

Dataset Documentation

Event Duration Monitoring - Storm Overflows - 2023

27/03/2023

This document will help you understand and use the Event Duration Monitoring (EDM) dataset relating to the performance of storm overflows. The dataset has been provided by Water and Sewerage Companies (WaSCs) for the 2023 regulatory EDM Annual Return.

Dataset description

The dataset includes one Excel file (containing 10 separate spreadsheets, one for each WaSC with storm overflows in England) reporting how often and for how long monitored storm overflows discharged during 2023. WaSCs provide this regulatory return to the Environment Agency each year to fulfil their permitted conditions to discharge from these storm overflows under the Environmental Permitting Regulations.

A separate Excel file (and pdf) summarises the key data from the 10 WaSC spreadsheets including; how many storm overflows were monitored, and the average spill duration and spill count per monitored overflow for each WaSC. Additional contextual information is provided. This includes information relating to the operability of the EDM devices and actions to resolve any issues encountered with the monitors within the year. It also includes categorisation of reasons for high spill frequency overflows and action taken/planned to resolve these. See Appendix A (page 13) for these categories. The additional summary dataset has been produced by the Environment Agency to show key findings, variations and trends.

Update frequency

This dataset will be updated annually in March.

Related datasets

This dataset presents the performance of permitted (under Environmental Permitting Regulations) storm overflows. Further details of permitted storm overflows can be found in our dataset ['Consented Discharges to Controlled Waters with Conditions'](#) (updated quarterly).

Common questions & known issues

The key performance measures are in the following columns:

- **Total duration (hours) of all spills prior to processing through 12-24 hour counting method** (column P) - how many hours the storm overflow was measured to discharge to the environment during the reporting period in 2023.
- **Counted spills using 12-24 hour count method** (column Q) - how many occurrences the storm overflow was measured to discharge to the environment during the reporting period in 2023. The 12-24hr counting method ensures that very long continuous spills over multiple days are not counted as one spill. It is described in our guidance; 'Water companies: environmental permits for storm overflows and emergency overflows - Updated 13 September 2018' found here: <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>
- **% of reporting period EDM operational** (column T) - the percentage of the reporting period that the monitor was functioning and could reliably record discharges if one occurred.

Note: We do our best to avoid quality problems but this dataset reflects the data we hold. Our datasets may contain errors.

Dataset content

EDM 2023 Storm Overflow Annual Return - all water & sewerage companies.xls

This file contains ten separate spreadsheets, one for each data return from each WaSC:

- **Anglian Water (AWS)**
- **Dŵr Cymru Welsh Water (DC/WW) (in England)**
- **Northumbrian Water (NW)**
- **Severn Trent Water (SvT)**
- **South West Water (SWW)**
- **Southern Water (SW)**
- **Thames Water (TW)**
- **United Utilities (UU)**
- **Wessex Water (WSSX)**
- **Yorkshire Water (YWS)**

There is also a summary spreadsheet and pdf that contain key summary data:

EDM 2023 Storm Overflow Annual Return - summary data.xls

EDM 2023 Storm Overflow Annual Return - summary data.pdf

Fields applying to the 10 Water & Sewerage Company datasets

The following fields apply to the 10 WaSC datasets (**EDM 2023 Storm Overflow Annual Return - all water companies.xls**):

Field name	Description
Water Company Name (Column A)	The name of the Water and Sewerage Company (WaSC) that is permitted to operate the storm overflow and who made the data return to the Environment Agency
Site Name (EA Consents Database) (Column B)	The permitted site name of the storm overflow held by the Environment Agency
Site Name (WaSC operational) [optional] (Column C)	Site name used by the WaSC for operational reasons
EA Permit Reference (EA Consents Database) (Column D)	The permit reference held by the Environment Agency
WaSC Supplementary Permit Ref. [optional] (Column E)	WaSC reference number/name for the overflow
Activity Reference on Permit (if >1 discharge on permit) (Column F)	Identifies which permitted discharge is being measured when more than one discharge is referenced on the permit
Storm Discharge Asset Type (Column G)	Identifies the type of overflow See Appendix A for the data dropdown options appropriate to this column
Outlet Discharge NGR (EA Consents Database) (Column H)	Location of discharge point to the environment Note the overflow & EDM device may be located further up the sewer network This NGR may vary from the Consents Database when requested by the Environment Agency
WFD Waterbody ID (Cycle 2) (discharge outlet) (Column I)	Identification number of Water Framework Directive (WFD) waterbody at the discharge point (as per Cycle 2)
WFD Waterbody Catchment Name (Cycle 2) (discharge outlet) (Column J)	Name of WFD waterbody catchment at the discharge point (as per Cycle 2)
Receiving Water / Environment (common name) (EA Consents Database) (Column K)	Name of the receiving water at discharge point, as recorded on the permit
Shellfish Water (only populate for storm overflow with a Shellfish Water EDM requirement) (Column L)	Name of the designated shellfishery
Bathing Water (only populate for storm overflow with a Bathing Water EDM requirement) (Column M)	Name of the designated bathing water
Treatment Method (over & above storm tank settlement/screening) (Column N)	Whether the storm overflow discharge is subject to any treatment method See Appendix A (page 10) for the data dropdown options appropriate to this column

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Initial EDM Commission Date (Column O)	Date EDM commissioned; the date reliable data can be expected from the EDM See Appendix A (page 11) for the data dropdown options appropriate to this column
Total Duration (hrs) all spills prior to processing through 12-24h count method (Column P)	How many hours the storm overflow was measured to discharge to the environment in 2023
Counted spills using 12-24h count method (Column Q)	How many times the storm overflow was measured to discharge to the environment in 2023 The 12-24hr counting method ensures that very long continuous spills over multiple days are not counted as one spill. It is described in our guidance; 'Water companies: environmental permits for storm overflows and emergency overflows - Updated 13 September 2018' found here: 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 .
Long-term average spill count (Column R)	Average spill count based on all existing validated EDM data at this storm overflow
No. full years EDM data (year) (Column S)	The number of full years of EDM data that exist for this overflow. This provides context for the long-term average spill count (column R)
EDM Operation - % of reporting period EDM operational (Column T)	The percentage of the reporting period that the monitor was functioning and could reliably record discharges if one occurred. Note this is based on the Initial EDM Commission Date (Column O). For example, if commissioned in July of the reporting year then period Jul-Dec would represent 100%; if commissioned in previous reporting year then period Jan-Dec would represent 100%
EDM Operation - Reporting % - Primary Reason <90% (Column U)	Primary reason why the EDM may not have been operational ≥90% of the reporting period Category must be selected when period of EDM operation (column T) is less than 90%. Optional to complete this column when period of EDM operation is 90% or over Data represents best information as held by the WaSC at time of submission of the Annual Return See Appendix A (page 11) for the data dropdown options appropriate to this column
EDM Operation - Action taken / planned - Status & timeframe (Column V)	Indicates whether action has already been taken / is planned to be taken, and in which month; or whether there is an ongoing investigation to identify the appropriate action See Appendix A (page 12) for the data dropdown options appropriate to this column
High Spill Frequency - Operational Review - Primary Reason (Column W)	Primary reason for spill count (Column Q) Category must be selected when spill frequency exceeds the Storm Overflow Assessment Framework SOAF threshold (using either column Q >60 OR column R >50 with 2 or more years

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	<p>existing data in column S OR column R >40 with 3 or more years existing data in column S)</p> <p>Data represents best information as held by the WaSC at time of submission of the Annual Return</p> <p>See Appendix A (page 13) for the data dropdown options appropriate to this column</p>
<p>High Spill Frequency - Action taken / planned - Status & timeframe (Column X)</p>	<p>Indicates whether action has already been taken / is planned to be taken, and in which month; or whether there is an ongoing investigation to identify the appropriate action</p> <p>Category must be selected when spill frequency exceeds SOAF threshold (using either column Q >60 OR column R >50 with 2 or more years existing data in column S OR column R >40 with 3 or more years existing data in column S)</p> <p>See Appendix A (page 14) for the data dropdown options appropriate to this column</p>
<p>High Spill Frequency - Environmental Enhancement - Planning Position (Hydraulic capacity) (Column Y)</p>	<p>Action taken to address spill performance through the planning framework</p> <p>Category must be selected when spill frequency exceeds SOAF threshold (using either column Q >60 OR column R >50 with 2 or more years existing data in column S OR column R >40 with 3 or more years existing data in column S)</p> <p>See Appendix A (page 15) for the data dropdown options appropriate to this column</p>
<p>Unique ID (Column Z)</p>	<p>A unique identifier which will remain with the asset in perpetuity and not be changed or re-used if an asset is retired. This field has been added to allow longer term tracking of assets and to enable alignment with water company Storm Overflow Action Plans (SOAP).</p>

Fields applying to the Summary Dataset

The following fields apply to the summary dataset (**EDM 2023 Storm Overflow Annual Return - summary data.xls** and **EDM 2023 Storm Overflow Annual Return - summary data.pdf**):

Field name	Description
Table 1: 2023 EDM Headlines	
Total no. storm overflows listed in the annual return in 2023	<p>The number of storm overflows included by Water & Sewerage Companies (WaSCs) in the 2023 Event Duration Monitoring Annual Return</p> <p>WaSCs should have listed all their Storm Overflows, regardless of whether they are currently permitted or not, or whether they have EDM commissioned or not</p>
Total no. active storm overflows listed in the annual return in 2023	<p>The number of active storm overflows included by Water & Sewerage Companies (WaSCs) in the 2023 Event Duration Monitoring Annual Return</p> <p>This is the number of overflows that were able to operate during the reporting year and excludes overflows that were revoked or surrendered at or before the start of the year.</p> <p>Total number of overflows minus overflows we would not expect companies to report EDM data on.</p>
Total no. storm overflows with EDM commissioned	<p>The number of storm overflows each WaSC declared had EDM commissioned (reliable data can be expected) by the end of the reporting year</p>
% active storm overflows listed with EDM commissioned	<p>Percentage of active storm overflows listed that had EDM commissioned (reliable data can be expected) by the end of the reporting year</p> <p>Total number of storm overflows reported to have EDM commissioned (column O) divided by the total number of 'active' storm overflows listed in the Annual Return by that WaSC</p> <p>The water company average for this row is calculated using the total number of 'active' overflows for all companies rather than as an average of the company averages.</p>
Total no. storm overflows with spill data in 2023	<p>The number of storm overflows in the EDM annual return which have spill count data reported (column Q)</p> <p>Some storm overflows may have an EDM commissioned but no reliable spill data is provided. This is either due to 0% EDM Operation during the reporting year, or where the EDM was working but a WaSC has not reported the spill data in the annual return</p>
Average no. spills per storm overflow with spill data in 2023	<p>The average number of spills that were counted (12/24h count method) per overflow with spill data.</p> <p>Total number of spill events reported by a WaSC divided by the total number of storm overflows with spill data reported by the WaSC</p> <p>The water company average for this row is calculated using the total number of spill events reported by all WaSC's divided by the total number of storm overflows with spill data reported by all WaSC's</p>

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Average duration (hrs) per monitored spill event in 2023	<p>The average duration of a spill per monitored overflow</p> <p>Sum duration of spill hours reported by a WaSC divided by the total number of spill events reported by that WaSC</p> <p>The water company average for this row is calculated using the sum duration of spill hours reported by all WaSC's divided by the total number of spill events reported by all WaSC's</p>
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Table 2: 2023 EDM Summary Statistics

Total no. number of spill events in 2023	The total number of spill events monitored during 2023
Average no. spills per storm overflow with spill data in 2023	See Table 1, metric (row) 6
Total duration (hrs) of monitored spill events in 2023	<p>Total hours monitored storm overflows discharged during the year</p> <p>Note that multiple storm overflows are likely to be discharging at the same time in response to rainfall and/or snowmelt</p>
Average duration (hrs) per monitored spill event in 2023	See Table 1, metric (row) 7
% storm overflows spilled ≤10 times in 2023	<p>Percentage of monitored storm overflows that recorded 10 spills or less in the reporting period</p> <p>No. overflows ≤10 spills (column Q) expressed as a percentage of the total overflows with spill data reported by the WaSC</p> <p>The water company average for this row is calculated using the total number of overflows with ≤10 spills (column Q) expressed as a percentage of the total overflows with spill data reported by all WaSC's</p>
Percentage time operating [spilling] during 2023 per overflow (average)	<p>Percentage of the year that the average monitored overflow operated</p> <p>Average duration of a monitored overflow multiplied by the average number of spills per storm overflow with spill data reported by the WaSC. Then multiplied by 24h x 365 days (8760h)</p>

Table 3: 2023 EDM Device Operation

Total no. storm overflows with EDM Operation data	The number of storm overflows with data showing whether the monitor was operational during the period (e.g. from 0% to 100%) (column T)
% storm overflows with EDM Operation data provided where expected	Percentage of storm overflows with EDM commissioned (Column O) and % EDM Operation data is provided (Column T)
% storm overflows with 0% EDM Operation during reporting period	Percentage of monitored storm overflows that did not return any reliable spill count data during the reporting period
% storm overflows with ≥90% EDM Operation during reporting period	Percentage of monitored storm overflows that provided reliable data for 90% (or over) of the reporting period
% storm overflows with <90% EDM Operation during reporting period	Percentage of monitored storm overflows that provided reliable data for less than 90% of the reporting period

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% of those with <90% operability with reason provided	Percentage of monitored storm overflows that provided reliable data for less than 90% of the reporting period, with the primary reason included within the dataset (column U)
Table 4: 2023 Storm Overflow Spill Performance	
% with EDM installed & provided count data - with 0 spill count (did not spill)	Percentage of monitored storm overflows that recorded zero spills during the reporting period
% storm overflows with spill data - recorded ≥1 spill count	Percentage of monitored storm overflows that recorded one or more spills during the reporting period
% recorded 5 spills or less	Percentage of monitored storm overflows that recorded five spills or less in the reporting period
% recorded 10 spills or less	Percentage of monitored storm overflows that recorded 10 spills or less in the reporting period
% recorded >10 spills	Percentage of monitored storm overflows that recorded 11 or more spills in the reporting period
% recorded 20 spills or more	Percentage of monitored storm overflows that recorded 20 spills or more in the reporting period
% recorded 40 spills or more	Percentage of monitored storm overflows that recorded 40 spills or more in the reporting period
% recorded 60 spills or more	Percentage of monitored storm overflows that recorded 60 spills or more in the reporting period
% recorded 100 spills or more	Percentage of monitored storm overflows that recorded 100 spills or more in the reporting period
% recorded 200 spills or more	Percentage of monitored storm overflows that recorded 200 spills or more in the reporting period

Table 5: 2023 Storm Overflow Spill Reasons

(Based on best available information held by the WaSC at the time of Annual Return data submission)

No. monitored storm overflows that spilled >60 in reporting year	The number of monitored overflows with greater than 60 spills in the reporting period
Of those that spilled over SOAF thresholds of >60x in reporting year, % with a reason provided	<p>% of overflows with greater than 60 spills in the reporting period that had a primary reason provided in column W</p> <p>The threshold of greater than 60 spills is based on spill frequency investigation triggers in the Storm Overflow Assessment Framework: SOAF.pdf (water.org.uk)</p>
Of those that spilled over SOAF thresholds of >60x in one year, what % due to exceptional rainfall throughout the year	<p>% of overflows with greater than 60 spills in the reporting period with primary reason attributed to exceptional rainfall</p> <p>Exceptional rainfall does not refer to individual rainfall events, but rather the rainfall across the reporting year.</p> <p>Two datasets can be used to determine whether rainfall in the reporting year was "exceptional" or not (over & above typical rainfall) – (1) Environment Agency water situation reports or (2) local rainfall records.</p> <p>If rainfall was exceptional and deemed the primary reason for high spill count then this is indicated by the WaSC in the annual return (Column W)</p>

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<p>Of those that spilt over <u>SOAF</u> thresholds of >60x in one year, what % due to other operational reasons (incl. asset maintenance)?</p>	<p>% of overflows with greater than 60 spills in the reporting period with primary reason attributed to other operational reasons, including asset maintenance</p> <p>Operational reasons (incl. asset maintenance) are where the asset (storm overflow) and potentially parts of the upstream & downstream sewer network have not operated as designed/expected.</p> <p>If asset maintenance is deemed the primary reason for high spill count this is indicated by the WaSC in the annual return (column W). The different operational reason categories are listed in Appendix A (page 13) of this dataset README guide</p>
<p>Of those that spilt over SOAF thresholds of >60x in one year, what % due to hydraulic capacity reasons?</p>	<p>% of overflows greater than 60 spills in the reporting period with primary reason attributed to hydraulic capacity</p> <p>If the reason for a high spilling storm overflow (over 60 times per year) is neither “exceptional rainfall” nor “asset maintenance” then the reason is classified under the “Hydraulic capacity” category.</p> <p>This indicates there is insufficient capacity (conveyance or storage) in the sewer network to cope with the wastewater flow plus typical rainfall entering the sewer network.</p>
<p>Of those that spilt over SOAF thresholds of >60 in one year, what % N/A - ongoing investigation for primary reasons</p>	<p>% of overflows greater than 60 spills in the reporting period with an investigation ongoing, which has not yet indicated the suspected primary reason by the time of Annual Return submission in February.</p> <p>This category should be used by exception only; for example where high spill frequency is crossed late in the reporting year and a WaSCs has had limited opportunity to determine an initial primary reason for spill count</p>

Table 6: 2023 EDM Storm Overflow Annual Return Data Entry

<p>Total no. storm overflows listed in the annual return in 2023</p>	<p>See Table 1, metric (row) 1</p>
<p>Total no. storm overflows with EDM commissioned</p>	<p>See Table 1, metric (row) 3</p>
<p>% active storm overflows listed with EDM commissioned</p>	<p>See Table 1, metric (row) 4</p>
<p>Total no. storm overflows with EDM device operability data</p>	<p>See Table 3, metric (row) 1</p>
<p>Total no. overflows with spill data</p>	<p>See Table 1, metric (row) 5</p>
<p>% overflows listed with spill data</p>	<p>Percentage of storm overflows listed in the return that have spill data reported</p> <p>Reasons for less than 100% include no EDM yet commissioned; EDM commissioned but 0% operability (therefore no spill data); or where the EDM was working but a WaSC has not reported the spill data in the annual return</p>
<p>% overflows with <90% operability where valid reason provided</p>	<p>See Table 3, metric (row) 6</p>
<p>% of overflows >60 spills in one year with a reason provided</p>	<p>See Table 5, metric (row) 2</p>

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Appendix A

Appendix A shows the drop-down categories applicable to certain columns on the 2023 EDM Annual Return.

Field name	Description	Further context (if applicable)
Column G: Storm Discharge Asset Type		
SO on sewer network	Storm overflow on sewer network. This can be direct or associated with a network storm tank Not associated with pumping station	-
Storm discharge at pumping station	Storm overflow on network at pumping station	-
Inlet SO at WwTW	Storm overflow (direct to the environment), permitted as part of a WwTW permit Exception is storm tank - see note below	-
Storm tank at WwTW	Storm overflow via a storm tank, permitted as part of a WwTW permit Note this can be physically remote from the WwTW	-
Other storm discharge asset type	Any storm overflow that does not clearly align with the four categories above These may be used to develop future drop-down categories	-
(As the five categories above but with "- with treatment" added)	As above, but indicates any storm spills are subject to treatment (over & above storm tank settlement/screening) before reaching the water environment	-
Column N: Treatment method (over & above storm tank settlement/screening)		
Not applicable	No treatment method applies or is not recognised in the permit	
UV (Ultraviolet)		
Chemical disinfection		
Membrane filtration		
Reed bed		
Facultative ponds		
Column O: Initial EDM Commission Date		
Installed but not yet commissioned	Installed in current reporting year but reliable data not yet expected by the WaSC	-
Commissioned in yyyy – full year data expected	Installed in previous reporting year	-

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Month (mmm) 2023	Date commissioned within current reporting year, e.g. Aug 2023	-
EDM not technically feasible at this overflow	WaSC investigation shows EDM installation & commission currently not technically feasible	-
Column U: EDM Operation - Reporting Percentage - Primary Reason <90%		
Access – Unable to retrieve data from non-telemetry data logger (NB: not to be used for delayed access to fix existing fault)	When access causes inability to retrieve data in part/full; e.g. landowner permission Consider core reason – if caused by poor installation or design then select “Installation set-up/design issue” category instead	Other examples include inability to retrieve data due to highway access/ parked vehicles / unsafe access conditions
Capital / maintenance works affect EDM operation	Where planned works affect EDM operation. Consider core reason – if caused by poor installation or design then select “Installation set-up/design issue” category instead.	Other examples include where false data provided due to chambers not being cleared/maintained
Comms failure / issue	Any part of communication failure; e.g. intermittent signal or antenna damage. Consider core reason – if caused by poor installation or design then select “Installation set-up/design issue” category instead. Similar if comms loss caused by power failure – select “Power failure / issue” instead	Other examples include third party damage / intermittent issues caused by vehicles parked over manholes / poor signal strength in remote locations / loss of third party network provision problem (particularly after storms)
Installation set-up / design issue	When installation or design (e.g. choice of location) affects EDM operability. e.g. Original design location cannot distinguish between two overflows & original EDM needs to be relocated to more representative point e.g. Original design location affected by river ingress & EDM requires relocation e.g. Alternative monitor type required	Other examples include EDM on storm tanks recording high storm tank volume rather than a spill to the environment / EDM device not set up to read at required interval (e.g. 15 minutes instead of 2 minutes) / interference from other ultrasonic monitors / physical structure of storm overflow (e.g. uneven bench or shallow chambers) causing false spill recordings due to echo bounce
Power failure / issue	Any part of power failure; e.g. loss of mains supply / battery fault Consider core reason – if caused by cutting through cable then select “Capital / maintenance works” category instead	Other examples include unable to replace battery due to unsafe access / third party vandalism to power supply
Sensor failure / issue	Any part of sensor failure;	Other examples include third party interference (e.g.

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	<p>e.g. water ingress to connection between sensor & logger.</p> <p>Consider core reason – if water ingress caused by poor choice of location for installation & requires adjustment then select “Installation set-up/design issue” category instead.</p>	<p>vegetation; unflushables; vandalism) / extreme temperature changes causing drift in readings</p>
<p>Telemetry or data archiving failure / issue</p>	<p>Any part of telemetry failure; e.g. dial-in or storage/sending of data problems.</p> <p>Consider core reason – if archiving problem caused by power fault or incorrect installation then use “Power failure / issue” or “Installation set-up/design issue” categories respectively. Similar if data transfer caused by intermittent signal – select “Comms failure / issue” instead</p>	<p>Other examples include when data found to be associated with the wrong site / software issues / outstation failure</p>
<p>No longer operational as an overflow – permit revoked or to be revoked</p>	<p>If asset operational as an overflow at some point in the reporting year then the EDM must have been operational & recording potential spills before the overflow was no longer operational. These data must be reported.</p> <p>Also includes where permit condition still existed at some point during the reporting year - asset must still be reported on the EDM storm overflow Annual Return</p>	<p>Also includes asset is no longer operational therefore data not available or not representative of any discharge to the environment</p>

Column V: EDM Operation - Action taken / planned - Status & timeframe

<p>Scheduled</p>	<p>Appropriate operational action to address <90% EDM operation is planned</p>	-
<p>Resolved - (mmm)</p>	<p>Appropriate operational action has already been taken within the reporting year & primary issue affecting EDM operation resolved</p>	-
<p>Resolved - (mmm) after reporting year</p>	<p>Appropriate operational action has been taken & primary issue affecting EDM operation resolved between the end of the reporting year & submission of the regulatory EDM Annual Return by the end of February</p>	-
<p>N/A - Ongoing investigation</p>	<p>Appropriate action not yet identified</p>	<p>Also includes appropriate action identified but not yet scheduled / previous resolution but further investigation is now required</p>
<p>Overflow no longer spilling to environment - from (mmm)</p>	<p>Use when selection in column U is “No longer operational as an overflow - permit revoked or to be revoked”.</p> <p>Month represents month from which spills to the environment were no longer</p>	-

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	possible (e.g. overflow sealed off in network)	
Column W: High Spill Frequency - Operational Review - Primary Reason (Asset maintenance)		
Performance - Partial / no capacity due to blockage or restriction - maintenance issue - (Asset maintenance)	Spill frequency primarily caused by maintenance issue e.g. roots causing channel restriction e.g. blocked screens causing premature spills	-
Performance - Sewer collapse (partial / full) - infrastructure issue - (Asset maintenance)	Spill frequency primarily caused by infrastructure issue e.g. partial collapse of sewer	-
Performance - Groundwater inundation - (Asset maintenance)	Groundwater inundation is primary reason for spills e.g. GW inundation in chalk catchment causing high spill frequency	Groundwater inundation can be caused by high water table or flooding in the catchment
Performance – Infiltration - (Asset maintenance)	High spill frequency caused by infiltration. Requires investment to infrastructure to resolve	Groundwater or surface flows enter the sewerage network via defects such as loose joints or cracks. These defects can be in public or private sewers. Infiltration can be caused by misconnection of surface water pipes or large areas of impermeable ground being connected to the sewerage network
Performance - Asset power failure - (Asset maintenance)	E.g., frequent power supply failure caused high spill frequency	e.g. fuse blown in asset and phase failure
Performance - Pump failure / issue - (Asset maintenance)	Spill frequency primarily caused by pump failure / premature spills e.g., pumping station struggles to maintain PFF & review of rising main design required	Also includes where pump capacity is inhibited by unflushable items and other things that shouldn't be in the sewerage network
Performance - Other maintenance / capital works - (Asset maintenance)	Spill frequency primarily caused by works e.g., jetting	Other examples include grit build up / air locking of rising main
Performance - Asset configuration (e.g. PS/rising main/storm tanks) - (Asset maintenance)	Spill frequency primarily caused by inappropriate asset configuration e.g. inlet design causing premature spills & requires further investigation	Other examples include weir height reduction over time causing premature spills / interference from screens
Data collection - EDM non-representative location - (Asset maintenance)	E.g. EDM records multiple discharge points & cannot distinguish spill counts between the two. Requires EDM relocation	Other examples include where EDM believed not to be recording only spills to environment (e.g. spills to balancing tank; high storm tank volume) / EDM affected by external noise / multiple

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		monitors in network recording same spills to the environment
Data collection - Tidal / river inundation - (Asset maintenance)	EDM spill frequency data quality affected by tidal or river inundation e.g. tidal cycle causes levels to reverse flows in outfall pipe	-
Data collection - Confirmed exceptional weather – Remaining spills not above SOAF threshold - (Not asset maintenance)	High spill frequency caused by exceptional rainfall events, over & above typical rainfall Subsequent analysis of these spill data show adjusted spill frequency now not above SOAF threshold	-
Not asset maintenance - hydraulic capacity - (Not asset maintenance)	Spill frequency primarily caused by hydraulic capacity issue rather than something that can be fixed operationally This indicates there is insufficient capacity (conveyance or storage) in the sewer network to cope with the wastewater flow plus typical rainfall entering the sewer network.	Also includes where currently no clear evidence that the majority of spills were due to asset maintenance issues / assets where verified hydraulic model shows >40 spills are due to hydraulic overload / sites already part of ongoing SOAF investigations
N/A - Ongoing investigation – (Not asset maintenance)	When investigation into high spill frequency has not yet indicated the suspected primary reason by the time of the regulatory EDM Annual Return submission at the end of February.	

Column X: High Spill Frequency - Action taken / planned - Status & timeframe

Scheduled	Appropriate operational action to address spill frequency is planned	e.g. committed schemes that are due to be completed / part of an action plan
Resolved - month (mmm)	Appropriate operational action has already been taken within the reporting year & issue affecting spill frequency resolved	-
Resolved - (mmm) after reporting year	Appropriate operational action has been taken & primary issue affecting spill frequency resolved between the end of the reporting year & submission of the regulatory EDM Annual Return by the end of February	-
N/A – Ongoing investigation	Appropriate operational action not yet identified	Also includes appropriate action identified but not yet scheduled / previous resolution but further investigation is now required
N/A – Hydraulic capacity	Issue is due to hydraulic capacity and unable to be fixed operationally through asset maintenance programme	Includes suspected or confirmed hydraulic capacity constraints

Column Y: High Spill Frequency - Environmental Enhancement - Planning Position
(Hydraulic Capacity)

SOAF N/A - Proposed SFTP (overflow previously improved)	Schemes previously improved via SOAF but now identified for Spill Frequency Trigger Permitting	-
Stage 1a: Confirmed "exceptional weather" issue	This does not refer to individual rainfall events, but rather the rainfall across the reporting year. Two datasets can be used to determine whether rainfall in the reporting year was "exceptional" or not (over & above typical rainfall) – (1) Environment Agency water situation reports or (2) local rainfall records. See SOAF for full definition	-
Stage 1b: Confirmed "asset maintenance" issue	Operational reasons (incl. asset maintenance) are where the asset (storm overflow) and potentially parts of the upstream & downstream sewer network have not operated as designed/expected. See SOAF for full definition	-
Stage 1c: Confirmed "hydraulic issue"	If not "exceptional weather" or "asset maintenance". This indicates there is insufficient capacity (conveyance or storage) in the sewer network to cope with the wastewater flow plus typical rainfall entering the sewer network.	-
U_INV driver - Stage 2 or 3: Environmental / UWWTR assessments or improvement options appraisal	SOAF investigation ongoing at Stage 2/3	-
U_INV driver - Stage 4: Cost beneficial outcome not yet determined	In process of Cost Benefit Analysis (CBA) but no outcome at present	Also includes where an option is at final detailed design stage but yet to pass through CBA
U_INV driver - Stage 4: No cost beneficial solution	CBA indicates costs are disproportionate to environmental benefit	-
U_IMP4 driver - Stage 4: Spill reduction scheme - On current WINEP/AMP7 or Green Recovery investigation/scheme	U_INV CBA indicates spill reduction scheme is cost beneficial and is on current WINEP or other planned improvement programme	Also includes committed schemes which may/may not have gone through SOAF CBA is being progressed outside of SOAF framework
U_IMP4 driver - Stage 4: Potential spill reduction scheme - Not yet on current WINEP/AMP7 or Green	U_INV CBA indicates a spill reduction scheme may be cost beneficial	Includes where scheme is being developed but not on a delivery programme

Recovery investigation/scheme		
Other investigation - WINEP/Green Recovery	Other investigation via the WINEP or Green Recovery scheme	
Other investigation - non-WINEP/Green Recovery	Other investigation but not via the WINEP or Green Recovery scheme	
Other improvement - WINEP/Green Recovery	Other improvement work via the WINEP or Green Recovery scheme	
Other improvement - non-WINEP/Green Recovery	Other improvement work but not via the WINEP or Green Recovery scheme	
N/A – Operational solution applied	Planning framework not required - spill frequency remedied through operational solution	-