

Kennet & Tributaries

Water Quality Update

Autumn 2022

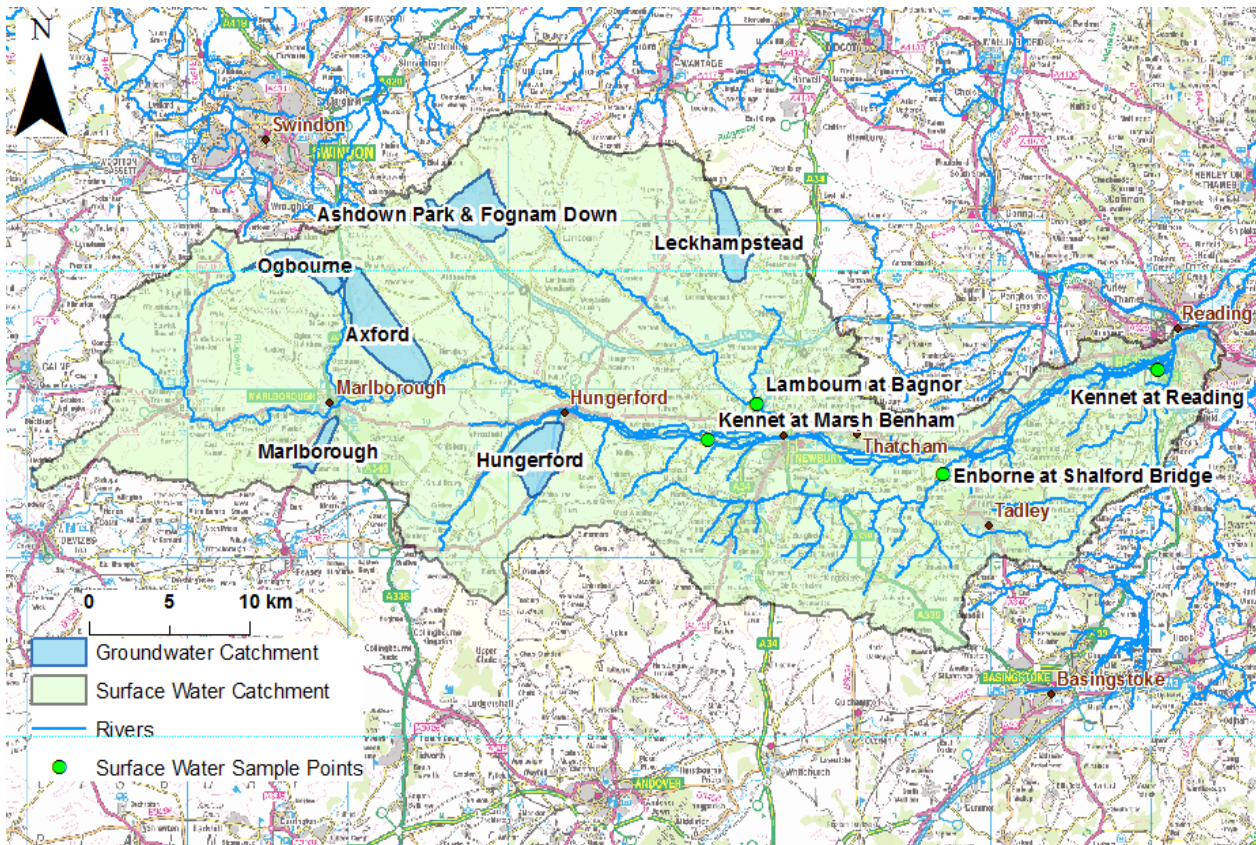
This is a water quality update for the Kennet & Tributaries catchment. Updates will be circulated quarterly to keep you updated with the latest water quality data from your catchment.

Diffuse pollution of raw water sources from agricultural pesticides and fertilisers, in both river and groundwater sources, 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)
	Groundwater: Nitrate
Thames Water projects	Catchment Fund and farm advice: Enborne, Lower Kennet (surface water) Marlborough, Axford & Ogbourne, Leckhamstead, Ashdown Park & Fognam Down, Hungerford (groundwater)
Contact	catchment.projects@thameswater.co.uk



Based on the Ordnance Survey Map with the Sanction of the Controller of H.M Stationery Office License Number 100019345

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 ($\mu\text{g/l}$).

Treated drinking water cannot contain more than $0.1\mu\text{g/l}$ 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.

Key: pesticide concentration

$<0.05\mu\text{g/l}$

$0.05-0.1\mu\text{g/l}$

$0.1-0.2\mu\text{g/l}$

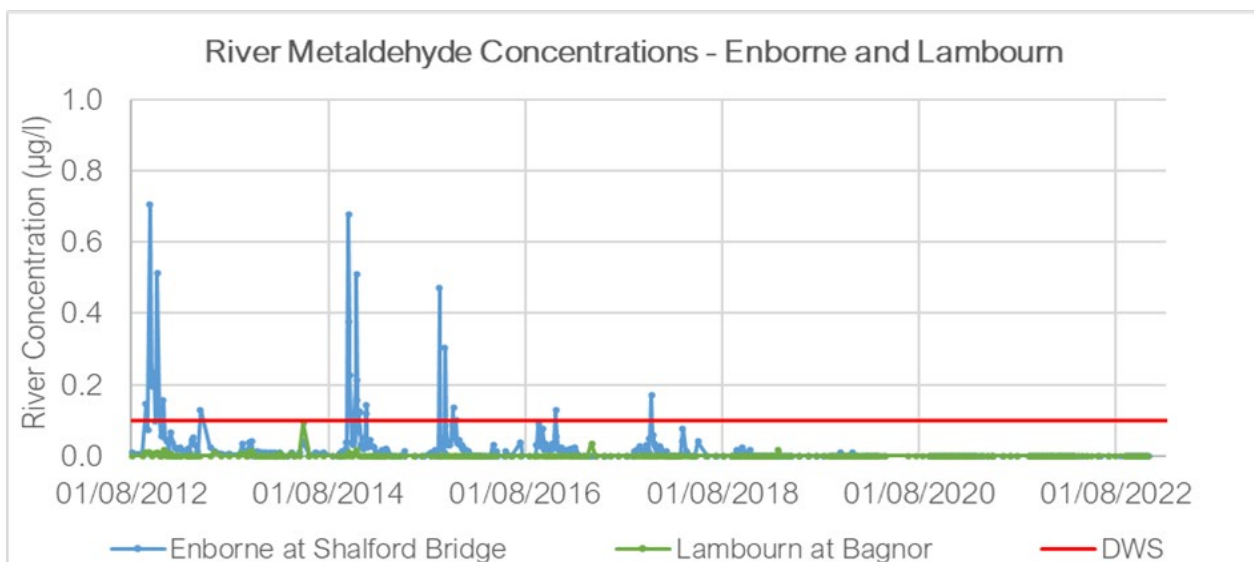
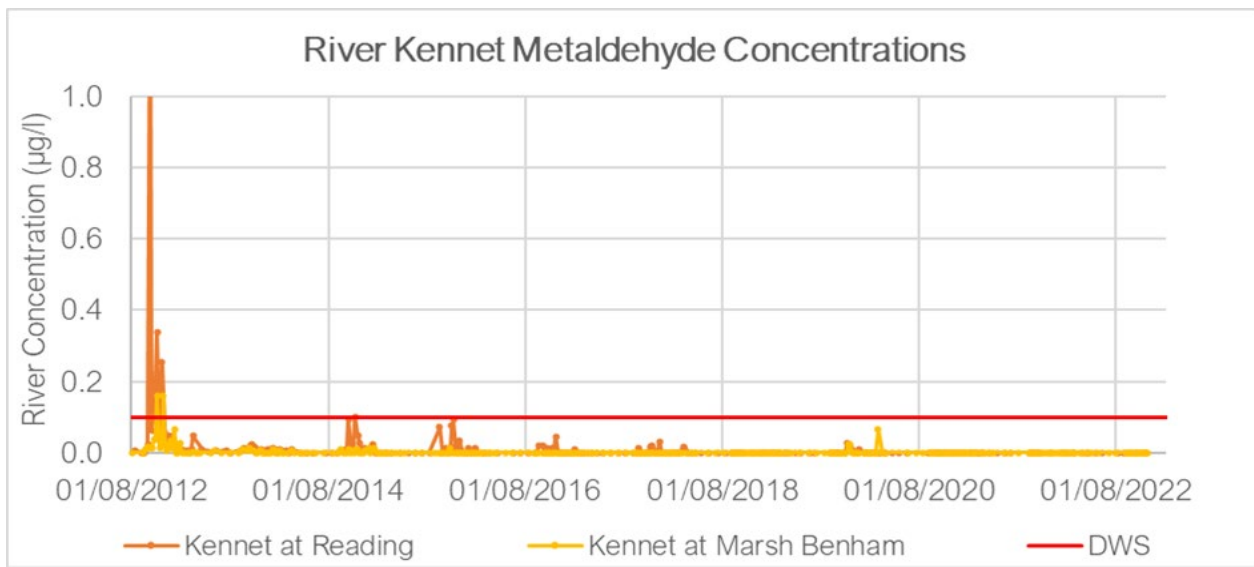
$>0.2\mu\text{g/l}$

No data



Metaldehyde - monthly maximum river concentrations (µg/l)												
Location	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022
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
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
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	0.000	0.000	-	0.000	0.000	0.000	0.000

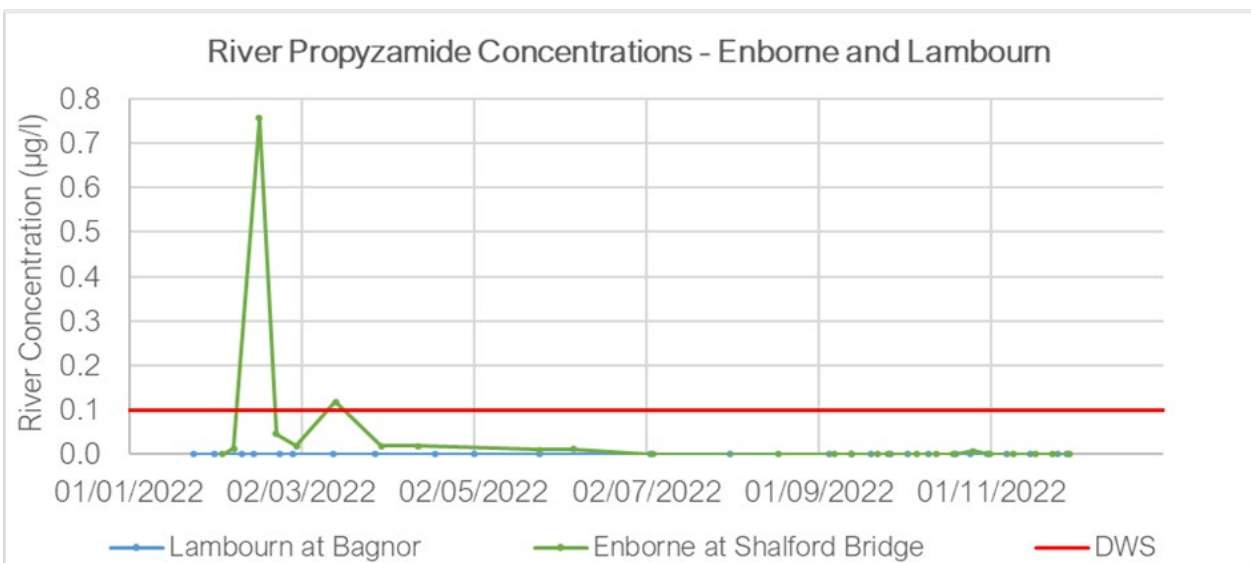
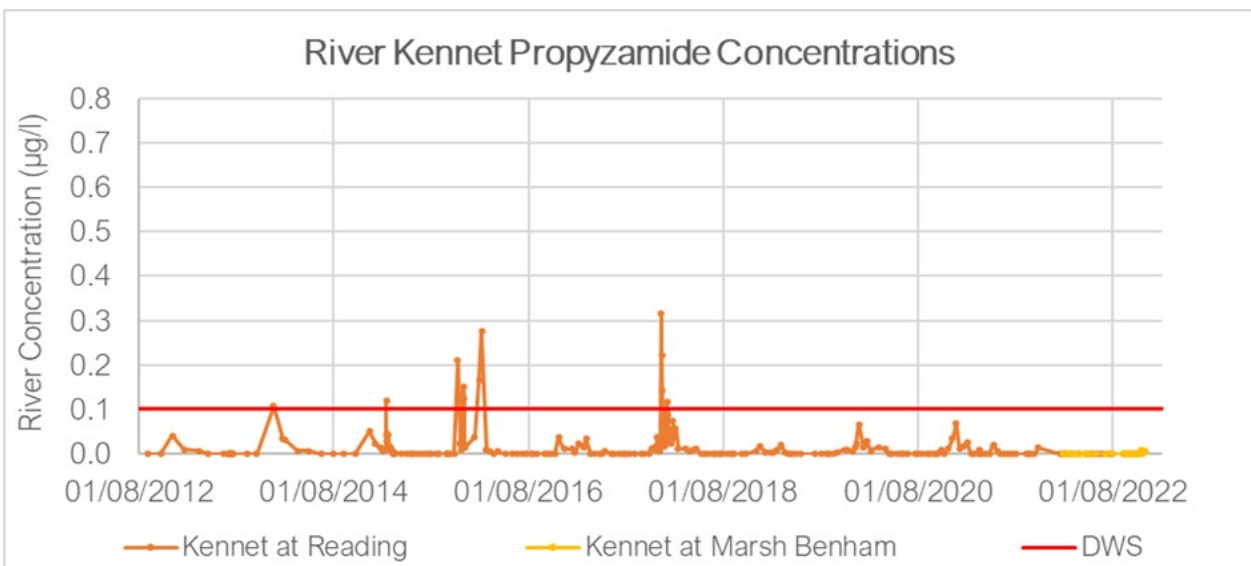
We have not seen any metaldehyde at sample points between December 2021 and November 2022, and we do not expect to see any detections going forward as metaldehyde is now banned for outside use.



Elevated levels of metaldehyde (>0.1 µg/l) were seen in the Kennet at Reading and the Kennet at Marsh Benham in winter 2012/13, and in the Enborne in winter 2012/13, 2014/15, 2015/16, 2016/17 and 2017/18. We have not detected metaldehyde at levels above the DWS at any sample point since winter 2017/18.

Propyzamide - monthly maximum river concentrations (µg/l)												
Location	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022
Kennet at Marsh Benham	-	0.000	0.000	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.010
Lambourn at Bagnor	-	0.000	0.000	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000
Enborne at Shalford Bridge	-	-	0.756	0.118	0.018	0.010	0.012	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	0.000

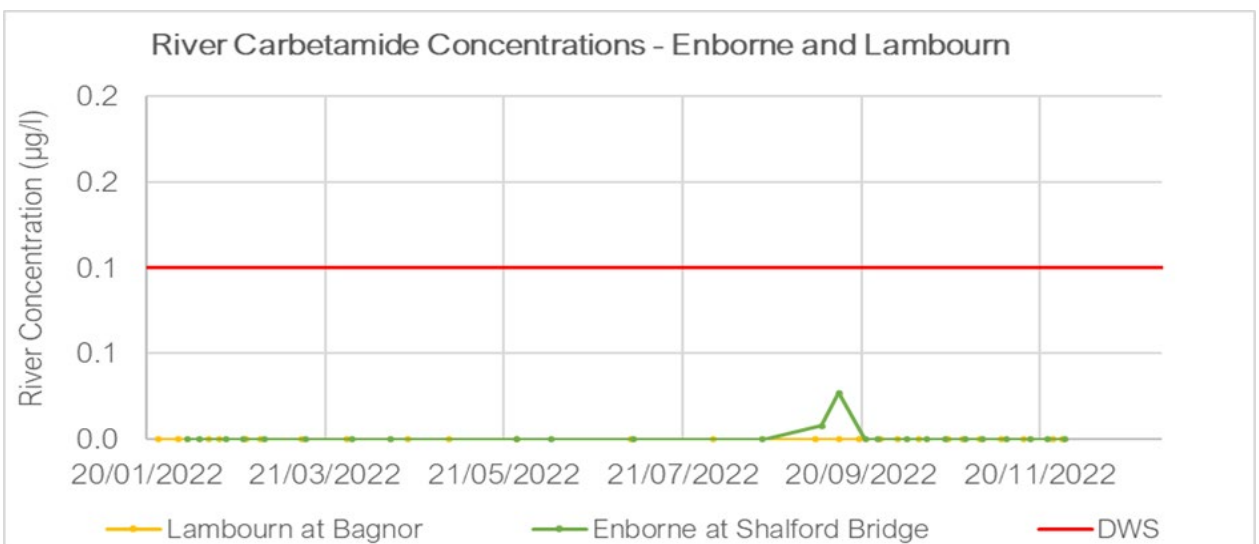
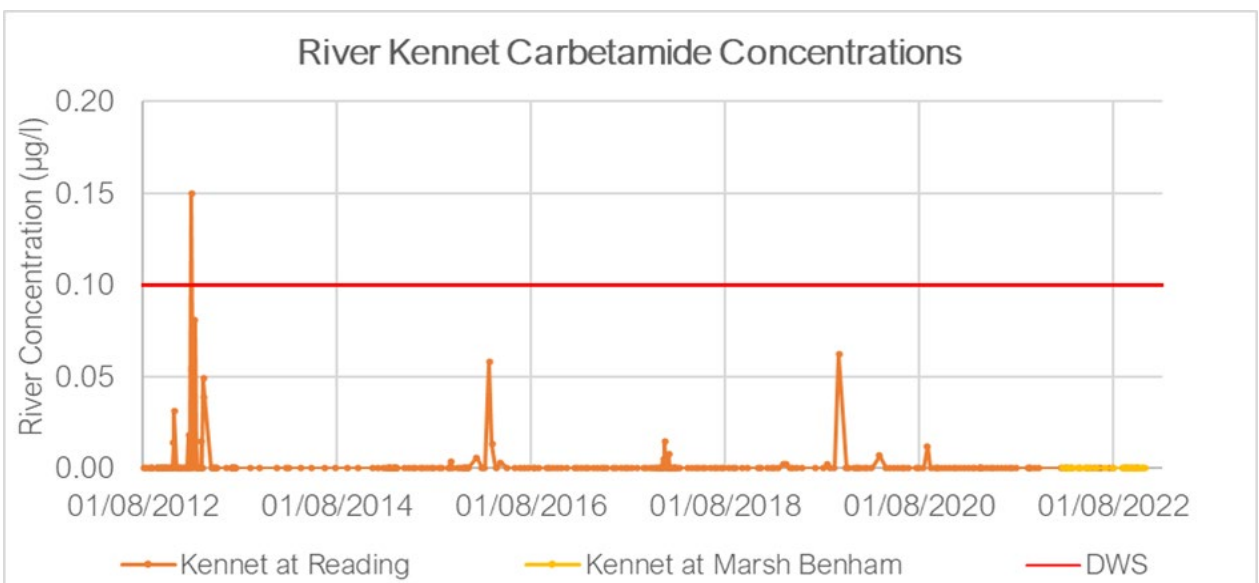
Elevated levels of propyzamide (>0.1 µg/l) we seen in the Enborne in February and March. We have not seen significant amounts of propyzamide at any of the sample points since March. Please note, sampling for propyzamide in the Kennet at Marsh Benham, Lambourn at Bagnor and Enborne at Shalford Bridge only started in January 2022.



Propyzamide shows a strong seasonal pattern, with peaks in the winter months. Elevated levels (>0.1 µg/l) were seen in winter 2013/14, 2014/15, 2015/16 and 2017/18 in the Kennet at Reading. Elevated levels of propyzamide were also seen in the Enborne in February and March 2022.

Carbetamide - monthly maximum river concentrations (µg/l)												
Location	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022
Kennet at Marsh Benham	-	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
Enborne at Shalford Bridge	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	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	0.000

No carbetamide was detected at any of the sample points in the Kennet catchment between January and November 2022, apart from a low detection of 0.027µg/l in the Enborne in September. Please note, sampling for carbetamide in the Kennet at Marsh Benham, Lambourn and Enborne only started in January 2022.



We saw elevated levels of carbetamide, reaching a peak of 0.15µg/l, in the Kennet at Reading over the winter of 2012/13. In subsequent years carbetamide levels have remained below the DWS for all four sample points.

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.

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





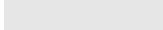
The nature of Chalk catchments means that although short term changes in catchment management are unlikely to have an immediate effect, current catchment practices are important in the long term trends of nitrate. This means the data below is generally reflecting historical nitrate use.

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.

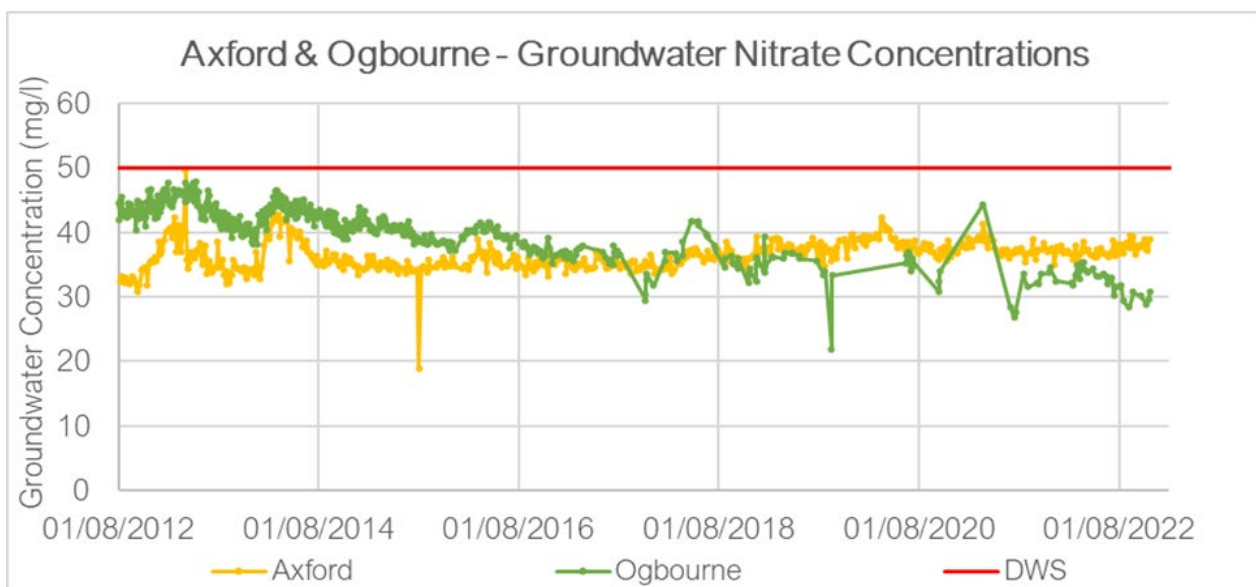
Please note, sampling frequency for groundwater sources varies depending on a number of factors, meaning data may not be available for all months.

Key: nitrate concentration

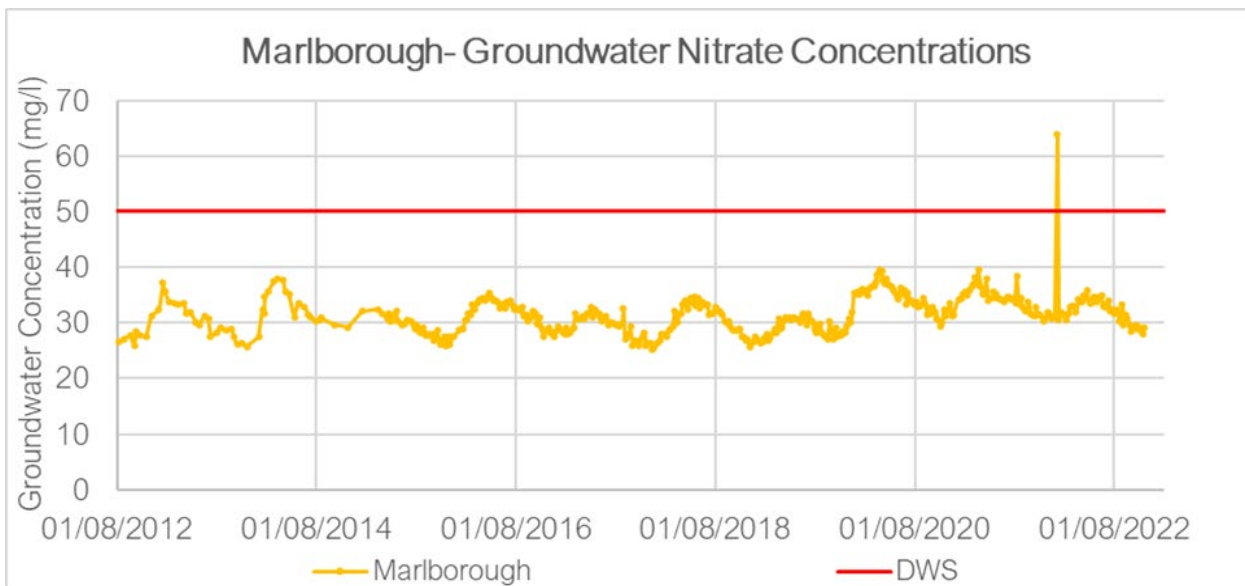
<40mg/l	
40-47mg/l	
47-50mg/l	
>50mg/l	
No data	

Nitrate - monthly maximum groundwater concentrations (mg/l)												
Location	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022
Ogbourne	32.43	-	33.36	35.39	34.32	33.19	33.48	32.89	31.70	30.70	30.12	30.86
Axford	37.66	37.88	38.03	38.47	37.35	37.45	36.82	38.83	38.25	39.48	38.18	38.94
Marlborough	31.91	63.96	32.96	34.32	35.80	34.74	34.90	34.06	33.32	31.42	29.52	29.12
Ashdown Park	47.91	49.08	50.49	51.00	50.81	51.02	48.61	51.40	47.47	44.15	39.78	42.00
Fognam Down	45.48	46.85	45.78	46.56	46.94	49.10	48.32	48.25	47.62	39.13	44.27	41.00
Hungerford	35.68	35.73	35.99	44.18	43.70	36.69	35.79	35.04	35.54	37.47	34.38	37.24
Leckhampstead	34.36	35.13	35.43	34.78	34.78	34.66	34.54	34.57	33.50	35.20	34.33	33.00

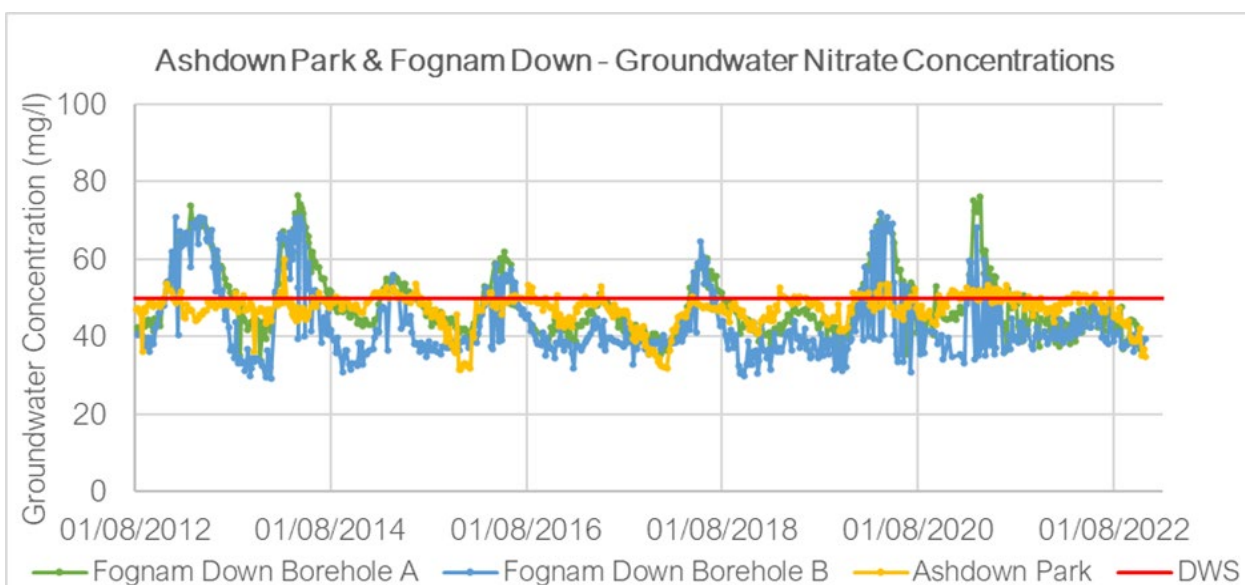
Nitrate concentrations in groundwater have remained consistently below the DWS in the abstractions in the Ogbourne, Axford, Hungerford and Leckhampstead catchments in the last year. Marlborough recorded a concentration of 63.96mg/l in January 2022; however, we believe this result is anomalous, and concentrations have been below the DWS since. Ashdown Park and Fognam Down have consistently recorded concentrations of 45-52mg/l from December 2021 to August 2022, with Ashdown Park recording above the DWS from February to May 2022. This has decreased since September 2022, with no abstraction recording concentrations >45mg/l.



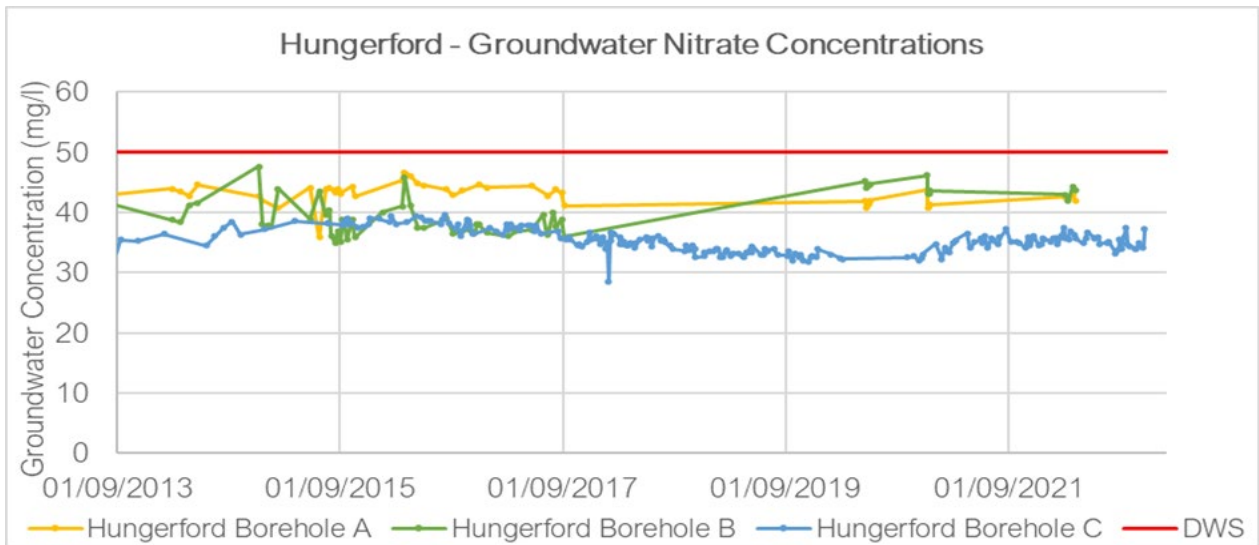
The graph above shows nitrate concentrations of raw, untreated groundwater at the abstractions in the Axford and Ogbourne catchments. Concentrations in Axford have been gradually increasing since 2012, to almost 40mg/l in 2022. Although this is below the DWS of 50mg/l and concentrations in Ogbourne seem to be improving with a downward trend, we'd like to avoid further deterioration in future water quality. The observed long term nitrate trends are strongly related to historical land use, but current activity can impact groundwater quality. We'd like to make sure concentrations don't start to rise again so this source can still be used to produce wholesome drinking water



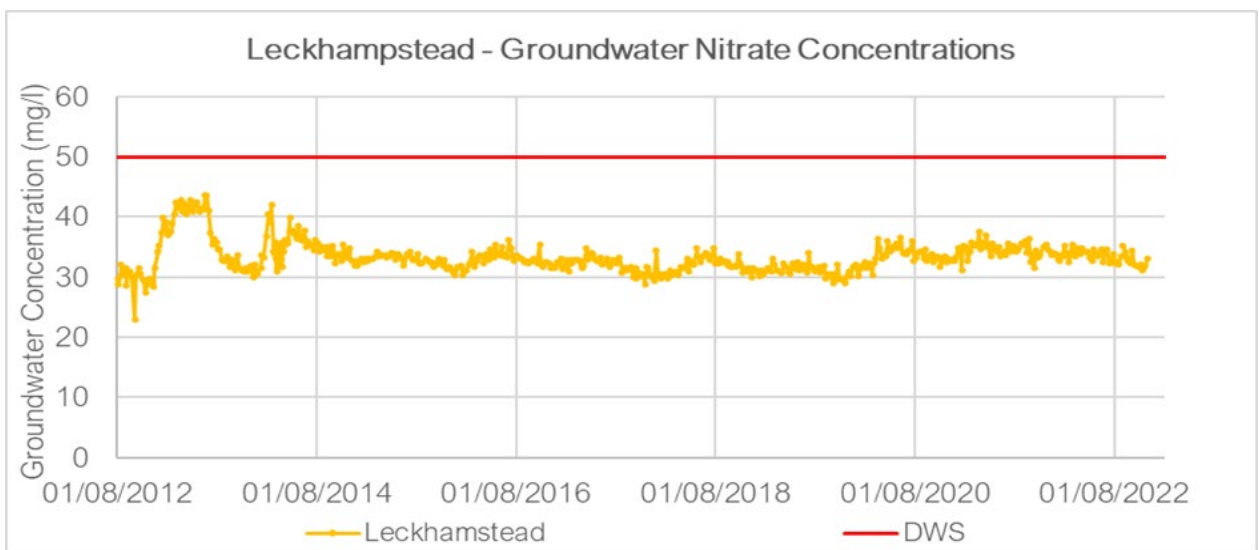
Nitrate concentrations of groundwater in the Marlborough catchment area have been gradually increasing, from annual minimums around 26mg/l in 2012 up to 35mg/l in 2021, to around 29mg/l in 2022. (We believe the peak in in January 2022 is anomalous and not representative.) Although concentrations are generally below the DWS, we'd like to avoid any further deterioration in 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 groundwater in the Ashdown Park catchment area have fluctuated around the DWS of 50mg/l from 2012 to 2022. At the Fognam Down boreholes, the baseline of nitrate concentration has been rising, with peak concentrations regularly exceeding the DWS of 50mg/l. Although the peak last year was lower, 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. Groundwater nitrate concentrations in sources in the Hungerford catchment have remained fairly steady since 2012, staying below the DWS of 50mg/l. However, there have been detections above 30mg/l consistently at all three boreholes, with Borehole A and B generally showing the highest.



Concentrations of nitrate in groundwater at the abstraction in the Leckhampstead 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. Prior to this, there were notable peaks above 40mg/l, however this remained below the DWS of 50mg/l. 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