

## Sewage Discharges at Stratfield Mortimer Sewage Works

### Introduction

In May 2021 Mike Edmondson raised with SMPC (via Danusia Morsley and Graham Bridgman) whether SMPC received reports on sewage discharges into Foudry Brook. In general, water companies can have permits to release storm discharges of partially treated and untreated sewage into rivers and streams.

Graham contacted Thames Water requesting information and Thames Water's reply is given in Appendix 1. The reply confirms that discharges take place and records are kept as Event Duration Monitor Data (EDM) which gives the timing of discharges.

Mike Edmondson commented on this reply (Appendix 2) which included the statement that between January and March 2021 the discharge averaged 15 hours per day and requested this be brought to the attention of SMPC.

### Examination of EDM Data

It seemed that some further examination of the EDM data might be useful.

An example of the EDM data for Mortimer Sewage Works for 2019 is show below.

TimestampStart	TimestampEnd	Sum of DurationMins	Sum of DurationHours
04/02/2019 12:32	08/02/2019 05:10	5318.4	88.64
08/02/2019 05:18	13/02/2019 13:27	7689.033333	128.1505556
13/02/2019 13:31	17/02/2019 04:30	5218.116666	86.9686111
12/03/2019 13:45	13/03/2019 02:28	763.633333	12.72722222
13/03/2019 02:32	13/03/2019 03:27	54.85	0.914166667
13/03/2019 03:35	13/03/2019 04:25	49.933333	0.832222217

The records show when discharge starts and finishes and the duration of the spill. Note that this an automatic system and there are often short breaks between spills. The first three lines illustrate this; there is a break of 8 minutes between 05:10 and 05:18 on the 8<sup>th</sup> Feb and a break of 4 minutes on 13<sup>th</sup> Feb. Thus, effectively the discharge starts on 4<sup>th</sup> Feb and finishes on 17<sup>th</sup> Feb.

This pattern is repeated throughout the data as shown in the following tables (one for each year). The first entry is for the discharge referred to above. The total duration is the sum of spill durations over this period and the length of the overall period is also given in both minutes and days. Percentage is the percentage of the overall period that discharge occurred.

Thus the discharge from 4<sup>th</sup> to 17<sup>th</sup> Feb lasted 12.67 days with discharge occurring 99.9 % of the period.

During spring and summer there are relatively few periods each lasting between 3 and 8 days.

However, in the winter the periods are long.

7th Nov to 31<sup>st</sup> Dec 2019 is 54.9 days (discharge 97.9% of the time). In fact this continues for the first 4.15 days in 2020 so the duration of discharge is 59 days. There is then a break of 8 days but then there is another long period of 67 days from 13th Jan 2020 to 21 March 2020. Thus between 7<sup>th</sup> November 2019 and 21<sup>st</sup> March 2020 there is only one spell of 8 days without discharge.

In October and November 2020 there is a spell of 51.9 days (though lower at 85.5% of the period from 3<sup>rd</sup> October to 25<sup>th</sup> November). Another spell started on 13<sup>th</sup> December and continues to the end of the year (18.4 days at 100% of the period) and this then extended in the first 7 days of 2021. Another spell started on 16<sup>th</sup> January and lasted until 25<sup>th</sup> February (39.7 days with 97.6%).

<b>Period</b>	<b>Total Dur Mins</b>	<b>Period minutes</b>	<b>Percent</b>	<b>Days</b>
04/02/19 to 17/02/19	18,226	18,238	99.93	12.67
12/03/19 to 20/03/19	8,812	10,815	81.48	7.51
10/06/19 to 14/06/19	4,577	4,614	99.19	3.20
13/10/19 to 21/10/19	11,131	11,407	97.58	7.92
26/10/19 to 30/10/19	4,920	4,890	100.60	3.40
07/11/19 to 31/12/19	77,384	79,087	97.85	54.92

<b>Period</b>	<b>Total Dur Mins</b>	<b>Period minutes</b>	<b>Percent</b>	<b>Days</b>
01/01/2020 to 05/01/20	5,980	5,980	100.00	4.15
13/01/20 to 21/03/21	93,693	96,721	96.87	67.17
27/08/20 to 30/08/20	3,289	3,289	99.99	2.28
03/10/20 to 25/11/20	63,874	74,745	85.46	51.91
13/12/20 to 31/12/20	26,491	26,491	100.00	18.40

<b>Period</b>	<b>Total Dur Mins</b>	<b>Period minutes</b>	<b>Percent</b>	<b>Days</b>
01/01/21 to 08/01/21	8,402	10,185	82.49	7.07
16/01/21 to 25/02/21	55,798	57,144	97.64	39.68
13/03/21 to 17/03/21	5,051	5,263	95.97	3.65

Thus, it is very clear that for much of that for 2019/2020 discharge happened throughout the late Autumn, winter and spring with a total of 126 days between 7<sup>th</sup> November 2019 and 21<sup>st</sup> March 2020.

In 2020/21 there were a total of 117 days between 3<sup>rd</sup> October 2020 and 25<sup>th</sup> February 2021.

The data only start in February 2019 so it is not possible to draw conclusions about the 2018/2019 winter period (Note it is not clear whether the data start in February 2019 or whether there were no spills in January 2019). In the absence of rainfall data for Stratfield Mortimer, data from the University of Reading site at Whiteknights were examined briefly. The total rainfall October to March Inclusive was 502 mm in 2019/20 and 433 mm in 2020/21 compared to the 1980 to 2010 mean of 347 mm (ie: 144% and 125% respectively). Thus, these years were wetter than average but 2020/21 was not excessively so. It is appreciated that there are limitations on the use of such data which are included to give some general context.

Thames Water also provided the same data sets for Reading Sewage Treatment Works. These show far far fewer discharges than Mortimer. These are summarised by the two measures in the table below. The Environmental Agency Guidelines state that the number of spills are counted using the 12 – 24 hour method. This means that any spills within the first 12 hours of a discharge count as one spill and subsequently all discharges within the next 24 hours also count as one spill.

Year	Counted Spells (12-24 hr method)		Total Duration all spills (hours)	
	Mortimer	Reading	Mortimer	Reading
2019	96	0	2084.15	104.39
2020	144	16	3222.12	267.41
2021	70	4	1154.40	34.75

These two measures are the national standard and all water companies have to submit an annual return to the Environmental Agency. From 2021 the data are available on line, see:

[Event Duration Monitoring data published by the Environment Agency - Defra in the media \(blog.gov.uk\)](https://blog.gov.uk/event-duration-monitoring-data-published-by-the-environment-agency-defra-in-the-media/)

The data were downloaded and that Thames Water for the calendar year 2020 were extracted. This contains records for 466 sewage treatment sites operated by Thames Water. The following tables show the top ten sites sorted by total duration and counted spills.

For total duration Stratfield Mortimer is ranked 4<sup>th</sup> worst and is very similar to Burghfield which is ranked third. I have also included Silchester which also discharges into Foundry Brook and is ranked 97 and Reading which is ranked 182.

When ranked in decreasing number of spills Mortimer is 9<sup>th</sup> worst with Burghfield 10<sup>th</sup>. Aldermaston is ranked 12<sup>th</sup> worst on the number of spills but with lower durations. On this criteria Silchester is ranked 165 and Reading 270.

**Top ten sewage treatment works sorted in descending order of total duration of discharges for 2020.**

Site Name	Permit No.	Total Duration (hours) of all spills prior to processing through 12-24 hour counting method	Counted spills using 12-24hr counting method	% of reporting period EDM operational
HAMPSTEAD NORREYS STW	TEMP.2647	4111.95	204	100%
CLANFIELD MARSH STW	TEMP.2488	3843.33	176	100%
SOUTH LEIGH STW	TEMP.2899	3342.86	154	100%
BURGHFIELD STW	TEMP.2425	3227.18	143	100%
MORTIMER (STRATFIELD) STW	TEMP.2783	3222.12	144	100%
MARLBOROUGH STW	TEMP.2763	2872.22	151	97%
EAST SHEFFORD STW	CNTD.0032	2753.49	121	100%
WHEATLEY STW	CSSC.2332	2678.75	145	100%
COTTERED STW	CSSC.1038	2604.94	152	100%

SILCHESTER	CTCR.0959	828.18	43	100%
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READING STW STK 4	CAWM.0942	267.41	16	100%
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**Top twelve ten sewage treatment works sorted in descending order of counted spills**

HAMPSTEAD NORREYS STW	TEMP.2647	4111.95	204	100%
CLANFIELD MARSH STW	TEMP.2488	3843.33	176	100%
FARNBOROUGH STW	CSSC.1369	1763.44	158	100%
PUTNEY BRIDGE STREET TQ24751505 CSO	CSAB.0544	536.59	158	99%
SOUTH LEIGH STW	TEMP.2899	3342.86	154	100%
COTTERED STW	CSSC.1038	2604.94	152	100%
MARLBOROUGH STW	TEMP.2763	2872.22	151	97%
WHEATLEY STW	CSSC.2332	2678.75	145	100%
MORTIMER (STRATFIELD) STW	TEMP.2783	3222.12	144	100%
BURGHFIELD STW	TEMP.2425	3227.18	143	100%
BENTLEY STW	CASM.0726	1665.80	142	100%
ALDERMASTON STW	TEMP.2345	1157.19	141	100%

## Appendix 1 Response from Thames Water

Thames Water Utilities Limited  
EIR Requests  
Clearwater Court  
Vastern Road  
Reading  
Berkshire  
RG1 8DB

Email: [EIR.Requests@thameswater.co.uk](mailto:EIR.Requests@thameswater.co.uk)

15 June 2021

Our Ref: EIR-21-22-236

### Environmental Information Regulation (EIR) Request

Dear Councillor Bridgman

Thank you for your e-mail dated 14 May 2021. Please see our response below to your request as set out in your e-mail.

#### Your Request (Summarised)

"The following email was addressed to one of our local parish councillors (Stratfield Mortimer Parish Council) by a constituent and has been forwarded to me:

*Having watched some of the Government Select Committee deliberations on the subject of sewage discharge into waterways, I wondered if Thames Water provide the parish council with routine performance reports.*

*I looked online for information, and was horrified to find that Thames Water seem to lump the performance of the plants they operate into one overwhelming report, which is of no local value.*

*Operators of sewage plants are permitted to discharge partly and untreated sewage into waterways when they are overloaded as a result of heavy rainfall.*

*It would therefore seem reasonable to expect Thames Water to produce a quarterly report showing volumes of sewage discharged into the Foudry Brook on a time base which shows simultaneous rainfall. This should require very little effort since this data would just be a copy of their measurements, and would reassure the parish council that the situation is being properly managed.*

*I am puzzled by the allowance of discharge during heavy rainfall. Surely, by definition, sewage consists of foul sewage and domestic water drainage. Surface water drainage is not permitted into sewage systems, so apart from some minor inevitable seepage, rainfall should have little effect? Another problem seems to be that heavy rainfall is not quantified.*

So:

- What measures do TW take to avoid discharges/mitigate any effect?
- Is a record kept of any discharges into the Foudry Brook? If so, what do those records show regarding any discharges over the last, say, two years. If not, why not?

#### Our Response

Storm discharges of partially and untreated sewage to the Foudry Brook are permitted from Reading STW and Mortimer STW. The pumping stations in Mortimer, however, are not permitted to discharge to the Foudry Brook as postulated in your request. Please find attached EDM data for records of storm discharges from Reading STW and Mortimer STW from 2019 to 18/05/2021 where spill summaries are provided for each year as well as the raw data. The volumes of discharges are not captured, whilst the duration of the discharges is. Further information on reading EDM data is provided below.

Storm flows at Reading STW are screened before discharges can occur, and at Mortimer STW it is possible for storm flows to bypass initial screening. However, at both sites the storm flows will first fill storm tanks where settlement of debris and particles may take place before the storm tanks overflow. When overflowing, the flows discharge at the storm outfall to the Foudry Brook. At Mortimer STW, the overflows pass through a CopaSac chamber, so the flows from both sites are ultimately screened before discharging to the environment. The discharges occur in accordance with their site Storm Discharge Permits – when the incoming flows exceed the site treatment capacity. If a suspected pollution resulting from the storm discharges occurs, Thames Water and its contractors will attend, and along with the Environment Agency, the incident will be assessed for the environmental impact and determine the required efforts to mitigate.

There have historically been such incidents at Reading STW, where suspected pollutions have been investigated, however these have been categorised as either Category 3 (no pollution) incidents requiring little mitigation, otherwise Category 4 incidents with no impact to the environment.

Regarding your constituent's queries, the EDM data does not measure the volumes of storm overflows, but only the durations of them as you will find in the attached spreadsheet. Thames Water reports all EDM data to the Environment Agency per-site on an annual basis (EDM Annual Return) which is also made available online. Alternatively, EDM data can be requested for a site and specific date range via an Environment Information Request where we will provide the data within 20 working days.

Numerous factors may affect the volumes of flows received by sewage treatment works, including seepage mentioned by the constituent. As mentioned, generally, surface water drainage is separate from the foul sewage system, but there may be connections between the two systems to allow surface water to enter the foul system if it becomes overwhelmed (or vice-versa) and this may increase the volume of flows received by a sewage works in periods of high rainfall. There may also be illegal connections of surface water drainage to the foul sewer system that Thames Water are not aware about. Additionally, high groundwater levels can also add to these flows.

Our CEO, Sarah Bentley, has been clear in recent statements that putting such untreated sewage into rivers is unacceptable to us, to our customers and to the environment. However, eliminating untreated sewage discharges is not going to be quick, easy, or inexpensive and we will need the continued support of our customers and regulators, as well as extensive collaboration with local communities and other stakeholders, to achieve it. Although our systems do not currently allow us to provide real-time notifications of discharges, we are building the capacity to do this and hope to have the new arrangements working within the next two years.

Further information on reading EDM data:

- EDM = Event Duration Monitor – placed at or near the overflow to detect overflows;
- 'TimestampStart' details the date and time the EDM detects spilling has started; 'TimestampEnd' for where the EDM stops detecting flows;

- Sum of DurationMins is the duration between TimestampStart and TimestampEnd
- Spills counts are counted using the 12/24 counting method – [see EA guidance](#).

## Appendix 2 Mike Edmondson’s comments on the reply

### Review of my concerns about the performance of Mortimer's sewage treatment plant.

1. The objective was to seek reassurance that the Mortimer Sewage Treatment facility was operating to an environmentally acceptable standard, and although TW did not press for payment in our request, expectation of payment for replies to entirely reasonable questions appears to be a deliberate attempt to subdue such queries.
2. TW's reply included a Disclaimer which said that “We cannot guarantee the accuracy of this information and it should not be relied on for any purpose.” Well- that's not at all helpful, because it means that the data they supplied is not to be relied upon. So I'm not sure what to do about that!
3. I tried and failed to download the Attachment headed “RE: Sewage treatment plant” but it does not seem to matter because I think it's just a record of our messages.
4. TW does not measure the volume of discharge – they only measure the elapsed time for discharge. Thus, the data is not very helpful and is almost useless, because it seems that volume and level of treatment or lack of it, is more important than comparing a long term tiny trickle with a huge short-term discharge.
5. Based on TW's spreadsheet we see that, not surprisingly the overflow discharge is worse during the winter and early spring.
6. Although some settling and screening is provided before overflow discharge, I presume that TW do not have the staff or equipment to continuously measure the biological contamination of partially or untreated sewage discharge into the brook.
7. We should perhaps consider that the Foudry Brook is a source of untreated drinking water for cattle in adjacent fields. I am not at all sure that this is acceptable.
8. The continued housing development in the area does not seem to have been challenged on the grounds of increasing the load on a treatment plant which clearly cannot properly cope with existing winter demand.

We could become entangled in never-ending arguments about the above, but they would be unlikely to deal with what seems to be a serious problem. We should perhaps concentrate on the following:-

9. Without nit-picking over precise values, the spreadsheet that TW provided shows that overflow discharge from January to March 2021 occurred at a very rough average of **8 hours every day!!!** **(later revised to 15 hours per day – MDD)**
10. The volumes and harmful bacterial contamination of overflow water into the Foudry Brook are not measured or controlled, and it seems logical that they should be.
11. TW CEO, Sarah Bentley says that *it has been made clear in recent statements that putting such untreated sewage into rivers is unacceptable to us, to our customers and to the environment.* That is of course just what should be expected, and we must understand that there is often a gap between promoting a policy and being able to implement it. However, a policy statement becomes almost meaningless unless clear details of how it should be achieved have been set out.

12. It would seem that the parish community reaction to all this should be to have a sensible and co-operative discussion about the situation with TW, to establish either whether there really is a health or environmental problem, and if so, what can we do about it. Getting all excited about responsibility, blame, funding, and legality is not going to produce an acceptable and harmonious result.