ANNUAL REPORT ON WATER QUALITY HERTSMERE BOROUGH COUNCIL 2012



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1. Introduction

Affinity Water produces an annual report for each local authority regarding the general water quality supplied to premises in the authority's area. The information includes results of samples taken from water supply zones in the authority's area of responsibility and any associated exceedences (see section 3 Water Quality) relevant to those supply areas i.e. exceedences from supplying water treatment works and service reservoirs. The report also includes details of the actions taken to comply with any enforcement orders, authorised departures and notices under regulation 19(4). This report is for Hertsmere Borough Council and covers the year ending 31 December 2012.

2. Water Treatment Works, Service Reservoirs & Water Supply Zones

A map of the water treatment works, service reservoirs and water supply zones within the Council's area is included in Appendix 1.

In 2012, the Company met the demand for drinking water by operating 83 water treatment works. The water supply to the area covered by the Council was provided by the following WTWs:

Clay Lane 27" Clay Lane 36" Iver North Mymms Queens Waterhall

In addition to the above Company-operated water treatment works there was a bulk import of treated water from Anglian Water's Grafham water treatment works. This was used as a supplementary supply to assist demand management.

Treated water from the above works is either passed directly into supply or via one of the following service reservoirs:

Arkley 1 & 2
Arkley 3 & 4
Arkley WT
Brookmans Park
Brookmans Park WT
Bushey Heath 1
Bushey Heath 2
Bushey Heath 3
Bushey Heath 5 East
Bushey Heath 5 West
Epping Green WT
Hatfield
Merry Hill East
Merry Hill West

The Company's area is divided into discrete Water Supply Zones, each with a population of 100,000 or less. In 2012, Affinity Water (Central Region) had 71 such zones.

In 2012, Hertsmere Borough Council's area was served by Zones:

023	Hatfield / Potters Bar
049	Borehamwood / Bushey
050	Barnet
052	Pinner / Stanmore
072	Shenley

Maps of and results of analyses for the above Zones can be found in Appendix 2.

3. Water Quality

In July 2012, a sample collected from Epping Green water tower was found to contain a single coliform bacteria. An associated sample collected on the same day, from the treatment works supplying the water tower, was satisfactory. Repeat samples, collected from the water tower and customer properties supplied from the tower, were negative for coliform bacteria. Despite a thorough investigation, no cause was identified for the failure.

During 2012 there were single contraventions of the standard for coliform bacteria in samples taken in Zones 049, 050 and 072. Investigations undertaken following the failures in Zones 050 and 072 identified the most likely cause to be the condition of the tap where the samples were taken. In Zone 049 the repeat samples demonstrated that the water supply within the area was satisfactory and no cause was identified for the exceedence.

Elevated levels of Metaldehyde were detected a total of five times in the Borough's area of responsibility across Zones 023, 050 and 052. The exceedences were due to an increase in the concentration of Metaldehyde in the supplying water treatment works' source waters. On one occasion (a sample taken in Zone 050 in October) the Metaldehyde concentration was high enough that the standard for total pesticides was exceeded as well. The levels of Metaldehyde detected were well below that which could affect public health. An Undertaking (see section 5. below) is in place for this parameter in zones supplied by Iver and North Mymms treatment works.

All exceedances of the standards are reported to the Drinking Water Inspectorate (DWI) in monthly exception reports. In the event that the Inspectorate is not satisfied with the Company's explanation of the circumstances and the action taken, enforcement action can be initiated.

4. Cryptosporidium

Listed below is a summary of the results for Cryptosporidium from treatment works that were originally identified as being at significant risk from Cryptosporidium and which supply water to the area covered by the Council.

Treatment	No of	Number of	Maximum
Works	Samples	Samples	Concentration
	taken in 2012	containing Oocysts	(Oocysts/10 litres)
Iver	366	0	<0.02

5. Customer Contacts

Under the Water Industry (Suppliers' Information) Direction 2009, the Company must provide the DWI with annual information on all consumer contacts received related to drinking water quality. For each water supply zone, the consumer contacts are separated into five main categories (with further division into sub-categories). An overall rate of contact per 1000 population is calculated for each zone as well as contact rates for combined categories.

The customer contact data for water supply zones within your Borough's area of responsibility is shown in the table below.

Zone (Pop.)	Total contacts "Consumer enquiries & Drinking Water Quality concern"	Zone Rate (Enquiries & DWQ concern per 1000 population)	Total contacts "Appearance, taste and odour & Illness"	Zone Rate (Appearance taste & odour and illness per 1000 pop.)	Overall Zone Rate (Contacts per 1000 pop.)
Company average		0.45		1.07	1.51
Zone 023 (77,886)	43	0.55	62	0.80	1.35
Zone 049 (78,136)	41	0.52	147	1.88	2.41
Zone 050 (47,606)	25	0.53	45	0.95	1.47
Zone 052 (67,043)	39	0.58	92	1.37	1.95
Zone 072 (3,928)	2	0.51	4	1.02	1.53

6. Section 19 Undertakings, Authorised Departures & Programmes of Work

Within the Council's area of supply there are Undertakings in place for Zones 023 and 050 relating to Metaldehyde & Total Pesticides for the Company's North Mymms and Iver WTWs and for the bulk import of treated water from Anglian Water's Grafham WTW. In all cases the Company has agreed to: implement a monitoring strategy; engage in catchment management activities, including support for voluntary initiatives to influence Metaldehyde use, in order to reduce concentrations in untreated waters; to engage with & provide data to relevant stakeholders; review possible alternative supply arrangements; optimise removal through current treatment processes; investigate new, sustainable treatment processes; and to continually review & appraise the risk from these hazards as part of the Regulatory process.

The Company did not have any Authorised Departures in place in the Council's area during 2012.

In order to meet the standard relating to lead, the Company has continued operating orthophosphate dosing plants at 35 sites across the Company's area. All the zones within the Council's area receive water dosed with orthophosphate.

7. Notifiable Events

Under the Water Industry (Suppliers Information) Direction 2009, the DWI must be notified of any situation where water quality is likely to be, or has been, adversely affected. Since 2009 the DWI has been using an event classification system to assess and quantify the significance of a notifiable event, giving each one a number (1 to 5) with an equivalent rating (not significant to major). The Company regards any event classified as a 3 Significant or above as being equivalent to the previously designated 'incident'. During 2012 there were no such notifiable events within your Borough's area of responsibility.

8. Further Information & Advice

For further information and advice on all water quality matters please contact:

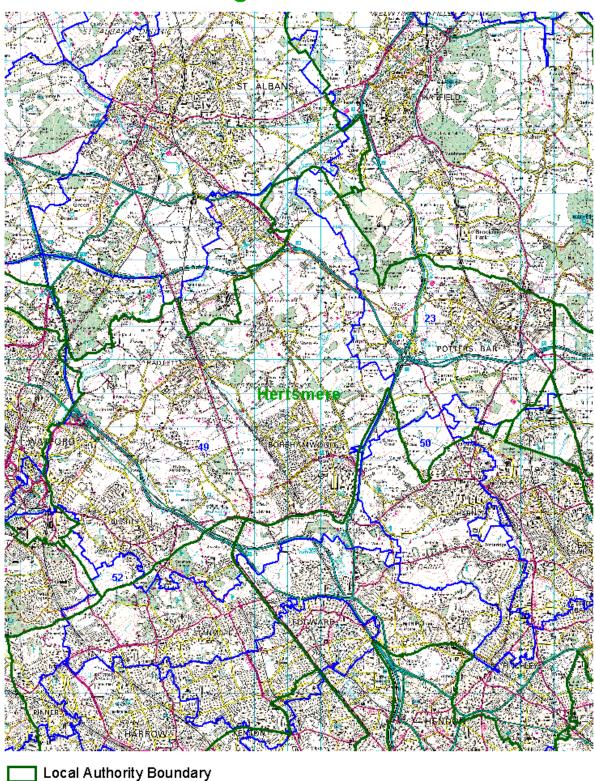
Eddie Lintott
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Telephone: 01707 277165

APPENDIX 1

Map of Hertsmere Borough Council

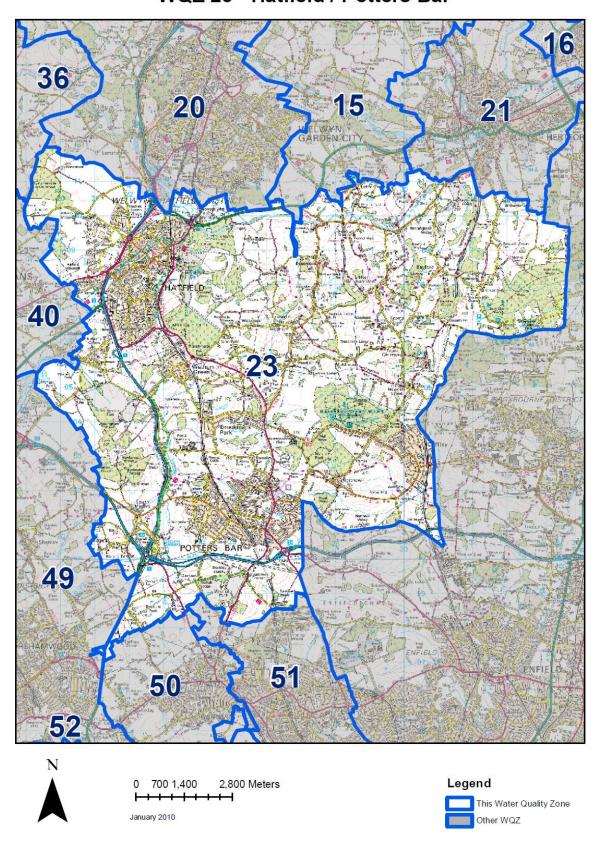
Hertsmere Borough Council



Local Authority Boundary
Water Supply Zone Boundary

APPENDIX 2 Maps of & Analytical Information for Individual Water Supply Zones

WQZ 23 - Hatfield / Potters Bar



Water Supply Zone: Hatfield/Potters Bar (AF023) Period: 01 January 2012 to 31 December 2012 Population: 77886



		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
		Mi	crobiological Parameters					
Coliform bacteria	No./100ml	192	0	0	0	0	0	0
E coli	No./100ml	192	0	0	0	0	0	0
Clostridium perfringens	No./100ml	52	0	0	0	0	0	0
Enterococci	No./100ml	8	0	0	0	0	0	0
2 day plate count 37 ℃	No./1ml at 37 ℃	52	No a bnormal change	0	0	0	3	139
3 day plate count 22 ℃	No./1ml at 22 ℃	52	No a bnormal change	0	0	0	14	600
			Customer Parameters					
Alkalinity	mgHCO ₃ /I	1	No PCV	0	0	310	310	310
Calcium	mgCa/l	1	No PCV	0	0	148	148	148
Chlorine (Residual)	mgCl ₂ /I	192	No PCV	0	0	0.02	0.16	0.46
Colour	mg/I Pt/Co	26	20	0	0	<1.0	<1.0	2.3
Fluoride	mgF/I	8	1.5	0	0	0.134	0.154	0.184
Hardness (Total)	mgCaCO ₉ /I	1	No PCV	0	0	370	370	370
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	6.9	7.2	7.6
Quantitative Odour	Dilution No.	26	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	26	consumers	0	0	0	0	0
Temperature	°C	186	No PCV	0	0	5.4	12.5	18.7
Turbidity	NTU	52	4	0	0	0.06	0.18	0.42
			Chemicals					
Metals								
Arsenic	μgAs/l	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/l	26	200	0	0	<5.0	5.4	36.5
Antimony	μgSb/l	8	5	0	0	< 0.20	< 0.20	< 0.20
Cadmium	μgCd/l	8	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	μgCr/I	8	50	0	0	<2.0	<2.0	<2.0
Copper	mgCu/l	8	2	0	0	< 0.010	0.015	0.050
Iron	μgFe/I	52	200	0	0	<15.0	<15.0	41.5
Lead	μgPb/l	8	25	0	0	<1.00	<1.00	1.23
Manganese	μgMn/l	26	50	0	0	<1.0	<2.0	<2.0
Mercury	μgHg/l	8	1	0	0	< 0.10	< 0.10	< 0.10
Nickel	μgNi/l	8	20	0	0	<2.0	<2.0	3.4
Sodium	mgNa/l	8	200	0	0	9.4	21.2	28.5

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Pesticides								
Atrazine	μg/l	8	0.1	0	0	<0.007	0.008	0.014
Bentazone	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Carbendazim	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Carbetamide	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Chlorotoluron	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Clopyralid	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Cyanazine	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dicamba	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dichlobenil	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Dichlorprop	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Diuron	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Fluroxypyr	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Glyphosate	μg/l	8	0.1	0	0	< 0.002	< 0.006	0.012
Isoproturon	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Linuron	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
MCPA	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
MCPB	μg/l	8	0.1	0	0	<0.008	<0.008	< 0.008
Mecoprop	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Metaldehyde	μg/l	8	0.1	2	25	< 0.012	0.054	0.118
Metazachlor	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
Methabenzthiazuron	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Prometryn	μg/l	8	0.1	0	0	< 0.008	< 0.008	<0.008
Propyzamide	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Simazine	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Terbutryn	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Total Pesticide	μg/l	8	0.5	0	0	0.000	0.055	0.127
Tri-allate	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Trietazine	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
2,4-D	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Additional Parameters								
Ammonium	mgNH₄/I	26	0.5	0	0	< 0.04	< 0.04	0.08
Benzene	μg/l	8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/l	8	0.01	0	0	< 0.001	< 0.001	0.001
Boron	mgB/l	8	1	0	0	< 0.100	< 0.100	< 0.100

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Additional Parameters (contin	ued)	•						
Bromate	µgBrO₃/I	8	10	0	0	<0.5	< 0.5	0.6
Chloride	mgCl/l	8	250	0	0	21	38	50
Electrical Conductivity at 20 ℃	µS/cm at 20 ℃	52	2500	0	0	533	661	803
Nitrate	mgNO ₉ /I	8	50	0	0	24.2	25.6	26.7
Nitrite	mgNO ₂ /I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	<0.48	< 0.53	< 0.53
Selenium	μgSe/l	8	10	0	0	<1.0	<1.0	<1.0
Sulphate	mgSO ₄ /I	8	250	0	0	12	44	58
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	0.0	0.0	0.0
Tetrachloromethane	μg/l	8	3	0	0	< 0.1	< 0.1	< 0.1
Total Cyanide	μgCN/I	8	50	0	0	<3.0	<3.0	<3.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	0.4	1.1	1.5
Total PAHs	μg/l	8	0.1	0	0	0.000	0.000	0.001
Total Trihalomethanes	μg/l	8	100	0	0	3.69	13.79	22.20
1, 2 dichloroethane	μg/l	8	3	0	0	< 0.1	< 0.1	< 0.1

PCV = Prescribed Concentration or Value or Specification Concentration or Value

Commentary on Water Quality

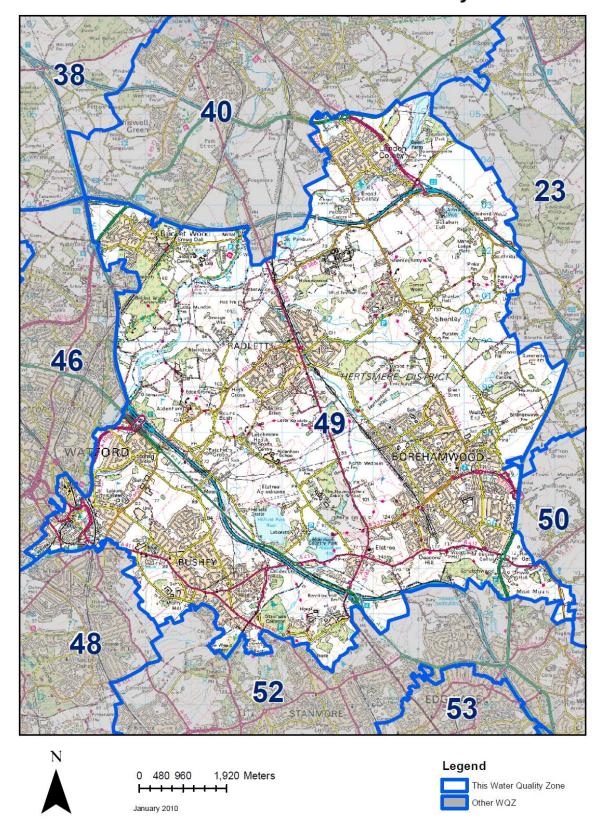
Elevated concentrations of the pesticide Metaldehyde were detected twice during 2012, once in June and once in October. At these times this zone was supplied with water from our North Mymms water treatment works. The raw waters that feed this treatment works have all been found to contain Metaldehyde and at present there are no known practical treatment processes that remove metaldehyde. An Undertaking is in place for this parameter in this zone which requires Affinity Water to investigate catchment management and possible treatment solutions. The concentration detected was well below that which could affect public health.

Undertakings & Authorised Departures

No Authorised Departures applied to this water supply zone during 2012.

An Undertaking is in place for this zone relating to Metaldehyde & Total Pesticides from North Mymms Water Treatment Works (WTW) & from Anglian Water Services' (AWS) Grafham WTW. The Company has agreed to: implement a monitoring strategy; engage in catchment management activities, including support for voluntary initiatives to influence Metaldehyde use, in order to reduce concentrations in untreated waters; to engage with & provide data to relevant stakeholders; review possible alternative supply arrangements; optimise removal through current treatment processes; investigate new, sustainable treatment processes; and to continually review & appraise the risk from these hazards as part of the Regulatory process. AWS has agreed to: implement a monitoring strategy; to engage with relevant stakeholders & provide regular updates on data; investigate new, sustainable treatment processes, supporting national research programmes where appropriate; and to continually review & appraise the risk from these hazards as part of the Regulatory process.

WQZ 49 - Borehamwood / Bushey



Water Supply Zone: Borehamwood/Bushey (AF049) Period: 01 January 2012 to 31 December 2012 Population: 83622



		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
		Mi	crobiological Parameters					
Coliform bacteria	No./100ml	192	0	1	<1	0	0	1
E coli	No./100ml	192	0	0	0	0	0	0
Clostridium perfringens	No./100ml	52	0	0	0	0	0	0
Enterococci	No./100ml	8	0	0	0	0	0	0
2 day plate count 37 ℃	No./1ml at 37 ℃	52	No a bnormal change	0	0	0	16	300
3 day plate count 22 ℃	No./1ml at 22 ℃	52	No a bnormal change	0	0	0	9	224
• •			Customer Parameters					
Alkalinity	mgHCO ₃ /I	1	No PCV	0	0	335	335	335
Calcium	mgCa/l	1	No PCV	0	0	142	142	142
Chlorine (Residual)	mgCl ₂ /I	192	No PCV	0	0	0.07	0.25	0.54
Colour	mg/l Pt/Co	26	20	0	0	<1.0	<1.0	1.5
Fluoride	mgF/I	8	1.5	0	0	0.129	0.150	0.172
Hardness (Total)	mgCaCO ₉ /I	1	No PCV	0	0	355	355	355
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	7.0	7.1	7.2
Quantitative Odour	Dilution No.	26	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	26	consumers	0	0	0	0	0
Temperature	°C	189	No PCV	0	0	6.9	13.1	19.8
Turbidity	NTU	52	4	0	0	0.05	0.14	0.36
•			Chemicals					
Metals								
Arsenic	μgAs/l	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/l	26	200	0	0	<5.0	<5.0	7.0
Antimony	μgSb/l	8	5	0	0	< 0.20	<0.20	0.25
Cadmium	μgCd/l	8	5	0	0	<0.20	<0.20	< 0.20
Chromium	μgCr/I	8	50	0	0	<2.0	<2.0	<2.0
Copper	mgCu/l	8	2	0	0	0.017	0.050	0.111
Iron	μgFe/I	52	200	0	0	<15.0	<15.0	29.7
Lead	μgPb/l	8	25	0	0	<1.00	<1.00	2.80
Manganese	μgMn/l	26	50	0	0	<1.0	<2.0	<2.0
Mercury	μgHg/l	8	1	0	0	<0.10	<0.10	<0.10
Nickel	μgNi/I	8	20	0	0	2.9	3.1	3.4
Sodium	mgNa/l	8	200	0	0	29.7	32.7	35.8

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Pesticides		•						
Atrazine	μg/l	8	0.1	0	0	0.031	0.039	0.045
Bentazone	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Bromacil	μg/l	8	0.1	0	0	<0.010	<0.010	< 0.010
Carbetamide	μg/I	8	0.1	0	0	<0.008	<0.008	<0.008
Chlorotoluron	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Clopyralid	μg/l	8	0.1	0	0	<0.008	<0.008	< 0.008
Cyanazine	μg/I	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dicamba	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dichlobenil	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Dichlorprop	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
Diuron	μg/I	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Fenpropimorph	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Fluroxypyr	μg/I	8	0.1	0	0	< 0.008	<0.008	<0.008
Flutriafol	μg/I	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Isoproturon	μg/I	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Linuron	μg/I	8	0.1	0	0	< 0.009	< 0.009	< 0.009
MCPA	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
MCPB	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Mecoprop	μg/I	8	0.1	0	0	< 0.008	<0.008	< 0.008
Metaldehyde	μg/l	8	0.1	0	0	0.024	0.031	0.054
Propyzamide	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Simazine	μg/I	8	0.1	0	0	< 0.008	0.010	0.014
Terbutryn	μg/I	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Total Pesticide	μg/l	8	0.5	0	0	0.025	0.075	0.101
Tri-allate	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Trietazine	μg/I	8	0.1	0	0	< 0.008	<0.008	< 0.008
2,4-D	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Additional Parameters								
Ammonium	mgNH ₄ /I	26	0.5	0	0	< 0.04	< 0.04	< 0.04
Benzene	μg/l	8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/I	8	0.01	0	0	< 0.001	<0.001	< 0.001
Boron	mgB/I	8	1	0	0	< 0.100	< 0.100	<0.100
Bromate	µgBrO ₉ /I	8	10	0	0	< 0.5	< 0.5	1.2
Chloride	mgCl/l	8	250	0	0	50	53	56

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Additional Parameters (contin	ued)							
Electrical Conductivity at 20 ℃	µS/cm at 20 ℃	52	2500	0	0	534	710	747
Nitrate	mgNO ₃ /I	8	50	0	0	25.5	27.0	28.1
Nitrite	mgNO ₂ /I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	< 0.51	< 0.56	< 0.56
Selenium	μgSe/l	8	10	0	0	<1.0	<1.0	1.9
Sulphate	mgSO ₄ /I	8	250	0	0	46	49	53
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	3.3	3.9	4.5
Tetrachloromethane	μg/l	8	3	0	0	<0.1	< 0.1	< 0.1
Total Cyanide	μgCN/I	7	50	0	0	<3.0	<3.0	4.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	0.9	1.4	1.9
Total PAHs	μg/l	8	0.1	0	0	0.000	0.000	0.000
Total Trihalomethanes	μg/l	8	100	0	0	8.91	16.08	25.44
1, 2 dichloroethane	μg/l	8	3	0	0	<0.1	< 0.1	< 0.1

PCV = Prescribed Concentration or Value or Specification Concentration or Value

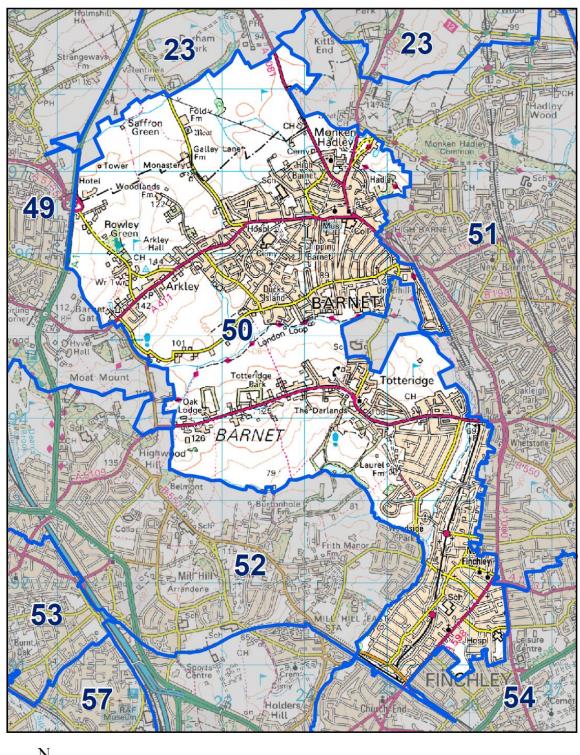
Commentary on Water Quality

A coliform was detected in a sample taken from a customer's property in Clarendon Road, Borehamwood in March. A detailed investigation was carried out which confirmed the quality of the water supply to the area was satisfactory but did not identify the cause of the failure. Coliforms do not pose a risk to public health.

Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during 2012.

WQZ 50 - Barnet





Water Supply Zone: Barnet (AF050) Period: 01 January 2012 to 31 December 2012 Population: 46214



		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
		Mi	crobiological Parameters					
Coliform bacteria	No./100ml	120	0	1	<1	0	0	1
E coli	No./100ml	120	0	0	0	0	0	0
Clostridium perfringens	No./100ml	36	0	0	0	0	0	0
Enterococci	No./100ml	8	0	0	0	0	0	0
2 day plate count 37 ℃	No./1ml at 37 ℃	36	No a bnormal change	0	0	0	8	74
3 day plate count 22 ℃	No./1ml at 22 ℃	36	No a bnormal change	0	0	0	4	64
			Customer Parameters					
Alkalinity	mgHCO ₉ /I	1	No PCV	0	0	264	264	264
Calcium	mgCa/l	1	No PCV	0	0	119	119	119
Chlorine (Residual)	mgCl ₂ /l	120	No PCV	0	0	0.05	0.23	0.49
Colour	mg/l Pt/Co	18	20	0	0	<1.0	<1.0	1.4
Fluoride	mgF/I	8	1.5	0	0	0.121	0.140	0.172
Hardness (Total)	mgCaCO ₉ /I	1	No PCV	0	0	298	298	298
Hydrogen Ion (pH)	pH value	36	6.5-9.5	0	0	6.9	7.2	7.5
Quantitative Odour	Dilution No.	18	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	18	consumers	0	0	0	0	0
Temperature	℃	119	No PCV	0	0	6.5	13.3	20.1
Turbidity	NTU	36	4	0	0	0.07	0.16	0.40
			Chemicals					
Metals								
Arsenic	μgAs/l	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/l	18	200	0	0	5.7	23.6	51.3
Antimony	μgSb/l	8	5	0	0	< 0.20	< 0.20	0.24
Cadmium	μgCd/l	8	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	μgCr/I	8	50	0	0	<2.0	<2.0	<2.0
Copper	mgCu/l	8	2	0	0	< 0.010	0.012	0.039
Iron	μgFe/l	36	200	0	0	<15.0	<15.0	16.1
Lead	μgPb/l	8	25	0	0	<1.00	<1.00	2.73
Manganese	μgMn/l	36	50	0	0	<1.0	<2.0	2.7
Mercury	μgHg/I	8	1	0	0	< 0.10	< 0.10	< 0.10
Nickel	μgNi/I	8	20	0	0	<2.0	<2.0	2.7
Sodium	mgNa/l	8	200	0	0	21.5	45.3	161.0

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Pesticides		•						
Atrazine	μg/l	8	0.1	0	0	<0.007	<0.007	0.010
Bentazone	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Carbendazim	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Carbetamide	μg/l	8	0.1	0	0	<0.008	<0.008	0.010
Chlorotoluron	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Clopyralid	μg/l	8	0.1	0	0	<0.008	<0.008	0.011
Cyanazine	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dicamba	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dichlobenil	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Dichlorprop	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Diuron	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Fluroxypyr	μg/l	8	0.1	0	0	<0.008	< 0.008	<0.008
Glyphosate	μg/l	8	0.1	0	0	< 0.002	< 0.006	0.012
Isoproturon	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Linuron	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
MCPA	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
MCPB	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Mecoprop	μg/l	8	0.1	0	0	< 0.008	< 0.008	<0.008
Metaldehyde	μg/l	8	0.1	2	25	0.015	0.104	0.488
Metazachlor	μg/l	8	0.1	0	0	< 0.008	< 0.008	0.051
Methabenzthiazuron	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Prometryn	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
Propyzamide	μg/l	8	0.1	0	0	< 0.006	< 0.006	0.033
Simazine	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Terbutryn	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Total Pesticide	μg/l	8	0.5	1	13	0.015	0.123	0.525
Tri-allate	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Trietazine	μg/l	8	0.1	0	0	< 0.008	< 0.008	<0.008
2,4-D	μg/l	8	0.1	0	0	<0.008	0.010	0.026
Additional Parameters	• • • • • • • • • • • • • • • • • • • •							
Ammonium	mgNH ₄ /I	18	0.5	0	0	<0.04	<0.04	<0.04
Benzene	μg/l	8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/l	8	0.01	0	0	< 0.001	< 0.001	< 0.001
Boron	mgB/I	8	1	0	0	< 0.100	< 0.100	< 0.100

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Additional Parameters (contin	ued)							
Bromate	µgBrO₃/I	8	10	0	0	<0.5	< 0.5	1.3
Chloride	mgCl/l	8	250	0	0	41	48	62
Electrical Conductivity at 20 ℃	µS/cm at 20 ℃	36	2500	0	0	559	646	716
Nitrate	mgNO ₃ /I	8	50	0	0	20.0	24.7	30.1
Nitrite	mgNO ₂ /I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	< 0.40	< 0.60	< 0.60
Selenium	μgSe/l	8	10	0	0	<1.0	<1.0	<1.0
Sulphate	mgSO ₄ /I	8	250	0	0	43	55	66
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	0.0	0.1	0.4
Tetrachloromethane	μg/l	8	3	0	0	< 0.1	< 0.1	< 0.1
Total Cyanide	μgCN/I	8	50	0	0	<3.0	<3.0	4.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	1.6	2.2	2.9
Total PAHs	μg/l	8	0.1	0	0	0.000	0.000	0.000
Total Trihalomethanes	μg/l	8	100	0	0	22.03	40.16	56.50
1, 2 dichloroethane	μg/l	8	3	0	0	<0.1	< 0.1	< 0.1

PCV = Prescribed Concentration or Value or Specification Concentration or Value

Commentary on Water Quality

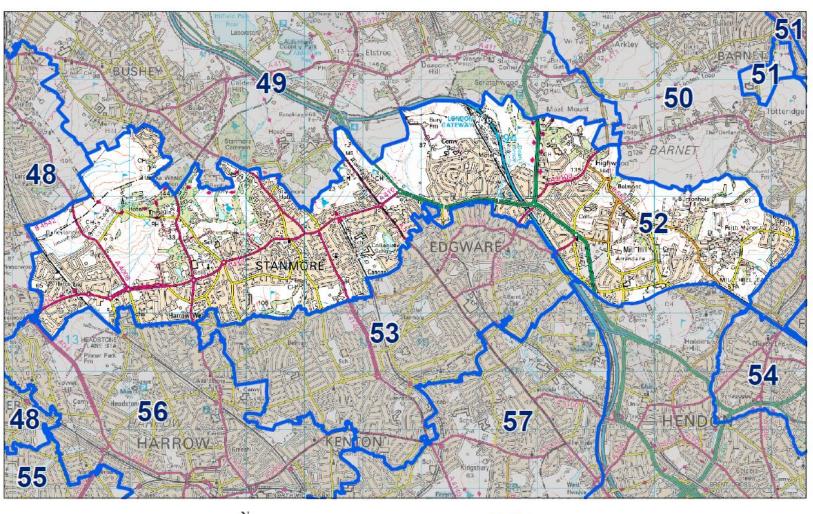
A coliform was detected in a sample taken from a customer's property in Oakdene Park, Finchley in November. Our investigation identified the most likely cause of the failure was the condition of the tap where the sample was taken. Coliforms do not pose a risk to public health. Elevated concentrations of the pesticide Metaldehyde were detected in two samples during 2012, one in October and one in November. In October, the Metaldehyde concentration was high enough that the standard for Total Pesticides was exceeded as well. At the time this zone was supplied with water from Iver and North Mymms water treatment works. During the autumn of 2012 there was a significant increase in the Metaldehyde concentration in the raw water that feeds these treatment works because of the wet summer and the heavy autumn rainfall and at present there are no known practical treatment processes that remove metaldehyde. Undertakings are in place for this parameter in this zone which requires Affinity Water to investigate catchment management and possible treatment solutions. The concentration detected was well below that which could affect public health.

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.

Undertakings & Authorised Departures

No Authorised Departures applied to this water supply zone during 2012.

An Undertaking is in place for this zone relating to Metaldehyde & Total Pesticides from North Mymms and Iver Water Treatment Works (WTW). The Company has agreed to: implement a monitoring strategy; engage in catchment management activities, including support for voluntary initiatives to influence Metaldehyde use, in order to reduce concentrations in untreated waters; to engage with & provide data to relevant stakeholders; review possible alternative supply arrangements; optimise removal through current treatment processes; investigate new, sustainable treatment processes; and to continually review & appraise the risk from these hazards as part of the regulatory process.



WQZ 52 - Pinner / Stanmore





Water Supply Zone: Mill Hill/Stanmore (AF052) Period: 01 January 2012 to 31 December 2012 Population: 67028



		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	0.139 330 7.1 0 0 13.3 0.14 <1.0 6.0 0 <0.20 <2.0 0 0.029 0 <15.0 <1.00 <2.0 <0.10	Max.
			crobiological Parameters					
Coliform bacteria	No./100ml	168	0	0	0	0	0	0
E coli	No./100ml	168	0	0	0	0	0	0
Clostridium perfringens	No./100ml	52	0	0	0	0	_	0
Enterococci	No./100ml	8	0	0	0	0	0	0
2 day plate count 37 ℃	No./1ml at 37 ℃	52	No a bnormal change	0	0	0	10	278
3 day plate count 22 ℃	No./1ml at 22 ℃	52	No a bnormal change	0	0	0	8	203
			Customer Parameters					
Alkalinity	mgHCO ₉ /I	1	No PCV	0	0	319	319	319
Calcium	mgCa/l	1	No PCV	0	0	132	132	132
Chlorine (Residual)	mgCl ₂ /I	168	No PCV	0	0	0.09	0.26	0.60
Colour	mg/l Pt/Co	26	20	0	0	<1.0	<1.0	1.6
Fluoride	mgF/I	8	1.5	0	0	0.101	0.139	0.173
Hardness (Total)	mgCaCO ₉ /I	1	No PCV	0	0	330	330	330
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	6.9	7.1	7.4
Quantitative Odour	Dilution No.	26	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	26	consumers	0	0	0	0	0
Temperature	℃	166	No PCV	0	0	8.1	13.3	21.3
Turbidity	NTU	52	4	0	0	0.04	0.14	0.35
			Chemicals					
Metals								
Arsenic	μgAs/l	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/I	26	200	0	0	<5.0	6.0	41.2
Antimony	μgSb/l	8	5	0	0	< 0.20	< 0.20	0.25
Cadmium	μgCd/l	8	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	µgCr/l	8	50	0	0	<2.0	<2.0	<2.0
Copper	mgCu/l	8	2	0	0	< 0.010	0.029	0.143
Iron	μgFe/I	52	200	0	0	<15.0	<15.0	15.5
Lead	μgPb/l	8	25	0	0	<1.00	<1.00	2.84
Manganese	μgMn/l	26	50	0	0	<1.0	<2.0	4.3
Mercury	μgHg/I	8	1	0	0	< 0.10	< 0.10	< 0.10
Nickel	μgNi/I	8	20	0	0	<2.0	<2.0	5.6
Sodium	mgNa/l	8	200	0	0	18.6	29.8	36.2

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Pesticides		•						
Atrazine	μg/l	7	0.1	0	0	<0.007	0.021	0.044
Bentazone	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Bromacil	μg/l	8	0.1	0	0	< 0.010	< 0.010	<0.010
Carbetamide	μg/l	7	0.1	0	0	<0.008	<0.008	0.015
Chlorotoluron	μg/l	7	0.1	0	0	< 0.007	< 0.007	< 0.007
Clopyralid	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Cyanazine	μg/l	7	0.1	0	0	< 0.007	< 0.007	< 0.007
Dicamba	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Dichlobenil	μg/l	8	0.1	0	0	< 0.006	< 0.006	< 0.006
Dichlorprop	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
Diuron	μg/l	7	0.1	0	0	< 0.006	< 0.006	< 0.006
Fenpropimorph	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Fluroxypyr	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
Flutriafol	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Isoproturon	μg/l	7	0.1	0	0	< 0.006	< 0.006	< 0.006
Linuron	μg/l	7	0.1	0	0	< 0.009	< 0.009	< 0.009
MCPA	μg/l	8	0.1	0	0	< 0.008	<0.008	<0.008
МСРВ	μg/l	8	0.1	0	0	< 0.008	<0.008	< 0.008
Mecoprop	μg/I	8	0.1	0	0	< 0.008	<0.008	<0.008
Metaldehyde	μg/l	8	0.1	1	13	< 0.012	0.045	0.229
Propyzamide	μg/l	8	0.1	0	0	< 0.006	0.010	0.079
Simazine	μg/l	7	0.1	0	0	< 0.008	< 0.008	0.015
Terbutryn	μg/l	7	0.1	0	0	< 0.009	< 0.009	< 0.009
Total Pesticide	μg/l	8	0.5	0	0	0.000	0.081	0.345
Tri-allate	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Trietazine	μg/l	7	0.1	0	0	< 0.008	<0.008	<0.008
2,4-D	μg/l	8	0.1	0	0	< 0.008	<0.008	0.014
Additional Parameters								
Ammonium	mgNH₄/I	26	0.5	0	0	<0.04	< 0.04	< 0.04
Benzene	μg/l	8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/I	8	0.01	0	0	< 0.001	< 0.001	< 0.001
Boron	mgB/I	8	1	0	0	< 0.100	<0.100	<0.100
Bromate	µgBrO ₉ /I	8	10	0	0	< 0.5	< 0.5	1.2
Chloride	mgCl/l	8	250	0	0	40	51	60

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Additional Parameters (contin	ued)							
Electrical Conductivity at 20 ℃	µS/cm at 20 ℃	52	2500	0	0	530	703	750
Nitrate	mgNO ₃ /I	8	50	0	0	19.7	24.4	28.0
Nitrite	mgNO ₂ /I	8	0.5	0	0	<0.008	<0.008	0.011
Nitrite Nitrate Formula		8	1	0	0	< 0.40	< 0.56	< 0.56
Selenium	µgSe/l	8	10	0	0	<1.0	<1.0	1.3
Sulphate	mgSO ₄ /I	8	250	0	0	40	49	56
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	0.0	2.8	4.6
Tetrachloromethane	μg/l	8	3	0	0	<0.1	< 0.1	< 0.1
Total Cyanide	μgCN/I	8	50	0	0	<3.0	<3.0	5.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	0.2	1.5	2.7
Total PAHs	μg/l	8	0.1	0	0	0.000	0.000	0.001
Total Trihalomethanes	μg/l	8	100	0	0	7.34	20.36	34.38
1, 2 dichloroethane	μg/l	8	3	0	0	<0.1	<0.1	<0.1

PCV = Prescribed Concentration or Value or Specification Concentration or Value

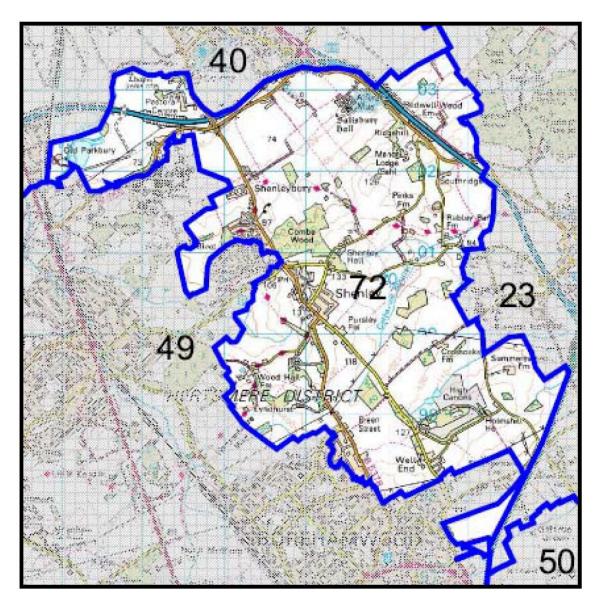
Commentary on Water Quality

An elevated concentration of the pesticide Metaldehyde was detected in a sample taken in Pinner in November. At the time this zone was supplied with water from Iver water treatment works. During the autumn of 2012 there was a significant increase in the Metaldehyde concentration in the raw water that feeds the treatment works because of the wet summer and the heavy autumn rainfall and at present there are no known practical treatment processes that remove metaldehyde. An Undertaking is in place at Iver treatment works for this parameter which requires Affinity Water to investigate catchment management and possible treatment solutions. The concentration detected was well below that which could affect public health.

Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during 2012.

WQZ 72 – Shenley North





Water Supply Zone: Shenley (AF072) Period: 01 January 2012 to 31 December 2012 Population: 3928



B	11	No. of	DOV/	No. of Samples	% of Samples		Mare	Mari
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
			crobiological Parameters					
Coliform bacteria	No./100ml	12	0	1	8	0	0	4
E coli	No./100ml	12	0	0	0	0	0	0
Clostridium perfringens	No./100ml	4	0	0	0	0	0	0
Enterococci	No./100ml	4	0	0	0	0	0	0
2 day plate count 37 ℃	No./1ml at 37 ℃	4	No ab normal change	0	0	0	10	40
3 day plate count 22 ℃	No./1ml at 22 ℃	4	No ab normal change	0	0	0	5	12
			Customer Parameters					
Alkalinity	mgHCO ₃ /I	1	No PCV	0	0	313	313	313
Calcium	mgCa/l	1	No PCV	0	0	131	131	131
Chlorine (Residual)	mgCl ₂ /l	12	No PCV	0	0	0.06	0.19	0.29
Colour	mg/l Pt/Co	4	20	0	0	<1.0	<1.0	1.3
Fluoride	mgF/I	4	1.5	0	0	0.118	0.133	0.139
Hardness (Total)	mgCaCO ₉ /I	1	No PCV	0	0	328	328	328
Hydrogen Ion (pH)	pH value	4	6.5-9.5	0	0	7.0	7.1	7.3
Quantitative Odour	Dilution No.	4	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	4	consumers	0	0	0	0	0
Temperature	℃	12	No PCV	0	0	7.9	13.7	18.9
Turbidity	NTU	4	4	0	0	0.08	0.20	0.38
			Chemicals					
Metals								
Arsenic	μgAs/l	4	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/l	4	200	0	0	<5.0	<5.0	<5.0
Antimony	μgSb/l	4	5	0	0	< 0.20	< 0.20	0.22
Cadmium	μgCd/l	4	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	μgCr/I	4	50	0	0	<2.0	<2.0	<2.0
Copper	mgCu/l	4	2	0	0	< 0.010	0.061	0.161
Iron	μgFe/I	4	200	0	0	<15.0	<15.0	<15.0
Lead	μgPb/l	4	25	0	0	<1.00	1.28	5.13
Manganese	μgMn/l	4	50	0	0	<1.0	<2.0	<2.0
Mercury	μgHg/I	4	1	0	0	< 0.10	< 0.10	<0.10
Nickel	μgNi/I	4	20	0	0	2.8	3.2	3.4
Sodium	mgNa/l	4	200	0	0	30.7	32.1	34.9

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Pesticides								
Atrazine	μg/l	3	0.1	0	0	0.040	0.042	0.043
Bentazone	μg/I	4	0.1	0	0	< 0.008	<0.008	<0.008
Carbetamide	μg/l	3	0.1	0	0	< 0.008	<0.008	<0.008
Chlorotoluron	μg/l	3	0.1	0	0	< 0.007	< 0.007	< 0.007
Clopyralid	μg/l	4	0.1	0	0	< 0.008	<0.008	<0.008
Cyanazine	μg/I	3	0.1	0	0	< 0.007	< 0.007	< 0.007
Dicamba	μg/l	4	0.1	0	0	< 0.007	< 0.007	< 0.007
Dichlorprop	μg/I	4	0.1	0	0	< 0.008	<0.008	<0.008
Diuron	μg/I	3	0.1	0	0	< 0.006	< 0.006	< 0.006
Fluroxypyr	μg/I	4	0.1	0	0	< 0.008	<0.008	<0.008
Isoproturon	μg/l	3	0.1	0	0	< 0.006	< 0.006	< 0.006
Linuron	μg/I	3	0.1	0	0	< 0.009	< 0.009	< 0.009
MCPA	μg/l	4	0.1	0	0	<0.008	<0.008	<0.008
MCPB	μg/I	4	0.1	0	0	< 0.008	<0.008	<0.008
Mecoprop	μg/I	4	0.1	0	0	< 0.008	<0.008	<0.008
Methabenzthiazuron	μg/l	3	0.1	0	0	< 0.009	< 0.009	< 0.009
Propazine	μg/I	3	0.1	0	0	< 0.007	< 0.007	< 0.007
Simazine	μg/I	3	0.1	0	0	0.012	0.013	0.014
Terbutryn	μg/I	3	0.1	0	0	< 0.009	< 0.009	< 0.009
Total Pesticide	μg/I	4	0.5	0	0	0.000	0.041	0.056
Trietazine	μg/I	3	0.1	0	0	< 0.008	<0.008	<0.008
2,4-D	μg/l	4	0.1	0	0	< 0.008	<0.008	<0.008
Additional Parameters								
Ammonium	mgNH ₄ /I	4	0.5	0	0	<0.04	<0.04	< 0.04
Benzene	μg/l	4	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/l	4	0.01	0	0	< 0.001	<0.001	< 0.001
Boron	mgB/I	4	1	0	0	<0.100	< 0.100	0.110
Bromate	µgBrO₃/I	4	10	0	0	< 0.5	< 0.5	0.8
Chloride	mgCl/l	4	250	0	0	50	52	54
Electrical Conductivity at 20 ℃	µS/cm at 20 ℃	4	2500	0	0	700	730	762
Nitrate	mgNO ₉ /I	4	50	0	0	24.9	27.0	28.8
Nitrite	mgNO ₂ /I	4	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		4	1	0	0	< 0.50	<0.58	<0.58
Selenium	μgSe/l	4	10	0	0	<1.0	<1.0	1.6

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Additional Parameters (continu	ued)	•						
Sulphate	mgSO ₄ /I	4	250	0	0	45	48	51
Sum of Tri & Tetrachloroethene	μg/l	4	10	0	0	1.9	3.1	4.2
Tetrachloromethane	μg/l	4	3	0	0	<0.1	<0.1	< 0.1
Total Cyanide	µgCN/I	4	50	0	0	<3.0	3.5	5.0
Total Organic Carbon	mgC/I	4	No abnormal change	0	0	1.0	1.2	1.5
Total PAHs	μg/l	4	0.1	0	0	0.000	0.000	0.000
Total Trihalomethanes	μg/l	4	100	0	0	11.81	18.67	24.32
1, 2 dichloroethane	μg/l	4	3	0	0	<0.1	<0.1	<0.1

PCV = Prescribed Concentration or Value or Specification Concentration or Value

Commentary on Water Quality

Coliform bacteria were detected in a sample taken from a customer's property in King Charles Road, Shenley in September. Our investigation identified the most likely cause of the failure was the condition of the tap where the sample was taken. Coliforms do not pose a risk to public health.

Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during 2012.