

Annual Report on Water Quality Hertsmere Borough Council 2019

EGHT

May 2020



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### **1** Introduction

Affinity Water produces an annual report for each local authority regarding the general quality of water 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. In 2019, 99.97% of the 190,000 tests taken as part of the Company's regulatory monitoring programme complied with the standards confirming that drinking water quality continues to be of a very high standard.

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 the Hertsmere Borough Council and covers the year ending 31 December 2019.

### 2 Water Treatment Works, Service Reservoirs and Water Supply Zones

In 2019, the Company met the demand for drinking water by operating 93 water treatment works. The water supply to the area covered by the Borough was provided by the following water treatment works:

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 2019, Affinity Water had 89 such zones.



In 2019, Hertsmere Borough Council's area was served by Zones:

023 Hatfield / Potters Bar 048 Northwood / Ruislip 049 Borehamwood / Bushey 050 Barnet 051 East Barnet 052 Mill Hill / Stanmore 072 Shenley 088 St Alban's North

Maps and results of analyses for the above water supply zones can be found in Appendix 2.

### 3 Water Quality

During February, coliform bacteria were detected in a routine sample taken from Bushey Heath Reservoir No 5 East, Bushey. As a precaution the reservoir was taken out of supply and drained down to allow an internal inspection to be undertaken. Our investigation established that the water leaving the reservoir was satisfactory, we did identify some minor ingress during the internal inspection which may have caused the exceedance. After the necessary remedial work, the reservoir was returned to supply. Coliforms do not pose a risk to public health.

In September, coliform bacteria were detected in a sample taken from a customer's property in Zone 049. Our investigation identified that the most likely cause of the failures was the condition of the tap where the samples were taken. The customers were all informed of the situation and actions to take to prevent contamination of taps.

All exceedences of the standards are reported to the Drinking Water Inspectorate (DWI) in monthly exception reports. In the event that the DWI 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 Borough.

Treatment Works	No. of samples taken in 2019	No. of samples containing oocysts	Maximum Concentration (Oocysts/10 litres)
lver	366	0	<0.10



### **5** Customer Contacts

Under the Water Industry (Suppliers' Information) Direction 2019, 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 (Population)	Zone Rate (Consumer Enquiries & Drinking Water Quality Concern per 1000 population)	Zone Rate (Appearance, taste and odour & illness per 1000 pop.)	Overall zone rate (Contacts per 1000 pop.)
Company average	0.25	0.81	1.06
Z023 (88,921)	0.36	0.79	1.15
Z048 (61,571)	0.21	0.83	1.04
Z049 (85,191)	0.26	0.63	0.89
Z050 (56,908)	0.32	0.39	0.70
Z051 (74,530)	0.32	0.38	0.70
Z052 (72,385)	0.39	0.79	1.17
Z072 (3,074)	0.33	0.33	0.65
Z088 (53,642)	0.41	0.78	1.19

### 6 Section 19 Undertakings, Authorised Departures & Regulation 28 Notices

Within the Borough's area of supply Zones 23, 48, 50 and 51 are affected by the Company's Section 19 Undertaking relating to Metaldehyde & Total Pesticides from North Mymms, Iver Water Treatment Works (WTW) and 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.

In addition, the DWI issued the Company with a Notice under Regulation 27(4) with regard to Cryptosporidium oocysts in the supply from Iver WTW requiring us to review all risks, ensuring they are fully addressed and considered. We have carried this assessment and several actions



have been agreed. These include plans to enhance the treatments at the WTW during the next two investment period.

The Company did not have any Authorised Departures in place in the Borough's area during 2019.

In order to meet the standard relating to lead, the Company has continued operating orthophosphate dosing plants at 38 sites across the Company's area. All the zones within the Borough's area receive water dosed with orthophosphate.

### 7 Notifiable events

Under the Water Industry (Suppliers Information) Direction 2019, 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" through to "major"). The Company regards any event classified as a 3 Significant or above as being equivalent to the previously designated 'incident'. During 2019 there were no such notifiable events within your Borough's area of responsibility.

### 8 Further information and advice

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

Eddie Lintott Water Quality Manager Affinity Water Tamblin Way Hatfield Hertfordshire AL10 9EZ Telephone: 0345 357 2407

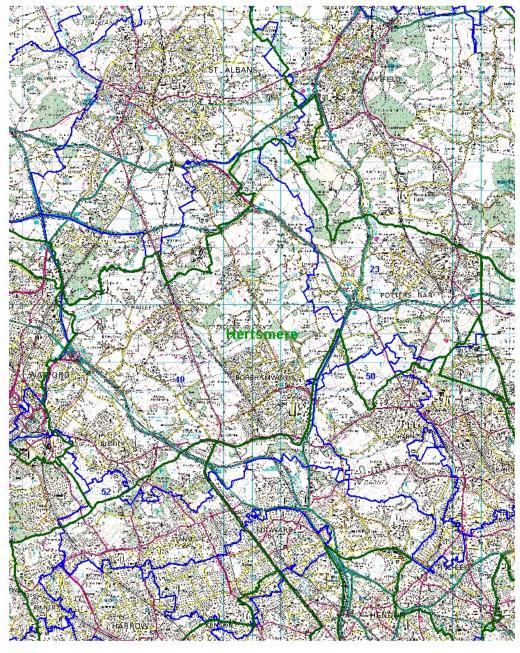


Appendices



## 9 Appendix One – Map

### **Hertsmere Borough Council**

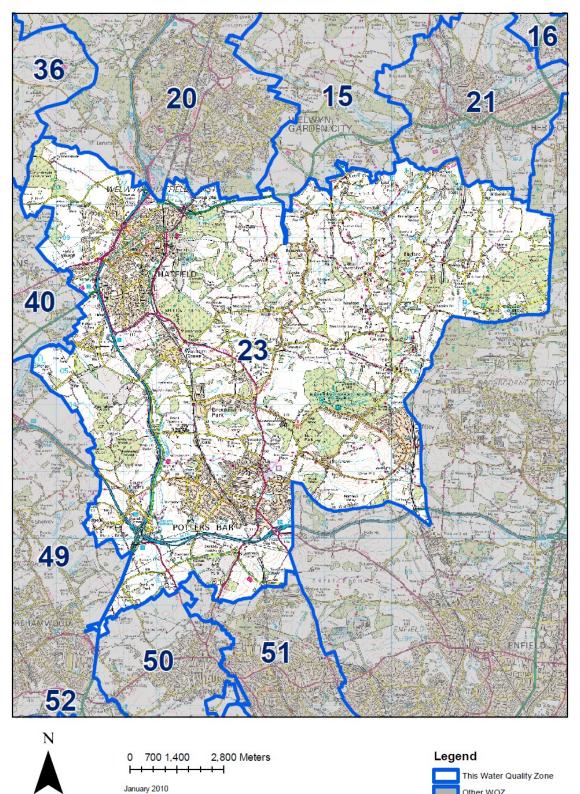


Local Authority Boundary
Water Supply Zone Boundary



### 10 Appendix Two – Water Quality Results

WQZ 23 - Hatfield / Potters Bar



Annual Report on Water Quality

5/20/20

Other WQZ



#### Water Supply Zone: Hatfield/Potters Bar (AF023) Period: 01-Jan-2019 to 31-Dec-2019

#### Affinity Water

#### Population: 88921

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Microbiological Parameters								
Coliform bacteria	No./100ml	216	0	1	<1	0	0	2
E coli	No./100ml	216	0	0	0	0	0	0
Clostridium perfringens	No./100ml	76	0	0	0	0	0	0
Enterococci	No./100ml	8	0	0	0	0	0	0
3 day plate count 22 °C	No./1ml at 22 °C	76	No abnormal change	0	0	0	8	260
Customer Parameters	11000/1		1. 2011		-	202		
Alkalinity	mgHCO3/I	1	No PCV	0	0	292	292	292
Calcium	mgCa/l	1	No PCV	0	0	134	134	134
Chlorine (Residual)	mgCl2/l	216	No PCV	0	0	0.05	0.24	0.81
Colour	mg/I Pt/Co	76	20	0	0	<1.0	<1.0	2
Fluoride	mgF/I	8	1.5	0	0	0.092	0.174	0.259
Hardness (Total)	mgCaCO3/I	1	No PCV	0	0	335	335	335
Hydrogen Ion (pH)	pH value	76	6.5-9.5	0	0	6.9	7.2	7.6
Quantitative Odour	Dilution No.	76	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	76	consumers	0	0	0	0	0
Temperature	°C	215	No PCV	0	0	5.4	13.7	23.1
Turbidity	NTU	76	4	0	0	<0.10	0.14	0.36
Chemicals								
Metals	A - (1	0	40	0	0	.1.0	-1.0	-1.0
Arsenic	μgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/l	76	200	0	0	<5.0	<5.0	20.3
Antimony	μgSb/l	8	5	0	0	<0.20	<0.20	0.36
Cadmium	μgCd/l	8	5	0	0	<0.20	<0.20	<0.20
Chromium	μgCr/l	8	50	0	0	< 0.5	<0.5	< 0.5
Copper	mgCu/l	8	2	0	0	< 0.010	0.086	0.57
Iron	μgFe/l	76	200	0	0	<15.0	<15.0	58.4
Lead	μgPb/I	8	10	0	0	<1.00	<1.00	2.65
Manganese	μgMn/l	76	50	0	0	<1.0	<1.0	1.1
Mercury	μgHg/l	8	1	0	0	<0.10	<0.10	<0.10
Nickel	μgNi/I	8	20 200	0	0	<2.0	2.4	3.3
Sodium	mgNa/l	8	200	0	0	17	35.2	54.5
Pesticides Atrazine		8	0.1	0	0	< 0.005	0.007	0.013
	μg/l							
Carbetamide	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Clopyralid	μg/l	8	0.1 0.1	0	0	<0.012 <0.002	<0.012 <0.010	0.024 <0.010
Glyphosate	μg/l	8	0.1	0	0	< 0.002	< 0.010	< 0.010
Mecoprop Metaldehyde	μg/l	8	0.1	0	0	0.003	0.031	0.058
	μg/l	8		0	0			
Metazachlor	μg/l		0.1	0		< 0.005	< 0.005	< 0.005
Propyzamide Simazine	μg/l	8	0.1 0.1	0	0	<0.008 <0.007	<0.008 <0.007	0.012
Total Pesticide	μg/l	8	0.1	0	0	0.035	0.061	0.008
2,4-D	μg/l	8	0.5	0	0	< 0.035	< 0.001	< 0.084
Additional Parameters	μg/l	0	0.1	0	0	<0.007	<0.007	<0.007
Additional Parameters	mgNH4/I	76	0.5	0	0	< 0.04	< 0.04	0.15
Benzene	μg/l	8	0.5	0	0	<0.04	<0.04	<0.02
Benzo (a) Pyrene	μg/l	8	0.01	0	0	<0.02	<0.02	0.002
Boron	mgB/I	6	1	0	0	< 0.1001	< 0.100	< 0.1003
Bromate	μgBrO3/I	8	10	0	0	<0.100	<0.100	<0.100
Chloride	mgCl/l	8	250	0	0	37	60	84
Electrical Conductivity at 20 °C	μS/cm at 20 °C	8	250	0	0	572	708	84
Nitrate	mgNO3/I	8	50	0	0	19.2	27.4	35.8
Nitrite	mgNO2/I	8	0.5	0	0	<0.008	0.018	0.093
Nitrite Nitrate Formula	IIIBNO2/I	8	0.5	0	0	< 0.008	<0.62	0.093
Selenium	μgSe/I	8	10	0	0	<0.46	<0.62	<1.0
Sulphate	mgSO4/I	8	250	0	0	34	79	127
Sulphate Sum of Tri & Tetrachloroethene	mgSO4/I μg/l	8	10	0	0	34	0.3	0.6
		8	10	0	0	<0.1	<0.1	0.6
Tetrachloromethane Total Gyapida	μg/l	8	3 50	0	0	<0.1	<0.1	1.1
Total Cyanide	μgCN/I	8	50 No abnormal change	0	0			
Total Organic Carbon	mgC/I		-			0.7	2.1	3.6
Total PAHs	μg/l	8	0.1	0	0	0	0.001	0.009
Total Trihalomethanes	μg/l	8	100	0	0	9.16	18.31	40.21
1, 2 dichloroethane	μg/l	8	3	0	0	< 0.04	< 0.04	< 0.04

#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

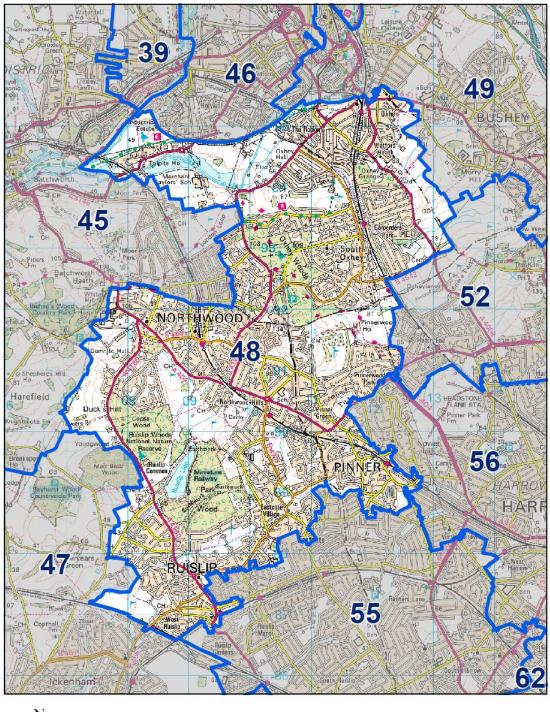
Commentary on Water Quality

Coliform bacteria were detected in a sample taken from a customer's property in Broad Acres, Hatfield in October. Our investigation identified that the water supply to the area was satisfactory but was unable to identify a cause for the failure. Coliforms do not pose a risk to public health.

Undertakings & Authorised Departures

No Authorised Departures applied to this water supply zone during 2019. 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 48 - Northwood / Ruislip







#### Water Supply Zone: Northwood (AF048) Period: 01-Jan-2019 to 31-Dec-2019

Population: 61571

4.47.01 TOKO		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Microbiological Parameters	N= /100 I	450	2	0	0	0	0	0
Coliform bacteria	No./100ml	156	0	0	0	0	0	0
E coli	No./100ml	156						
Clostridium perfringens	No./100ml	52	0	0	0	0	0	0
Enterococci	No./100ml	8		0	0	0	0	0
3 day plate count 22 °C	No./1ml at 22 °C	52	No abnormal change	0	0	0	3	120
Customer Parameters		2	No PCV	0	0	277	279	280
Alkalinity	mgHCO3/I							
Calcium	mgCa/l	2	No PCV	0	0	109	117	124
Chlorine (Residual)	mgCl2/l	155	No PCV	0	0	0.09	0.37	0.95
Colour	mg/l Pt/Co	52	20	0	0	<1.0	<1.0	1.9
Fluoride	mgF/I	8	1.5	0	0	0.109	0.12	0.132
Hardness (Total)	mgCaCO3/I	2	No PCV	0	0	273	293	310
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	7.1	7.2	7.5
Quantitative Odour	Dilution No.	52	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	51	consumers	0	0	0	0	0
Temperature	°C	156	No PCV	0	0	7.4	14	21.6
Turbidity	NTU	52	4	0	0	<0.10	0.16	0.35
Chemicals								
Metals								
Arsenic	μgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	µgAI/I	52	200	0	0	<5.0	13.9	38.5
Antimony	μgSb/l	8	5	0	0	< 0.20	0.22	0.44
Cadmium	μgCd/I	8	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	μgCr/l	8	50	0	0	< 0.5	< 0.5	< 0.5
Copper	mgCu/l	8	2	0	0	<0.010	< 0.019	0.062
Iron	μgFe/l	51	200	0	0	<15.0	<15.0	37.2
Lead	μgPb/I	8	10	0	0	<1.00	<1.00	7.83
Manganese	μgMn/l	52	50	0	0	<1.0	<1.0	1.9
Mercury	μgHg/l	8	1	0	0	<0.10	< 0.10	< 0.10
Nickel	μgNi/l	8	20	0	0	<2.0	<2.0	3.6
Sodium	mgNa/l	8	200	0	0	28.6	33.4	38.8
Pesticides								
Atrazine	μg/l	8	0.1	0	0	< 0.005	0.008	0.023
Carbetamide	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Clopyralid	μg/I	8	0.1	0	0	< 0.012	< 0.012	< 0.012
Glyphosate	μg/l	7	0.1	0	0	< 0.002	< 0.003	< 0.003
Mecoprop	μg/l	8	0.1	0	0	< 0.005	< 0.005	< 0.005
Metaldehyde	µg/I	8	0.1	0	0	< 0.009	< 0.009	0.024
Metazachlor	μg/l	8	0.1	0	0	< 0.005	< 0.005	< 0.005
Propyzamide	μg/l	8	0.1	0	0	<0.008	<0.008	<0.008
Simazine	μg/l	8	0.1	0	0	< 0.007	< 0.007	0.01
Total Pesticide	μg/l	8	0.5	0	0	0.007	0.038	0.094
2.4-D	μg/l	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Additional Parameters	P0/ .		012				.0.007	
Ammonium	mgNH4/I	52	0.5	0	0	< 0.04	< 0.04	< 0.04
Benzene	μg/l	7	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/l	8	0.01	0	0	< 0.001	< 0.002	< 0.002
Boron	mgB/I	7	1	0	0	<0.100	<0.100	<0.1002
Bromate	µgBrO3/I	8	10	0	0	<0.5	0.9	1.8
Chloride	mgCl/l	8	250	0	0	52	59	67
Electrical Conductivity at 20 °C	μS/cm at 20 °C	52	2500	0	0	568	652	765
Nitrate	mgNO3/I	8	50	0	0	29	31.9	40.3
Nitrite		8	0.5	0	0	<0.008	< 0.008	<0.008
Nitrite Nitrate Formula	mgNO2/I	8	1	0	0	<0.008	<0.008	<0.008
Selenium	ugSo/I	8	1	0	0	<0.58	<0.81	< 0.81
Selenium Sulphate	μgSe/l	8	250	0	0	<1.0	<1.0	1.4
	mgSO4/I							
Sum of Tri & Tetrachloroethene	μg/l	7	10	0	0	0.2	1.3	3.3
Tetrachloromethane	μg/l	7	3	0	0	<0.1	<0.1	<0.1
Total Cyanide	μgCN/I	8	50	0	0	<1.0	<1.0	1.7
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	1.3	2	3.2
Total PAHs	μg/l	8	0.1	0	0	0	0	0
Total Trihalomethanes	μg/l	7	100	0	0	20.07	31.77	48.27
1, 2 dichloroethane	μg/l	7	3	0	0	< 0.04	< 0.04	< 0.04

Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

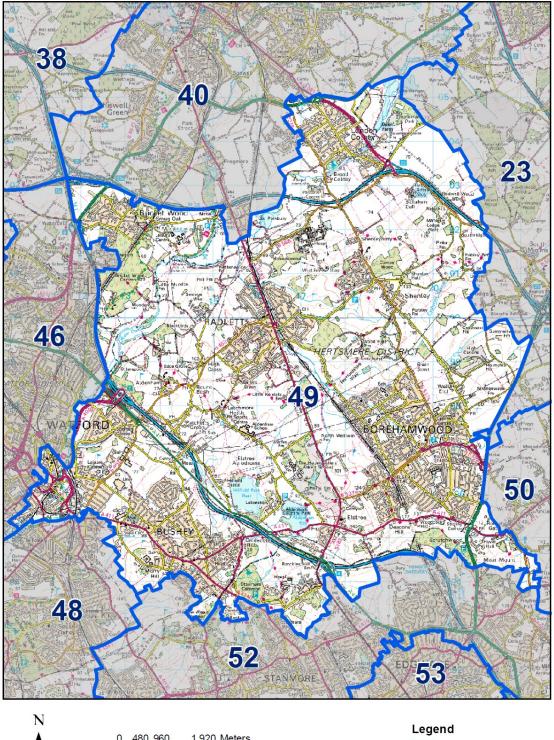
**Commentary on Water Quality** Water quality was satisfactory in this zone in 2019.

Undertakings & Authorised Departures

No Authorised Departures applied to this water supply zone during 2019.

An Undertaking is in place for this zone relating to Metaldehyde & Total Pesticides from Iver Water Treatment Works. 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. In addition the DWI issued the Company with a Notice under Regulation 28(4) with regard to individual pesticides in the supply from Iver WTW requiring us to install additional GAC contactors to improve pesticide removal. This work was completed in December 2018.





### WQZ 49 - Borehamwood / Bushey

0 480 960 1,920 Meters

Legend This Water Quality Zone Other WQZ



### Water Supply Zone: Borehamwood/Bushey (AF049) Period: 01-Jan-2019 to 31-Dec-2019 Population: 85191

Coliform bacteria NV E coli Clostridium perfringens NV Enterococci NV 3 day plate count 22 °C NV Alkalinity m Calcium m Chlorine (Residual) m Colour m Fluoride m Hardness (Total) m Hydrogen Ion (pH) pH Quantitative Odour Di Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic µ Aluminium µ Cadmium µ Cadmium µ Copper m Iron µ Ead µ Manganese µ Manganese µ Mercury µ Nickel µ		Samples M 216 216 76 8 76 76 1 1 216 76 8 1 76 76 76 76 215 76	PCV icrobiological Parameters 0 0 0 No abnormal change Customer Parameters No PCV No PCV No PCV No PCV 20 1.5 No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4 Chemicals	>PCV 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	>PCV <1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Min. 0 0 0 0 0 0 0 0 0 0 0 0 0	Mean           0           0           0           0           0           348           139           0.34           <1.0           0.117           348           7.1           0	Max. 26 0 0 320 348 139 0.67 2.7 0.131 348 7.2 0
E coli Na Clostridium perfringens NA Enterococci Na 3 day plate count 22 °C Na Alkalinity m Calcium m Calcium m Colour (Residual) m Colour m Fluoride m Hydrogen Ion (pH) pH Quantitative Odour Di Quantitative Taste Di Quantitative Taste Di Quantitative Taste Di Austriative Taste C Turbidity N Metals Arsenic µ Assenic µ Copper m Iron µ Copper m Iron µ Lead µ Manganese µ Mercury µ Kickel µ	o./100ml o./100ml o./100ml o./1ml at 22 °C gGC/l gCa/l gC2/l	216 216 76 8 76 1 1 216 76 8 1 76 76 76 76 215	0 0 0 0 No abnormal change Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4			0 0 0 348 139 0.11 <1.0 0.108 348 6.9 0	0 0 6 348 139 0.34 <1.0 0.117 348 7.1	0 0 320 348 139 0.67 2.7 0.131 348 7.2
E coli Na Clostridium perfringens NA Enterococci Na 3 day plate count 22 °C Na Alkalinity m Calcium m Calcium m Colour m Fluoride m Hydrogen Ion (pH) pH Quantitative Odour Di Quantitative Taste Di Quantitative Taste Di Austriative Taste Di Austriative Taste Di Austriative Taste Di Metals C Arsenic µ Atsenic µ Copper m Iron µ Copper m Iron µ Lead µ Manganese µ Mercury µ Kickel µ	o./100ml o./100ml o./100ml o./1ml at 22 °C gGC/l gCa/l gC2/l	216 76 8 76 1 1 216 76 8 1 76 8 1 76 76 76 76 215	0 0 0 No abnormal change Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4			0 0 0 348 139 0.11 <1.0 0.108 348 6.9 0	0 0 6 348 139 0.34 <1.0 0.117 348 7.1	0 0 320 348 139 0.67 2.7 0.131 348 7.2
Clostridium perfringens N4 Enterococci N4 3 day plate count 22 °C N4 Alkalinity m Calcium m Chlorine (Residual) m Fluoride m Hardness (Total) m Hydrogen Ion (pH) pH Quantitative Odour Di Quantitative Odour Di Quantitative Odour Di Temperature °C Turbidity N7 Metals Arsenic µ Aluminium µ Copper m Copper m Lead µ Kanganese µ Manganese µ Mercury µ Kickel µ Sodium m	5./100ml 5./100ml 5./1ml at 22 °C gHCO3/l gCa/l gCl2/l gCl2/l gCaCO3/l d value lution No. lution No.	76 8 76 1 1 216 76 8 1 76 76 76 76 215	0 0 No abnormal change Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4			0 0 0 348 139 0.11 <1.0 0.108 348 6.9 0	0 0 6 348 139 0.34 <1.0 0.117 348 7.1	0 0 320 348 139 0.67 2.7 0.131 348 7.2
Enterococci Na 3 day plate count 22 °C Na Alkalinity m Calcium m Chlorine (Residual) m Hordine (Residual) m Hardness (Total) m Hydrogen Ion (pH) pi Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N <sup>*</sup> Metals Arsenic µg Aluminium µg Cadmium µg Chromium µg Chromium µg Copper mg Icad µg Manganese µg Mercury µg Sodium m	o./100ml o./1ml at 22 °C gHCO3/l gCa/l gCl2/l g(12/l gCl2/l gCaCO3/l t value lution No. lution No. TU	8 76 1 1 216 76 8 1 76 76 76 76 215	0 No abnormal change Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4			0 0 348 139 0.11 <1.0 0.108 348 6.9 0	0 6 348 139 0.34 <1.0 0.117 348 7.1	0 320 348 139 0.67 2.7 0.131 348 7.2
3 day plate count 22 °C Net Alkalinity m Calcium m Chlorine (Residual) m Colour m Fluoride m Hydrogen Ion (pH) p Quantitative Odour Di Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Chromium µg Chromium µg Copper m Iron µg Lead µg Manganese µg Mercury µg Sodium m	D./1ml at 22 °C gHCO3/I gCa/I gCl2/I g(I Pt/Co gF/I gCaCO3/I 4 value lution No. lution No.	76 1 216 76 8 1 76 76 76 76 215	No abnormal change Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4		0 0 0 0 0 0 0 0 0 0 0 0	0 348 139 0.11 <1.0 0.108 348 6.9 0	6 348 139 0.34 <1.0 0.117 348 7.1	320 348 139 0.67 2.7 0.131 348 7.2
Alkalinity m Calcium m Calcium m Colour m Fluoride m Hardness (Total) m Hydrogen Ion (pH) p Quantitative Odour Di Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Cadmium µg Cadmium µg Cadmium µg Chromium µg Copper m Iron µg Lead µg Manganese µg Marganese µg Marganese µg Nickel µg	gHCO3/I gCa/I gCl2/I g/I Pt/Co gF/I gCaCO3/I 4 value lution No. lution No.	1 216 76 8 1 76 76 76 76 215	Customer Parameters No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	348 139 0.11 <1.0 0.108 348 6.9 0	348 139 0.34 <1.0 0.117 348 7.1	348 139 0.67 2.7 0.131 348 7.2
Calcium m Chlorine (Residual) m Colour m Fluoride m Hardness (Total) m Hydrogen Ion (pH) pp Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Chromium µg Chorper m Iron µg Kanganese µg Manganese µg Metals µg Manganese µg Metals µg Manganese µg	gCa/l gCl2/l g/l Pt/Co gF/l gCaCO3/l H value lution No. lution No.	1 216 76 8 1 76 76 76 76 215	No PCV No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	139 0.11 <1.0 0.108 348 6.9 0	139 0.34 <1.0 0.117 348 7.1	139 0.67 2.7 0.131 348 7.2
Calcium m Chlorine (Residual) m Colour m Fluoride m Hardness (Total) m Hydrogen Ion (pH) pp Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Chromium µg Chormium µg Chormium µg Chormium µg Copper m Iron µg Kada µg Manganese µg Manganese µg Mercury µg Sodium m	gCa/l gCl2/l g/l Pt/Co gF/l gCaCO3/l H value lution No. lution No.	1 216 76 8 1 76 76 76 76 215	No PCV No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	139 0.11 <1.0 0.108 348 6.9 0	139 0.34 <1.0 0.117 348 7.1	139 0.67 2.7 0.131 348 7.2
Chlorine (Residual)     m       Colour     m       Fluoride     m       Hardness (Total)     m       Hydrogen Ion (pH)     pH       Quantitative Odour     Di       Quantitative Taste     Di       Temperature     "C       Turbidity     N       Metals     C       Aluminium     µg       Antimony     µg       Chromium     µg       Lead     µg       Manganese     µg       Mickel     µg       Sodium     m	g(12/I g/I Pt/Co gF/I gCaCO3/I I value Iution No. Iution No.	216 76 8 1 76 76 76 215	No PCV 20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0 0 0 0	0 0 0 0 0 0	0.11 <1.0 0.108 348 6.9 0	0.34 <1.0 0.117 348 7.1	0.67 2.7 0.131 348 7.2
Colour m Fluoride m Hardness (Total) m Hydrogen Ion (pH) p Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic 44 Aluminium 44 Cadmium 44 Cadmium 44 Cadmium 44 Copper m Iron 44 Lead 44 Manganese 44 Mangane	g/I Pt/Co gF/I gCaCO3/I I value Iution No. Iution No. TU	76 8 1 76 76 76 215	20 1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0 0	0 0 0 0 0	<1.0 0.108 348 6.9 0	<1.0 0.117 348 7.1	2.7 0.131 348 7.2
Fluoride m Hardness (Total) m Hydrogen Ion (pH) pH Quantitative Odour Di Quantitative Taste Di Temperature °C Turbidity N Metals Arsenic 46 Aluminium 46 Antimony 46 Cadmium 46 Chromium 46 Chromium 46 Copper m Iron 46 Manganese	gF/I gCaCO3/I I value Iution No. Iution No.	8 1 76 76 215	1.5 No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0	0 0 0 0 0	0.108 348 6.9 0	0.117 348 7.1	0.131 348 7.2
Hardness (Total) m Hydrogen Ion (pH) pP Quantitative Odour Di Jugantitative Taste Di Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Chromium µg Choper m Iron µg Lead µg Manganese µg Mercury µg Sodium m	gCaCO3/I I value Iution No. Iution No. IU	1 76 76 215	No PCV 6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0 0	0 0 0 0	348 6.9 0	348 7.1	348 7.2
Hydrogen lon (pH) pH Quantitative Odour DD Quantitative Taste DD Temperature C Turbidity NY Metals Arsenic P Aluminium P Antimony P Cadmium P Chromium P Copper m Iron P Lead P Manganese P Mercury P Kickel P Sodium m	I value lution No. lution No. TU	76 76 76 215	6.5-9.5 Abnormal & unacceptable to consumers No PCV 4	0 0 0 0	0 0 0	6.9 0	7.1	7.2
Quantitative Odour     Di       Quantitative Taste     Di       Temperature     *C       Turbidity     N       Metals        Arsenic     µg       Aluminium     µg       Antimony     µg       Cadmium     µg       Copper     m       Iron     µg       Manganese     µg       Metcury     µg       Sodium     m	lution No. lution No. TU	76 76 215	Abnormal & unacceptable to consumers No PCV 4	0 0 0	0	0		
Quantitative Taste Di Temperature °C Turbidity N' Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Copper m Iron µg Lead µg Manganese µg Mercury µg Nickel µg Sodium m	lution No. TU	76 215	consumers No PCV 4	0	0	-	0	0
Temperature °C Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Chromium µg Chromium µg Copper m Iron µg Lead µg Manganese µg Mercury µg Sodium m	ΓU	215	No PCV 4	0		0		0
Turbidity N Metals Arsenic µg Aluminium µg Antimony µg Cadmium µg Cadmium µg Copper m Iron µg Lead µg Manganese µg Mercury µg Nickel µg Sodium m	ΓU		4		0	0	0	0
Metals       Arsenic     µғ       Aluminium     µғ       Antimony     µғ       Cadmium     µғ       Chromium     µғ       Copper     m       Iron     µғ       Lead     µғ       Manganese     µғ       Mercury     µѣ       Sodium     m		76		0	0	7.2	13.8	22.9
Arsenic µ4 Aluminium µ4 Antimony µ4 Cadmium µ4 Chromium µ4 Copper m Iron µ4 Lead µ4 Manganese µ4 Mercury µ4 Sodium m	gAs/I		Chemicals	v	0	<0.10	0.11	0.38
Arsenic µ4 Aluminium µ4 Antimony µ4 Cadmium µ4 Chromium µ4 Copper m Iron µ4 Lead µ4 Manganese µ4 Mercury µ4 Sodium m	gAs/I							
Aluminium 44 Antimony 44 Cadmium 44 Chromium 44 Copper m Iron 44 Lead 44 Manganese 44 Manganese 44 Mercury 44 Sodium m	gAs/I							
Antimony 44 Cadmium 44 Chromium 44 Copper 76 Iron 44 Lead 44 Manganese 44 Mercury 44 Sodium 76		8	10	0	0	<1.0	<1.0	<1.0
Cadmium 44 Chromium 44 Copper m Iron 44 Lead 44 Manganese 44 Manganese 44 Mercury 44 Sodium m	gAI/I	76	200	0	0	<5.0	<5.0	45.2
Chromium بو Copper m Iron بو Lead بو Manganese بو Mercury بو Sodium m	gSb/Ι	8	5	0	0	<0.20	<0.20	0.21
Copper m Iron پو Lead پو Manganese پو Mercury پو Nickel پو Sodium m	gCd/I	8	5	0	0	<0.20	<0.20	<0.20
Iron με Lead με Manganese με Mercury με Nickel με Sodium m	gCr/I	8	50	0	0	< 0.5	<0.5	0.5
Lead 44 Manganese 44 Mercury 44 Nickel 44 Sodium m	gCu/l	8	2	0	0	< 0.010	0.013	0.022
Manganese µ4 Mercury µ4 Nickel µ4 Sodium m	gFe/I	76	200	0	0	<15.0	<15.0	<15.0
Mercury με Nickel με Sodium m	gPb/l	8	10	0	0	<1.00	<1.00	3.73
Nickel µg Sodium m	gMn/l	76	50	0	0	<1.0	<1.0	<1.0
Sodium m	gHg/I	8	1	0	0	<0.10	< 0.10	<0.10
	gNi/I	8	20	0	0	2.6	2.8	3
Pesticides	gNa/I	8	200	0	0	34.2	37.3	40.1
Concideo								
Atrazine με	g/l	8	0.1	0	0	0.017	0.02	0.023
Total Pesticide με	g/l	8	0.5	0	0	0.06	0.071	0.087
Additional Parameters								
	gNH4/I	76	0.5	0	0	< 0.04	< 0.04	0.09
Benzene με		8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene με	g/l	8	0.01	0	0	< 0.001	< 0.001	< 0.001
	gB/I	7	1	0	0	<0.100	< 0.100	< 0.100
Bromate με	BrO3/I	8	10	0	0	< 0.5	< 0.5	< 0.5
Chloride m	gCI/I	8	250	0	0	61	65	67
Electrical Conductivity at 20 °C μS	s/cm at 20 °C	76	2500	0	0	635	740	798
Nitrate m	gNO3/I	8	50	0	0	31.4	32.6	35.5
Nitrite m	gNO2/I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	< 0.63	< 0.71	<0.71
Selenium με	se/l	8	10	0	0	<1.0	1	1.3
	gSO4/I	8	250	0	0	49	54	59
Sum of Tri & Tetrachloroethene με		8	10	0	0	1.4	2.1	2.6
Tetrachloromethane µg		8	3	0	õ	<0.1	<0.1	<0.1
	sCN/I	7	50	0	0	<1.0	1.2	1.9
	gC/I	8	No abnormal change	0	0	1.1	1.2	1.4
Total PAHs µg		8	0.1	0	0	0	0	0
		8	100	0	0	6.62	13.42	20.48
Total Trihalomethanes με 1, 2 dichloroethane με		8	3	0	0	< 0.04	<0.04	<0.04

#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

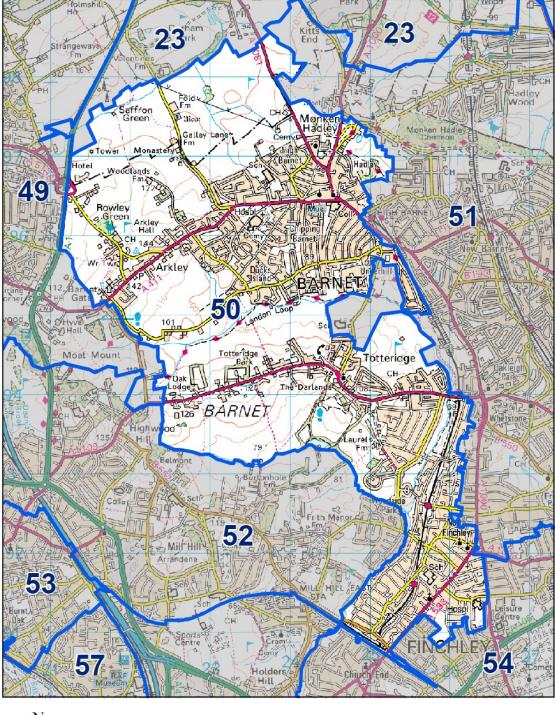
#### Commentary on Water Quality

In September, coliform bacteria were detected in a sample taken from a customer's property in Herkomer Road, Bushey. Our investigation identified that the most likely cause of the failure was the condition of the tap where the sample was taken. The customer was informed of the situation and actions to take to prevent contamination of taps. Coliforms do not pose a risk to public health.

#### Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during Year:2019.





WQZ 50 - Barnet



0 262.5525 1,050 Meters

Legend This Water Quality Zone Other WQZ



### Water Supply Zone: Barnet (AF050) Period: 01-Jan-2019 to 31-Dec-2019 Population: 56908

-1000000000		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Microbiological Parameters Coliform bacteria	No./100ml	144	0	0	0	0	0	0
E coli			0	0	0	0	0	0
	No./100ml No./100ml	144 52	0	0	0	0	0	0
Clostridium perfringens	No./100ml	8	0	0	0	0	0	0
Enterococci		52		0	0	0	6	243
3 day plate count 22 °C Customer Parameters	No./1ml at 22 °C	52	No abnormal change	0	0	0	6	243
	mall(02/l	1	No PCV	0	0	254	254	254
Alkalinity	mgHCO3/I							
Calcium	mgCa/l	1 144	No PCV No PCV	0	0	107 0.01	107 0.3	107 0.84
Chlorine (Residual)	mgCl2/l			0	0			
Colour Fluoride	mg/I Pt/Co	52 8	20 1.5	0	0	<1.0 0.105	<2.5 0.121	2.6 0.135
	mgF/l	0	No PCV	0	0	268	268	268
Hardness (Total)	mgCaCO3/I	52	6.5-9.5	0	0	208	7.3	7.7
Hydrogen Ion (pH) Quantitative Odour	pH value Dilution No.	52	Abnormal & unacceptable to	0	0	0	0	0
			consumers	-		-		
Quantitative Taste	Dilution No.	52		0	0	0	0	0
Temperature	°C	144	No PCV	0	0	6.6	14.1	23
Turbidity	NTU	52	4	0	0	<0.10	0.16	0.43
Chemicals Metals								
	······ A - /I	0	10	0	0	10	11.0	-1.0
Arsenic	μgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAl/I	52	200	0	0	<5.0	19.5	32.7
Antimony	μgSb/l	8	5	0	0	<0.20	< 0.20	0.31
Cadmium	μgCd/l	8	5	0	0	<0.20	<0.20	<0.20
Chromium	μgCr/l	8	50	0	0	<0.5	<0.5	<0.5
Copper	mgCu/l	8	2	0	0	< 0.010	< 0.010	0.018
Iron	μgFe/I	52	200	0	0	<15.0	<15.0	22.5
Lead	μgPb/I	8	10	0	0	<1.00	<1.00	<1.00
Manganese	µgMn/l	52	50	0	0	<1.0	<1.0	2.2
Mercury	μgHg/I	8	1	0	0	<0.10	< 0.10	<0.10
Nickel	μgNi/l	8	20	0	0	<2.0	<2.0	2.8
Sodium	mgNa/l	8	200	0	0	23	29	34.7
Pesticides								
Atrazine	μg/l	8	0.1	0	0	< 0.005	< 0.005	< 0.005
Carbetamide	μg/l	8	0.1	0	0	< 0.009	< 0.009	< 0.009
Clopyralid	μg/I	8	0.1	0	0	< 0.012	< 0.012	< 0.012
Glyphosate	μg/I	9	0.1	1	11	< 0.002	< 0.005	0.005
Mecoprop	μg/I	8	0.1	0	0	< 0.005	< 0.005	< 0.005
Metaldehyde	μg/I	8	0.1	0	0	< 0.009	0.014	0.035
Metazachlor	μg/I	8	0.1	0	0	< 0.005	< 0.005	< 0.005
Propyzamide	μg/I	8	0.1	0	0	<0.008	< 0.008	< 0.008
Simazine	μg/I	8	0.1	0	0	< 0.007	< 0.007	< 0.007
Total Pesticide	μg/I	8	0.5	0	0	0	0.022	0.042
2,4-D	μg/l	8	0.1	0	0	<0.007	< 0.007	< 0.007
Additional Parameters								
Ammonium	mgNH4/I	52	0.5	0	0	< 0.04	< 0.05	0.17
Benzene	μg/l	8	1	0	0	< 0.02	< 0.02	< 0.02
Benzo (a) Pyrene	μg/I	7	0.01	0	0	< 0.001	< 0.001	< 0.001
Boron	mgB/I	6	1	0	0	<0.100	< 0.100	< 0.100
Bromate	μgBrO3/I	8	10	0	0	1	1.9	3.3
Chloride	mgCl/l	8	250	0	0	43	51	58
Electrical Conductivity at 20 °C	μS/cm at 20 °C	52	2500	0	0	556	620	704
Nitrate	mgNO3/I	8	50	0	0	26.2	30.9	35.1
Nitrite	mgNO2/I	8	0.5	0	0	<0.008	< 0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	< 0.52	<0.70	<0.70
Selenium	μgSe/I	8	10	0	0	<1.0	<1.0	1
Sulphate	mgSO4/I	8	250	0	0	49	56	72
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	0.1	0.2	0.3
Tetrachloromethane	μg/I	8	3	0	0	<0.1	<0.1	<0.1
Total Cyanide	μgCN/I	8	50	0	0	<1.0	<1.0	<1.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	1.5	2.2	3.2
Total PAHs	μg/l	7	0.1	0	0	0	0	0
Total Trihalomethanes	μg/l	8	100	0	0	19.43	28.73	49.07
rotal minalomethanes								

#### Notes

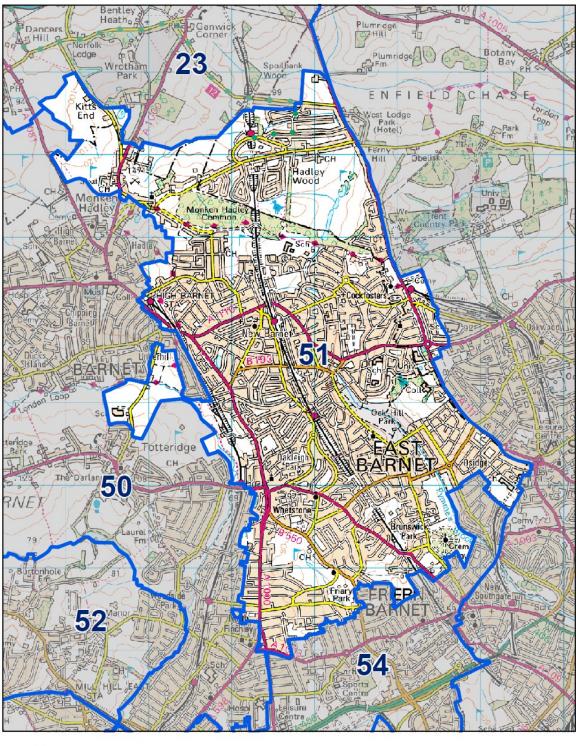
PCV = Prescribed Concentration or Value or Specification Concentration or Value

Commentary on Water Quality Water quality was satisfactory in this zone during 2019.

Undertakings & Authorised Departures

No Authorised Departures applied to this water supply zone during 2019. 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. In addition the DWI issued the Company with a Notice under Regulation 28(4) with regard to individual pesticides in the supply from Iver WTW requiring us to install additional GAC contactors to improve pesticide removal. This work was completed in December 2018.





WQZ 51 - East Barnet



0 262.5525 1,050 Meters





#### Water Supply Zone: East Barnet (AF051) Period: 01-Jan-2019 to 31-Dec-2019

I Chicar of Jun Ford	
Population: 74530	

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Cr. St. Service and Cr.	1 Sec. 10		Aicrobiological Parameters				0 0 0 225 117 0.28 <2.5 0.123 293 7.2 0 14.2 0.17 0 0   2 0   14.2 0.17   <1.0 18.3 <0.20   <0.17    <1.0 18.3 <0.20   <0.20 <0.20   <0.20 <0.20   <0.5 0.029   <1.0 <2.0   <2.41 <1.0   <1.0 <0.10   <2.0 <2.012   <0.010 <2.0   <<0.010 <2.0   <<0.012 <0.012   <<0.012 <0.012   <<0.012 <0.012   <<0.012 <0.012   <<0.012 <0.015   <<0.005 <0.005   ><0.0019 <<0.019   <<0.012 <0.019   <<0.0019 <<0.019   <<0.0019 <<0.0019   <<0.0019 <<0.0019   <<0.0018 <<0.0018   <<0.0058 <0.0058	
Coliform bacteria	No./100ml	180	0	2	1	0		4
E coli	No./100ml	180	0	0	0	0		0
Clostridium perfringens	No./100ml	52	0	0	0	0		0
Enterococci	No./100ml	8	0	0	0	0		0 950
3 day plate count 22 °C	No./1ml at 22 °C	52	No abnormal change Customer Parameters	0	0	0	22	950
Alkalinity	mgHCO3/I	1	No PCV	0	0	275	275	275
Calcium	mgCa/l	1	No PCV	0	0	117		117
Chlorine (Residual)	mgCl2/l	180	No PCV	0	0	0.04		0.65
Colour	mg/I Pt/Co	52	20	0	0	<1.0		2.9
Fluoride	mgF/I	8	1.5	0	0	0.107		0.141
Hardness (Total)	mgCaCO3/I	1	No PCV	0	0	293		293
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	7		7.5
Quantitative Odour	Dilution No.	52	Abnormal & unacceptable to	0	0	0		0
Quantitative Taste	Dilution No.	52	consumers	0	0	0		0
Temperature	°C	180	No PCV	0	0	7.3		22
Turbidity	NTU	52	4	0	0	<0.10		0.41
			Chemicals					
Metals								
Arsenic	µgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	µgAI/I	52	200	0	0	6.8		37.7
Antimony	μgSb/l	8	5	0	0	<0.20	<0.20	0.32
Cadmium	µgCd/I	8	5	0	0	<0.20	<0.20	<0.20
Chromium	µgCr/I	8	50	0	0	< 0.5	<0.5	< 0.5
Copper	mgCu/l	8	2	0	0	< 0.010	0.029	0.091
Iron	µgFe/l	52	200	0	0	<15.0		20.6
Lead	µgPb/l	8	10	1	13	<1.00		11.8
Manganese	μgMn/l	52	50	0	0	<1.0		1.9
Mercury	µgHg/I	8	1	0	0	< 0.10		< 0.10
Nickel	µgNi/I	8	20	0	0	<2.0		2.6
Sodium	mgNa/l	8	200	0	0	23.3	28.7	33.8
Pesticides	4							
Atrazine	μg/l	8	0.1	0	0	< 0.005		0.005
Carbetamide	μg/l	8	0.1	0	0	< 0.009		< 0.009
Clopyralid	μg/l	8	0.1	0	0	< 0.012		< 0.012
Glyphosate	μg/l	8	0.1	0	0	< 0.002		< 0.005
Mecoprop	μg/l	8	0.1 0.1	0	0	<0.005 <0.009		0.006
Metaldehyde Metazachlor	μg/l	8	0.1	0	0	< 0.009		< 0.041
Propyzamide	μg/l μg/l	8	0.1	0	0	< 0.003		< 0.003
Simazine	μg/l	8	0.1	0	0	< 0.008		< 0.008
Total Pesticide	μg/l	8	0.5	0	0	0	0.026	0.049
2,4-D	μg/l	8	0.1	0	0	< 0.007	< 0.020	< 0.007
Additional Parameters	M8/1		0.1	0		.0.007	.0.007	.0.007
Ammonium	mgNH4/I	52	0.5	0	0	< 0.04	< 0.04	0.04
Benzene	μg/l	7	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	7	1	0	0	<0.100	<0.100	<0.100
Bromate	µgBrO3/I	8	10	0	0	0.9	1.7	2.6
Chloride	mgCl/l	8	250	0	0	47	51	61
Electrical Conductivity at 20 °C	μS/cm at 20 °C	52	2500	0	0	557	627	705
Nitrate	mgNO3/I	8	50	0	0	26.6	30.6	35.5
Nitrite	mgNO2/I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	< 0.53	<0.71	<0.71
Selenium	μgSe/l	8	10	0	0	<1.0	<1.0	<1.0
Sulphate	mgSO4/I	8	250	0	0	45	59	67
Sum of Tri & Tetrachloroethene	μg/l	7	10	0	0	0	0.2	0.3
Tetrachloromethane	μg/l	7	3	0	0	<0.1	<0.1	<0.1
Total Cyanide	μgCN/I	7	50	0	0	<1.0	<1.0	<1.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	1.7	2.1	2.8
Total PAHs	μg/I	8	0.1	0	0	0	0	0
Total Trihalomethanes	μg/l	7	100	0	0	17.26	26.77	41.54
1, 2 dichloroethane	μg/l	7	3	0	0	< 0.04	< 0.04	< 0.04

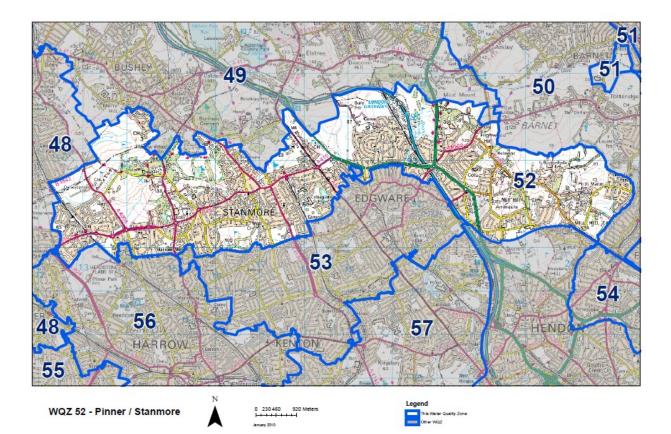
#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

#### Commentary on Water Quality

In March lead was detected at a concentration above the standard in a sample taken from a customer's property in Monks Avenue, Barnet. The investigation established that the elevated concentration of lead was likely to have been caused by lead pipework leading to and within the customer's property. We replaced the lead pipework on our side of the boundary stop tap and a letter was sent to the customer explaining the situation and how to reduce the lead concentration in their water supply. In June and November, coliform bacteria were detected in samples taken from two customer properties in Derwent Crescent, London and Taylors Lane, Barnet. Our investigations identified that the most likely cause of the alilures was the condition of the tap where the sample was taken. The customers were informed of the situation and actions to take to prevent contamination of taps. Coliforms do not pose a risk to public health.







#### Water Supply Zone: Stanmore/Mill Hill (AF052) Period: 01-Jan-2019 to 31-Dec-2019 Population: 72385

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV icrobiological Parameters	>PCV	>PCV	Min.	Mean	Max.
Coliform bacteria	No./100ml	180	0	1	<1	0	0	1
E coli	No./100ml	180	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
		52		0	0	-	3	
3 day plate count 22 °C	No./1ml at 22 °C	52	No abnormal change Customer Parameters	0	0	0	3	111
Alkalinity	mgHCO3/I	1	No PCV	0	0	339	339	339
Calcium	mgCa/l	1	No PCV	0	0	141	141	141
Chlorine (Residual)	mgCl2/l	180	No PCV	0	0	0.06	0.33	0.72
		52	20	0	0	<1.0	<1.0	2.4
Colour	mg/I Pt/Co							
Fluoride	mgF/I	8	1.5	0	0	0.105	0.121	0.128
Hardness (Total)	mgCaCO3/I	1	No PCV	0	0	353	353	353
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	6.9	7.1	7.4
Quantitative Odour	Dilution No.	52	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	52	consumers	0	0	0	0	0
Temperature	°C	179	No PCV	0	0	7.8	13.8	21.6
Turbidity	NTU	52	4	0	0	< 0.10	0.1	0.31
			Chemicals					
Metals	. //		40		-			
Arsenic	μgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	µgAl/l	52	200	0	0	<5.0	<5.0	13.7
Antimony	µgSb/l	8	5	0	0	<0.20	<0.20	0.24
Cadmium	µgCd/I	8	5	0	0	<0.20	< 0.20	< 0.20
Chromium	μgCr/l	8	50	0	0	< 0.5	<0.5	< 0.5
Copper	mgCu/l	8	2	0	0	< 0.010	< 0.019	0.028
Iron	μgFe/l	52	200	0	0	<15.0	<15.0	<15.0
Lead	µgPb/I	8	10	0	0	<1.00	1.47	4.65
Manganese	μgMn/l	52	50	0	0	<1.0	<1.0	<1.0
Mercury	µgHg/l	8	1	0	0	<0.10	<0.10	<0.10
Nickel	μgNi/I	8	20	0	0	2.6	3.4	6.6
Sodium	mgNa/l	8	200	0	0	33.6	56.7	193
Pesticides								
Atrazine	μg/l	8	0.1	0	0	0.016	0.019	0.021
Total Pesticide	μg/l	8	0.5	0	0	0.057	0.07	0.088
Additional Parameters								
Ammonium	mgNH4/I	52	0.5	0	0	< 0.04	< 0.04	< 0.04
Benzene	μg/l	7	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	7	1	0	0	<0.100	< 0.100	<0.100
Bromate	µgBrO3/I	8	10	0	0	< 0.5	<0.5	< 0.5
Chloride	mgCl/l	8	250	0	0	62	65	69
Electrical Conductivity at 20 °C	µS/cm at 20 °C	52	2500	0	0	641	726	787
Nitrate	mgNO3/I	8	50	0	0	29.9	32.3	34.5
Nitrite	mgNO2/I	8	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula	-	8	1	0	0	<0.60	<0.69	<0.69
Selenium	μgSe/I	8	10	0	0	<1.0	1	1.3
Sulphate	mgSO4/I	8	250	0	0	47	55	59
Sum of Tri & Tetrachloroethene	μg/I	7	10	0	0	1	2	2.4
Tetrachloromethane	μg/l	7	3	0	0	<0.1	<0.1	<0.1
Total Cyanide	μgCN/I	7	50	0	0	<1.0	1.2	1.8
Total Organic Carbon		8	No abnormal change	0	0	1.1	1.2	1.0
Total PAHs	mgC/I	8		0	0	1.1	1.3	0
	μg/l		0.1					
Total Trihalomethanes	μg/l	7	100	0	0	6.81	16.36	25.56
1, 2 dichloroethane	μg/l	7	3	0	0	< 0.04	< 0.04	< 0.04

#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

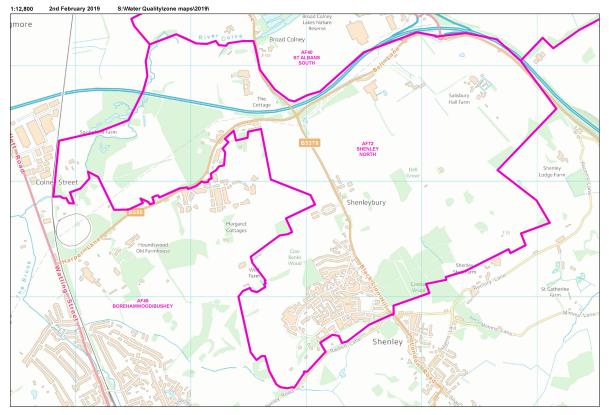
#### Commentary on Water Quality

During December, coliform bacteria were detected in a sample taken from a customer's property in Goodhall Close, Stanmore. Our investigation identified that the most likely cause of the failure was the condition of the tap where the sample was taken. The customer was informed of the situation and actions to take to prevent contamination of taps. Coliforms do not pose a risk to public health.

#### Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during Year:2019.





Water Supply Zone AF72 - SHENLEY NORTH



# Water Supply Zone: Shenley (AF072) Period: 01-Jan-2019 to 31-Dec-2019 Population: 3074

Parameter	Units	No. of Samples	PCV	No. of Samples >PCV	% of Samples >PCV	Min.	Mean	Max.
Microbiological Parameters	Onits	Samples	FCV	2FCV	ALC V	IVIII.	Iviean	IVIAA.
Coliform bacteria	No./100ml	12	0	0	0	0	0	0
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
3 day plate count 22 °C	No./1ml at 22 °C	4	No abnormal change	0	0	0	2	7
Customer Parameters	N0./ 1111 dt 22 C	7	No abhormar change	0	0	0	2	1
Alkalinity	mgHCO3/I	1	No PCV	0	0	284	284	284
Calcium	mgCa/l	1	No PCV	0	0	101	101	101
Chlorine (Residual)	mgCl2/l	12	No PCV	0	0	0.15	0.25	0.37
Colour	mg/I Pt/Co	4	20	0	0	<1.0	<1.0	<1.0
Fluoride		4	1.5	0	0	0.113	0.122	0.128
	mgF/I		1.5 No PCV		0			
Hardness (Total)	mgCaCO3/I	1		0		253	253	253
Hydrogen Ion (pH)	pH value	4	6.5-9.5	0	0	7.1	7.2	7.2
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	°C	12	No PCV	0	0	10.8	14.1	18.8
Turbidity	NTU	4	4	0	0	<0.10	0.11	0.15
Chemicals								
Metals								
Arsenic	µgAs/I	4	10	0	0	<1.0	<1.0	<1.0
Aluminium	µgAI/I	4	200	0	0	<5.0	<5.0	8.2
Antimony	µgSb/l	4	5	0	0	<0.20	< 0.20	< 0.20
Cadmium	μgCd/l	4	5	0	0	< 0.20	< 0.20	< 0.20
Chromium	μgCr/l	4	50	0	0	< 0.5	< 0.5	< 0.5
Copper	mgCu/l	4	2	0	0	< 0.010	0.049	0.127
Iron	µgFe/l	4	200	0	0	<15.0	<15.0	<15.0
Lead	µgPb/l	4	10	0	0	<1.00	<1.00	<1.00
Manganese	µgMn/l	4	50	0	0	<1.0	<1.0	<1.0
Mercury	µgHg/I	4	1	0	0	< 0.10	<0.10	<0.10
Nickel	µgNi/I	4	20	0	0	<2.0	<2.0	3.3
Sodium	mgNa/l	4	200	0	0	11.4	18.8	37.9
Pesticides								
Atrazine	μg/l	4	0.1	0	0	< 0.005	0.005	0.021
Total Pesticide	μg/l	4	0.5	0	0	0	0.018	0.073
Additional Parameters	10,							
Ammonium	mgNH4/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	<0.100
Bromate	µgBrO3/I	4	10	0	0	< 0.5	< 0.5	< 0.5
Chloride	mgCl/l	4	250	0	0	23	34	64
Electrical Conductivity at 20 °C	μS/cm at 20 °C	4	2500	0	0	502	568	721
Nitrate	mgNO3/I	4	50	0	0	12.9	18.5	31.2
Nitrite	mgNO2/I	4	0.5	0	0	<0.008	<0.008	<0.008
Nitrite Nitrate Formula	mgiv0z/i	4	1	0	0	<0.26	<0.62	<0.62
Selenium	µgSe/I	4	10	0	0	1.2	2	2.5
		4						
Sulphate	mgSO4/I		250	0	0	33	40	50
Sum of Tri & Tetrachloroethene	μg/l	4	10	0	0	0	0.5	1.7
Tetrachloromethane	μg/l	4	3	0	0	<0.1	<0.1	<0.1
Total Cyanide	μgCN/I	3	50	0	0	<1.0	<1.0	1.6
Total Organic Carbon	mgC/I	4	No abnormal change	0	0	0.6	0.8	1.1
Total PAHs	μg/l	4	0.1	0	0	0	0	0
Total Trihalomethanes	μg/I	4	100	0	0	2.81	5.85	12.09
1. 2 dichloroethane	µg/l	4	3	0	0	< 0.04	< 0.04	< 0.04

#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

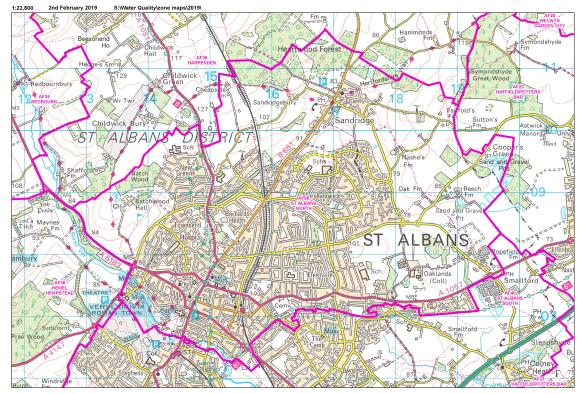
#### Commentary on Water Quality

Water quality was satisfactory in this zone in 2019.

#### Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during Year:2019.





Water Supply Zone AF88 - ST ALBANS NORTH



#### Water Supply Zone: St Albans North (AF088) Period: 01-Jan-2019 to 31-Dec-2019 Population: 53642

		No. of		No. of Samples	% of Samples			
Parameter	Units	Samples	PCV	>PCV	>PCV	Min.	Mean	Max.
Microbiological Parameters								
Coliform bacteria	No./100ml	132	0	1	<1	0	0	12
E coli	No./100ml	132	0	0	0	0	0	0
Clostridium perfringens	No./100ml	8	0	0	0	0	0	0
Enterococci	No./100ml	8	0	0	0	0	0	0
3 day plate count 22 °C	No./1ml at 22 °C	52	No abnormal change	0	0	0	5	192
Customer Parameters			0					
Alkalinity	mgHCO3/I	1	No PCV	0	0	342	342	342
Calcium	mgCa/l	1	No PCV	0	0	127	127	127
Chlorine (Residual)	mgCl2/l	132	No PCV	0	0	0.04	0.3	0.9
Colour	mg/I Pt/Co	52	20	0	0	<1.0	<1.0	1.2
Fluoride	mgF/I	8	1.5	0	0	0.07	0.083	0.093
Hardness (Total)	mgCaCO3/I	1	No PCV	0	0	318	318	318
Hydrogen Ion (pH)	pH value	52	6.5-9.5	0	0	6.9	7	7.2
Quantitative Odour	Dilution No.	51	Abnormal & unacceptable to	0	0	0	0	0
Quantitative Taste	Dilution No.	51	consumers	0	0	0	0	0
Temperature	°C	132	No PCV	0	0	7.5	13.9	23.3
Turbidity	NTU	52	4	0	0	<0.10	0.1	0.46
Chemicals	NTO .	52	-	0		10.10	0.1	0.10
Metals								
Arsenic	µgAs/I	8	10	0	0	<1.0	<1.0	<1.0
Aluminium	μgAI/I	8	200	0	0	<5.0	<5.0	8.4
Antimony	μgSb/l	8	5	0	0	<0.20	<0.20	<0.20
Cadmium	μgCd/I	8	5	0	0	<0.20	<0.20	<0.20
Chromium	μgCr/l	8	50	0	0	<0.20	0.7	1.7
Copper	mgCu/l	8	2	0	0	0.011	0.098	0.43
Iron	μgFe/l	8	200	0	0	<15.0	<15.0	<15.0
Lead	μgPb/I	8	10	0	0	<1.00	<1.00	1.31
		8	50	0	0	<1.00	<1.00	<1.0
Manganese Mercury	μgMn/l	8	1	0	0	<0.10	<0.10	<0.10
Nickel	μgHg/l	8	20	0	0	<2.0	<2.0	<2.0
	μgNi/l	8	200	0	0		16.9	
Sodium Pesticides	mgNa/l	8	200	0	0	12.6	16.9	20.8
Atrazine		8	0.1	0	0	0.02	0.023	0.020
	μg/l				0	0.02		0.026
Total Pesticide Additional Parameters	μg/l	8	0.5	0	0	0.048	0.053	0.061
	AUL 4 /I	50	0.5	0	0	.0.04	.0.04	.0.04
Ammonium	mgNH4/I	52	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	7	1	0	0	<0.100	<0.100	<0.100
Bromate	µgBrO3/I	8	10	0	0	< 0.5	0.5	0.9
Chloride	mgCl/l	8	250	0	0	30	35	42
Electrical Conductivity at 20 °C	μS/cm at 20 °C	52	2500	0	0	535	603	651
Nitrate	mgNO3/I	8	50	0	0	26.4	28.2	31.5
Nitrite	mgNO2/I	8	0.5	0	0	<0.008	< 0.008	<0.008
Nitrite Nitrate Formula		8	1	0	0	<0.53	< 0.63	< 0.63
Selenium	μgSe/I	8	10	0	0	<1.0	<1.0	<1.0
Sulphate	mgSO4/I	8	250	0	0	17	22	28
Sum of Tri & Tetrachloroethene	μg/l	8	10	0	0	0	0.3	0.7
Tetrachloromethane	μg/l	8	3	0	0	<0.1	<0.1	< 0.1
Total Cyanide	μgCN/I	7	50	0	0	<1.0	<1.0	<1.0
Total Organic Carbon	mgC/I	8	No abnormal change	0	0	0.5	0.7	0.9
Total PAHs	μg/l	8	0.1	0	0	0	0	0
Total Trihalomethanes	μg/l	8	100	0	0	2.37	6.4	11.16
1, 2 dichloroethane	μg/l	8	3	0	0	< 0.04	< 0.04	< 0.04

#### Notes

PCV = Prescribed Concentration or Value or Specification Concentration or Value

Commentary on Water Quality

In August, coliform bacteria were detected in a sample taken from a customer's property in Harness Way, St. Albans. Our investigation identified that the most likely cause of the failure was the condition of the customer's filtered tap unit where the sample was taken. The customer was informed of the situation and actions to take to prevent contamination of taps. Coliforms do not pose a risk to public health.

Undertakings & Authorised Departures

No Undertakings or Authorised Departures applied to this water supply zone during Year:2019.