



Kennet & Tributaries

Water Quality Update

Spring 2024

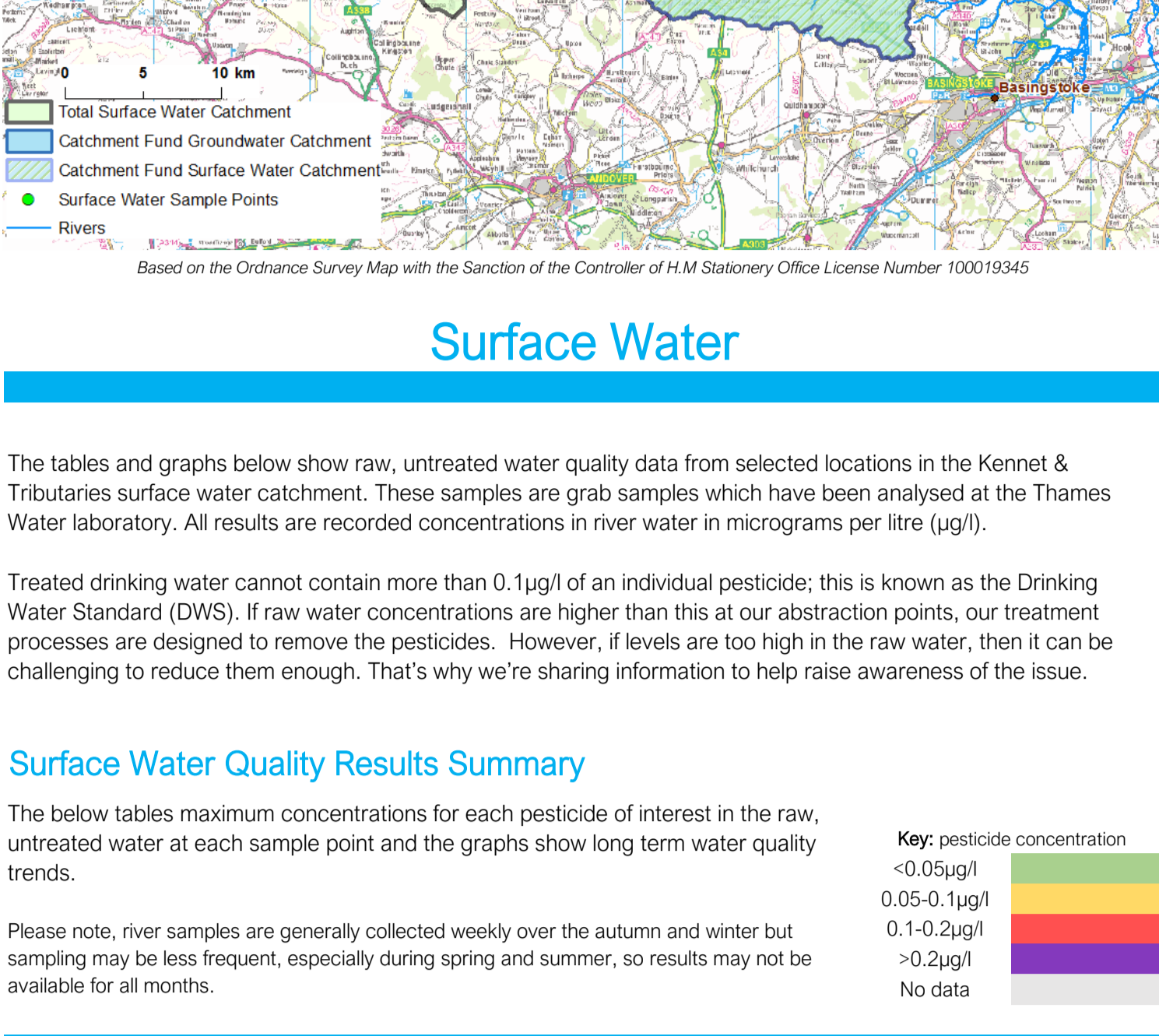
This is a water quality update for the Kennet catchment. Updates will be circulated quarterly to keep you updated with the latest water quality data from your catchment.

Pollution of water can come from many different sources and activities like agriculture, the general public, and all types of industry (including the water industry). However, the focus of this update is on diffuse pollution of raw water sources from agricultural pesticides and fertilisers, in both river and groundwater sources, which is an ongoing problem for water companies as we regularly detect them in raw water. Removing these compounds through water treatment is expensive, energy intensive and not the most sustainable approach. We're keen to work with farmers and advisors within the catchment to avoid pesticides and fertilisers reaching groundwater and surface water sources in the first place. Please consider the impact on water quality before advising or applying fertilisers and plant protection products.

See an overview of the catchment in the table and map below, followed by short and long term water quality summaries. If you have any questions, or would like to be added to the mailing list, please contact catchment.projects@thameswater.co.uk.

Catchment Overview

Catchment size	~1,160km ²
Major towns	Reading, Newbury, Thatcham, Marlborough, Hungerford
Thames Water drinking water quality priorities	Surface water: Pesticides (metaldehyde, propyzamide, carbetamide, flufenacet) Groundwater: Nitrate
Thames Water projects	Catchment Fund and farm advice: Enborne, Lower Kennet, Sulham Brook, Foudry Brook (surface water) Marlborough, Axford & Ogbourne, Leckhamstead, Ashdown Park & Fognam Down, Hungerford (groundwater)
Contact	catchment.projects@thameswater.co.uk



Surface Water

The tables and graphs below show raw, untreated water quality data from selected locations in the Kennet & Tributaries surface water catchment. These samples are grab samples which have been analysed at the Thames Water laboratory. All results are recorded concentrations in river water in micrograms per litre (µg/l).

Treated drinking water cannot contain more than 0.1µg/l of an individual pesticide; this is known as the Drinking Water Standard (DWS). If raw water concentrations are higher than this at our abstraction points, our treatment processes are designed to remove the pesticides. However, if levels are too high in the raw water, then it can be challenging to reduce them enough. That's why we're sharing information to help raise awareness of the issue.

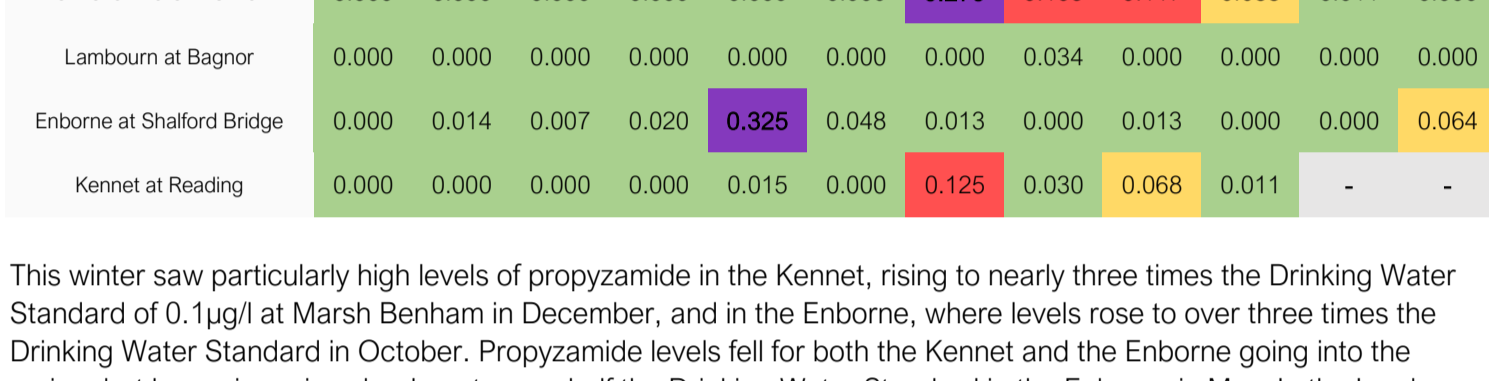
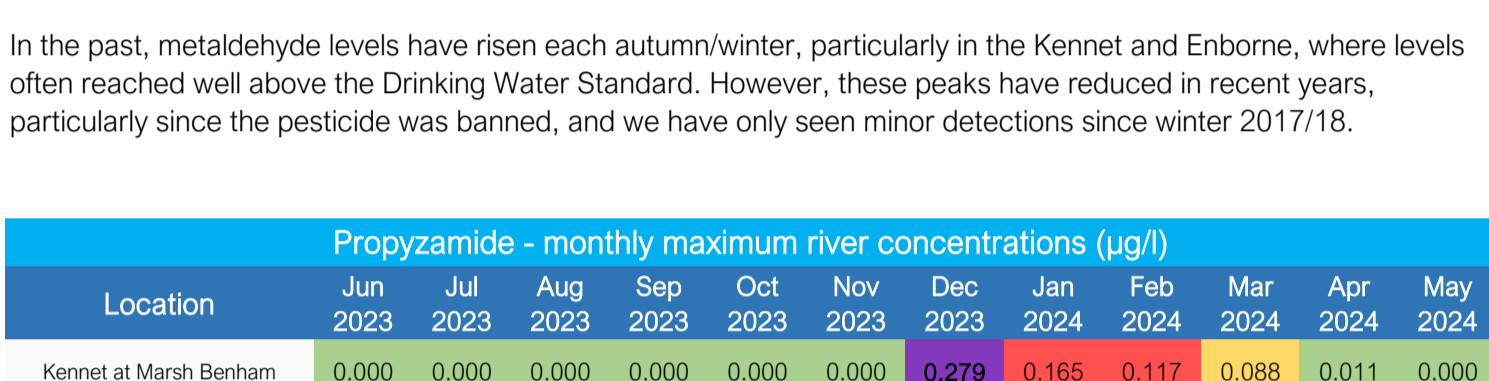
Surface Water Quality Results Summary

The below tables maximum concentrations for each pesticide of interest in the raw, untreated water at each sample point and the graphs show long term water quality trends.

Please note, river samples are generally collected weekly over the autumn and winter but sampling may be less frequent, especially during spring and summer, so results may not be available for all months.

Location	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024
Enborne at Shalford Bridge	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Kennet at Reading	0.000	-	0.000	0.000	0.000	0.031	0.000	0.000	0.000	0.000	0.000	-

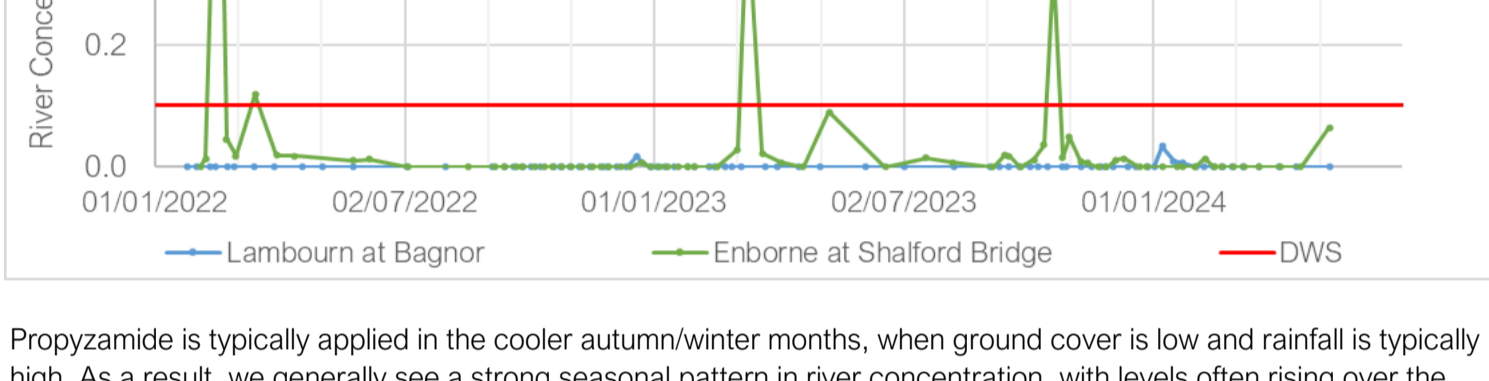
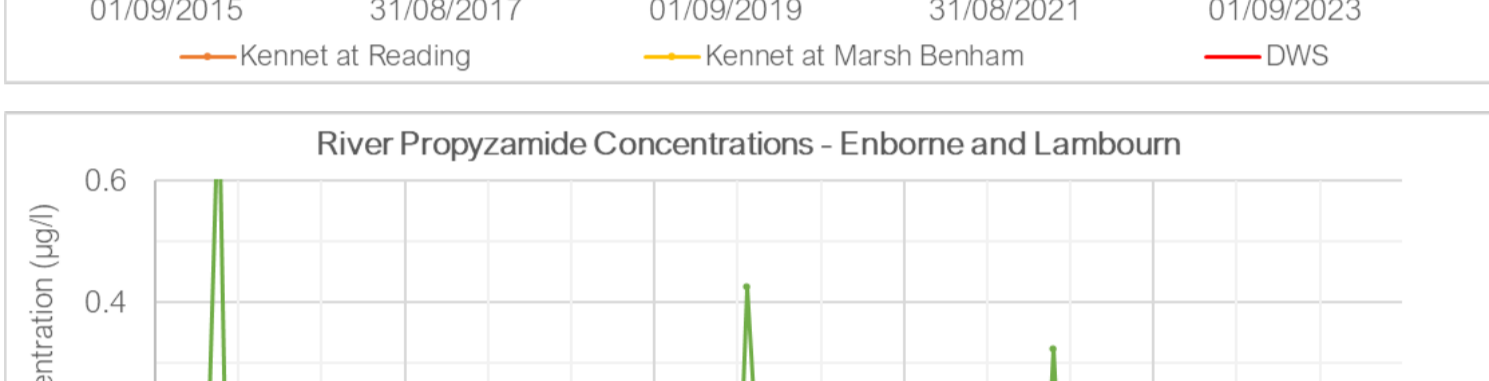
Metaldehyde has been banned for outside use since March 2022, so we do not expect to see any turning up in rivers. We have not seen any metaldehyde at any of these sample points over the last year, apart from a minor detection in the Kennet in November, and sampling for this pesticide in the Lambourn and Kennet at Marsh Benham has been discontinued.



In the past, metaldehyde levels have risen each autumn/winter, particularly in the Kennet and Enborne, where levels often reached well above the Drinking Water Standard. However, these peaks have reduced in recent years, particularly since the pesticide was banned, and we have only seen minor detections since winter 2017/18.

Location	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024
Kennet at Marsh Benham	0.000	0.000	0.000	0.000	0.000	0.000	0.279	0.165	0.117	0.088	0.011	0.004
Lambourn at Bagnor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.000	0.000
Enborne at Shalford Bridge	0.000	0.014	0.007	0.020	0.325	0.048	0.013	0.000	0.013	0.000	0.000	0.064
Kennet at Reading	0.000	0.000	0.000	0.000	0.015	0.000	0.125	0.030	0.068	0.011	-	-

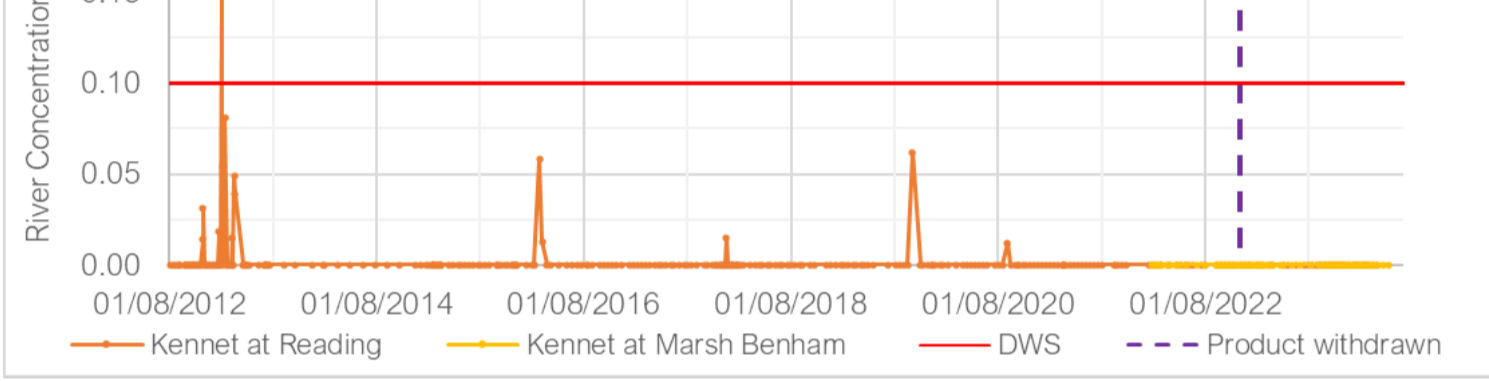
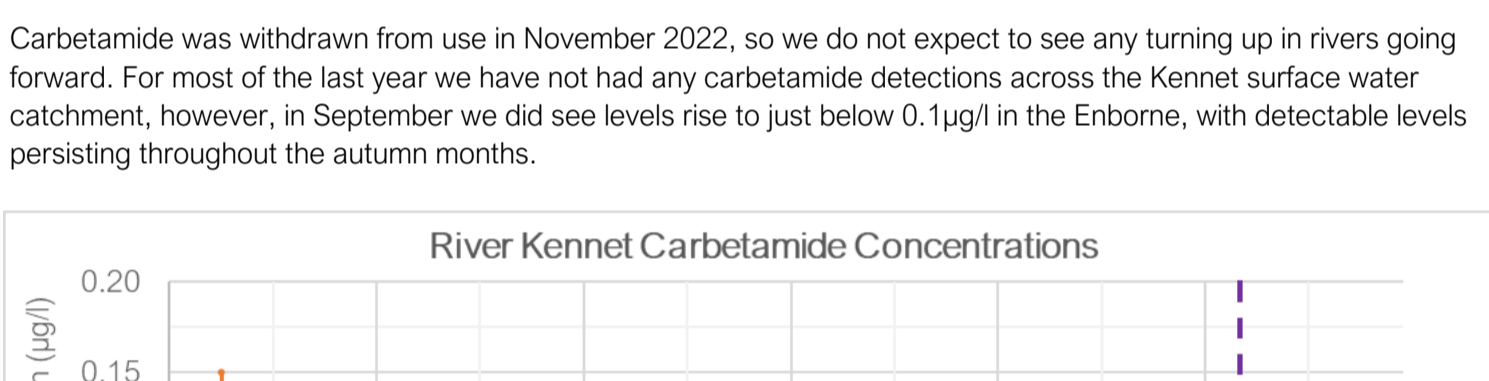
This winter saw particularly high levels of propyzamide in the Kennet, rising to nearly three times the Drinking Water Standard of 0.1µg/l at Marsh Benham in December, and in the Enborne, where levels rose to over three times the Drinking Water Standard in October. Propyzamide levels fell for both the Kennet and the Enborne going into the spring, but have since risen back up to over half the Drinking Water Standard in the Enborne in May. In the Lambourn, no propyzamide has been detected over the last twelve months.



Propyzamide is typically applied in the cooler autumn/winter months, when ground cover is low and rainfall is typically high. As a result, we generally see a strong seasonal pattern in river concentration, with levels often rising over the winter at most sample points. Sampling for propyzamide in the Kennet at Marsh Benham, the Lambourn and the Enborne only started in January 2022, but these sample points are starting to show a similar pattern to what is seen elsewhere.

Location	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024
Kennet at Marsh Benham	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Lambourn at Bagnor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Enborne at Shalford Bridge	0.000	0.000	0.000	0.085	0.034	0.015	0.000	0.000	0.000	0.000	0.000	0.000
Kennet at Reading	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

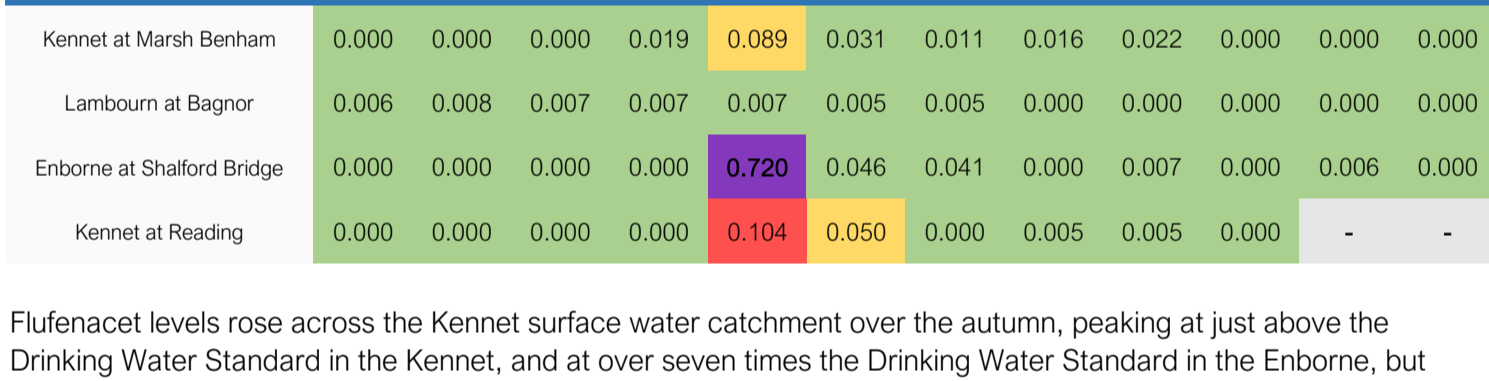
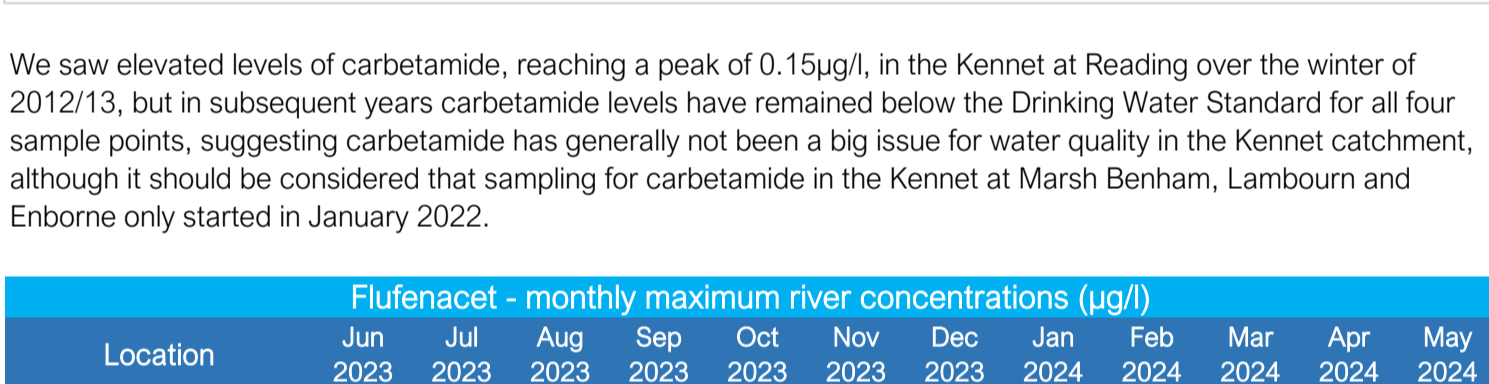
Carbetamide was withdrawn from use in November 2022, so we do not expect to see any turning up in rivers going forward. For most of the last year we have not had any carbetamide detections across the Kennet surface water catchment, however, in September we did see levels rise to just below 0.1µg/l in the Enborne, with detectable levels persisting throughout the autumn months.



We saw elevated levels of carbetamide, reaching a peak of 0.15µg/l, in the Kennet at Reading over the winter of 2012/13, but in subsequent years carbetamide levels have generally been below the Drinking Water Standard for all sample points, suggesting carbetamide has generally not been a big issue for water quality in the Kennet catchment, although it should be considered that sampling for carbetamide in the Kennet at Marsh Benham, Lambourn and Enborne only started in January 2022.

Location	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024
Kennet at Marsh Benham	0.000	0.000	0.000	0.019	0.089	0.031	0.011	0.016	0.022	0.000	0.000	0.000
Lambourn at Bagnor	0.006	0.008	0.007	0.007	0.007	0.005	0.005	0.000	0.000	0.000	0.000	0.000
Enborne at Shalford Bridge	0.000	0.000	0.000	0.000	0.720	0.046	0.041	0.000	0.007	0.000	0.006	0.000
Kennet at Reading	0.000	0.000	0.000	0.000	0.104	0.050	0.000	0.005	0.005	0.000	-	-

Flufenacet levels rose across the Kennet surface water catchment over the autumn, peaking at just above the Drinking Water Standard in the Kennet, and at over seven times the Drinking Water Standard in the Enborne, but levels fell going towards the end of the year and remained low since. In contrast, levels have remained low in the Lambourn over the last year.



Flufenacet, which is often used to control blackgrass populations when growing cereals, is applied over the late autumn/early winter, when ground cover is low and rainfall is high, meaning there is a risk of it entering watercourses via surface run off. As a result, we tend to see a strong seasonal pattern, with levels in the Kennet rising each year, occasionally above the Drinking Water Standard. At present, we only have a short dataset for the Lambourn and Enborne, but levels seem to show a similar pattern to the Kennet so far.

Groundwater

The tables and graphs below show raw, untreated water quality data from several of our groundwater sites within the Kennet & Tributaries surface water catchment. These samples are grab samples which have been analysed at the Thames Water laboratory. All results are recorded concentrations in groundwater in milligrams per litre (mg/l).

Treated drinking water cannot contain more than 50mg/l of nitrate; this is known as the Drinking Water Standard (DWS). If raw water concentrations are higher than this at our abstraction points, our treatment and blending processes are designed to remove the nitrate. However, if levels are too high in the raw water, then it can be challenging to reduce them enough. That's why we're sharing information to help raise awareness of the issue.

Location and Hydrogeology Summary

Axford Water Treatment Works (WTW) is located near Axford, Wiltshire. Groundwater is abstracted from three boreholes in a Chalk aquifer and treated at the WTW.

Ogbourne WTW is located near Marlborough, Wiltshire. Groundwater is abstracted from the Chalk aquifer and treated at the WTW.

Marlborough WTW is also located near Marlborough, Wiltshire. Groundwater is abstracted from the Chalk aquifer via one borehole which is treated on site at the WTW.

Ashdown Park WTW and the Fognam Down boreholes are located to the north west of Lambourn, Berkshire. Groundwater is abstracted from the Chalk and Upper Greensand aquifers through two boreholes at Ashdown Park and two at Fognam Down, and treated at the WTW.

Hungerford WTW is located in Hungerford, Berkshire. Groundwater is abstracted from the Chalk aquifer through three abstraction boreholes and treated at the WTW.

Leckhamstead WTW is located near Leckhamstead, Berkshire. Groundwater is abstracted from the Chalk aquifer and treated at the WTW on site.

The nature of Chalk catchments means that although short term changes in catchment management are unlikely to have an immediate effect, current catchment practices are important in the long term trends of nitrate. This means the data below is generally reflecting historical nitrate use.

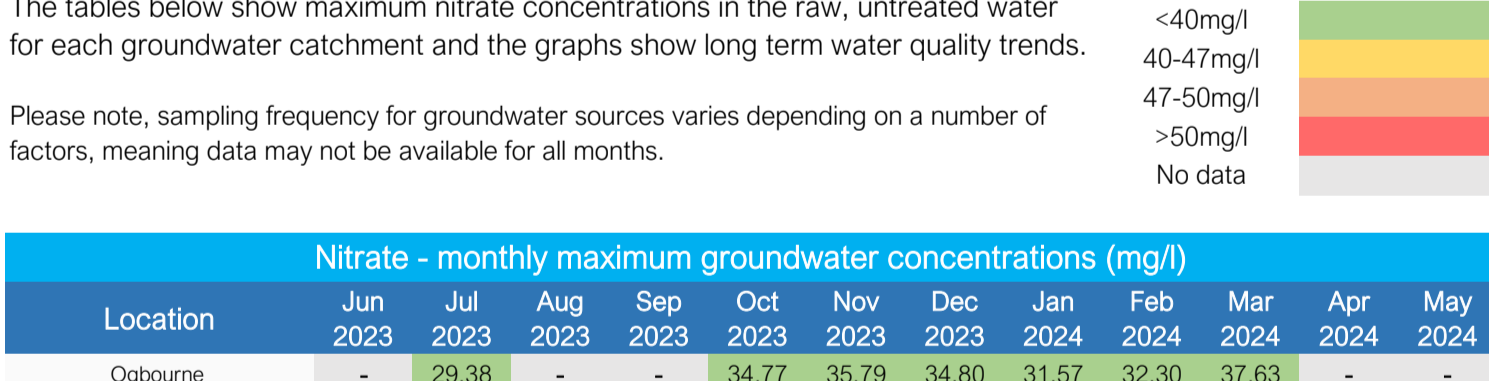
Groundwater Quality Results Summary

The tables below show maximum nitrate concentrations in the raw, untreated water for each groundwater catchment and the graphs show long term water quality trends.

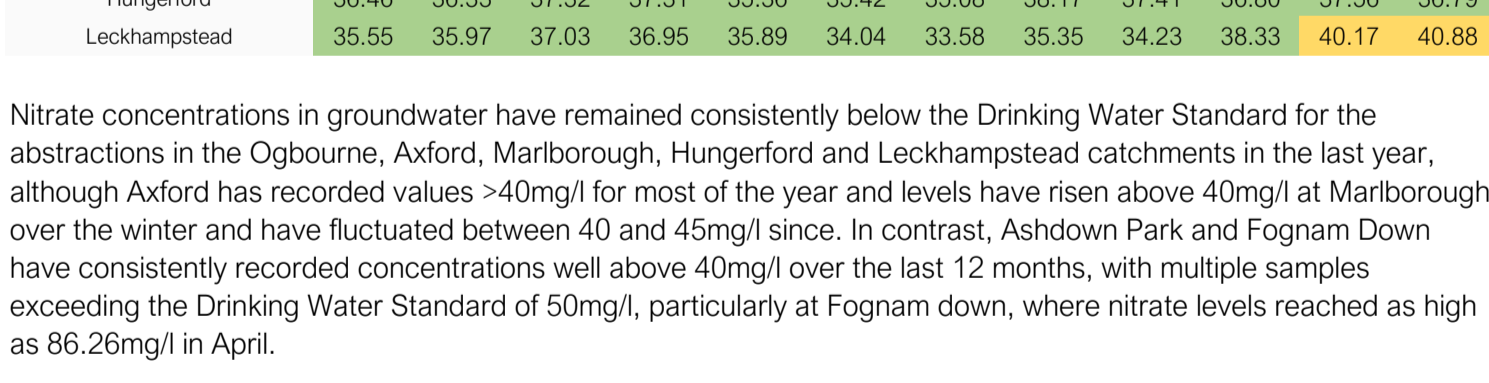
Please note, sampling frequency for groundwater sources varies depending on a number of factors, meaning data may not be available for all months.

Location	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024
Oxbourne	40.45	29.38	-	-	34.77	35.79	34.80	31.57	32.30	37.63	-	-
Axford	40.45	40.72	40.28	39.75	38.03	41.01	42.22	44.94	44.99	45.59	44.56	43.64
Marlborough	38.77	37.82	37.96	36.74	34.12	40.21	40.06	45.20	43.49	44.73	44.03	42.81
Ashdown Park	50.18	51.63	53.39	49.32	48.14	52.01	52.00	50.70	46.70	47.32	48.46	49.07
Fognam Down	59.86	55.04	54.76	47.72	47.37	54.87	72.98	72.14	82.47	73.10	86.26	83.37
Hungerford	36.46	36.33	37.32	37.31	35.36	35.42	35.08	38.17	37.41	36.80	37.56	36.79
Leckhamstead	35.55	35.97	37.03	36.95	35.89	34.04	33.58	35.35	34.23	38.33	40.17	40.88

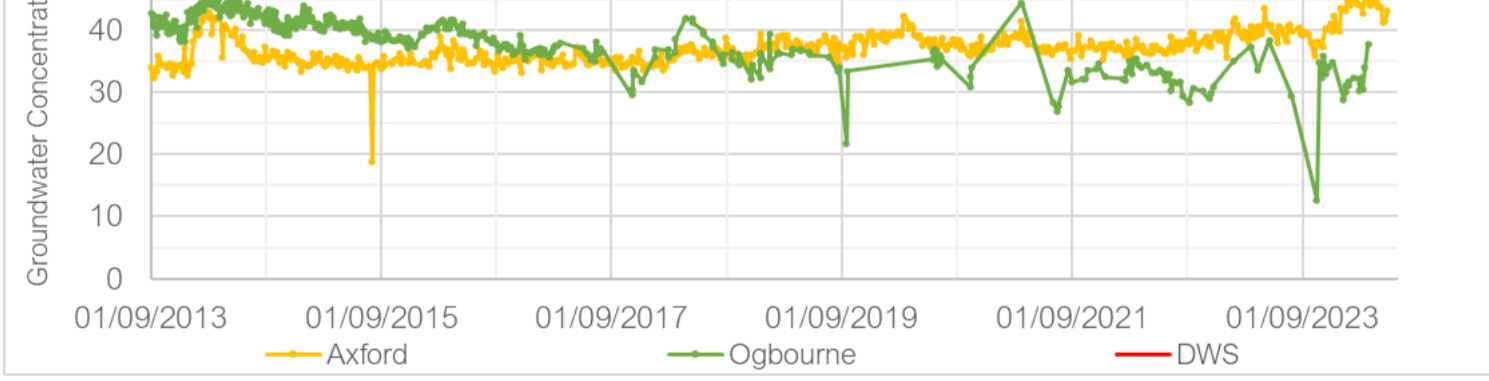
Nitrate concentrations in groundwater have remained consistently below the Drinking Water Standard for the abstractions in the Oxbourne, Axford, Marlborough, Hungerford and Leckhamstead catchments in the last year, although Axford has recorded values >40mg/l for most of the year and levels have risen above 40mg/l at Marlborough over the winter and have fluctuated between 40 and 45mg/l since. In contrast, Ashdown Park and Fognam Down have consistently recorded concentrations well above 40mg/l over the last 12 months, with multiple samples exceeding the Drinking Water Standard of 50mg/l, particularly at Fognam down, where nitrate levels reached as high as 86.26mg/l in April.



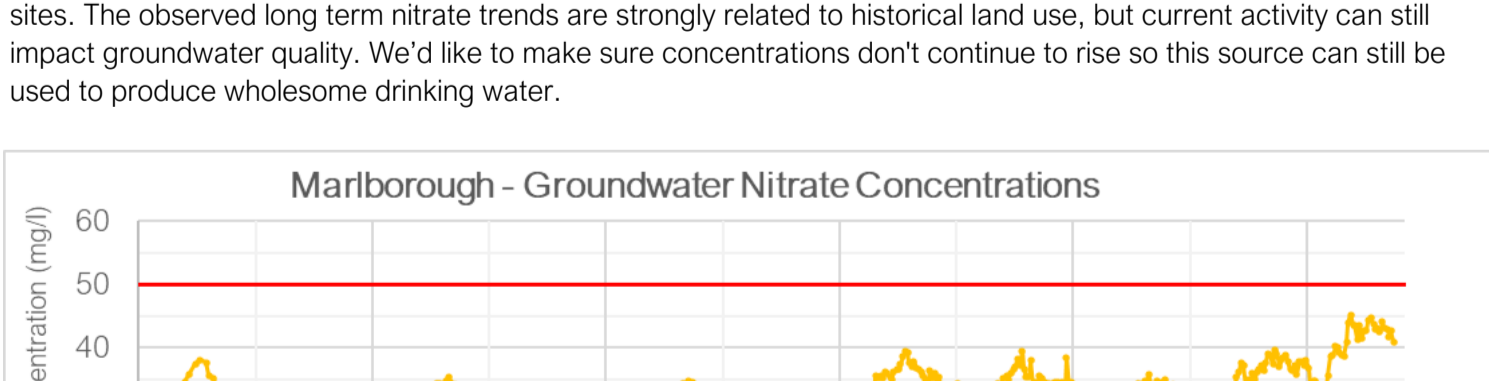
The graph above shows nitrate concentrations of raw, untreated groundwater at the abstractions in the Axford and Oxbourne catchments. Concentrations at Axford have been gradually increasing since 2012, to just above 45mg/l in 2024. Although this is below the Drinking Water Standard of 50mg/l, and concentrations in Oxbourne seem to be improving somewhat with a downward trend, we'd like to avoid further deterioration in future water quality for both sites. The observed long term nitrate trends are strongly related to historical land use, but current activity can still impact groundwater. We'd like to make sure concentrations don't continue to rise so this source can still be used to produce wholesome drinking water.



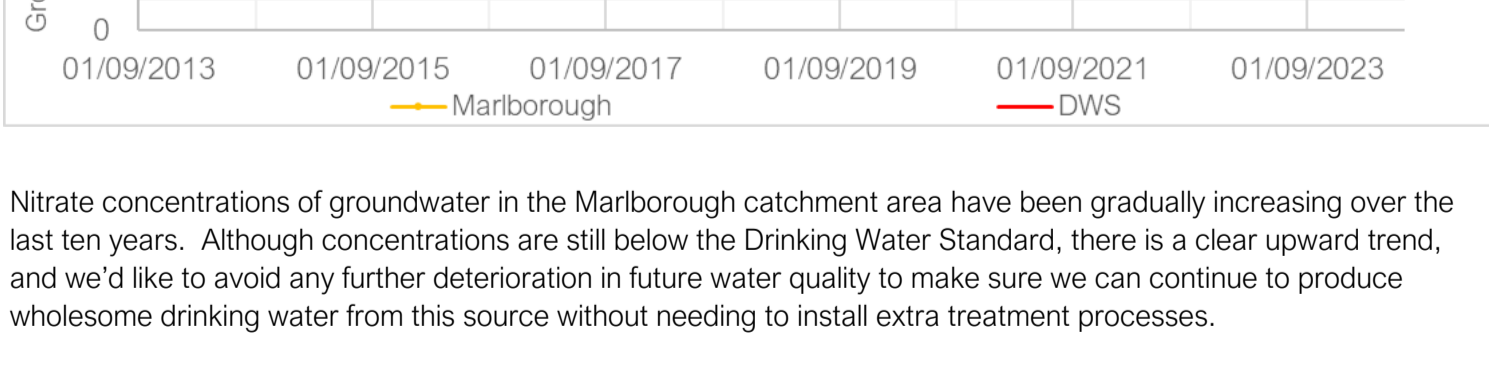
Nitrate concentrations of groundwater in the Marlborough catchment area have been gradually increasing over the last ten years. Although concentrations are still below the Drinking Water Standard, there is a clear upward trend, and we'd like to avoid any further deterioration in future water quality to make sure we can continue to produce wholesome drinking water from this source without needing to install extra treatment processes.



Nitrate concentrations in the groundwater in the Ashdown Park catchment area have fluctuated around the Drinking Water Standard from 2013 to 2024, occasionally exceeding 50mg/l. For the Fognam Down boreholes, the baseline nitrate concentration has been rising, with peak concentrations regularly exceeding the Drinking Water Standard of 50mg/l. Although the peak concentration in 2023 was lower than at times in the past, levels have risen well above 50mg/l again in 2024, exceeding the peaks seen in previous years, which potentially related to the exceptionally high rainfall exacerbating the increasing trend. We'd like to avoid future peaks to make sure we can continue to produce wholesome drinking water from these sources and reduce reliance on nitrate removal treatment.



Our Hungerford water treatment works has three boreholes that take groundwater from the Chalk aquifer, although only one of the boreholes is currently in supply and regularly sampled. Groundwater nitrate concentrations at this borehole have remained fairly steady since 2013, staying well below the Drinking Water Standard of 50mg/l, but since 2021 levels exceeded 35mg/l with increasing frequency. We'd like to avoid deterioration in future water quality to make sure we can continue to produce wholesome drinking water from this source without needing to install extra treatment processes.



Concentrations of nitrate in groundwater at the abstraction in the Leckhamstead catchment have remained fairly consistently between 29mg/l - 36mg/l since late 2014, although there does appear to be a very gradual increase in the baseline concentration. Although current concentrations are below the Drinking Water Standard we'd like to avoid deterioration in future water quality to make sure we can continue to produce wholesome drinking water from this source without needing to install extra treatment processes.

Thank you for your interest in protecting water quality in your local area. If you have any questions or feedback, please don't hesitate to get in touch.

[Catchment.Projects@thameswater.co.uk](mailto:catchment.projects@thameswater.co.uk)