20 potential abuses of Operator Self-Monitoring of treated sewage to avoid permit breaches

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Windrush Against Sewage Pollution (WASP)
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INTRODUCTION

Operator Self Monitoring (OSM) was introduced in 2009/2010 and requires water and sewerage companies (WaSCs) in England and Wales to test the quality of sewage treatment by taking "spot" samples, typically once each month, and reporting the results of independent laboratory testing to the Environment Agency (EA).

Individual permits for sewage treatment works (STWs), issued by the EA, define statutory standards to which treated sewage must comply. Some standards are upper limits that must never be exceeded. Some standards, such as for concentrations of ammonia and suspended solids, must be achieved most of the time e.g. only allowing 2 exceedances out of 12 successive sample results. Other standards, such as for phosphate, limit the annual average concentration.

Non-compliance with OSM related permit conditions affects annual water industry negotiations with Ofwat, the financial regulator, when their compliance targets are reviewed and penalties and future customer charges are determined. Thus, a permit breach potentially has significant financial implications for a WaSC.

This report describes WASP's investigation into possible abuses of OSM by WaSCs to avoid breaches of quality standards for sewage treatment.

FINDINGS

WASP's analysis suggests that some WaSCs may manipulate OSM in their favour by

1. arranging "optimal" sampling times to ensure compliance with permit standards
2. engineering sample failure ("NO FLOW/NO SAMPLE") to qualify for default compliance

WASP provided many examples of "optimal" sampling times in a previous study[1]. Here, WASP provides recent evidence of 20 potentially false "NO FLOW/NO SAMPLE" claims at 15 sewage treatment works across 7 water companies (Table 1 for summary).

CONCLUSIONS

The Environment Agency must institute a thorough investigation of the evidence provided here. The use of OSM within the annual Environment Performance Exercise (EPA) must be reviewed and associated star ratings of some WaSCs might need to be revised.

OSM should be taken out of WaSC control and be managed by an independent body paid for by the water industry. Until such a regime is in place

- spot sampling/testing should be gradually replaced by continuous monitoring devices that most WaSCs are already using for internal purposes, sometimes for over a decade
- all monitoring results, whether spot or continuous monitoring, and reasons for failing to undertake sampling should be published online with open access.

[1] The failure of Operator Self-Monitoring

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Some WaSCs may use non-statutory continuous monitoring of treated sewage to guide OSM SPOT sampling in order to select the most favourable times to achieve compliance

B OSM "NO FLOW/NO SAMPLE" claims vary considerably across the water industry

C Some claims of "NO FLOW/NO SAMPLE" coincide with sudden gaps in final effluent flow

No	WaSC	STW	Date	WaSC reply
C 1	ANGLIAN WATER	HITCHIN STW	May 10th 2021	No
C 2	SOUTH WEST WATER	IVYBRIDGE STW	Feb 11th 2021	Yes
C 3	NORTHUMBRIAN WATER	ALLENDALE STW	Feb 4th 2022	Yes
C 4	THAMES WATER	HAMPSTEAD NORREYS STW	Apr 11th 2024	Yes
C 5	UNITED UTILITIES	GRASMERE STW	Aug 1st 2022	Yes
C 6	ANGLIAN WATER	THURLEIGH STW	Jul 19th 2022	No
C 7	ANGLIAN WATER	EVENLEY STW	Sep 7th 2022	No
C 8	UNITED UTILITIES	KIRKBY STEPHENS STW	Mar 7th 2022	Yes
C9	UNITED UTILITIES	KIRKBY STEPHENS STW	Jun 15th 2022	Yes
C10	UNITED UTILITIES	KIRKBY STEPHENS STW	Aug 8th 2023	Yes
C 11	ANGLIAN WATER	DEREHAM STW	May 9th 2023	N/A
C 12	UNITED UTILITIES	NETHER PEOVER STW	May 13th 2023	N/A
C 13	UNITED UTILITIES	NETHER PEOVER STW	Jun 17th 2022	N/A
C 14	THAMES WATER	THAME STW	Apr 8th 2022	Yes
C 15	THAMES WATER	THAME STW	May 5th 2021	Yes
C 16	THAMES WATER	CLANFIELD STW	May 20th 2024	Yes
C 16	THAMES WATER	CLANFIELD STW	Jun 19th 2024	Yes
C 18	YORKSHIRE WATER	FLAXTON STW	Feb 24th 2021	Yes
C 19	YORKSHIRE WATER	FLAXTON STW	May 3rd 2022	Yes
C 20	UNITED UTILITIES	KNUTSFORD STW	Sep 21st 2022	Yes
C 21	SEVERN TRENT WATER	BLACKMINSTER STW	Jul 26th 2022	Yes

TABLE ONE Potential abuses of OSM default compliance when sampling is not possible

Report ID	WaSC	STW	Date
C1	Anglian	Hitchin	10/05/2021 11:30
C6	Anglian	Thurleigh	18/07/2022 07:20
C7	Anglian	Evenley	07/09/2022 12:49
C11	Anglian	Dereham	09/05/2023 09:55
C3	Northumbrian	Allendale	04/02/2022 10:24
C20	Severn Trent	Blackminster	21/07/2022 00:00
C2	South West	Ivybridge	11/02/2021 10:15
C14	Thames	Thame	08/04/2021 07:50
C15	Thames	Thame	05/05/2021 08:25
C4	Thames	Hampstead Norreys	11/04/2024 10:15
C16	Thames	Clanfield	20/05/2024 09:25
C17	Thames	Clanfield	19/06/2024 07:06
C12	United	Nether Peover	13/05/2022 11:08
C13	United	Nether Peover	17/06/2022 11:38
C5	United	Grasmere	01/08/2022 11:00
C19	United	Knutsford	21/09/2022 11:31
C8	United	Kirkby Stephen	07/03/2023 09:11
C9	United	Kirkby Stephen	15/06/2023 11:41
C10	United	Kirkby Stephen	08/08/2023 10:15
C18	Yorkshire	Flaxton	24/02/2021 10:10

BACKGROUND

OSM: water company monitoring of the quality of sewage treatment

OSM sampling is undertaken by a designated team for each WaSC whose visits to STWs should be planned a year in advance in complete confidence without knowledge of STW operating staff.

Samples of treated sewage or "final effluent" are taken at a specified STW location – usually close to where the final effluent is discharged to a watercourse. The samples need to be stored appropriately and subsequently delivered to a certified laboratory for testing.

During a site visit, a sampling point may be inaccessible and a sample cannot be made because

the receiving watercourse is flooding the outlet, or

the outlet flow is frozen.

Alternatively, there may be no or insufficient effluent flow leaving the sewage works or there may even be a failure of sample storage, safe transfer to, and testing, at a laboratory.

In such circumstances, a WaSC is allowed to record a "NO FLOW/NO SAMPLE" and the unsuccessful sampling/testing is assumed by default to comply with all relevant discharge permit conditions. The EA requires WaSCs to gather evidence to back up such "no flow/no sample" claims but does not routinely ask for or investigate the evidence:

> *If no sample is available during a sample visit you must record evidence of this. Acceptable evidence includes:*
>
> - *a digital photo showing no sample is available at the sample point – with the time and date recorded*
> - *flow monitoring data*
>
> *You must provide the evidence to the Environment Agency if we ask for it.*[2]

The reply to WASP's request to the EA for details of no flow/no sample claims, where evidence to support such claims had been requested and provided, was as follows

> ***…*** *the information you have requested is not held by the Environment Agency, and we are therefore refusing your request on the grounds that there is no information we can provide. We do not routinely request water companies to provide evidence for no flow sample events and so do not have readily available numbers …*

The EA does have an audit system in place which reviews OSM, but clearly does not have its own detailed records of when and how no flow/no sample claims have been reported and subsequently investigated. WASP is still waiting to receive information about several individual no flow/no sample claims by Severn Trent. United Utilities and Anglian Water has provided information in relation to several NO FLOW/NO SAMPLE claims.

Engineering artificial "NO FLOW/NO SAMPLE**" sampling claims**

In 2019, Southern Water was found guilty of engineering artificial "NO FLOW/NO SAMPLE" sample claims[3]. In records of court proceedings these were referred to as ANF (Artificial No Flow):

[2] https://www.gov.uk/government/publications/water-companies-operator-self-monitoring-osm-environmental-permits/water-companies-operator-self-monitoring-osm-environmental-permits

[3] https://www.ofwat.gov.uk/wp-content/uploads/2019/10/Ofwat%E2%80%99s-final-decision-to-impose-a-financial-penalty-on-Southern-Water-S....pdf

"This included, for example, through the improper use of tankering (i.e. by tankering wastewater from one WwTW to another to cause an ANF). Another method included 'recirculating' effluent within a WwTW again to ensure there was no final effluent available for sampling" [2]

During its investigation of Southern Water, the EA highlighted Warnham STW for which it had uncovered an internal company communication for 18th Feb 2013 which said:

"Tankers are on-site and ensuring no-flow is leaving site. This will continue for the rest of the day and recommence tomorrow morning or until a sample is taken…Tankering has been reinstated, there is a high expectation the sample is this week and most likely tomorrow." [4]

WASP has reviewed the OSM final effluent sampling data for 2012 and 2013 for Warnham STW (**Fig** .1) which confirm that in 2012 there were two exceedances of the suspended solids (SS) permitted concentration so another at the beginning of 2013 would have caused the STW to be non-compliant and in breach of permit. In fact, four "no flow" OSM sampling attempts were recorded for Warnham STW at the beginning of 2013. The EA confirmed there was no evidence to suggest that the artificial "no flow" on February 26th was genuine. Indeed, it seems likely that one or more of the "no flow" samples would have exceeded permit limits. According to the EA, non-compliance with statutory permit conditions is illegal. The manipulation of sewage treatment flow or selection of favoured dates on which to undertake statutory sampling, so as to guarantee or improve the chances of compliance, may also be a criminal offence.

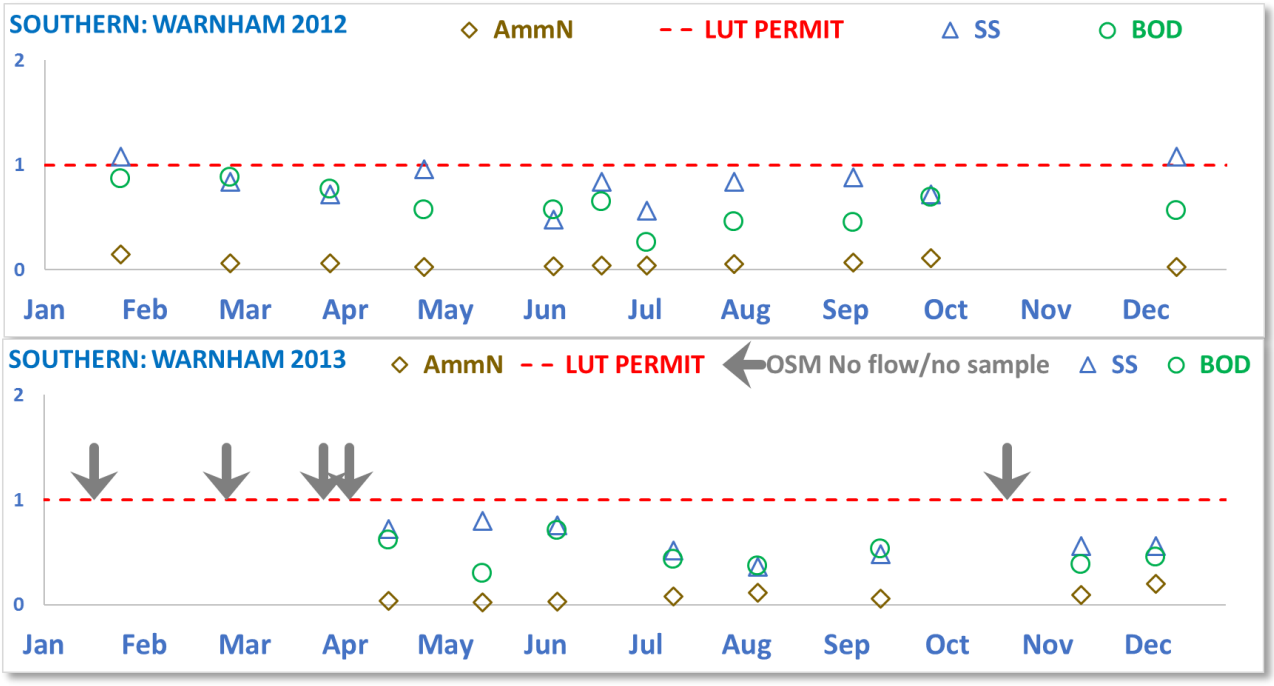


Figure 1: OSM sample results for Southern Water's Warnham STW for 2012 and 2013
(LUT refers to a threshold for compliance obtained from a "**L**ook **U**p **T**able" in the permit; in this case, the LUT threshold cannot be exceeded more than twice in 12 consecutive sample results; 2 suspended solids (SS) exceedances in early/late 2012 followed by a 3rd exceedance in early 2013 would have been a permit breach)

[4] https://www.ofwat.gov.uk/wp-content/uploads/2019/10/Ofwat%E2%80%99s-final-decision-to-impose-a-financial-penalty-on-Southern-Water-S....pdf

Purpose of this report

WASP has previously reported on OSM and revealed the limited 7am-3pm time range of monthly SPOT testing and the use, by WaSCs, of ”private” continuous monitoring data that is not reported to the EA as it is non-statutory. WASP exposed the potential for the continuous monitoring data to be used to guide SPOT testing to times when results would be less likely to exceed parameter thresholds. Some of the findings of that earlier are repeated here for completeness.

In the study reported here, WASP has investigated “NO FLOW/NO SAMPLE” claims for the period 2021-2024 using data made available by WaSCs, the EA and DEFRA. Analysis of sewage treatment flow data and OSM sample results, provided by WaSCs to the EA and DEFRA, suggest that some WaSCs may have engineered similar “artificial no flow” events for which Southern Water was convicted in 2019.

Because the validity of “NO FLOW/NO SAMPLE” claims requires evidence based on final effluent flow data and until very recently all WaSCs other than Thames Water, Wessex Water and Dwr Cymru were rejecting EIR (Environment Information Regulation) requests for such data, WASP has had to limit the investigation. Nevertheless, there are 20 examples presented here where the sampling results and “NO FLOW/NO SAMPLE” claims are consistent with abuse of OSM and a much more detailed and extensive investigation should be pursued by the EA.

FINDINGS

A Over 50% of treated sewage has avoided statutory OSM quality monitoring for 13 years

Some WaSCs may use non-statutory continuous monitoring of treated sewage to guide OSM SPOT sampling in order to select the most favourable times to achieve compliance

Typically, in dry weather, the rate at which sewage arrives at a treatment works follows a regular diurnal pattern with one peak around breakfast time and another covering evening meal/bedtime (**Fig**. 2a). Between 7 am and 3 pm, the proportion of the daily volume of treated sewage discharged from a sewage works is approximately 40%-45%. For the remainder of a day, i.e., midnight to 7 am and 3 pm to midnight, about 55%-60% of treated sewage (by volume) is discharged. There are, of course, weather, regional and seasonal variations.

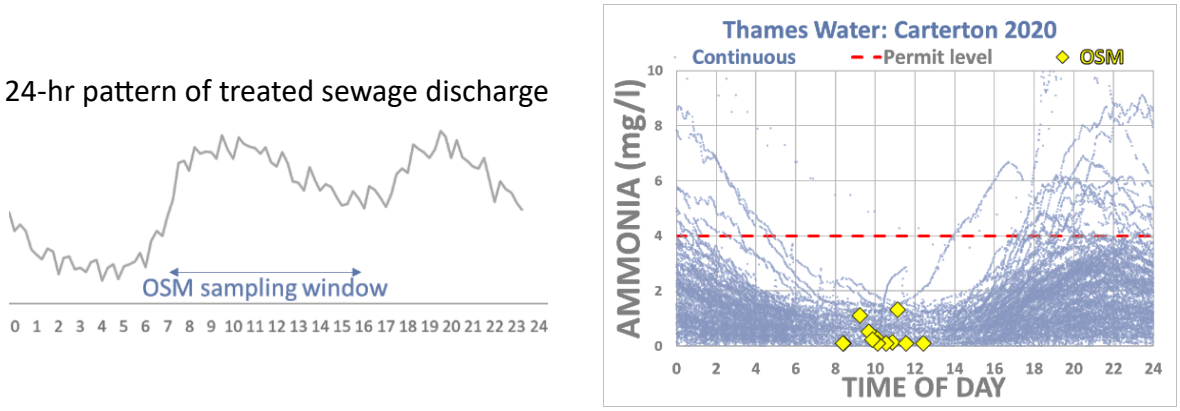


Figure 2: **a)** 24-hr pattern of treated sewage discharge; **b)** example of multiple potential breaches of a 95% permit limit for ammonia revealed by continuous monitoring whereas all 12 OSM samples are compliant.

Figure 3 shows the frequency of the time of day when tens of thousands of OSM statutory “spot” test samples were collected in 2022 to monitor levels of ammoniacal nitrogen (AmmN), biological

oxygen demand (BOD) and suspended solids (SuspSolids) by all water and sewerage companies (WaSCs). Note that the period 7am to 3 pm covers almost all sampling activity.

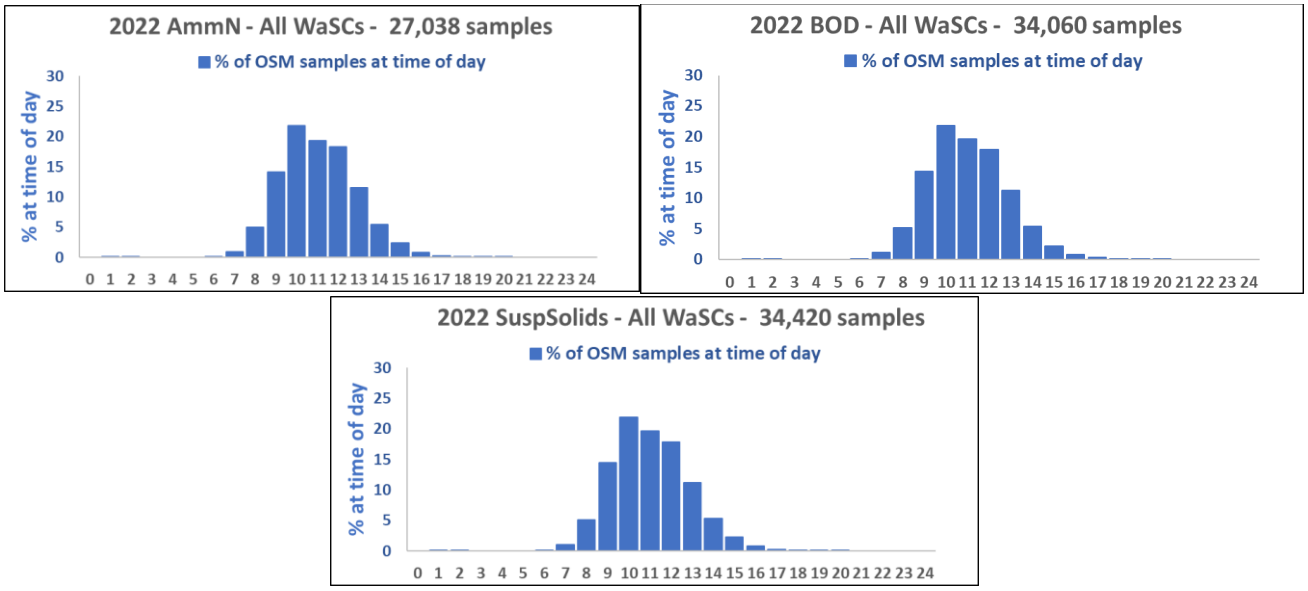


Figure 3: frequency of OSM spot sample times in 2022 by all WaSCs for ammonia, BOD and suspended solids

This limited monitoring of ammonia levels has been the case every year since OSM was introduced in 2009/2010 (**Fig**. 4). Given that multiple parameters are typically tested in each sample, this is also true for BOD, suspended solids and other final effluent quality parameters.

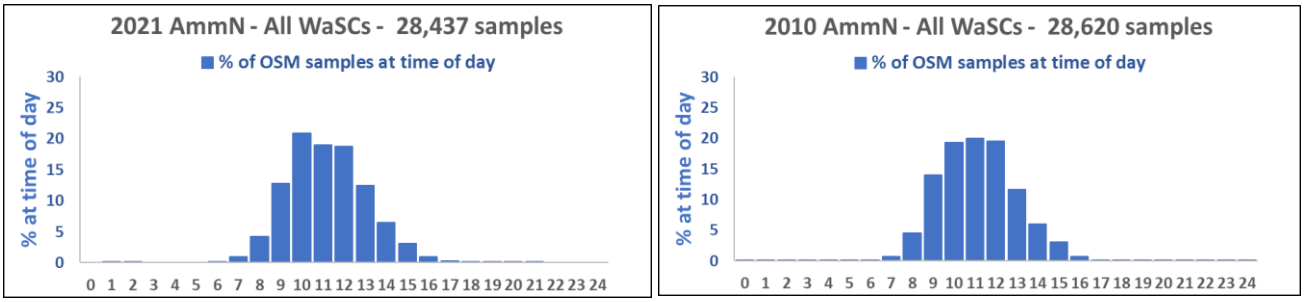


Figure 4: OSM spot sampling times in 2021 and 2010 for ammonia for all WaSCs

Figure 2b shows the results of statutory SPOT testing and non-statutory "private" continuous monitoring of Ammonia levels in final effluent at Thames Water's Carterton STW in 2020. Notice that the SPOT testing results provided to the EA, all sampled between 7am and 3 pm, are compliant with the LUT ammonia threshold. In contrast, the continuous monitoring results that Thames Water keeps to itself, as they are non-statutory, are in exceedance of the LUT (look up table) threshold outside the OSM testing interval.

Almost all WaSCs employ such continuous monitoring devices but claim they are simply used as an informal guide to the performance of an STW. WASP does not accept this claim and believes that WaSCs are using such devices to guide the timing of OSM SPOT sampling in order to increase the likelihood of permit compliance. A previous report by WASP contains many similar examples of continuous monitoring results exceeding permit limits while monthly SPOT testing results are compliant.

B OSM "NO FLOW/NO SAMPLE" claims vary considerably across the water industry

In 2022, for OSM testing of the compliance of final effluent against permit standards, 3,546 sampling points and 139,785 test results were recorded in Defra's online data archive.

Of the 39,640 or so samples recorded, 1,856 (4.7%) were described as "NO FLOW/NO SAMPLE". Corresponding totals for 2021 and 2023 were 39,725 and 40,554 samples with 1,618 (4.1%) and 1,671 (4.1%) "NO FLOW/NO SAMPLE" claims respectively.

There are interesting differences between claims of "NO FLOW/NO SAMPLE" by WaSCs. The pie charts below (**Fig**. 5) indicate the proportion of all "NO FLOW/NO SAMPLE" samples between 2021 and 2023 that were claimed by each of the 9 WaSCs in England.

The Anglian region stands out as undertaking 22.2% of all 39,640 OSM samples in 2022 but recording 32.6% of the "NO FLOW/NO SAMPLE" claims. For 2023, it undertook 21.7% of all 40,609 samples and recorded 37.5% of the "NO FLOW/NO SAMPLE" claims.

Each "no flow" claim is given a code reflecting the reason for the sampling failure.

Determinand	Value	Meaning
7668 No flow /No sample	0	No flow/discharge at sampling point
7668 No flow /No sample	1	Sample point inaccessible e.g., flooding (submerged) etc
7668 No flow /No sample	2	Inclement weather e.g., frozen over
7668 No flow /No sample	3	Any other reason, see comments

In 2022, only 2 WaSCs used a coding other than 0. Thames Water used code 1 for 7.3% and United Utilities used codes 1-3 for 40% of their "NO FLOW/NO SAMPLE" claims.

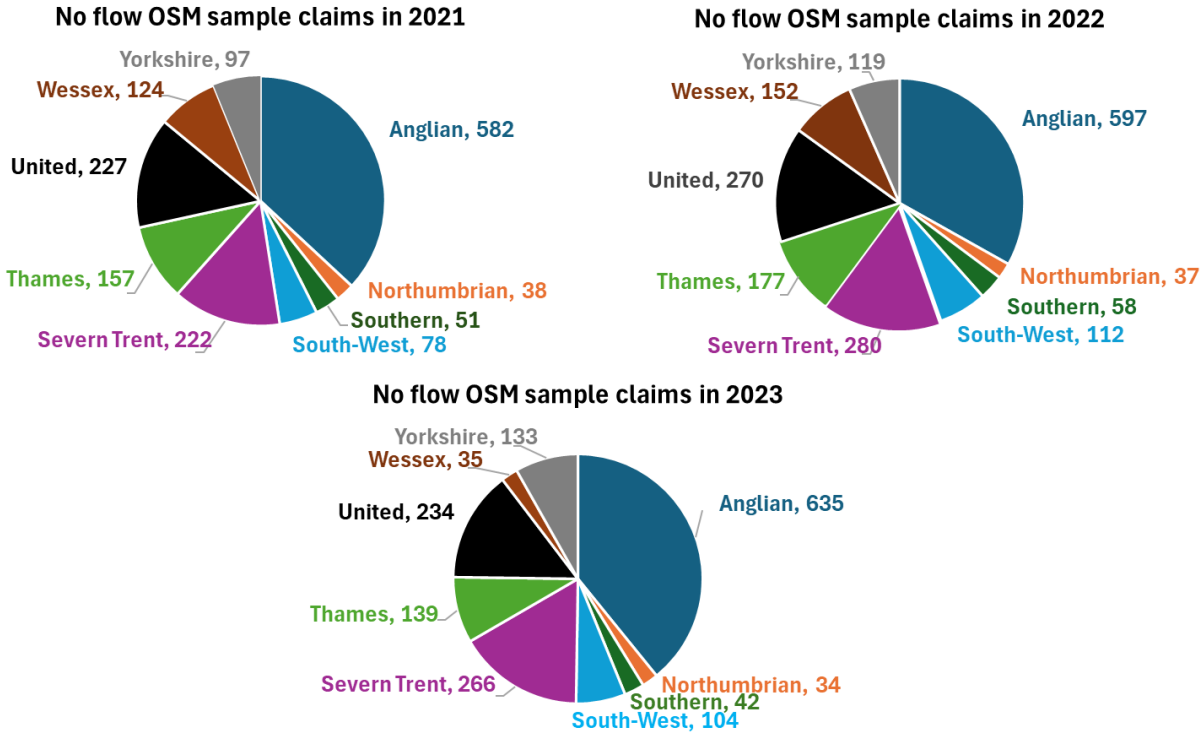


Figure 5: apportionment of no flow/no sample claims to each WaSC 2021- 2023
(Data from DEFRA WIMS ARCHIVE is subject to change and accuracy is not guaranteed
https://environment.data.gov.uk/water-quality/view/download)

The effect of Southern Water's criminal conviction in 2019 for engineering artificial "No FLOW/NO SAMPLE" events can clearly be seen in its rapid reduction of the number of such claims just before and subsequent to the court case. Similar reductions in the number of "NO FLOW/NO SAMPLE" claims can be seen for most other WaSCs (**Fig**. 6). Thereafter, there is a gradual increase until 2022 when all but Anglian appear to reduce the number of claims. These figures are subject to continuing updates of the DEFRA WIMS database so may become out of date.

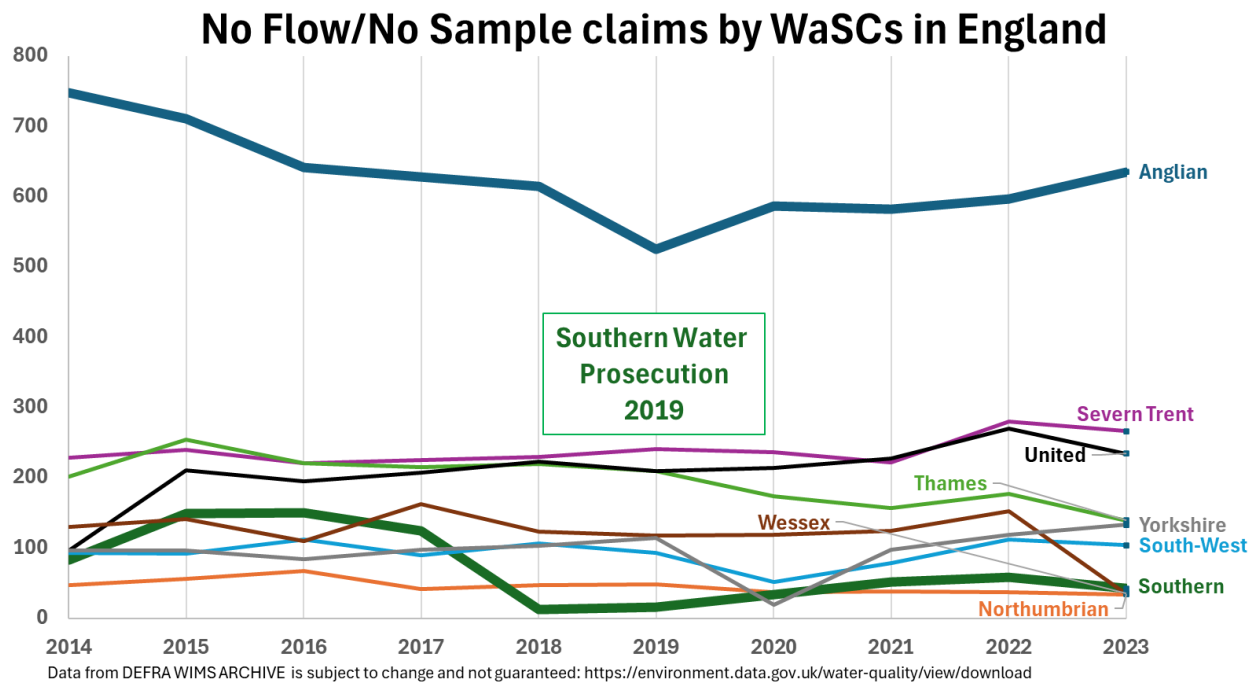


Figure 6: overview of no flow/no sample claims for each WaSC 2014- 2023

It is not clear to WASP why Anglian Water should be so "outstanding" in making claims of "NO FLOW/NO SAMPLE" failures for undertaking OSM testing.

C Some claims of "NO FLOW/NO SAMPLE" coincide with sudden gaps in final effluent flow

C 1 ANGLIAN WATER HITCHIN STW May 10th 2021

The OSM records for Anglian Water's Hitchin STW include a declaration of a "NO FLOW/NO SAMPLE" for May 10th 2021:

AN-HITCHIN	HITCHIN STW F/E	10/05/2021 11:30	NO FLOW/SAMP	0

Figure 7 shows the flow of raw sewage being passed into treatment (SEWAGE IN) as well as treated sewage (FINAL EFFLUENT) leaving the STW over a 5-day period. The SEWAGE IN flow is unbroken, but the FINAL EFFLUENT flow, the treated sewage to be sampled, appears to drop abruptly to zero just before the sample is attempted and rise just as abruptly shortly afterwards.

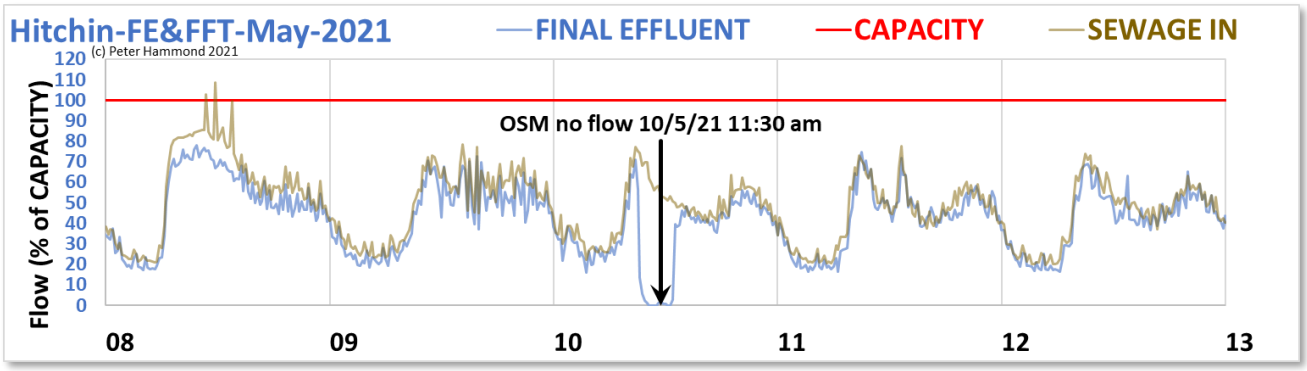


Figure 7: sewage flow and OSM no flow sample at Hitchen STW in May 2021
(final effluent flow (FE) drops to 0 just before and rises just after the "spot" sample attempt is recorded)

Given there is no break in untreated sewage being passed on for treatment, the sudden drop and surge of final treated effluent either side of the sampling attempt suggests the "no flow" may have been artificially contrived. What might encourage such behaviour?

Figure 8 below shows all OSM sampling results for 2021 for Hitchin STW and also the receiving river level. Ammonia levels in the final effluent had exceeded the permit level on 2 occasions before the no sample claim. A third exceedance of SS level would have resulted in a permit breach. Was this avoided by engineering an artificial no flow?

On May 10th 2021, the day of the no sample claim, the river level was about 15 cms which seems unlikely to have caused flooding of the outlet.

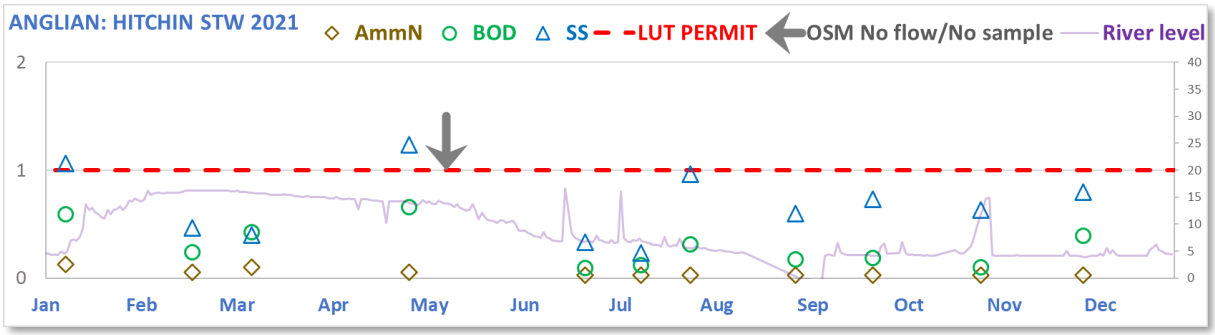


Figure 8: OSM sampling results for 2021 for Hitchin STW

Response from Anglian Water None as of October 22nd 2024

C 2 SOUTH WEST WATER IVYBRIDGE STW Feb 11th 2021

An OSM spot sample was attempted on February 11th 2021 at 10:15 am at South West Water's Ivybridge STW but was recorded as a "NO FLOW/NO SAMPLE".

SW-70920133 IVYBRIDGE STW 11/02/2021 10:15 NO FLOW/SAMP 0

Figure 9 shows the final effluent flow over a 4-day period including the day of the "no flow" sample.

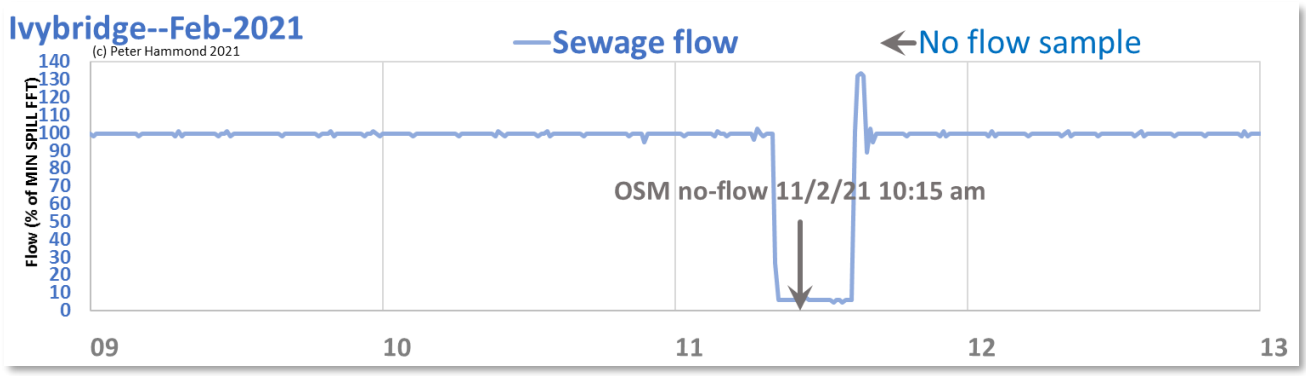


Figure 9: final effluent flow and OSM no flow sample at Ivybridge STW in February 2021

The sewage flow being passed into the treatment process (FFT) was at capacity for 23 days before and for 2 days after the day of the no-flow sample. Indeed, the storm tank EDM recorded 500+ hours of unbroken spilling from 20/01/2021 to 5am on 10/2/2021.

On the day of the no-flow, the FFT was at or above storm overflow capacity apart from 6.5 hours when it dropped dramatically at 8 am to 5.9% capacity and remained at that level until 2.30 pm when it rose dramatically to 132% capacity. In between these times, an OSM no-flow sampling attempt was recorded at 10:15 am. Once again, the data suggest an artificial "no flow" may have been engineered.

Alternatively, a frozen outfall is possible in February but a sampling attempt coinciding with fairly instantaneous freezing and unfreezing of the effluent outflow would be quite remarkable when either side the works was at full capacity and often spilling untreated sewage.

Response from South West Water

On 11 February 2021 we carried out the first phase of essential planned maintenance on our primary settlement tank at Ivybridge Wastewater Treatment Works. This work was planned months in advance. The full sampling schedule is submitted to the Environment Agency the year before it takes place. The schedule for 2021 was submitted in 2020. Our operational and engineering teams have no knowledge of any of our samplers' planned visits.

Given that the maintenance was planned some time in 2020, why was the sampler not notified that there was no point in turning up at the works while treatment was suspended?

C 3 NORTHUMBRIAN WATER ALLENDALE STW Feb 4th 2022

A “NO FLOW/NO SAMPLE” sampling attempt was recorded at Northumbrian Water’s Allendale STW on Feb 4th 2022.

NE-43200090	ALLENDALE STW	04/02/2022 10:24	No flow /No sample	0

Figure 10 shows treated effluent, river level, rainfall as well as the “no flow” OSM sampling attempt within an interval when the treated effluent drops to zero and rises again steeply in a short period of time.

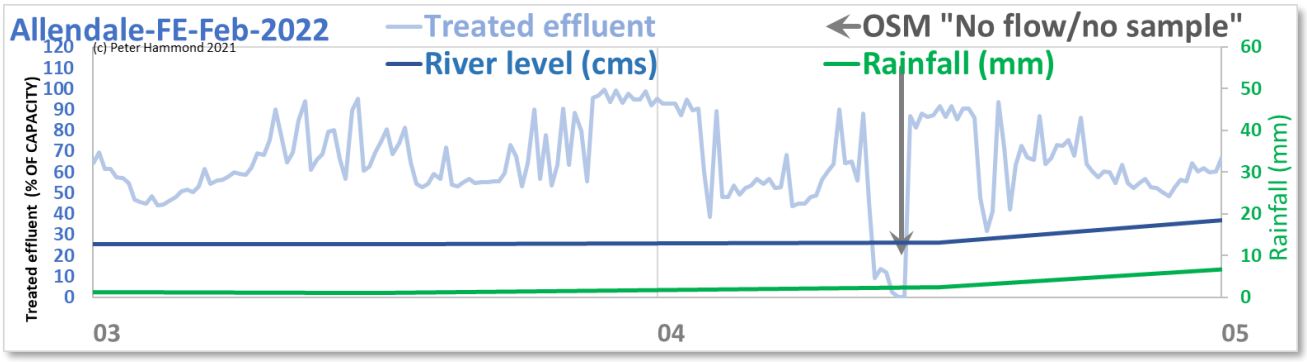


Figure 10: treated effluent, river level, rainfall and a “no flow” OSM sample at Allendale STW in Feb 2022

Is this “no flow” genuine or has the effluent flow been artificially manipulated? Alternatively, a frozen outfall is possible in February but it seems a strange coincidence that freezing and unfreezing should occur over a few hours just when “the inspector calls”.

Response from Northumbrian Water

On the morning of 4th February 2022 Allendale Sewage Treatment Works experienced an air lock in the inlet pump and for a short period there was no flow being pumped to either the treatment stage or to the environment. This issue was quickly identified and was resolved the same day. The sample was reported as a ‘no flow’ to the Environment Agency, in accordance with their requirements. All of the eleven samples that were taken during 2022 from Allendale Sewage Treatment Works complied with the permit conditions.

C 4 THAMES WATER HAMPSTEAD NORREYS STW Apr 11th 2024

An OSM spot sample was attempted on April 11th 2024 at 10:15 am at Thames Water's Hampstead Norreys STW but was recorded as a "NO FLOW/NO SAMPLE" (**Fig**. 11). In fac

TH-PPSE0010	HAMPSTEAD NORREYS STW	26/01/2022 12:20	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	31/07/2022 09:01	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	15/08/2022 10:19	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	29/09/2022 13:15	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	18/10/2022 09:38	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	13/01/2023 12:50	NO FLOW/SAMP
TH-PPSE0010	HAMPSTEAD NORREYS STW	11/04/2024 09:14	NO FLOW/SAMP

The results of OSM "spot" samoling are shown below:

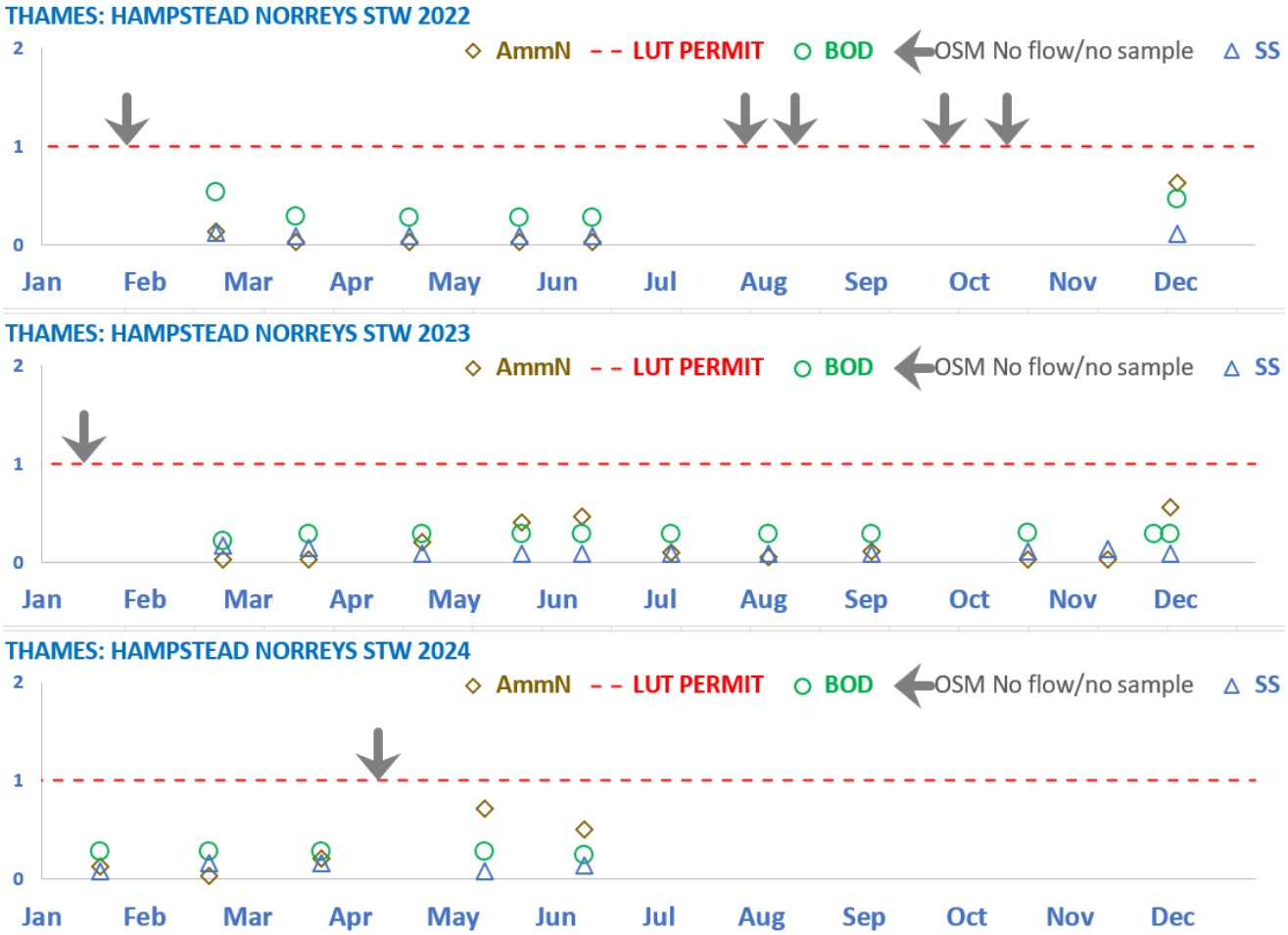
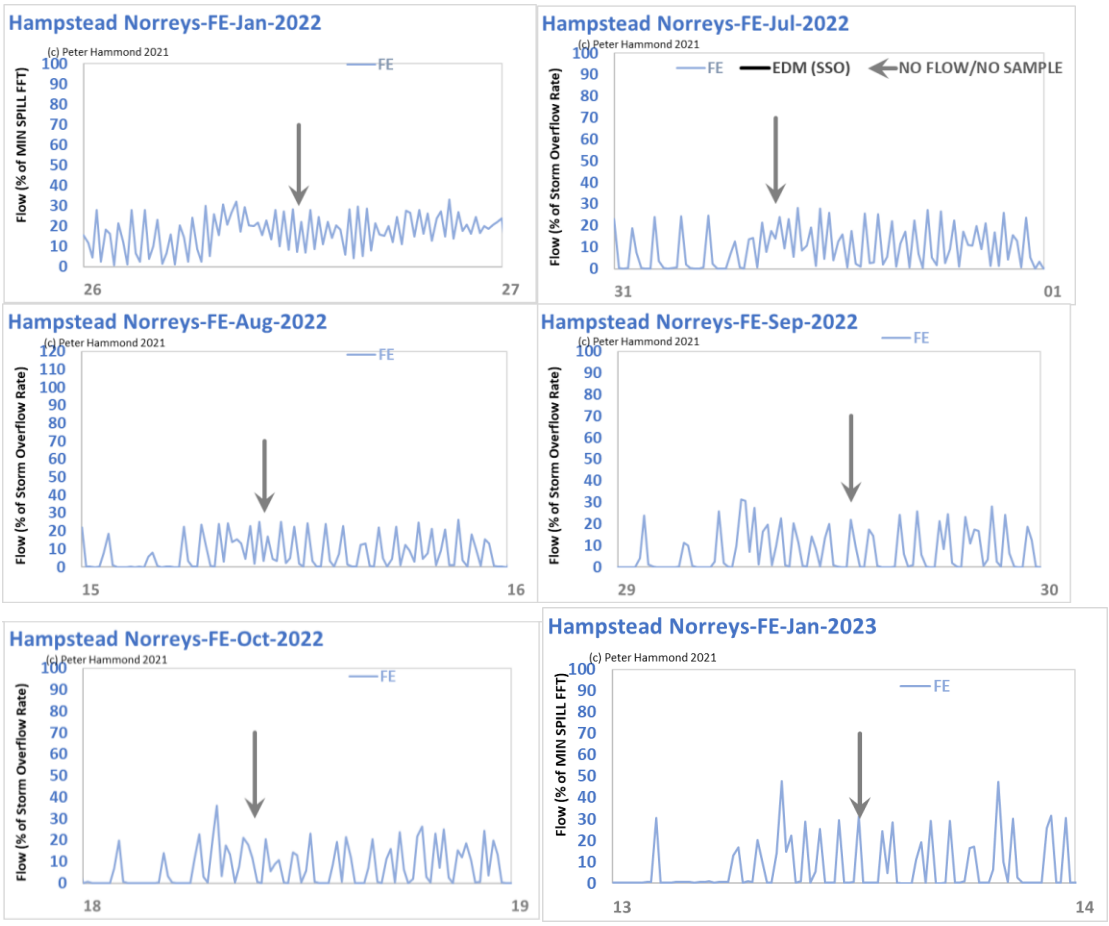


Figure 11: all OSM sample results for 2024 (up to June) for Hampstead Norrys STW

The "NO FLOW/NO SAMPLE" claims in 2022 and 2023 appear, in general, to coincide with some effluent flow (see below)



On the 5 days prior to the day of the no sample claim on November 11th 2024, the sewage flow to full treatment (FFT) was at about 80% of capacity and final effluent flow was at about 50%. Just before the time of the no flow sample, both flows drop to zero and a short time afterwards rise back to the previous levels (**Fig**. 12).

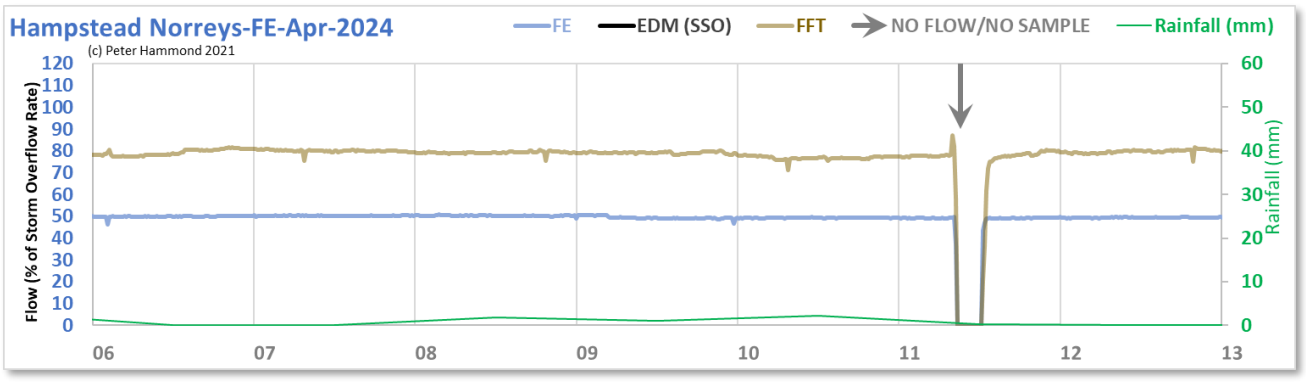


Figure 12: rainfall, untreated/treated sewage and OSM no flow at Hampstead Norreys STW in April 2024

The river level (**Fig**. 13) was raised during the first 5 months of 2024. Nevertheless, samples were obtained every month, apart from April when the no flow occurred (shown as **red arrow**). It seems unlikely, therefore that flooding of the outlet could be used as an excuse.

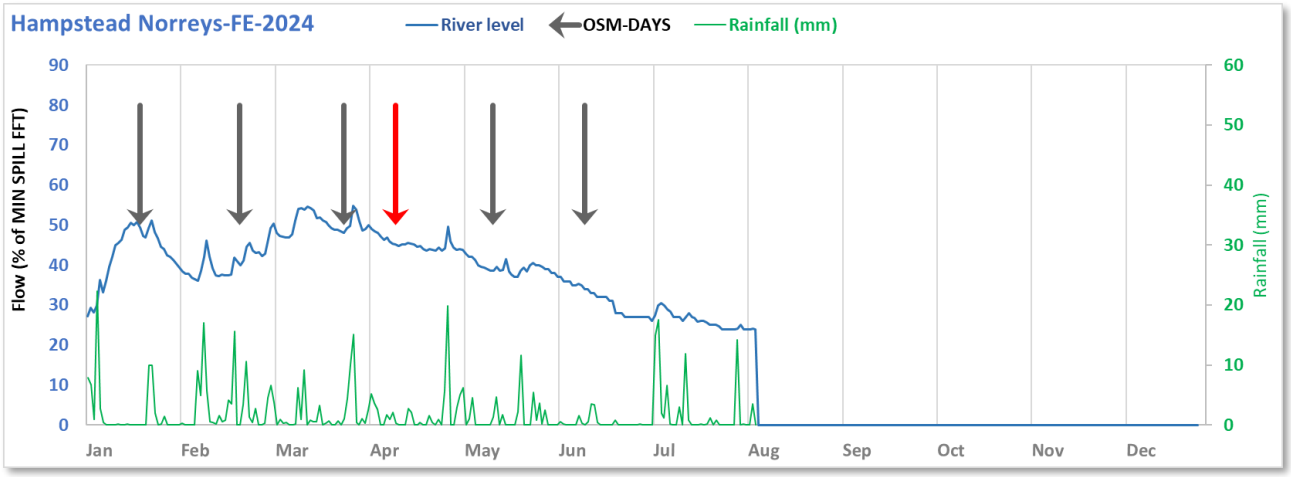


Figure 13: rainfall and river flow at Hampstead Norreys alongside 6 OSM sample dates in 2024

Response from Thames Water

Hampstead Norreys STW was sampled six times from January 2024 to June 2024 with five samples taken which all registered results well within permitted ranges. One sample, on April 11th was unable to be collected because there was no flow at the time the sampler arrived on site.

No explanation is provided here as to why there was no flow passed forward for treatment and no final effluent leaving the works starting just 1 hour before the sample was attempted on April 11th 2024.

C 5 UNITED UTILITIES GRASMERE STW Aug 1st 2022

At 11 am on August 1st 2022, a "NO FLOW/NO SAMPLE" OSM sampling attempt was recorded at United Utilities Grasmere STW.

NW-88004180 GRASMERE STW FULLY TREATED 01/08/2022 11:00 NO FLOW/SAMP 0

On the day of the "NO FLOW/NO SAMPLE" sample, treated effluent flow at Grasmere STW starts at 60%-70% of storm overflow capacity but drops to 0 at 10:45 am (**Fig**. 14). An OSM sample is attempted at 11 am but "no flow" is recorded and an hour or so later the flow jumps to over 100% capacity and then returns back to 60% to 70% etc. Was this no flow sample engineered or was it genuine?

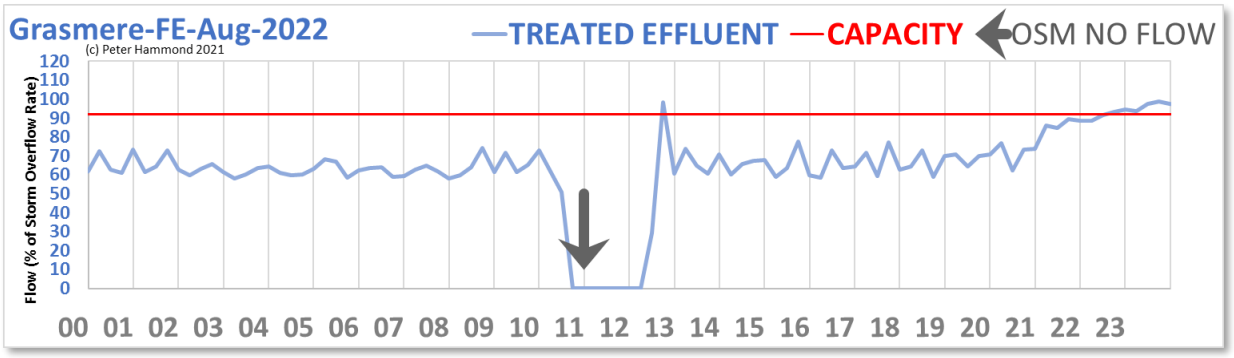
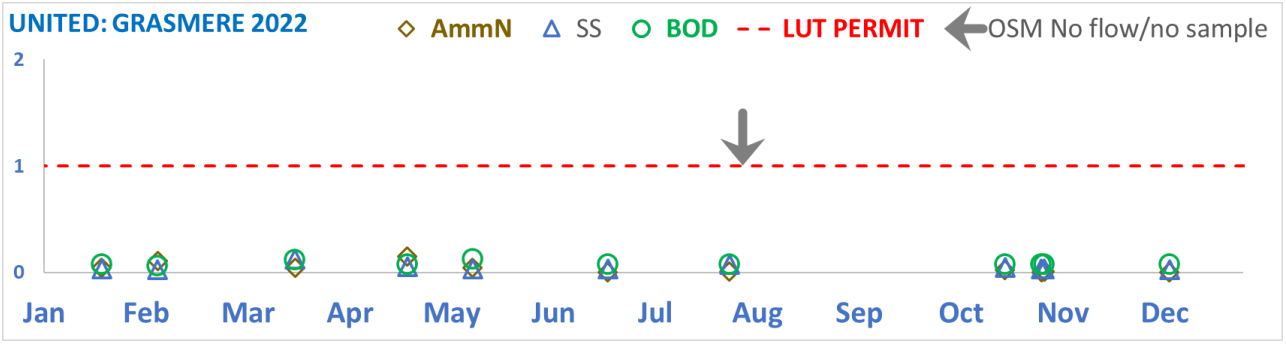


Figure 14: treated effluent flow, storm overflow capacity and OSM "no flow" on August 8th 2022

Response from United Utilities

The drop in flow at Grasmere was a result of an enhancement project to install new tertiary treatment feed pumps and tertiary treatment process units.

If the enhancement project was preplanned why was the sampler not warned that during this period there would be no point in attempting to take a sample?



Why did the sampler not reschedule? Why was no sample taken in September 2022?

C 6 ANGLIAN WATER THURLEIGH STW Jul 19th 2022

Thurleigh STW discharges to the Thurleigh Brook. On June 16th 2022, Anglian Water reported exceedances of Ammonia and BOD levels and according to records it provided to WASP, these are still under investigation. **Fig**. 15 shows 2022 OSM results for Thurleigh STW including the record of a "NO FLOW/NO SAMPLE" the following month on 19th July 2022 at 07:20 am.

AN-THURLEI THURLEIGH STW F/E 19/07/2022 07:20 NO FLOW/SAMP 0

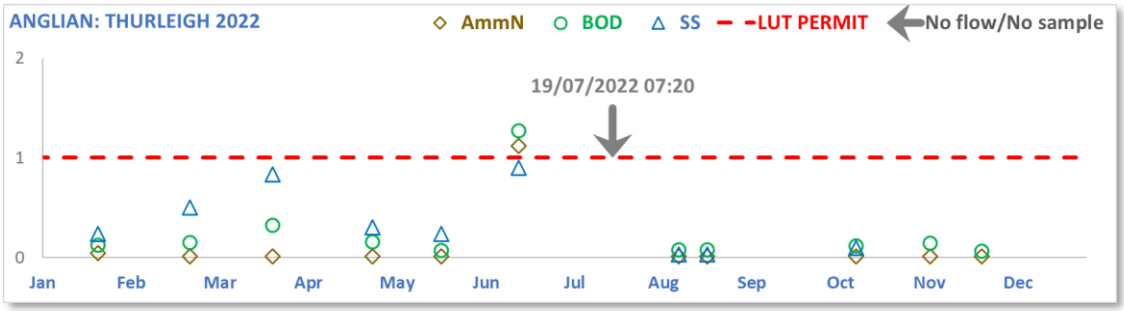


Figure 15**:** 2022 OSM data for Thurleigh STW with AmmN and BOD exceedances and a No FLOW/NO SAMPLE

WASP was provided with sewage treatment data by the EA that it had previously received from Anglian Water. **Fig**. 16 shows the final effluent flow and rainfall for 17th-20th July 2022. The final effluent flow drops dramatically to zero at 06:30 am, rises dramatically at 08:15 and in between is the record of a NO FLOW/NO SAMPLE at 07:20.

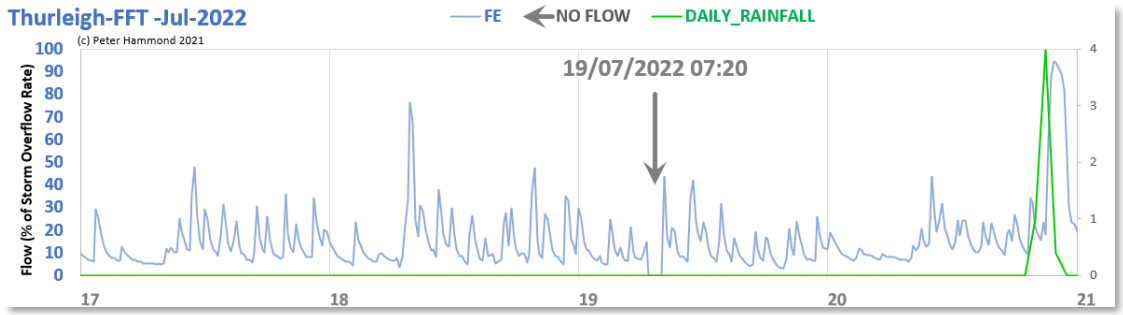


Figure 16: Final effluent flow for Thurleigh STW showing a gap in flow enveloping the NO FLOW/NO SAMPLE

Figure 17: photograph provided by Anglian Water of the outlet at Thurleigh STW on July 19th 2022

On request, WASP was provided with a photograph of the outfall pipe at Thurleigh STW (**Fig**. 17). The photograph's metadata confirmed it was taken at 2022:07:19 07:18:26.

No explanation was provided as to why the flow had dropped so suddenly and then risen again, just as suddenly, over a period of 105 minutes that coincided with an attempted OSM spot sample. There does not appear to have been a rescheduling of this failed sample.

Response from Anglian Water None as of October 22nd 2024

C 7 ANGLIAN WATER EVENLEY STW Sep 7th 2022

Evenley STW discharges to the Evenley Brook. In Autumn 2021 and Spring 2022, two final effluent OSM samples exceeded the LUT permit level for Suspended Solids (SS). These are shown in **Fig**. 18 along with 2 NO FLOW/NO SAMPLE results in the Autumn of 2022 within 12 months of the 2021 exceedance. Had either sample been taken, an exceedance of SS would have breached its permit.

AN-EVENLEY	EVENLEY STW F/E	07/09/2022 12:49	NO FLOW/SAMP	0
AN-EVENLEY	EVENLEY STW F/E	24/10/2022 11:31	NO FLOW/SAMP	0

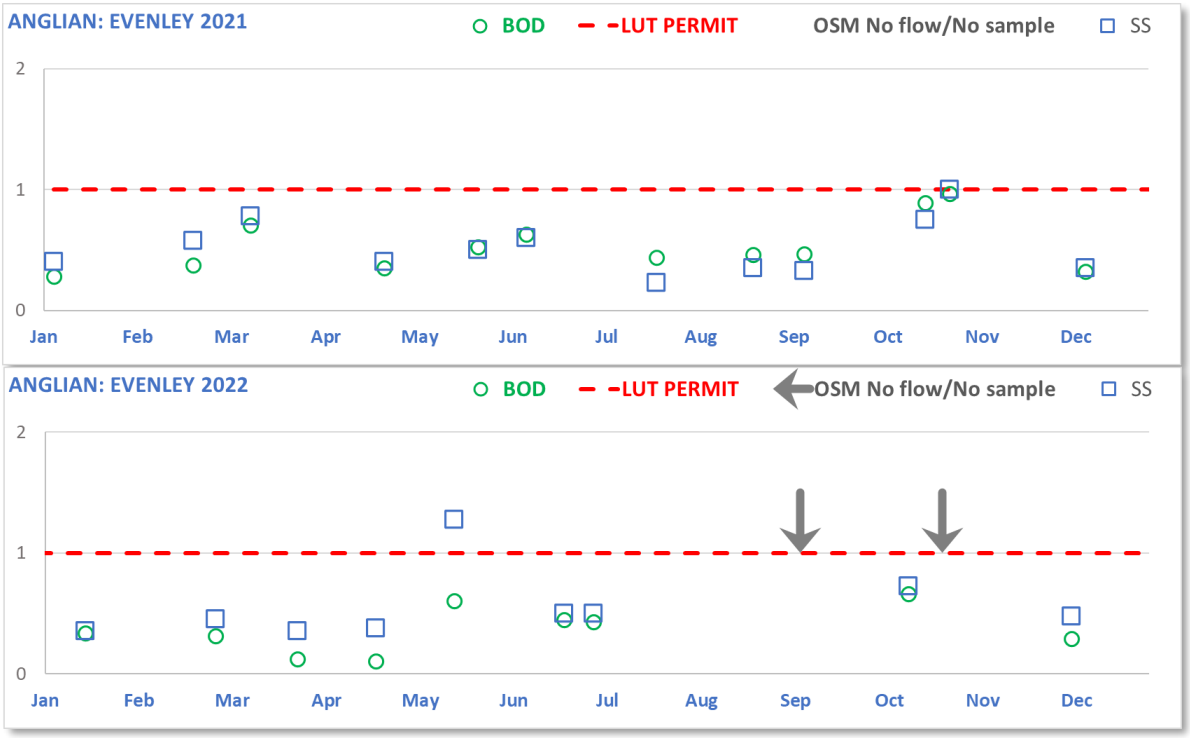


Figure 18: OSM test results for Evenley STW in 2021 and 2022 showing 2 NO FLOW/NO SAMPLE records within 12 months of the first of 2 SS exceedances

Final effluent (FE) flow data provided to WASP by the EA, and to the EA by Anglian Water, is shown in **Fig**. 19. The NO FLOW/NO SAMPLE claim coincides with less than 1 hour of low/no flow. Was this a coincidence or engineered to avoid a third exceedance and potentially a permit breach?

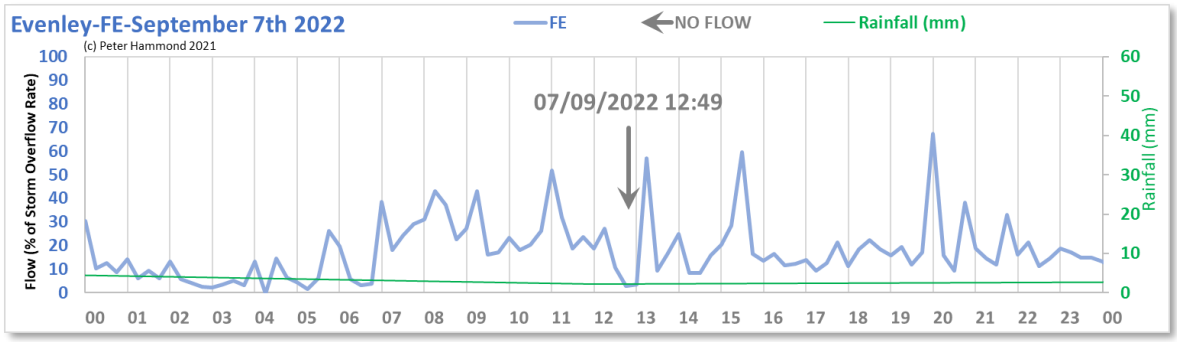


Figure 19: Final effluent on Sept 7th 2022 at Evenley STW showing gap in flow and NO FLOW/NO SAMPLE claim

Response from Anglian Water None as of October 22nd 2024

C 8-10 UNITED UTILITIES KIRKBY STEPHENS STW Mar 7th, Jun 15th, Aug 8th 2023

Kirkby Stephens STW discharges to the River Eden in Cumbria. It rises on Black Fell Moss and flows through the Vale of Eden and Solway Plain before it reaches the sea at Solway Firth. In 2023, Kirkby Stephens STW was struggling to keep *Iron* levels in its final effluent below the LUT permit level of 4,000 µg/l – in fact, it exceeded the limit on 2 occasions (**Fig**. 20).

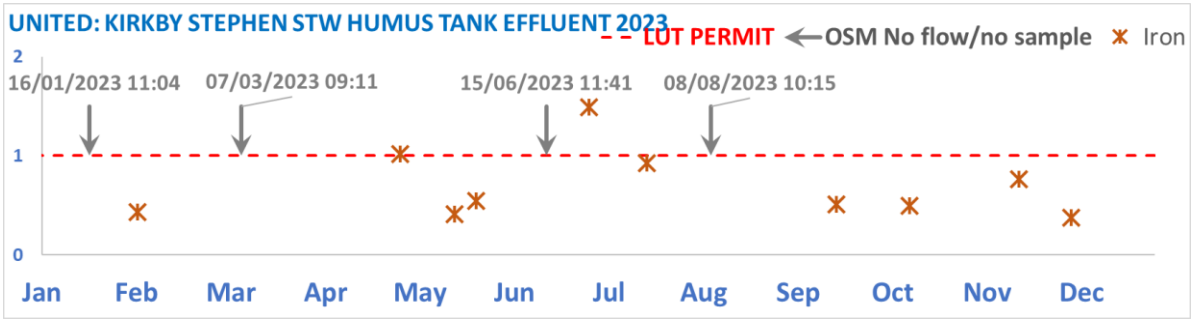


Figure 20: 2023 OSM data at Kirkby Stephens STW showing 2 Iron exceedances, 4 NO FLOW/NO SAMPLEs

The final effluent flow and rainfall data for Kirkby Stephen for March, June and August are shown in **Fig**. 21 Were the NO FLOW/NO SAMPLEs genuine or engineered to avoid Iron exceedances and a permit breach? Three of them coincide with sudden gaps in final effluent flow.

NW-88006017	KIRKBY STEPHEN STW HUMUS TANK EFFLUENT	07/03/2023 09:11	NO FLOW/SAMP	0
NW-88006017	KIRKBY STEPHEN STW HUMUS TANK EFFLUENT	15/06/2023 11:41	NO FLOW/SAMP	0
NW-88006017	KIRKBY STEPHEN STW HUMUS TANK EFFLUENT	08/08/2023 10:15	NO FLOW/SAMP	0

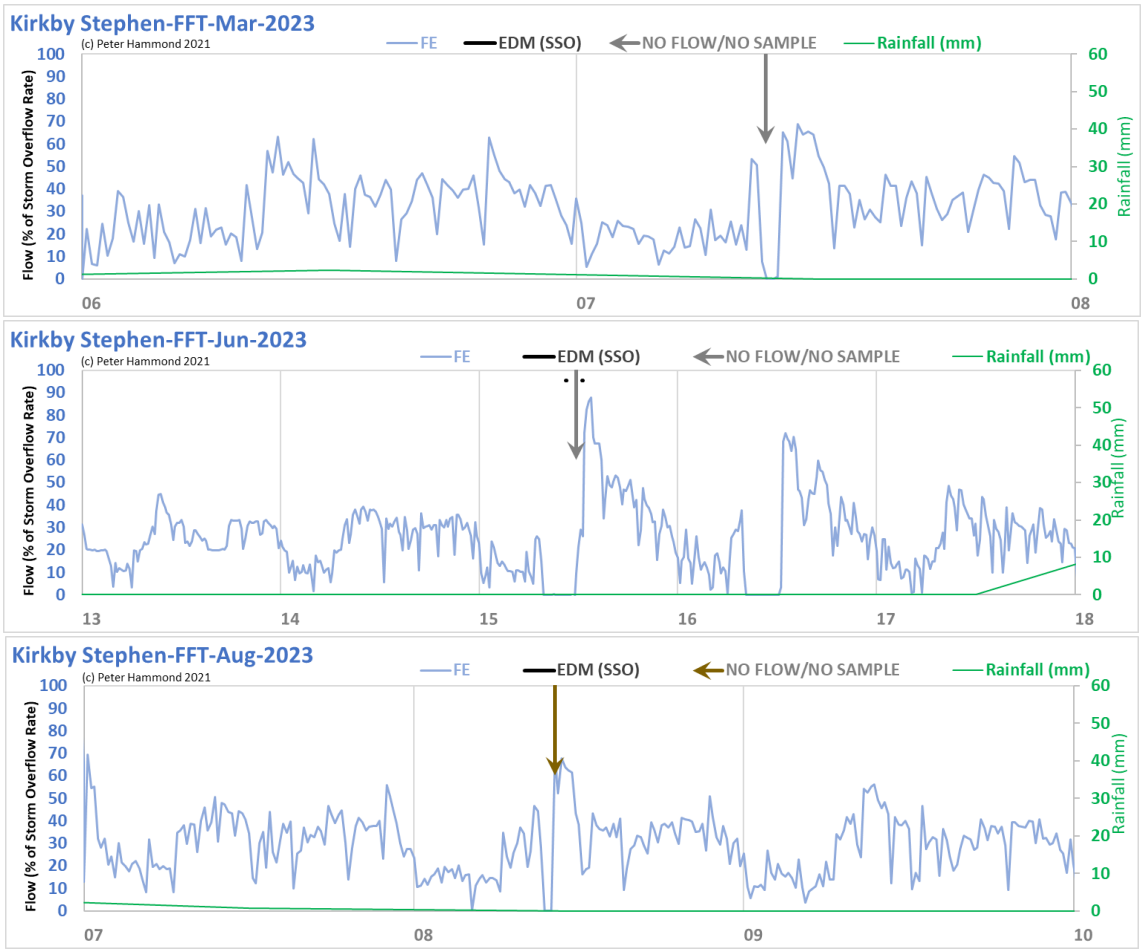


Figure 21: final effluent flow data for Kirkby Stephen STW
showing gaps in flow coinciding with NO FLOW/NO SAMPLE claims

When WASP asked for the supporting evidence for the 2023 "NO FLOW/NO SAMPLE" claims, United Utilities said that these were to be reviewed by the Environment Agency in October 2024 and withheld the supporting evidence:

> *"For 2023 there are 4 no flow/no sample events these are subject to review by the Environment Agency (EA) at the Operator Monitoring Assessment (OMA) which is due to occur in October 2024 when the evidence is submitted to them, as such we deem the supporting evidence as internal correspondence subject to Regulation 12(4)(e) of the EIR. The supporting evidence will be available on conclusion of the OMA and the acceptance of evidence stipulated by the EA."* United Utilities

United Utilities also said in the same reply that 3 other "NO FLOW/NO SAMPLE" claims were to be considered by the Environment Agency in 2025:

> *"For 2024 there are currently 3 no flow/no sample events and which will also be subject to review by the EA at our Operator Monitoring Assessment (OMA) in 2025. Therefore the 2024 supporting evidence is being withheld as internal communications under Regulation 12(4)(e) of the EIR. The supporting evidence will be available on conclusion of the OMA and the acceptance of evidence stipulated by the EA."* United Utilities

The three 2024 "NO FLOW/NO SAMPLE" claims occurred within a week in late January (**Fig.** 22).

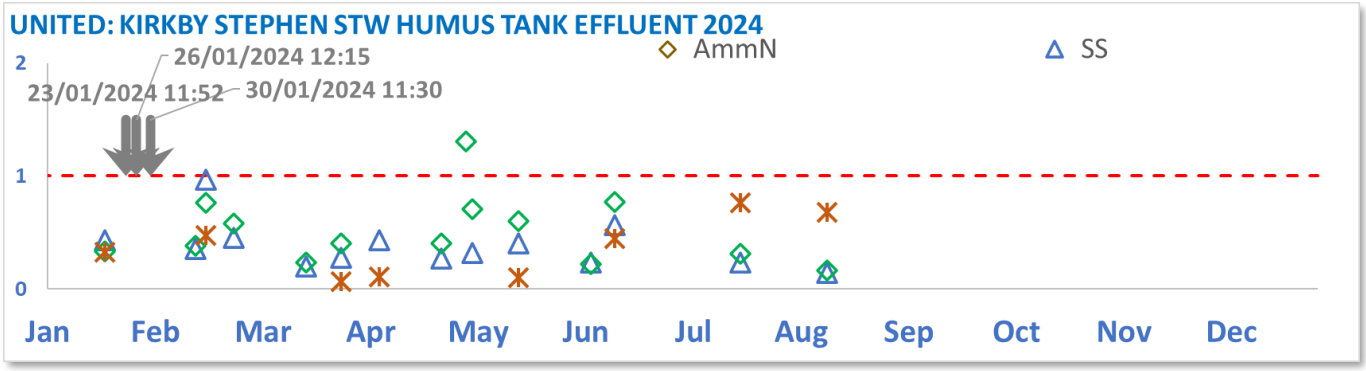


Figure 22: 2024 OSM data for Kirkby Stephen STW with 3 "NO FLOW/NO SAMPLE" claims and an AmmN exceedance

By this time, there had been a breach of permit (likely for Iron) and therefore, according to Environment Agency rules, the frequency of OSM sampling was doubled to 24 times per year until a period of 12 months without any permit exceedance.

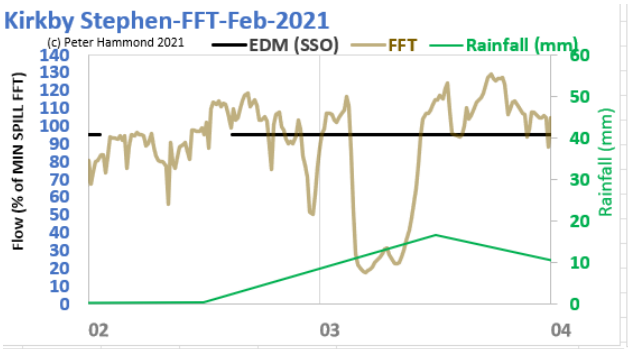
Unfortunately, WASP has not been able to examine the final effluent flow corresponding to these "NO FLOW/NO SAMPLE" claims as United Utilities has withheld the data.

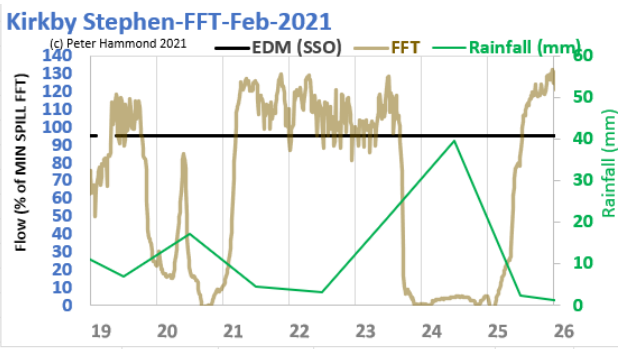
Response from United Utilities

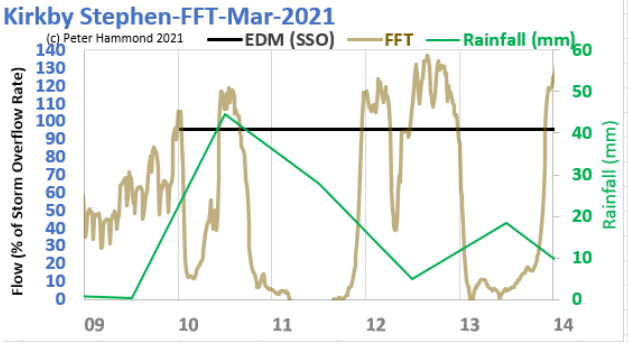
To ensure the site remained compliant with its Iron permit level, new additional treatment capacity was installed with the first batch being in August 2022 and the second additional batch of equipment installed in November 2022. The Environment Agency was notified of the change. This new equipment results in an intermittent flow pattern and periods of no flow.

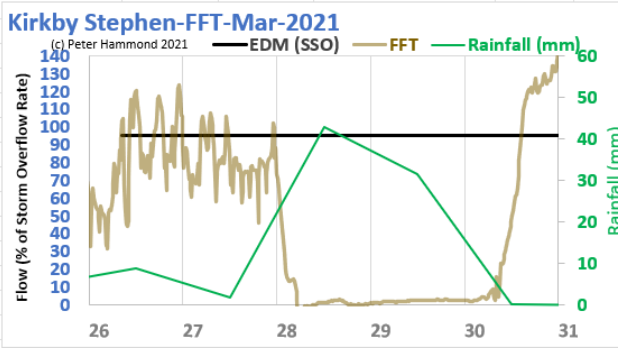
United Utilities cites new equipment as resulting in "an intermittent flow and periods of no flow". But, Kirk Stephens STW has displayed periods of no flow for several years, especially when discharges of untreated sewage are made via its storm tank overflow (see below)

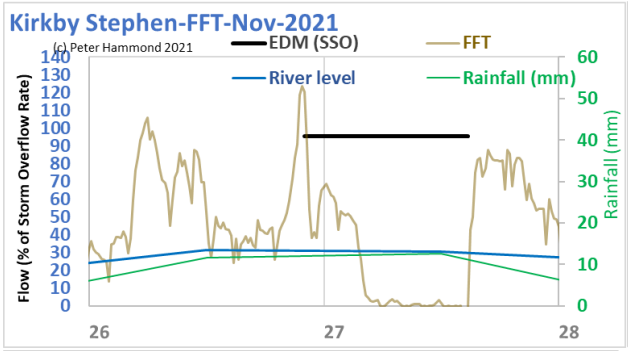
.

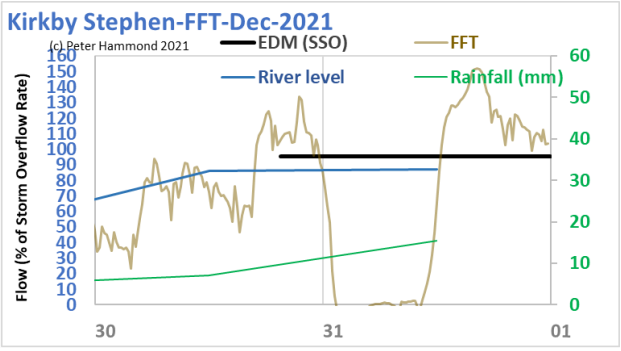

Kirkby Stephen-FFT-Feb-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of MIN SPILL FFT)
Rainfall (mm)
02
03
04

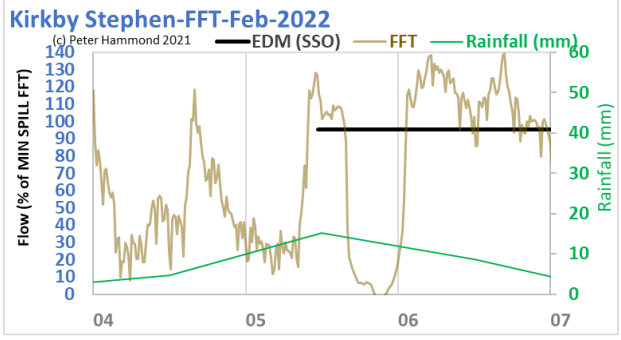

Kirkby Stephen-FFT-Feb-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of MIN SPILL FFT)
Rainfall (mm)
19
20
21
22
23
24
25
26

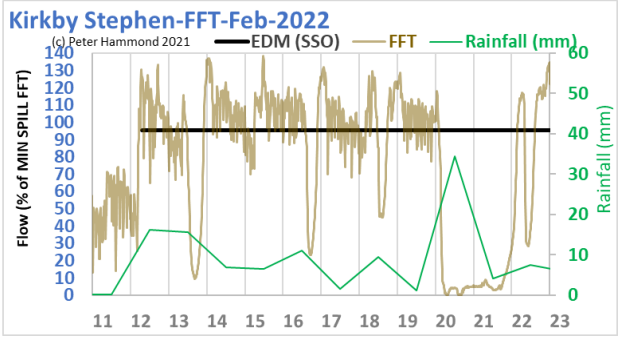

Kirkby Stephen-FFT-Mar-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of Storm Overflow Rate)
Rainfall (mm)
09
10
11
12
13
14


Kirkby Stephen-FFT-Mar-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of Storm Overflow Rate)
Rainfall (mm)
26
27
28
29
30
31


Kirkby Stephen-FFT-Nov-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
River level
Rainfall (mm)
Flow (% of Storm Overflow Rate)
Rainfall (mm)
26
27
28


Kirkby Stephen-FFT-Dec-2021
(c) Peter Hammond 2021
EDM (SSO)
FFT
River level
Rainfall (mm)
Flow (% of Storm Overflow Rate)
30
31
01


Kirkby Stephen-FFT-Feb-2022
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of MIN SPILL FFT)
Rainfall (mm)
04
05
06
07


Kirkby Stephen-FFT-Feb-2022
(c) Peter Hammond 2021
EDM (SSO)
FFT
Rainfall (mm)
Flow (% of MIN SPILL FFT)
Rainfall (mm)
11
12
13
14
15
16
17
18
19
20
21
22
23

C 11 ANGLIAN WATER DEREHAM STW May 9th 2023

Dereham STW discharges to the Wendling Beck, a tributary of the River Wensum - one of Norfolk's chalk streams.

In 2023, Anglian Water recorded 2 "NO FLOW/NO SAMPLE" claims which do not appear to have been rescheduled for repeat sampling attempts (**Fig**. 23).

AN-DEREHAM	DEREHAM STW F/E	09/05/2023 11:29	NO FLOW/SAMP	0
AN-DEREHAM	DEREHAM STW F/E	20/10/2023 12:50	NO FLOW/SAMP	0

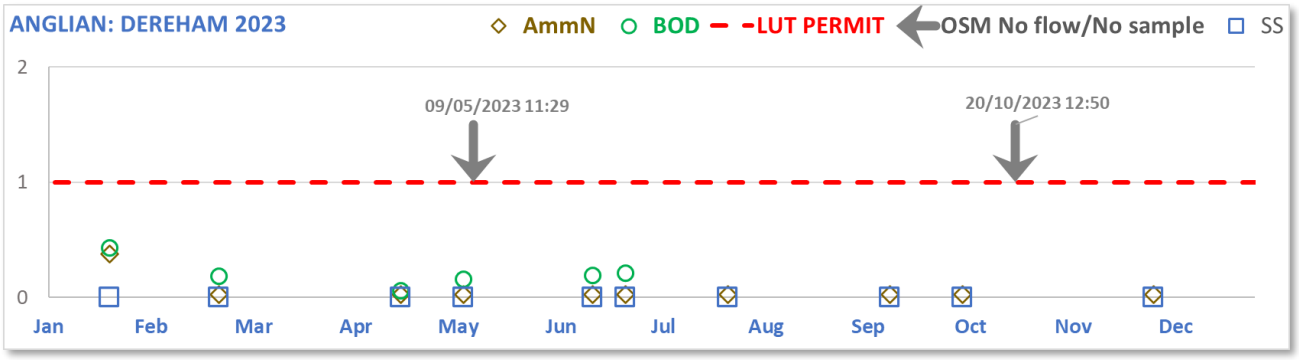


Figure 23: OSM data for 2023 for Dereham STW

WASP obtained Anglian Water's own sewage flow and EDM spill monitoring data. **Fig**. 24 shows a gap in final effluent flow and the time at which a NO FLOW/NO SAMPLE was recorded.

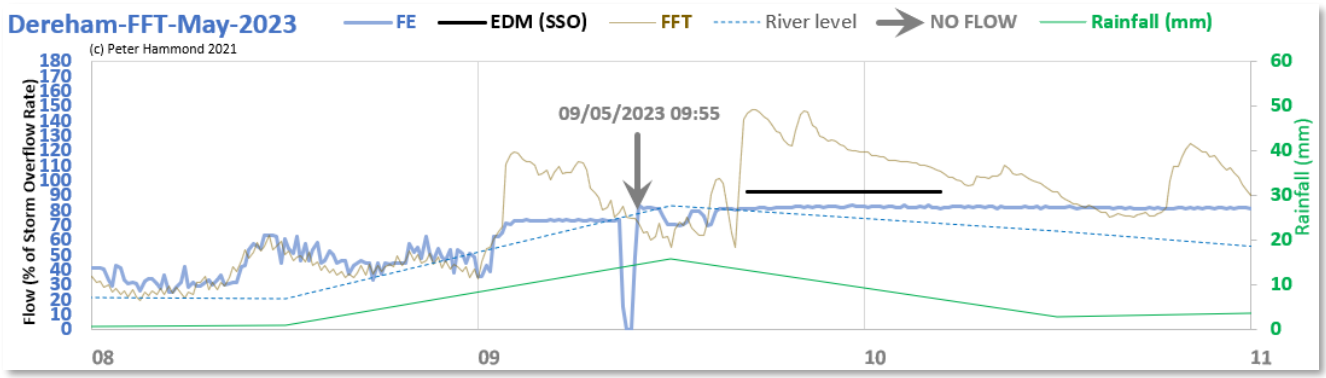


Figure 24 OSM data for 2023 for Dereham STW

The river level (dotted line in Fig. 24) was obviously high during this period and the outlet may have been flooded. Yet, the flow to full treatment continues and the final effluent is shown as dropping to zero and then rising again as the SPOT sample is attempted but recorded as failing. WASP would like to see evidence that establishes this NO FLOW/NO SAMPLE as genuine.

Response from Anglian Water

This example was not presented to Anglian Water for a response.

Nether Peover STW is a very small works (**Fig**. 25a) and serves a population equivalent of about 300. It is unusual in that it discharges both treated and untreated sewage to a pond in the middle of a field (**Fig**. 25b) which drains into a drainage ditch that appears dry much of year.

Figure 25: a) Nether Peover STW; b) Pond receiving discharges from Nether Peover STW (both images: Google Earth)

In Jan and April 2022, Nether Peover STW recorded 3 OSM permit exceedances – 2 for BOD and 1 for AmmN. For May and June, 2 NO FLOW/NO SAMPLE claims were made (**Fig**. 26). Were these genuine or engineered to avoid a third exceedance and an associated permit breach?

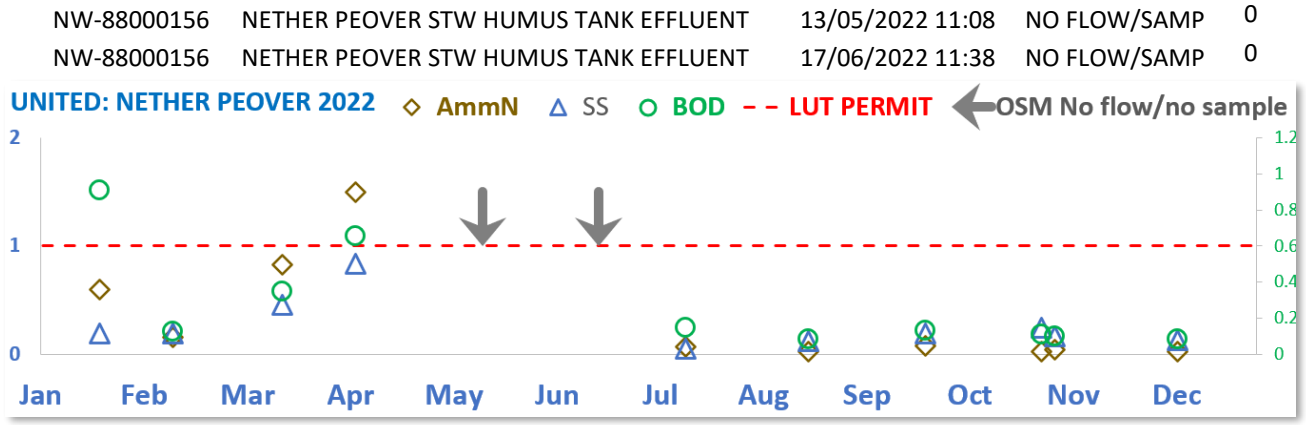


Figure 26: 2022 OSM data for Nether Peover STW

WASP obtained sewage treatment flow and EDM data for Nether Peover from the EA who had been supplied with the data by Anglian Water as part of the EA's current investigations into WaSCs.

Fig. 27 shows the May and June flow data (UU-TDV), rainfall and both NO FLOW/NO SAMPLE claims.

Because of the nature of the small size and close proximity of the catchment the rise and fall of sewage flow will typically occur in a diurnal pattern resulting in a spikiness of the pattern which might also arise from pumping to push treated sewage out of the works in a regular fashion. The times at

which the OSM samples are attempted and are recorded as NO FLOW/NO SAMPLE appear to coincide with points at which the pump is not in operation. Was this an accident of timing or was it a deliberate ploy during the attempted sampling to coincide with low or no flow?

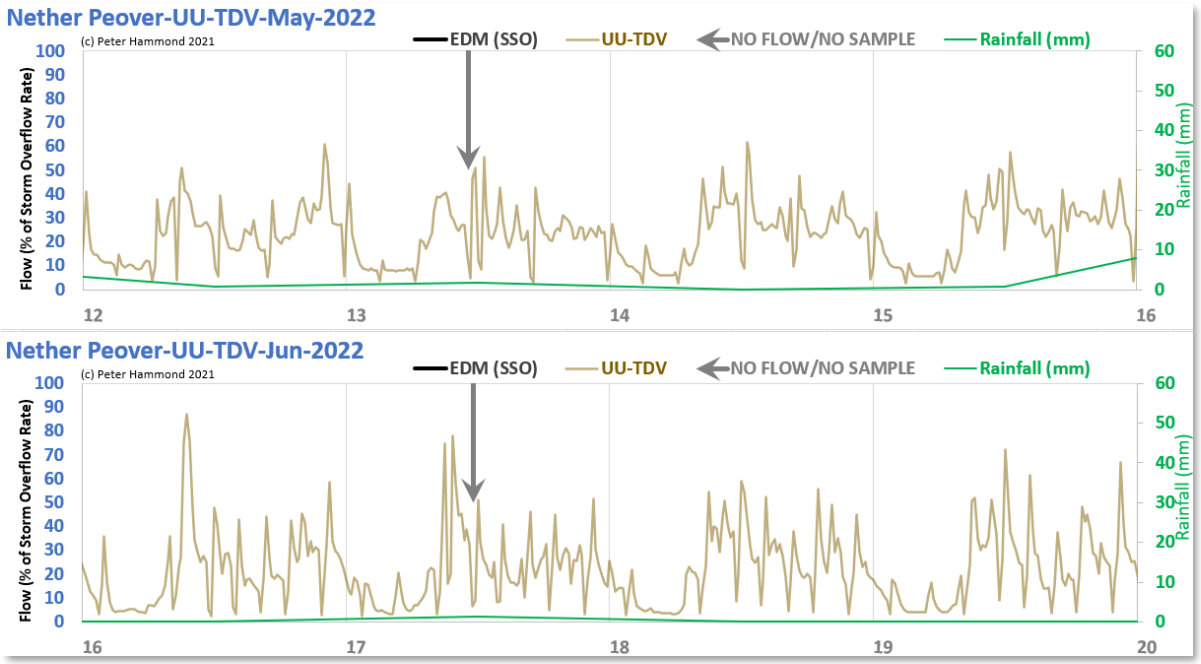


Figure 27: flow data with gaps coinciding with OSM NO FLOW/NO SAMPLE claims

Response from United Utilities

These examples were not presented to United Utilities for a response.

C 14-15 THAMES WATER THAME STW Apr 8th, May 5th 2021

Thame STW discharges to the River Thame. A summary chart for final effluent for Thame STW for 2021 is shown in **Fig**. 28. Notice that there are just two periods of loss of flow data – in April and May.

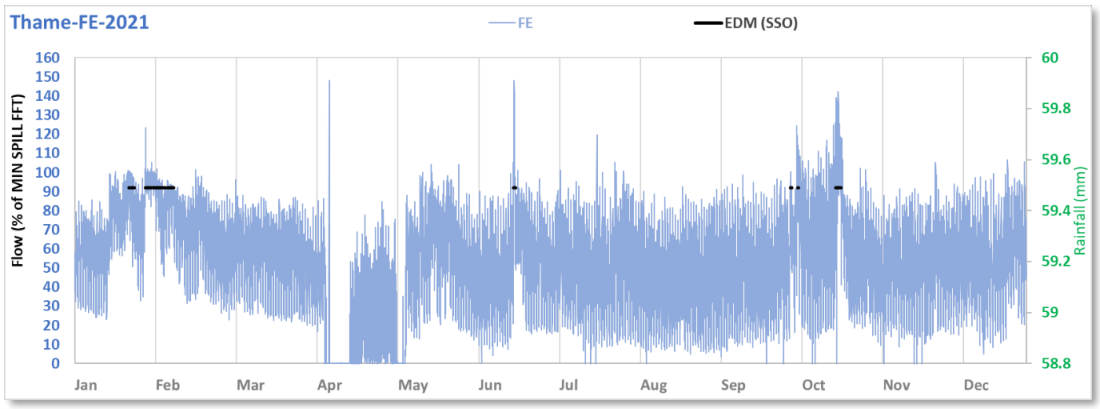


Figure 28: 2021 overview for Thame STW showing final effluent (FE) and sewage spills

In February and March 2021, there were 3 OSM exceedances – 1 for AmmN and 2 for BOD (**Fig**. 29).

TH-PTAE0076	THAME STW	08/04/2021 07:50	NO FLOW/SAMP	0
TH-PTAE0076	THAME STW	05/05/2021 08:25	NO FLOW/SAMP	0

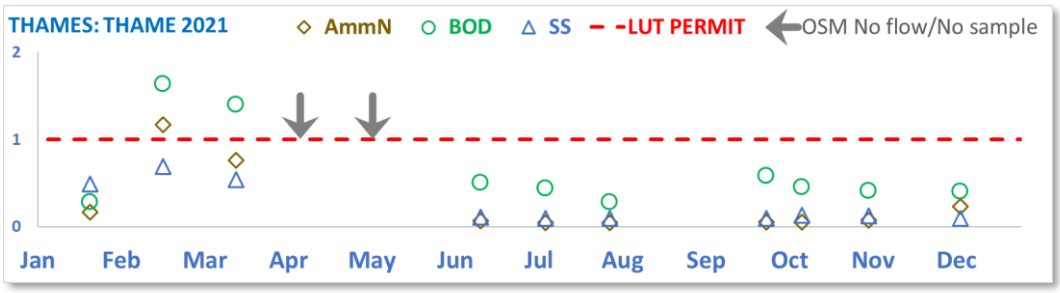


Figure 29: 2021 OSM data for Thame STW with 3 exceedances & 1 NO FLOW/NO SAMPLE claims

Obviously, a third BOD exceedance would have caused a permit breach. The flow data for April and May show how the NO FLOW/NO SAMPLEs fall in the two extensive gaps in the flow data (**Fig**. 30). Were these genuine or contrived?

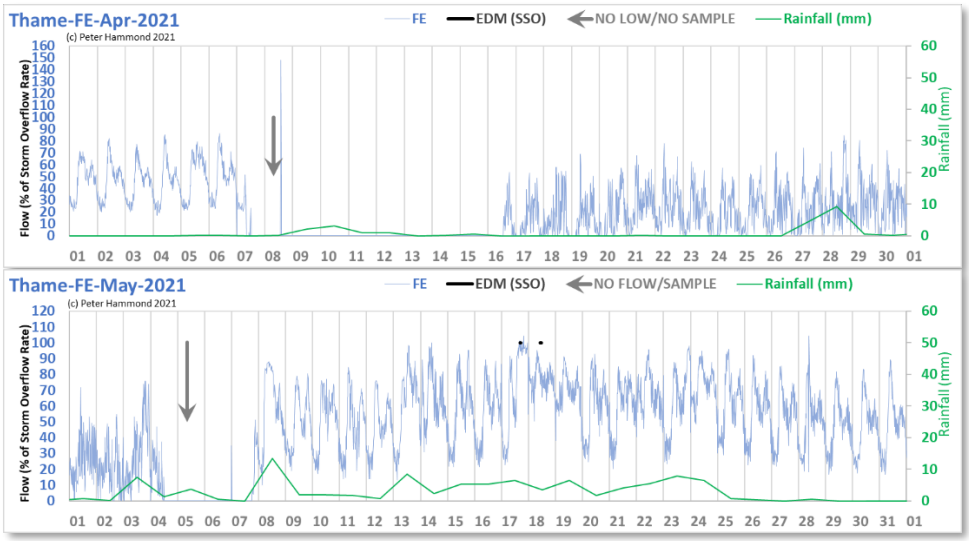
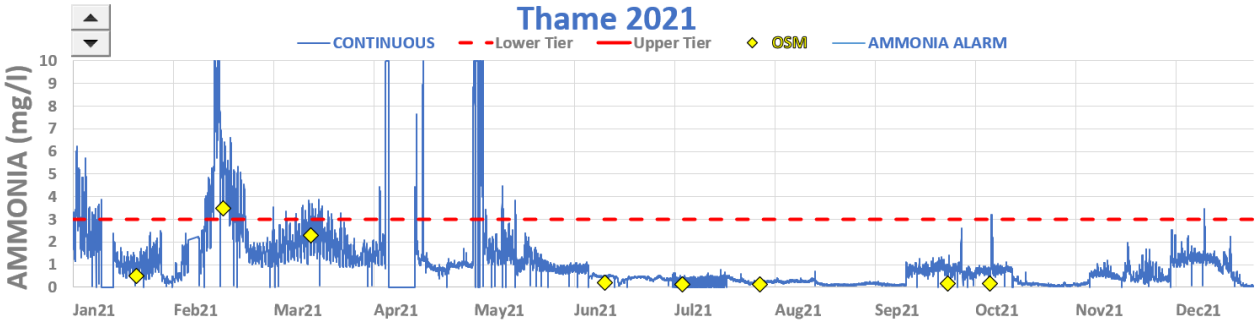
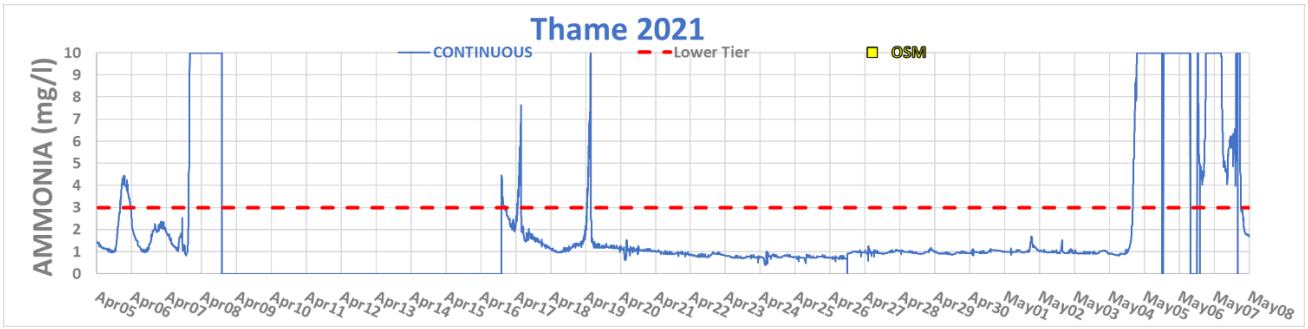


Figure 30: final effluent for April and May 2021 for Thames STW

WASP had previously obtained continuous sonde data (blue curve, **Fig.** 31a) for AmmN from Thames Water for 2021. The continuous monitoring data agrees well with the OSM SPOT sample results.



a)



b)

Figure 31: AmmN continuous sonde data for Thames STW for 2021

The continuous sonde data also suggest that Thame STW had breached its LUT permit threshold several times between April 5th and May 8th (**Fig**. 31b)

Response from Thames Water

In April and May 2021, Thame STW was offline for extended periods of planned maintenance and its flow was being tankered to other sites. Given the site was offline on and around the days when a tester visited the site, its unsurprising there was no flow to test. Again a reminder that operational teams do not know when a test is going to take place.

It may be the case that Operational staff are unaware of when samplers might visit works, but surely the sampling team should be made aware of planned maintenance in order to avoid a wasted journey. By allowing samplers to visit sewage works where it is known that a “NO FLOW/NO SAMPLE” is highly likely because of maintenance, WaSCs are abusing OSM default compliance when sampling is not possible.

C 16-17 THAMES WATER CLANFIELD STW May 20th, Jun 19th 2024

Clanfield STW discharges to the Clanfield Brook and has been notorious in recent years for illegal spilling. At the beginning of 2024, Clanfield STW spilled extensively for 2,694 hours (**Fig**. 32).

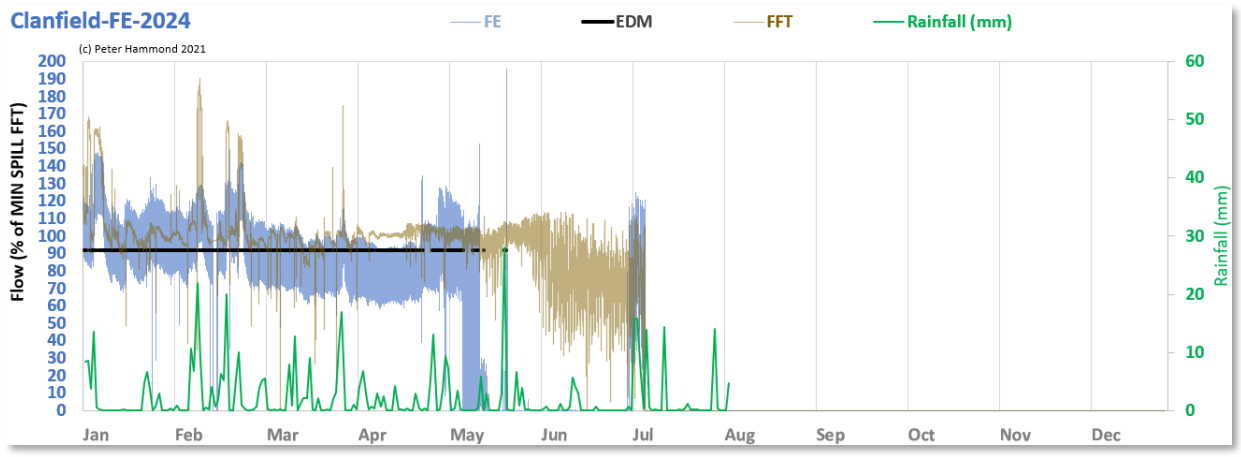


Figure 32: extensive spilling (2,694 hours) at Clanfield STW in the first 5 months of 2024

By May 2024, Clanfield STW had recorded 2 exceedances of BOD and in the two following OSM SPOT test attempts made NO FLOW/NO SAMPLE claims (**Fig** 33).

TH-PUTE0049	CLANFIELD STW	20/05/2024 09:25	NO FLOW/SAMP	0
TH-PUTE0049	CLANFIELD STW	19/06/2024 07:06	NO FLOW/SAMP	0

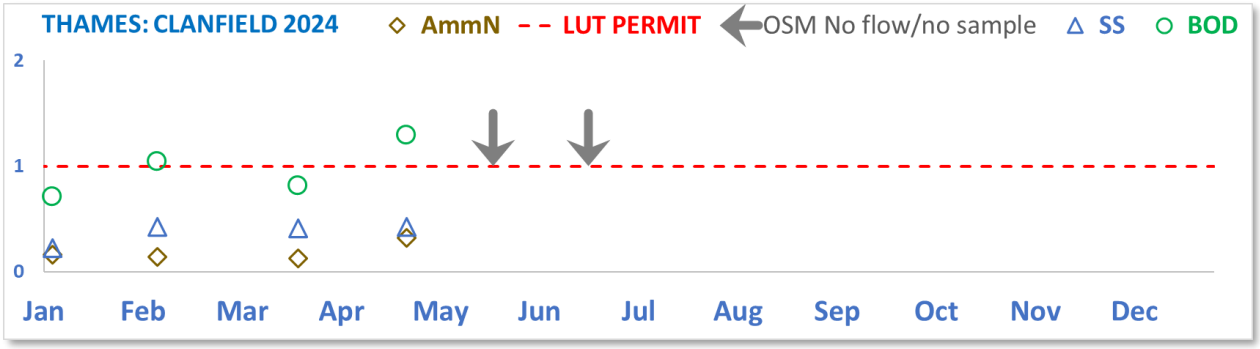


Figure 33: OSM results for 2024 (to July) for Clanfield STW
including 2 exceedances of BOD and two NO FLOW/NO SAMPLE claims

As can be seen in **Fig**. 34, the final effluent flow raises its head occasionally, while flow to full treatment goes ahead as do spills of untreated sewage, and dies completely in June (**Fig** 35).

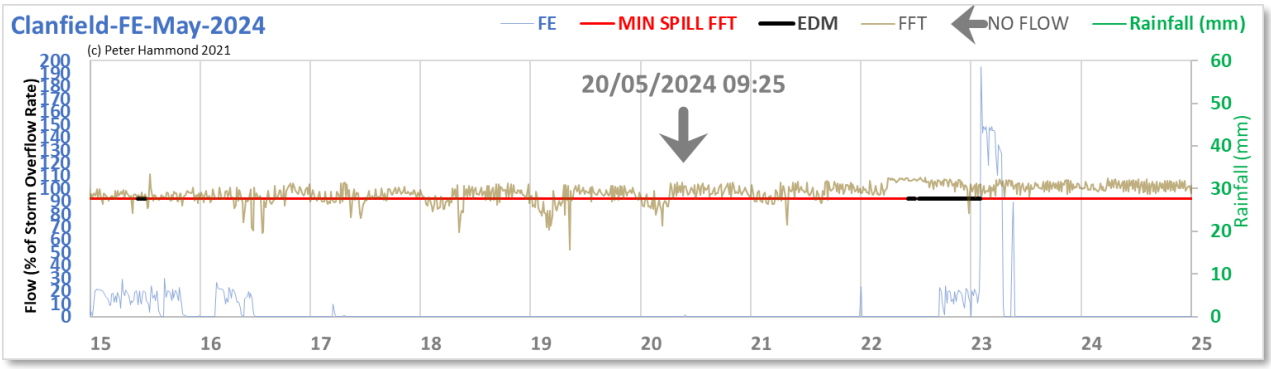


Figure 34: flow to full treatment and final effluent flow at Clanfield STW towards the end of May when one of the NO FLOW/NO SAMPLE claims is made

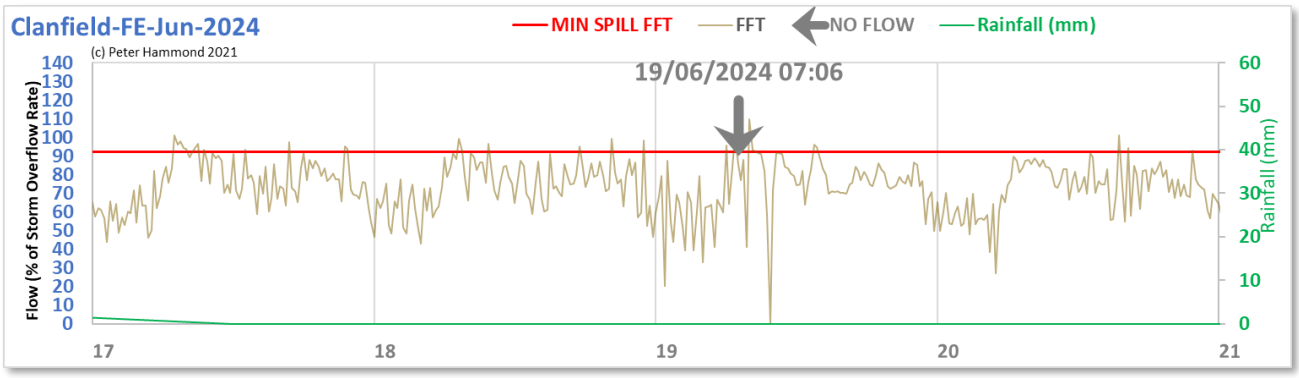


Figure 35: flow to full treatment at Clanfield STW towards the end of June when the second of the NO FLOW/NO SAMPLE claims is made

In fact, Thames Water had started to tanker the contents of the Final Settlement Tank at Clanfield STW to Witney STW (**Fig.** 36).

Figure 36: tankering of "treated sewage" from Clanfield STW to Witney STW in 2024 (photo: Geoff Tombs)

It is possibly unfair to cite this example, but it does show how potential permit breaches can be avoided especially when a works such as Clanfield STW is failing dramatically.

C 18-19 YORKSHIRE WATER FLAXTON STW Feb 24th 2021, May 3rd 2022

Flaxton STW serves a small village population. **Figure** 37 shows 1 exceedance of BOD and 5 exceedances of AmmN in the final effluent at Flaxton STW between 2020 and 2022 as well as "NO FLOW/NO SAMPLE" claims in 2021 and 2022.

NE-49100376	FLAXTON WPC WORKS FINAL EFFLUENT	24/02/2021 10:10	NO FLOW/SAMP	0
NE-49100376	FLAXTON WPC WORKS FINAL EFFLUENT	03/05/2022 09:10	NO FLOW/SAMP	0

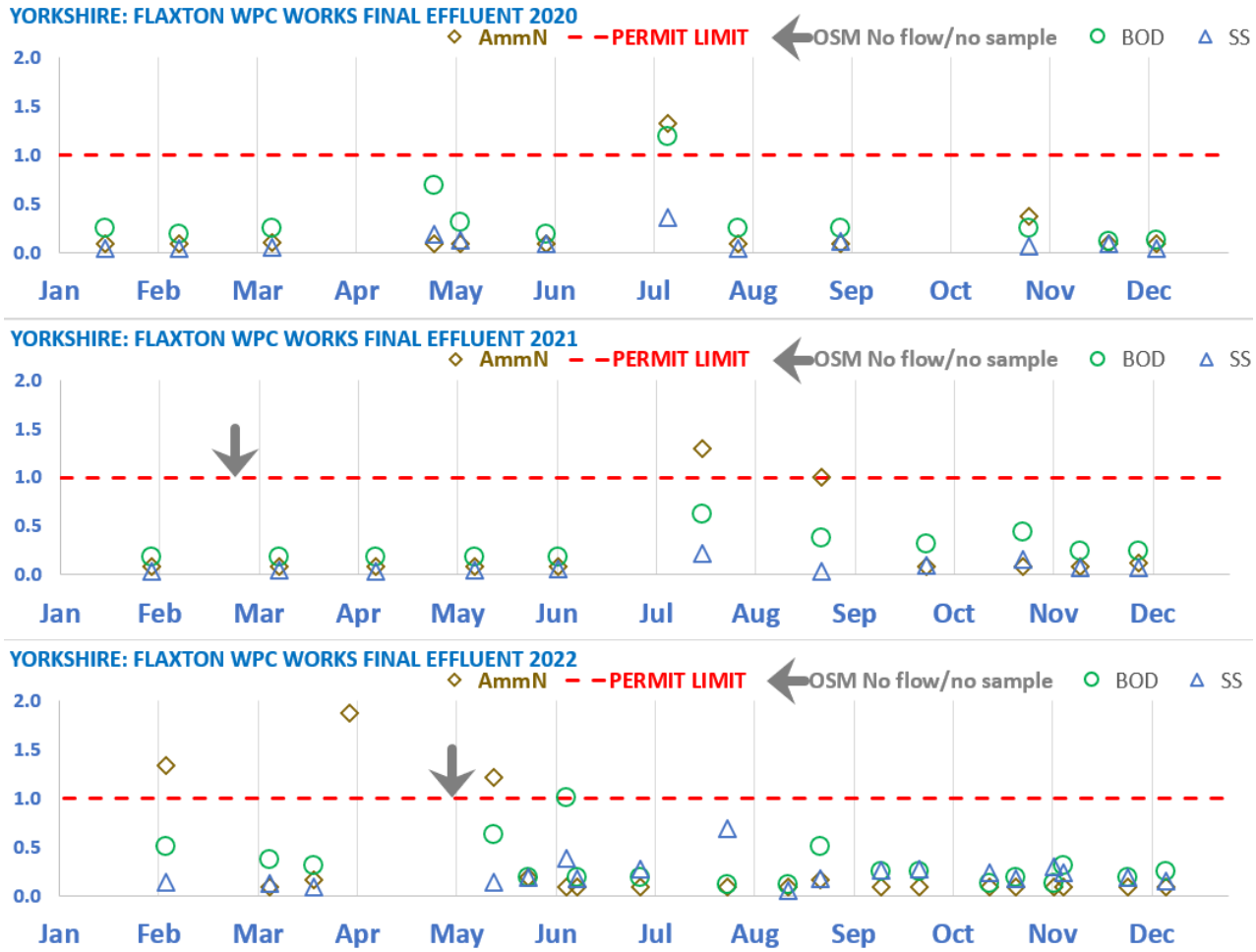


Figure 37: OSM data for Flaxton STW for 2020, 2021 and 2022 showing several exceedances of Ammonia

The final effluent flow covering the period of the "NO FLOW/NO SAMPLE" at 10:10 am on February 24th 2021 (**Fig**. 38) shows a rapid fall and rise between about 7 am and 3 pm. During the same period, the flow being passed for full treatment continues in an unchanged fashion. Moreover, the EDM appears to be recording short illegal "dry" spills on every pulse of sewage sent to treatment.

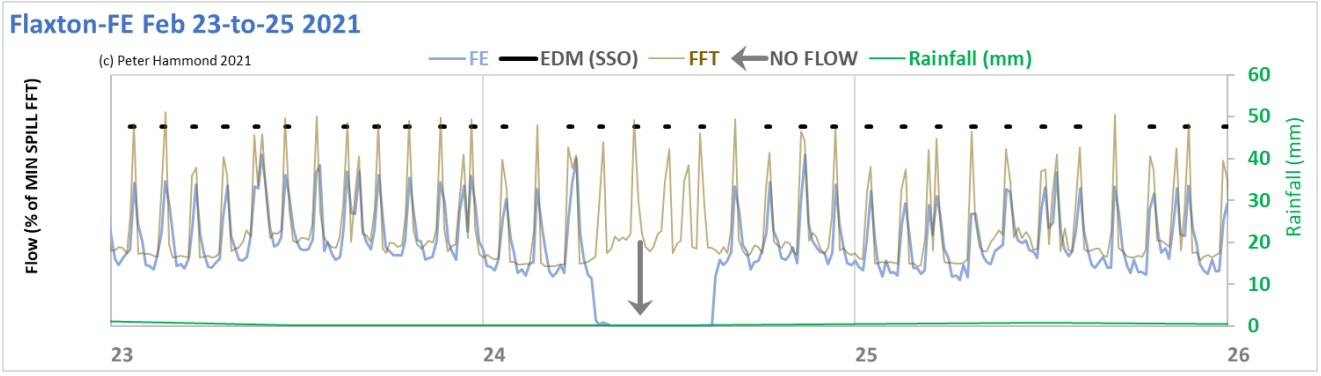


Figure 38: flow to treatment and final effluent flow data for Flaxton STW for Feb 23-25 2021

Was this a genuine loss of final effluent or was it engineered? If the final effluent had been diverted temporarily for this 8-hour period, say to a holding tank while maintenance was undertaken, would this not be reflected in some sort of catch up flow in the final effluent after 3 pm? Is it being tankered away at the same as an OSM sample is attempted? If so, surely the sampling team would have been aware and rescheduled the OSM visit.

The second "NO FLOW/NOSAMPLE" claim occurred on May 3rd 2022 by which time there had been 4 exceedances of AmmN in the previous 12 months and a further one in the next month. By this time, Flaxton STW has breached its AmmN permit condition and had instituted extra OSM sampling, 24 times per year, as can be seen by the 12 tests undertaken in the latter half of 2022.

The flow data including the "NO FLOW/NO SAMPLE" claim in May 2022 is given in **Fig.** 39.

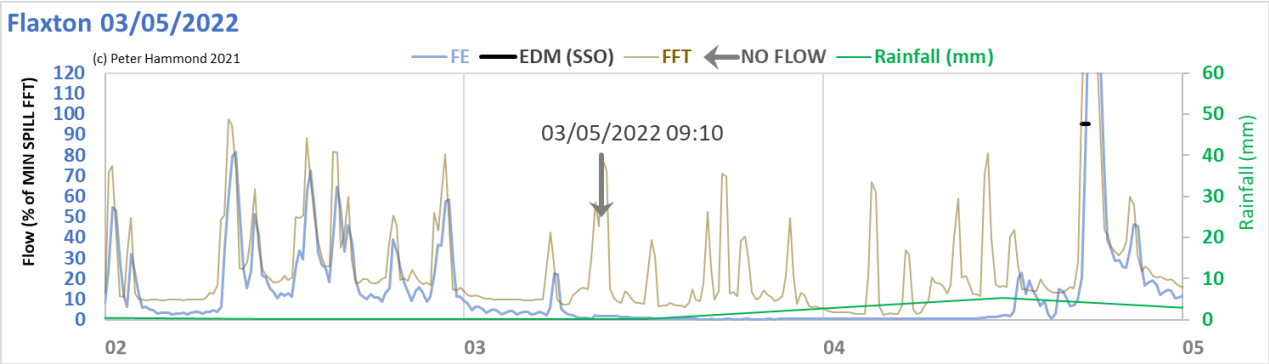


Figure 39: final effluent data for Flaxton STW for Apri; 29th to May 5th

Coinciding with this "NO FLOW/NO SAMPLE" claim in May 2022, there is no or negligible flow of final effluent for about 25 hours. As with the previous "NO FLOW/NO SAMPLE" claim, throughout this hiatus in final effluent the flow to full treatment is maintained. Thus, the question arises again, where does the missing final effluent go. Is it being tankered away at the same as an OSM sample is attempted? If so, surely the sampling team would have been aware and rescheduled the OSM visit.

Response from Yorkshire Water

We've analysed activity at Flaxton on 24th February 2021 and we have established that the no flow event was due to routine planned activity to maintain the health and ongoing performance of the treatment works. Such an activity is completely typical for treatment processes such as those deployed at Flaxton. Tankering takes place regularly at Flaxton to remove sludge from the rotating biological contactor (RBC) to protect the works and ensure it continues to treat wastewater effectively. This process drops levels in the RBCs and it takes time for them to refill due to it being a small rural catchment and it is normal for final effluent flows to take time to recommence.We have records of the tankering process at this works and the final effluent on, and in the period before, the 24th February 2021, and there were no concerns about the quality of the final effluent. The 24th February 2021 sample was correctly categorised as a no flow sample.

C 20 UNITED UTILITIES KNUTSFORD STW Sep 21st 2022

Knutsford STW discharges to the Birkin Brook and serves a population of 13,546. In 2021-2022, it was struggling to satisfy some of its permit thresholds (**Fig**. 40) with an exceedance for BOD in 2021 and exceedance for AmmN in December 2022.

NW-88000976	KNUTSFORD STW TERTIARY TREATMENT	21/09/2022 11:31	NO FLOW/SAMP	0
NW-88000976	KNUTSFORD STW TERTIARY TREATMENT	14/11/2022 11:41	NO FLOW/SAMP	0

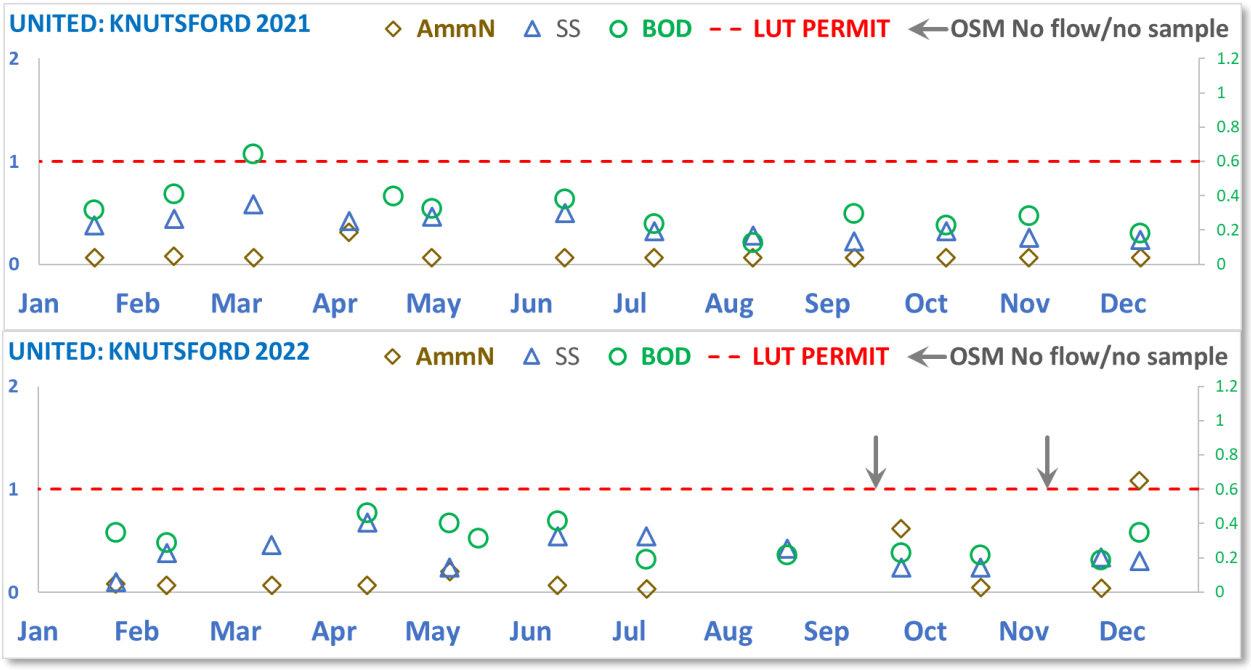


Figure 40: 2021 and 2022 OSM data for Knutsford STW

Two NO FLOW/NO SAMPLE claims were made in 2022 for 21st September and 14th November. The corresponding final effluent flow data for the first claim is shown in **Fig**. 41.

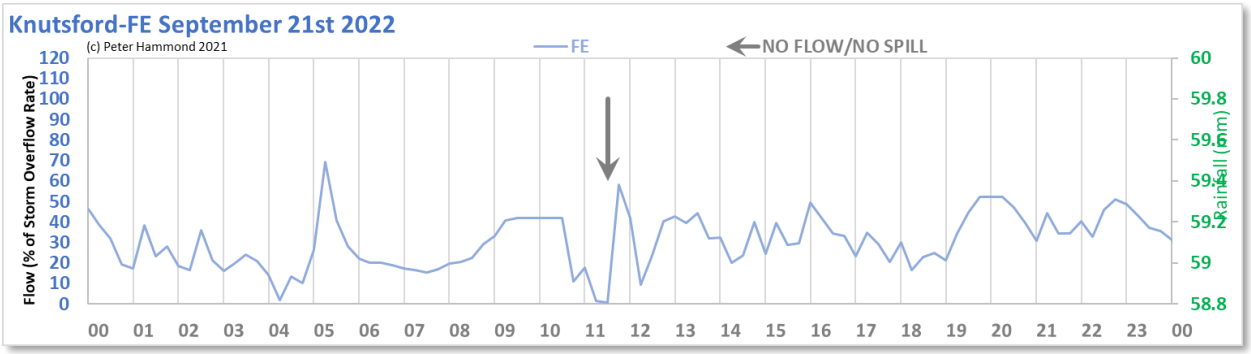


Figure 41: final effluent flow for Knutsford STW for September 21st 2022

The final effluent begins to drop rapidly at 10:30 am and rises quickly at 11:30 am with the attempted SPOT sampling failing at 11:31 am. Was this a genuine loss of flow or was it artificially engineered?

Response from United Utilities

An electrical power failure in the local network resulted in a drop in flow at Knutsford. Power was restored quickly, and the plant brought back into full operation.

C 21 SEVERN TRENT WATER BLACKMINSTER STW Jul 26th 2022

Blackminster STW serves a population of 8,119 and discharges to the Badsey Brook, a tributary of the River Avon in Worcestershire. Severn Trent Water was fined £1 million in December 2021for an incident at Blackminster STW in 2018 when it failed to respond to alarms at the works and an estimated 360,000 litres of untreated sewage were discharged to the Badsey Brook[5].

WASP had not been able to access the EA permit for Blackminster STW before completing this report, so that the OSM sampling results could not be compared to permitted thresholds. The raw test results for 11 of the usual 12 OSM samples are shown in Table 2:

Table 2 OSM data	AmmN	BOD ATU	Iron as Fe	SS
31/01/2022 12:45	1.7	< 1	77	4
16/02/2022 11:15	< 0.41	< 1	40	4
11/03/2022 09:00	< 0.41	1	58	10
07/04/2022 10:00	< 0.41	< 1	47	12
23/05/2022 11:55	< 0.41	3	109	8
13/06/2022 15:05	0.96	< 1	66	7
11/08/2022 10:05	< 0.41	< 1	57	8
21/09/2022 15:05	< 0.41	< 1	126	8
07/10/2022 11:10	< 0.41	1	433	10
26/10/2022 12:00	< 0.41	3	99	6
03/11/2022 10:15	< 0.41	4	90	6

Instead of a sample test result for July 2022, a “NO FLOW/NO SAMPLE” claim was made (**Fig.** 42).

MD-07687500 BLACKMINSTER STW, FE (GRASS PLOT) 26/07/2022 12:05 NO FLOW/SAMP 0

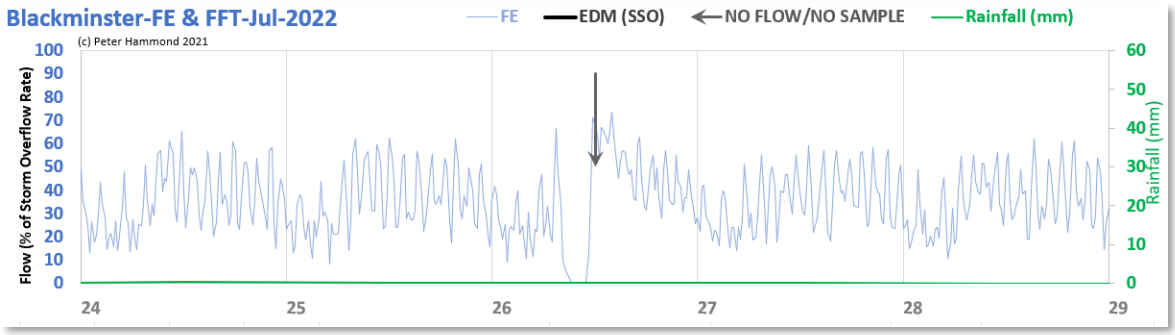


Figure 42: final effluent data for Blackminster STW for July 24-28 2022 showing a sudden loss of flow coinciding with the “NO FLOW/NO SAMPLE” claim

The final effluent data shows a sudden loss of flow for about 3 hours that coincides with the “NO FLOW/NO SAMPLE” claim. Interestingly, when commenting about an earlier WASP report describing illegal spills at Colwall STW which involved sudden changes of flow rates, Severn Trent said:

chart of Colwall shows a totally unrealistic drops in flow levels Severn Trent

Did this “NO FLOW/NO SAMPLE” involve a genuine loss of flow or was it artificially engineered?

Response from Severn Trent Water

Our regulatory sampler (ALS) attended site as there was “no flow” in the sample chamber so as per our documented procedure we captured photographic evidence & investigated the cause. It was a blockage in the chamber so the action was to “clean anoxic chamber to ASP” It was recorded, reported and actioned as per the usual procedures / so is essentially an operational site issue that was identified, looked in to and sorted - the suggestion of anything else is absolutely absurd.

[5] https://www.worcesternews.co.uk/news/19771061.severn-trent-fined-1-5million-leaking-sewage-worcestershire-water/

PREVIOUS WASP REPORTS

2021 Mar	**Detection of untreated sewage discharges to watercourses using machine learning** WASP publishes first AI research on automated detection of sewage spills	
Nov	**Wasp Review Of Unpermitted Spills From Sewage Treatment Works – Part 1 Thames Water** WASP reveals 700+ illegal spills by Thames Water	
2022 Jan	**Wasp_Review_Of_Unpermitted_Spills_From_Sewage_Treatment_Works –Part 2** WASP reveals 2,400 illegal spills by 7 water companies: Southern, South West, Thames, United Utilities, Welsh, Wessex & Yorkshire.	
Sept	Wasp Review of Unpermitted Spills From Sewage Treatment Works – Part 3 EDM Submissions WASP reveals dodgy sewage spill monitoring data submitted to EA by Water Industry.	
2023 Feb	The failure of Operator Self-Monitoring WASP shows how self-testing of sewage treatment quality has failed and how the system can be manipulated by Water Companies.	
May	Effective regulation of untreated sewage discharges needs volumetric and catchment-based monitoring WASP estimates volumes of sewage spills and shows how pollution exposure progresses down a river catchment from the headwaters.	
Aug	Sewage spills and infrastructure: don't blame the Victorians WASP dispels the myth about Victorian sewerage networks. Only 12 % of all sewers in England are Victorian in age.	
Oct	Illegal sewage discharges to 11 Welsh rivers 2018 to 2023 WASP shows 2,274 days with illegal sewage discharges to 11 Welsh rivers from 2018 to 2023 and reveals that one, Cardigan STW, has been in breach of its permit for a decade without criminal prosecution.	
2024 Jun	**Event duration monitors are not fit for purpose** WASP demonstrates that even when sewage spill monitors are working they often generate inaccurate data. In 2026, such data is planned to be a metric for the EA's annual review of water companies – "a system built on sand".	
Oct	**Reports on illegal spills by Severn Trent Water and United Utilities** WASP provides evidence that two of the UK's 4* rated companies may have made more than 1,300 illegal sewage discharges in 2021 and 2022.	