the SODRP plan that this was necessary and would be done. This would help with the hydraulic impacts of the new plans by the current government for an extended housing programme. No reference is made to the revision of the, the latest edition being published in December 2024.

49 There is for a need for a commentary on S106 of the Water Industry Act which gives developers automatic right of connection of domestic sewage to sewer with a complex appeal process. This can be more of a challenge for management of sewer assets than treatment works, but it is still a risk for works. There needs to be greater clarity in the relationship between individual connections providing a very small increment of financial contribution and the major provision of additional assets as individual connections increase through estates. Whilst the reduction of domestic water consumption will have a small but welcome impact, there is no connection in the proposed Guidance to the work intended to reduce consumption through the Water Efficiency Road Map and consideration needs to be given to the design targets for new build which would require the 2010 Building Regulations and the 1999 Water Fitting Regulations to be revised.

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

50 The WCWC poses the question; should sink disposal units for food waste be banned?

51 The design of bathrooms, water fittings, sewer connections of domestic wastewater and surface water must be dealt with by the Government initiative, the Future Homes Hub:

<https://www.futurehomes.org.uk/about>

52 The reduction of infiltration is also essential to managing overflows. Of course, the reverse might happen with leaky sewers during dry weather, and that is equally undesirable, which might eventually collapse with blockages and emergency overflows. Sewers may deteriorate by fracturing due to soil movement for a variety of meteorological reasons. So, climate change affects groundwater as well. The nature of this problem is highlighted in the discussion after the BBC report and needs particular attention, for example by Wessex Water in its infiltration reduction plan. This may not bring the benefits planned.

<https://corporate.wessexwater.co.uk/media/mftgfnpv/wessex-water-regional-infiltration-reduction-plan-summary-report.pdf>

53 The WCWC recognises that the inclusion of this information, whilst highly relevant, is beyond the scope of the proposed guidance, even if the approach of incorporating most of the proposals into updated 2018 Guidance were to be adopted (as set out below). The introduction to the consultation makes this plain: *The*

Department for Environment, Food and Rural Affairs (Defra) has drafted information and guidance on storm overflows, in collaboration with Ofwat and the Environment Agency. This covers existing policy and legislation, and it aims to support water and sewerage companies and the regulators in managing and regulating storm overflows in England.

54 The WCWC has offered comments previously on all of these aspects, suggesting that sorting them out in an integrated approach seems vital. The WCWC also recognises that even if a way could be found to include these aspects, it might take some while to achieve, so there may need to be a plan for a series of future updates as the issues get resolved, possibly in accompanying Guidance to the main Guidance on the implementation of the formal statutory requirements, or by widening the focus of the main Guidance. When a topic such as 'dry discharges' gets headlines in the popular news stories, the WCWC suggests very strongly that all the aspects need drawing together to enable everyone to understand that achieving the goals needs more than just telling water companies what designs they should use for overflows. That requires Government itself to take swift action on several matters.

Specific Responses

55 Before answering the Consultation, the WCWC takes note of the Opinion published by the Office of Environment Protection, which is relevant:

<https://www.theoep.org.uk/news/oep-finds-there-have-been-failures-comply-environmental-law-relation-regulatory-oversight>.

56 The WCWC suggests that a more comprehensive understanding of the regulation of storm overflows, and hence their design and operation helps to interpret this proposed new guidance. In fact, the current focus is not in the draft UWWTD Regulations Guidance of 1997, rather in the Guidance issued in 2018 and 2019 (principally in 2018), which is in need of an update.

57 The WCWC has not been able to locate a readily available copy of the 1997 Draft Guidance in the public domain. So, it is impossible to see what the proposed deletions and additions mean in practice. It would be appropriate to publish the whole document to provide a wider context.

58 It appears that the focus on the 1997 Draft Guidance for the 1994 UWWTD Regulations seems misplaced:

<https://www.legislation.gov.uk/ukxi/1994/2841/note/made>

59 The WCWC recognises that it is helpful to have guidance on all regulations. The focus of delivery of the SODRP is the execution of the 2016 Permitting Regulations, which make no reference to the 1997 Guidance on Draft UWWTD Regulations.

<https://www.legislation.gov.uk/ukxi/2016/1154/contents>

60 The consultation does not elaborate enough on the steps necessary to ensure the crucial role of monitoring for which there are several programmes and which the

WCWC have suggested should be integrated under one focus of quality assurance governance in Water Companies.

61 So in the current circumstances, it would seem more logical to take all of the technical advice out of the 1997 Draft Guidance and incorporate it into updated 2018 Guidance (which should also assimilate the separate Guidance on DWF, etc.). This would leave the bare principles of applying the UWWTDR in the updated and 'dedrafted' 1997 Guidance with cross reference to the updated 2018 Guidance. Defra should consider the interests of the users of the Guidance and ensure that when non-professionals seek to understand what the application of regulations should be.

62 The WCWC notes that Guidance issued in 2018 referred to Emergency Overflows as well as Storm Overflows. This proposed Guidance does not, which is surprising bearing in mind that the high-profile Water (Special Measures) Bill is going through Parliament now which extends the statutory provision of EDMs to Emergency Overflows. Emergency Overflows must be included.

63 Since 2018, the concepts of risk management in the control of storm overflows need to be more clearly articulated. The WCWC set out these principles in its response on the Bathing Water Regulation consultation at the end of 2024. This consultation does not mention risk. There needs to be a much better articulation of how this guidance would integrate into the principles of catchment management as set out again in the response on the proposed revision of Bathing Waters Regulations.

64 The WCWC has not been able to locate the consultation on the SOAF by the Environment Agency in spite of reference to this in its Consultation and in the OEP Opinion.

65 On this basis, the WCWC does not offer any detailed commentary but comments that it has made significant contributions on the environmental impact of discharges to environmental waters in its submission on the revision of the 2013 Bathing Water Regulations archived in the WCWC website.

<https://waterconservators.org/policies-and-practices/>

66 It repeats the suggestion that what is needed desperately is an overarching framework for managing controlled waters and to consider that there are too many piece-meal initiatives which need to be tied together better. And this would include finding a way of integrating guidance on all those matters not arising from sewage related discharge permits etc., and which affect storm overflows, like separating surface water connections away from sewage discharges from new properties, disposal of used sanitary ware and so on.

67 There also needs to be some recognition of the fact that dry day discharges may occur for unavoidable reasons even with the best investment and management. Negligent management and inadequate investment may well be contributing factors, but apart from that there are many reasons why this might occur. Emergencies happen, which are a fact of life in sewers and treatment works, such as power

outages or third-party damage to sewers. How are these to be incorporated to avoid unnecessary accusations of culpability?

68 It is not certain that this Guidance, as drafted, will be the best response to the challenge by the OEP but suggests that basing it on an updating of the Guidance of 2018 might be a better way forward.

69 The 2018 Guidance needs updating, to reflect issues like the SODRP and changes to DWF profiling and the WCWC suggests that the whole topic needs to be reviewed, updated and clarified; with this Guidance redrafted as an update of the 2018 Guidance as suggested.

70 The Guidance should harmonise with the NPPF, the most recent edition being published in December 2024, and with any subsequent evolution of the Framework. There is already a Working Paper on this to which the WCWC is responding.

<https://www.gov.uk/government/publications/planning-reform-working-paper-development-and-nature-recovery/planning-reform-working-paper-development-and-nature-recovery>

71 The WCWC draws its members from all the aspects of the delivery of water conservation and in preparing this response was provided with views from the supply chain are not often recorded in consultations like this. So the WCWC decided that whilst these are not strictly needed to respond to the consultation that they are valuable in understanding how guidance will impact on the delivery of the desired outcomes. The contribution provides suggestions that:

- there is a risk that the focus on short term gains might not be the best in the long term
- there is a role for rapidly deployed mobile solutions providing the flexibility which fixed assets cannot
- there is a need for better maintenance of assets such as inlet works
- any guidance should provide more focus on green/blue solutions
- the water companies need to have a 'smart system' of delivery .. too often the aspirations of Boards are thwarted by 'frontline' practical problems
- better engagement is needed with supply chains with plenty of notice of requirements.

APPENDIX

ON A MORE DETAILED BACKGROUND TO CURRENT APPROACHES

A1 Sewers in the UK collect used and surface waters (rain) and the combined sewage is passed to sewage treatment .But it has long been understood that the system can be overwhelmed by heavy rain and so it must be designed to cope with all but the most extreme circumstances .As the consultation refers to, the contemporary processes still have their origin in guidance issued in 1970 but updated substantially since then. Sewers may overflow and the treatment works have a period of storage of high flows after which they too can discharge excess flows. This stops the flooding of properties for example.

What are the origins of what we do now?

A2 When the concepts of modern drainage were established, centuries ago, it was easier to evolve the asset inheritance to take combined flows including, domestic waste, rainwater, infiltration and industrial effluent. Authorities struggled with how overflows should be controlled. This matter was addressed as far back as the iconic:

<https://wellcomecollection.org/search/works?query=%22Great%20Britain.%20Royal%20Commission%20on%20Sewage%20Disposal.%22>

A3 Government Guidance was issued in 1939 and then in 1963 culminating in that given in the 1970 Final report of the/ Technical Committee on Storm Overflows and the Disposal of Storm Sewage, the foundation for modern approaches;

<https://wellcomecollection.org/works/s8xfk4kp>

A4 This was updated from time to time and the last formal Guidance provided in 2018 and in 2019, in need of update.

<https://assets.publishing.service.gov.uk/media/5a78afd940f0b632476995e7/pb13561-ep2010waterdischarge-101220.pdf>

<https://www.gov.uk/government/publications/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works/calculating-dry-weather-flow-dwf-at-waste-water-treatment-works>

<https://www.gov.uk/government/publications/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows>

<https://www.gov.uk/government/publications/waste-water-treatment-works-treatment-monitoring-and-compliance-limits/waste-water-treatment-works-treatment-monitoring-and-compliance-limits>

<https://www.gov.uk/government/publications/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows/water-companies-environmental-permits-for-storm-overflows-and-emergency-overflows>

<https://www.gov.uk/government/publications/waste-water-treatment-works-treatment-monitoring-and-compliance-limits/waste-water-treatment-works-treatment-monitoring-and-compliance-limits>

A5 The Environment Agency considered that storm overflows are unsatisfactory when they:

- operate in dry weather conditions
- operate in breach of permit conditions
- or cause a series of defined environmental impacts

A6 Various supporting documents have been cited and the Consultation refers to a principal document that defines current practice for the design, construction and operation of collecting systems being BS EN 752:2017 “Drain and sewer systems outside buildings – sewer system management”.

Other relevant supporting documentation have included:

- 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 other 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. Reference should be made to the CIWEM UDG guidance ‘WaPUG Guide: The Design of CSO Chambers to Incorporate Screens’

A7 There is the Environment Agency’s Storm Overflows Assessment Framework ref, (SOAF), in need of update referred to in the consultation, which states that a review is being conducted in parallel, while consultation on this does not seem to have been published yet. This is a framework that helps the water industry monitor and manage

the performance of storm overflows. The framework was developed to address issues caused by discharges from storm overflows that occur too frequently. It is intended to:

- Ensure that sewerage systems comply with relevant legislation
- Demonstrate that the water industry is proactively managing overflows
- Account for pressures from growth, urban creep, and changing rainfall patterns

The SOAF currently applies to discharges that affect rivers, but it will be extended to address storm overflows that affect lakes, estuaries, and coastal waters. The framework doesn't apply to storm overflows that meet bathing or shellfish water standards. It is assumed that this is what the next consultation will be about.

<https://www.water.org.uk/wp-content/uploads/2018/12/SOAF.pdf>
<chrome-extension://efaidnbnmnnibpcajpcglclefindmkaj/https://www.water.org.uk/wp-content/uploads/2018/12/SOAF.pdf>

A8 As described earlier, the most recent evolution is to introduce formal regulation of event duration of discharges in the Storm Overflows Discharge Reduction Plan SODRP. Event Duration Monitors had been required in 2018 Guidance.

A9 The SODRP states that it will address the harm to human health from storm overflows discharging near designated bathing waters, where people are most likely to use water bodies for recreation. *This target applies to both inland, coastal and estuarine areas. It will require all storm overflows near existing, or any newly designated, bathing areas to comply with a rigorous standard for bathing, which sets a limit of 3 or fewer discharges per bathing season, with some bathing waters having tighter limits. 8% of storm overflows are close to designated bathing waters. We expect this target to reduce discharges from storm overflows close to designated bathing waters by over 70% during the bathing season and for reductions to also occur outside of the bathing season. These first two targets (ecology and public health) and their sub-targets will ensure that the storm overflows causing the most harm, to public health or the environment, are addressed first. This target will also be supported by the government's work to promote the designation of more bathing waters and rivers (Section 3.4), and to ensure that users are informed in near real time of any storm overflow activity or impacts on water quality in bathing waters (Section 3.1).*

A10 In this Plan, Defra states *that it is setting new targets which will revolutionise our sewer system and generate the most significant investment and delivery programme ever undertaken by water companies to protect people and the environment:*

- *By 2035, water companies will have: improved all storm overflows discharging near every designated bathing water; and improved 75% of storm overflows discharging into or near 'high priority sites' (as defined in Annex 1).*

- *By 2045, water companies will have improved all remaining storm overflows discharging into or near 'high priority sites'.*
- *By 2050, no storm overflows will be permitted to operate outside of unusually heavy rainfall or to cause any adverse ecological harm.*

A11 The PR24 performance commitment for combined sewer overflows (CSOs) stated by Ofwat *is based on a company's average annual spills, which is calculated by dividing the number of spills by the number of storm overflows. The spills are counted using the 12/24 method, which counts each spill that lasts longer than 12 hours as more than one spill. For example, a spill that lasts 60 hours would be counted as three spills.*

The PR24 performance commitment is intended to incentivize companies to reduce spills beyond any statutory obligations. The goal is to challenge companies to go beyond the proposed annual average target of 20 spills per overflow by 2025.

<https://www.ofwat.gov.uk/wp-content/uploads/2023/05/Updating-storm-overflows-performance-commitment-definition-for-PR24-our-decision-1.pdf>

<https://www.ofwat.gov.uk/wp-content/uploads/2024/07/PR24-DD-sector-summary.pdf>.

A12 The original formula of 1970 still cited, and even in this consultation this, uses for design purposes the base flow in dry weather DWF is calculated by the equation 'DWF = PG + IMAX + E', where:

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

The evolution of the concept of dry weather flow as a central feature of design and regulation in sewage management

A13 As a measurable hydraulic function, DWF was defined originally by the Institute of Water Pollution Control (predecessor to CIWEM) Glossaries in 1975. It is defined as "the average daily flow to the treatment works during seven consecutive days without rain, defined as rainfall of less than 0.25 mm on each day (excluding a period which includes public holidays) following seven days during which the rainfall did not exceed 0.25mm on any one day".

A14 This is difficult to measure, and did not take account of the fluctuation of flows during a 24-hour period. Whilst such fluctuations are smoothed out more at larger treatment works, they are more significant in the operation of a sewer. So, this fluctuation of base flows coupled with fluctuations caused by surface water flows made the concept difficult to apply in practice. Also flows can vary by season, for

example in tourist resorts or in systems with seasonal trade effluents, such as those from vegetable processing.

A15 A history was published by Edie in 2006

<https://www.edie.net/redefining-dry-weather-flow/>

In which a proposition was made to change the definition and framework of overflow management, following work in UKWIR, and now incorporated in the 2018 Environment Agency Guidance, but the original principles of the 1970 guidance remain at its heart. In this the concept of percentile flows were incorporated into the system of compliance monitoring; it must be reflected in permits, and it has been applied to the larger works in England.

The nonparametric 20-percentile value of a time series of measured total daily volume (TDV) data provides a good estimate of DWF. The 20-percentile figure is that value exceeded by 80% of the recorded daily values. It's also known as the Q80. If you have 365 measured values of TDV in a year ranked from the lowest to the highest, the Q80 is the 73rd value.

A16 For compliance purposes the 10th percentile of total daily (flow) volume, referred to as the 'Q90 flow', is used to assess compliance or non-compliance against the permitted limit. Permitted DWF values are fixed for each treatment plant site based upon the local residential populations, accounting for industrial (Trade) input flows and infiltration into the sewer network. Recent changes to the assessment of DWF compliance have resulted in a new assessment method. This new method means that if the Q90 exceeds the permitted DWF for any 3 years in 5 the site will be classed as non-compliant. Due to the time lags in upgrading a site to comply with an adjusted permit, if upgrades are required, this means water companies must forecast future flows to avoid a site becoming non-compliant its DWF limit. This concept of statutory assessment of DWF can only apply to the permitted conditions of treatment works.

A17 So there is more control over the management of excess flows in treatment works than there is in sewers.

A18 The concept of DWF in sewers applies to design, there is no DWF permit condition; the higher the sewer DWF the more vulnerable a sewer is to overflow and be affected by rainfall and fluctuations in instantaneous rate, thus creating unacceptable overflow events.

A19 A sewer DWF can be increased by events beyond the immediate control of water company (as indeed are the increasing quantities of surface water due to connections made by developers, more of this later). A sewer DWF even if it could to be interpreted in practice by Q80 would still have to be assessed against a design DWF as part of Formula A, which is defined again in the 2018 Guidance.

A20 A designed minimum retained flow in the sewer of formula A is the normal minimum requirement for storm overflows on the sewer network and for unsettled storm overflows at the inlet to WWTW. It's calculated as:

Formula A (l/d) = DWF + 1360P + 2E

Where:

DWF = total dry weather flow (l/d) calculated from PG + I + E

P = catchment population (number)

G = per capita domestic flow (l/head/d)

I = infiltration (l/d)

E = trade effluent flow (l/d)

The formula A value is the minimum retained continuation flow rate. It must be maintained in the downstream sewer during the full duration of a spill, not just at first spill. This may be spelled out as PG + I + E + 1360P + 2E. This replaced the older simpler version of 6DWF, which is still used in the vernacular.

A21 Returning to the situation in treatment works, in the simplest definition in the 2018 Guidance, the Flows to Full Treatment the FFT are defined as Flow to full 3PG + I_{max} + 3E, where:

P = catchment population (number)

G = per capita domestic flow (l/head/day)

E = trade effluent flow (l/d)

This FFT setting is also known as 3DWF. I_{max} is the maximum infiltration rate over the whole year. Storm tanks must settle out solids and have a minimum capacity of 68l/head served or a storage equivalent of 2 hours at the maximum flow rate to the storm tanks.

A22 The 2018 Guidance sets out a number that points to be taken into account which are reflected in the commentary above. Now the SODRP has added the spill frequency and duration for flows beyond 6DWF and the storage capacity. This may well require a more sophisticated approach to storage.

A23 This consultation states that *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 head 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.* There is no reference to the use of statistical flow concepts in place of DWF per se in permits, nor of the variety of sophistications which were reflected in the 2018 Guidance, or which have been highlighted more recently by monitoring programmes.