



Kennet & Tributaries

Water Quality Update

Spring 2023

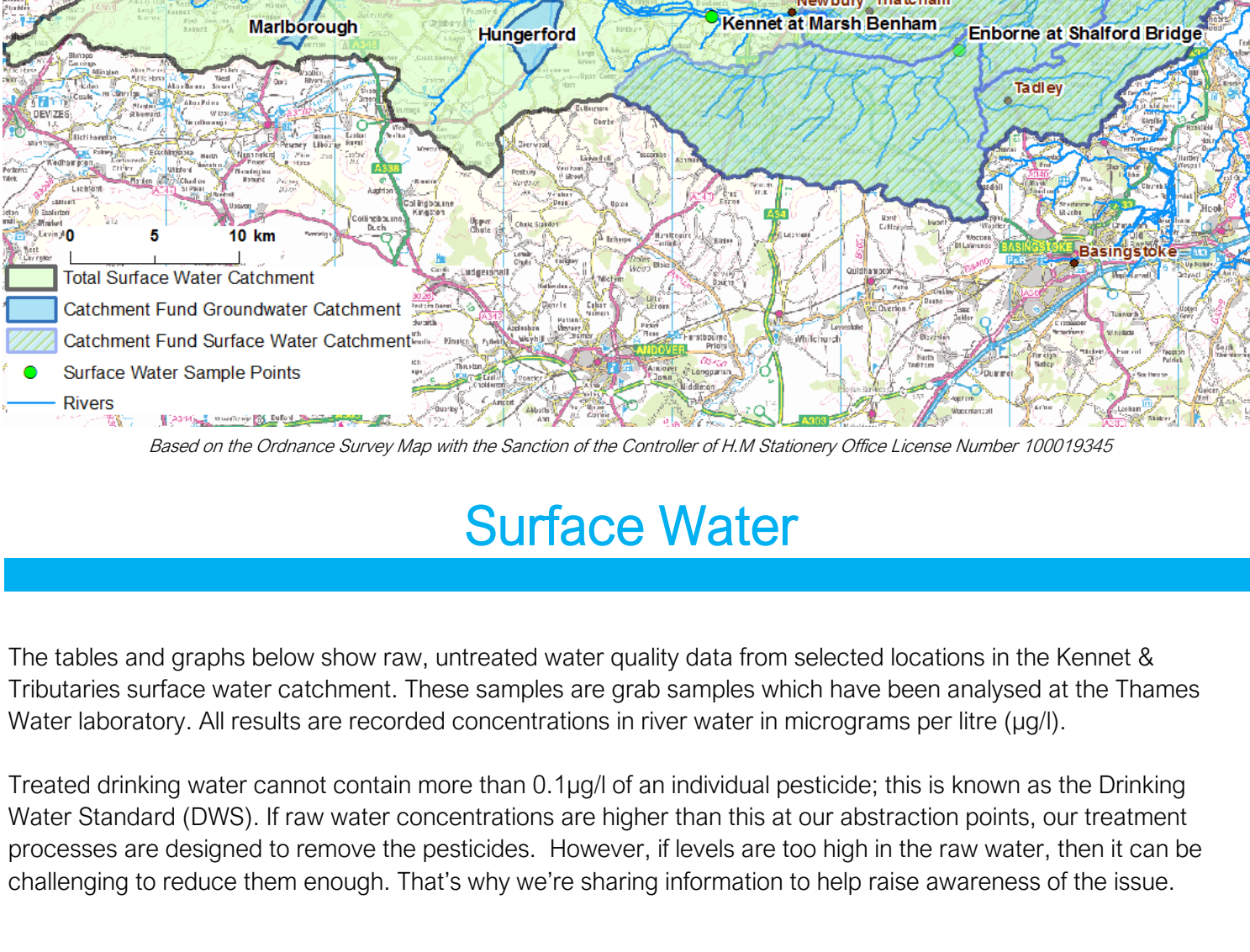
This is a water quality update for the Kennet & Tributaries catchment. Updates will be circulated quarterly to keep you updated with the latest water quality data from your catchment.

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 (metoldehyde, 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

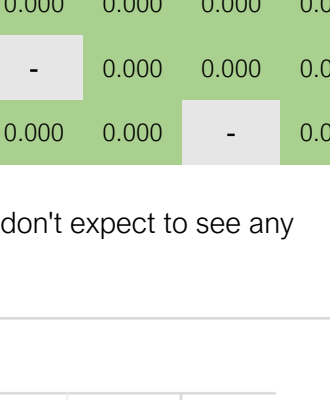
The tables and graphs below show raw, untreated water quality data from selected locations in the Kennet & Tributaries surface water catchment. These samples are grab samples which have been analysed at the Thames Water laboratory. All results are recorded concentrations in river water in micrograms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

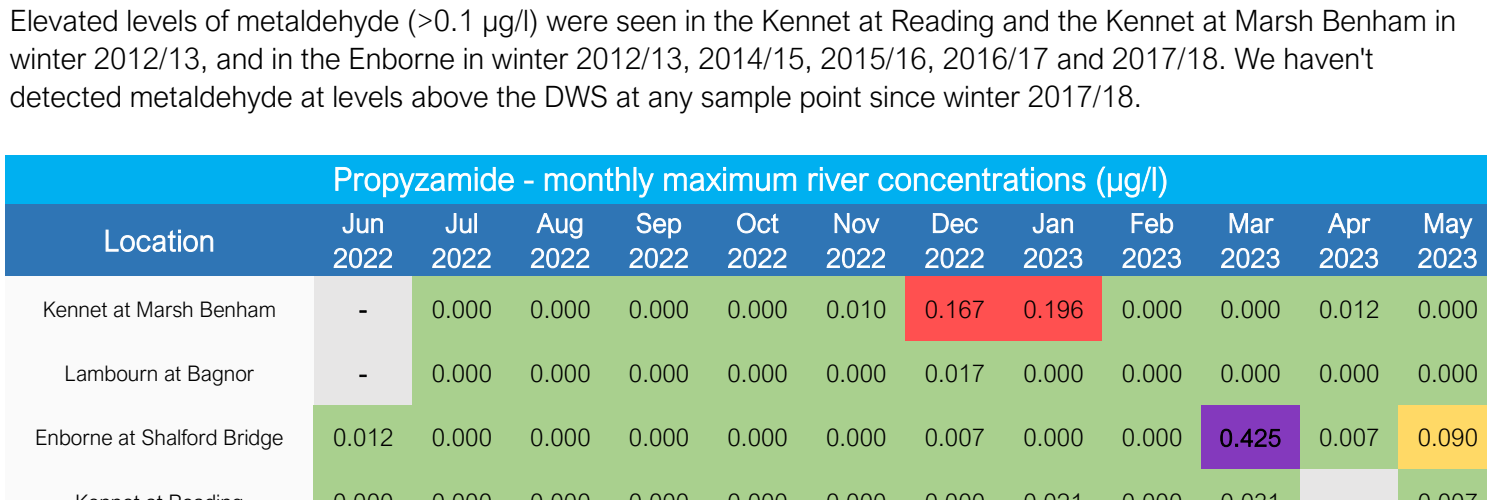
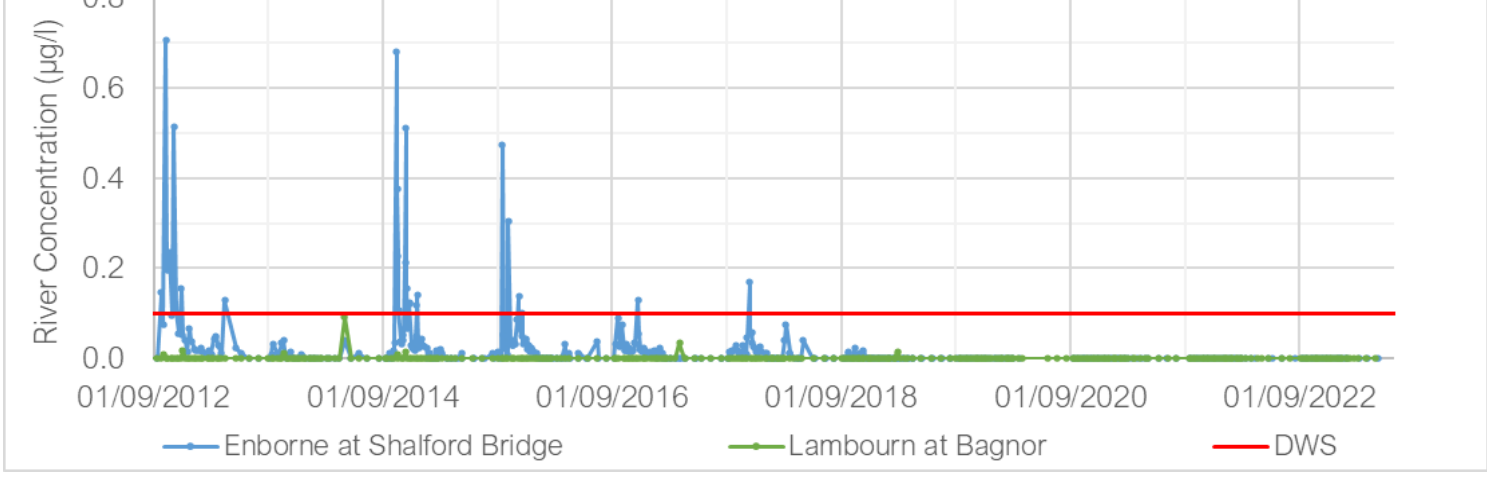
The below tables maximum concentrations for each pesticide of interest in the raw, untreated water at each sample point and the graphs show long term water quality trends.

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.



Metoldehyde - monthly maximum river concentrations (µg/l)												
Location	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023
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
Kennet at Reading	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	0.000

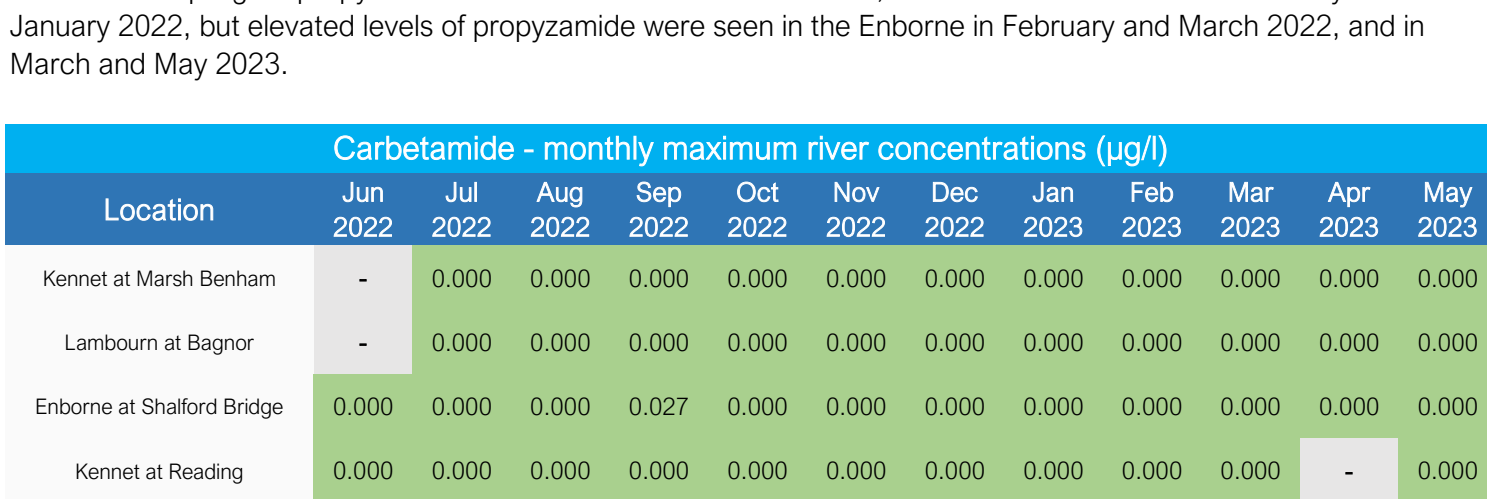
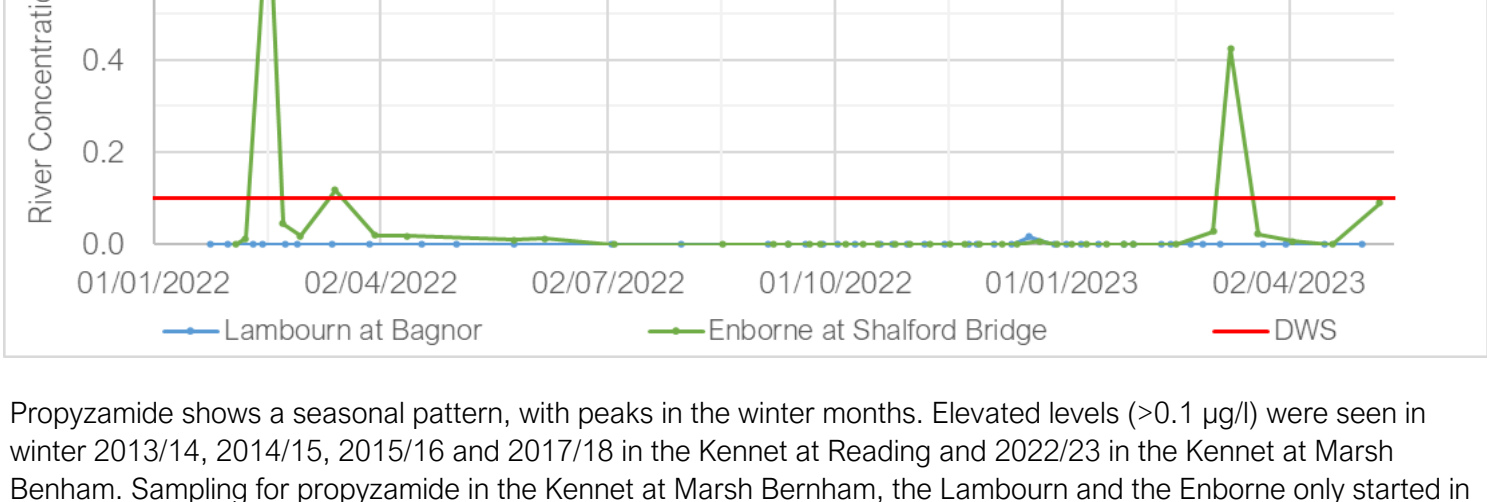
We haven't seen any metoldehyde at these sample points in the last 12 months, and we don't expect to see any detections going forward as metoldehyde is now banned from use.



Elevated levels of metoldehyde (>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 haven't detected metoldehyde at levels above the DWS at any sample point since winter 2017/18.

Propyzamide - monthly maximum river concentrations (µg/l)												
Location	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023
Kennet at Marsh Benham	-	0.000	0.000	0.000	0.000	0.010	0.167	0.196	0.000	0.000	0.012	0.000
Lambourn at Bagnor	-	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000
Enborne at Shalford Bridge	0.012	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.425	0.007	0.090
Kennet at Reading	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.031	-	0.007

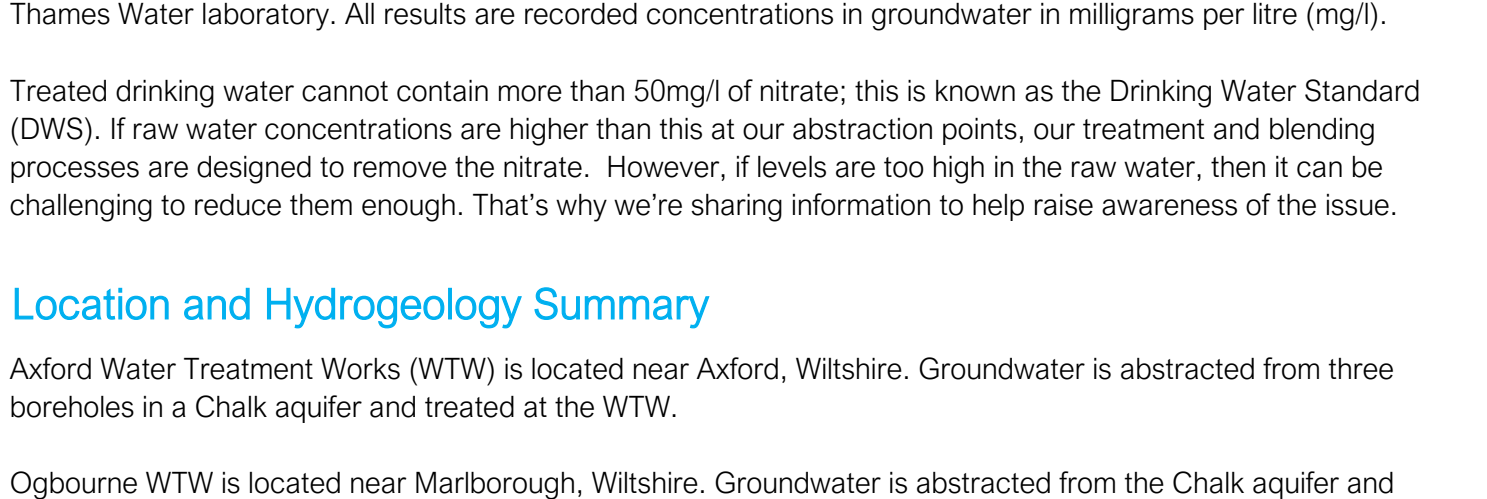
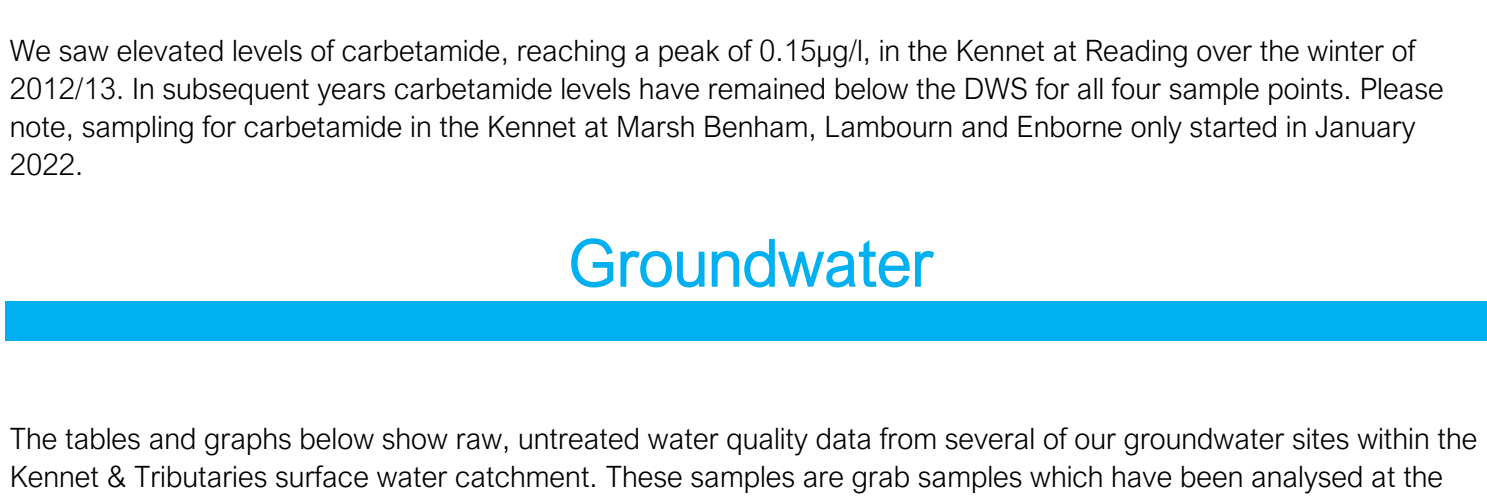
Elevated levels of propyzamide (>0.1 µg/l) were seen in the Kennet at Marsh Benham in December and January, and in the Enborne at Shalford Bridge in March, when levels reached over four times the DWS. Very little propyzamide has been seen in the Lambourn or the Kennet at Reading over the last 12 months.



Propyzamide shows a 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 and 2022/23 in the Kennet at Marsh Benham. Sampling for propyzamide in the Kennet at Marsh Benham, the Lambourn and the Enborne only started in January 2022, but elevated levels of propyzamide were seen in the Enborne in February and March 2022, and in March and May 2023.

Carbetamide - monthly maximum river concentrations (µg/l)												
Location	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023
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	0.027	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	-	0.000

No carbetamide was detected at any of the sample points in the Kennet surface water catchment over the last 12 months, apart from a low detection of 0.027µg/l in the Enborne in September 2022. Carbetamide has now been removed from use, so we don't expect to see it going forward.



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. Please note, sampling for carbetamide in the Kennet at Marsh Benham, Lambourn and Enborne only started in January 2022.

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.

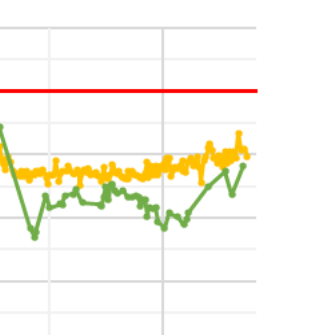
Leckhamstead WTW is located near Leckhamstead, Berkshire. Groundwater is abstracted from the Chalk aquifer and treated at the WTW on site.

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

Groundwater Quality Results Summary

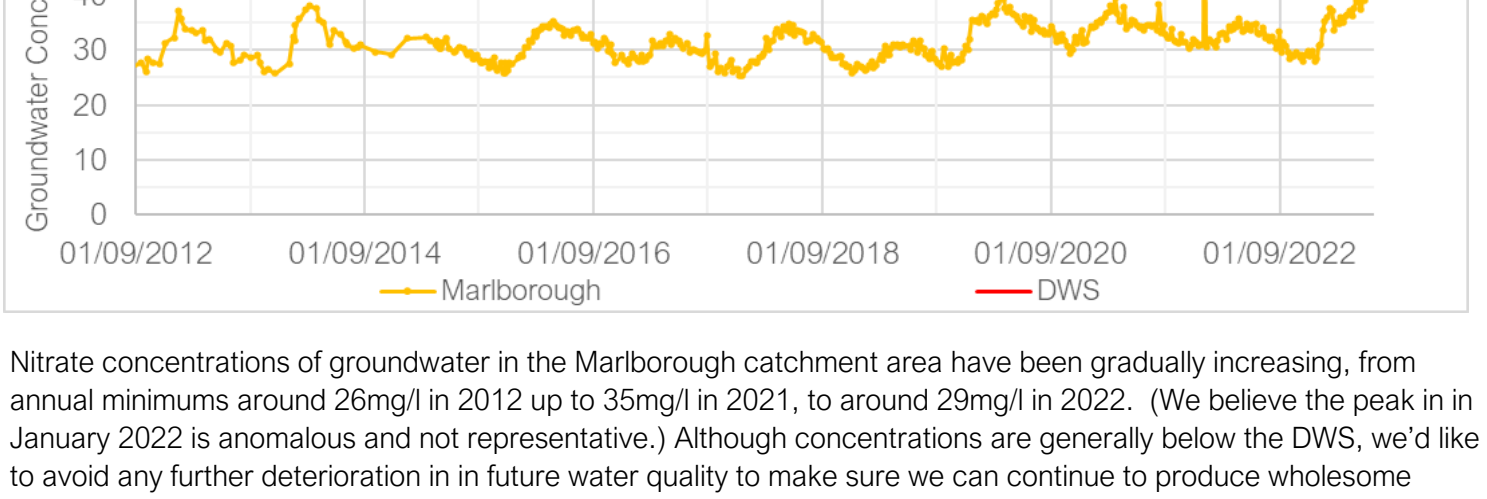
The tables below show maximum nitrate concentrations in the raw, untreated water for each groundwater catchment and the graphs show long term water quality trends.

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

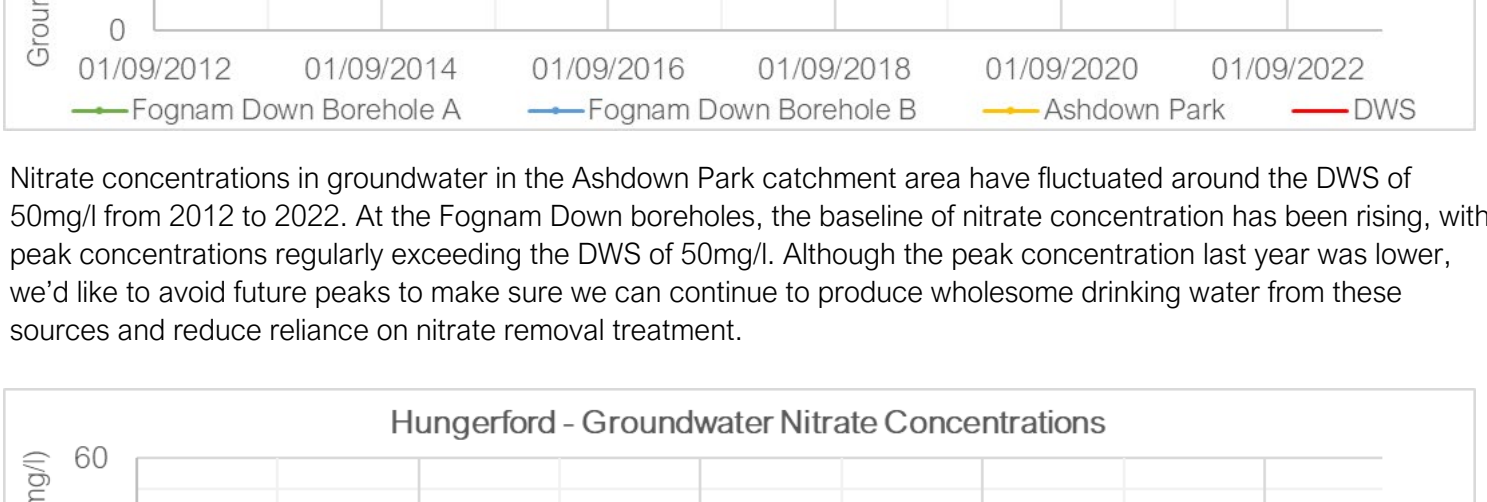


Nitrate - monthly maximum groundwater concentrations (mg/l)												
Location	Jun 2022	Jul 2022	Aug 2022	Sep 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023
Ogbourne	33.48	32.89	31.70	30.70	30.12	30.86	-	34.86	-	37.32	33.59	38.25
Axford	36.82	38.83	38.25	39.48	38.18	38.94	39.58	41.77	40.69	40.51	40.46	43.41
Marlborough	34.90	34.06	33.32	31.42	29.52	29.93	29.93	35.31	37.62	36.19	37.66	39.70
Ashdown Park	48.61	51.40	47.47	44.15	39.78	42.00	40.42	48.55	50.03	49.27	50.63	50.93
Fognam Down	48.32	48.25	47.62	39.13	44.27	41.00	40.93	51.35	57.22	57.25	60.67	68.72
Hungerford	35.79	35.04	35.54	37.47	34.38	37.24	36.13	-	34.84	35.54	35.11	36.56
Leckhamstead	34.54	34.57	33.50	35.20	34.33	33.00	32.35	32.84	34.06	35.09	32.82	35.25

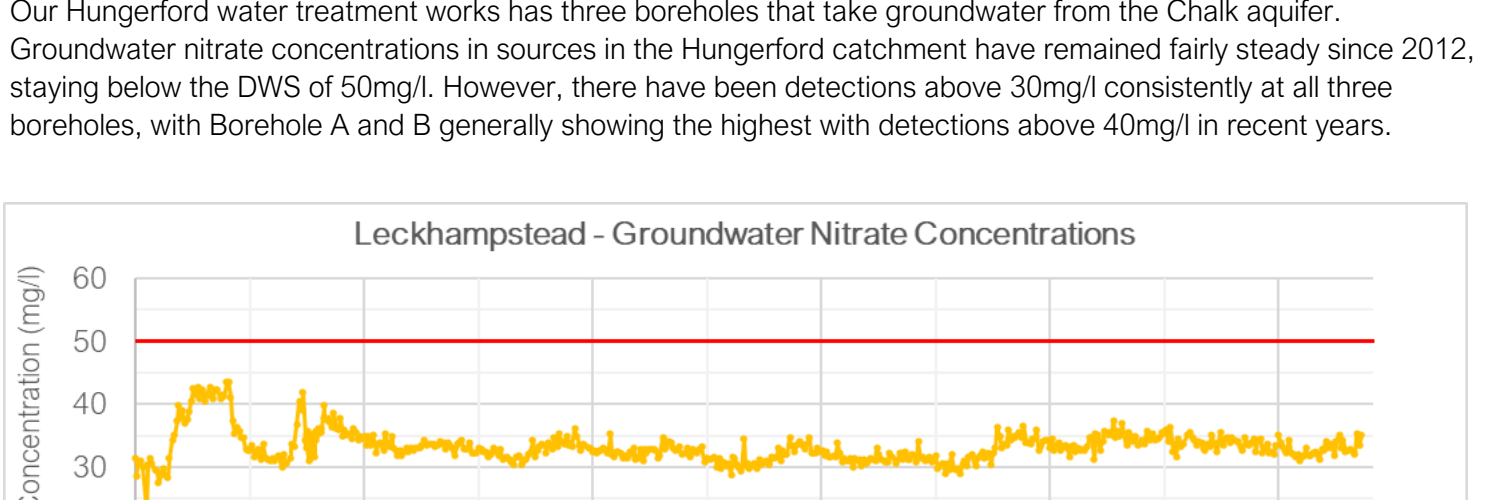
Nitrate concentrations in groundwater have remained consistently below the DWS in the abstractions in the Ogbourne, Axford, Marlborough, Hungerford and Leckhamstead catchments in the last year. However, Axford has recorded values >40mg/l. Ashdown Park and Fognam Down have consistently recorded concentrations >40mg/l with multiple samples exceeding the DWS of 50mg/l. Fognam Down had the highest value of 68.72mg/l in May 2023.



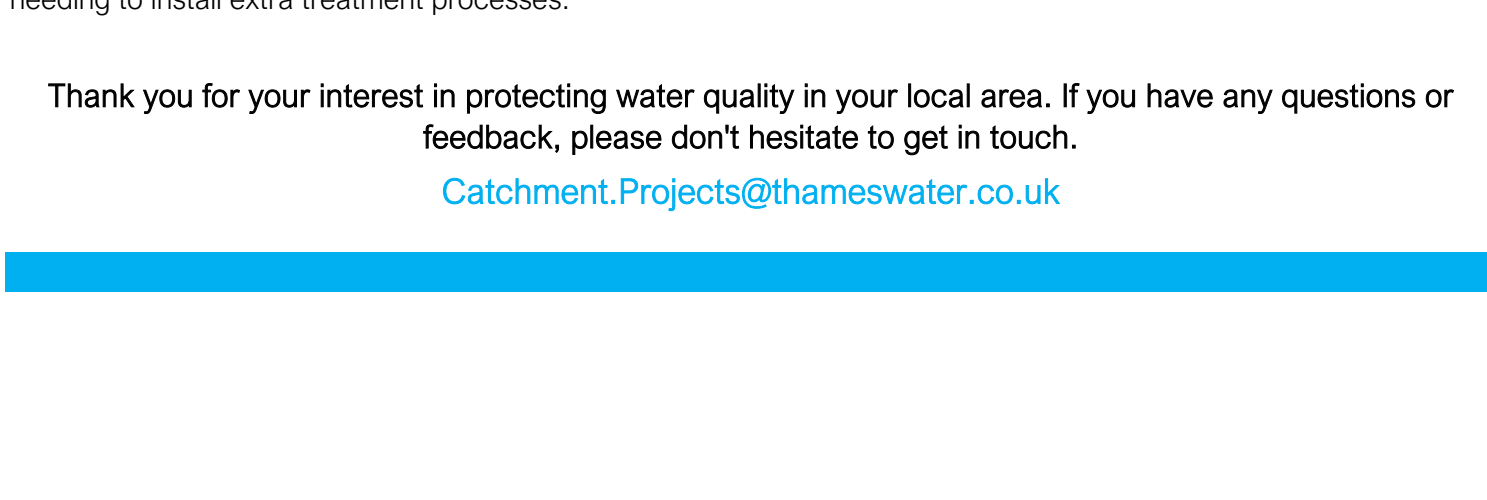
The graph above shows nitrate concentrations of raw, untreated groundwater at the abstractions in the Axford and Ogbourne catchments. Concentrations at Axford have been gradually increasing since 2012, to almost 42mg/l in 2023. Although this is below the DWS of 50mg/l and concentrations in Ogbourne seem 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 still 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 around 26mg/l in 2012 up to 35mg/l in 2021, to around 29mg/l in 2022. (We believe the peak in January 2022 is anomalous and not representative.) Although concentrations are generally below the DWS, 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 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 concentration last year was lower, we'd like to avoid further deterioration in future water quality 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 with detections above 40mg/l in recent years.

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. Before this, there were notable peaks above 40mg/l, but it 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