2020
Water Quality Report

The Jersey New Waterworks Company Limited

JerseyWater
for Island life

Contents

Executive Summary

Jersey Water exists to supply the water needed for the island to thrive, today and everyday. The provision of clean, safe water is core to our mission and during the year ended 30 September 2020 ('the year'), extremely high standards were again achieved.

Jersey Water supplied high-quality drinking water with an overall compliance rate of 99.98%, slightly ahead of 99.97% in 2019. As for last year, Jersey Water met 100% compliance with water quality standards for nitrates and pesticides. The bacteriological compliance of the water supplied was 100% for *E.coli* (2019: 100%) and 99.89% for total coliforms (2019: 99.51%).

During the year, the Company completed 14,586 analyses on treated water samples and of these, only three were outside of their respective regulatory water quality parameter but posed no threat to health[1]. They were quickly rectified.

2020 was the 7th consecutive year of full compliance with regulatory limits for nitrates. The maximum concentration detected in treated water was 45.4mg/l, below the regulatory limit of 50mg/l but an increase on the unusually low 2019 value of 34.5 mg/l.

The increase in concentrations compared to last year was mainly due to a wet winter resulting in increased run-off, and the recharge of aquifers resulting in more significant streamflow.

In 2020, Jersey adopted a new risk-based approach to raw water quality monitoring for pesticides, analysing reservoir outlets at a weekly frequency using a "broad sweep" analysis capable of identifying the presence of 450 different pesticides. The change in approach maintained a high level of vigilance over the quality of water taken for treatment. Testing during the year identified 54 (2019: 35) detections of pesticides at 0.1μg/l or greater in the reservoirs. The increase is attributed to wetter conditions during the growing season. Careful selection of which reservoir to use and treatment ensured that there were no breaches of the pesticide limit in treated water.

From April 2019, Jersey Water has voluntarily amended its drinking water monitoring program for PFAS (poly and perfluoroalkyl substances) and increased the frequency of testing above that which would be required under the Water (Jersey) Law 1972. Results of the analysis confirmed full compliance with applicable regulatory limits (2019: 100%) for all water supplied by Jersey Water.

Fewer consumers contacted Jersey Water with enquiries and slightly more with water quality issues, compared to the England and Wales (E&W) industry averages. This increase was principally down to two separate incidents concerning discoloured water (in June 2020, generating ten customer contacts and in September 2020, generating 17 contacts). Without these two incidents, the Zone rate would have been 0.92, which is well below the average in England and Wales. These incidents have been reviewed and the lessons learned are being used to improve Jersey Water's practices to minimise the impact of similar incidents on consumers in the future.

There has been a slight increase in the proportion of contacts regarding the taste or odour of the water supplied by Jersey Water from 17% in 2019 to 23% in the year. These had no health risks associated and work to improve the acceptability of water to consumers in terms of taste and odour is on-going.

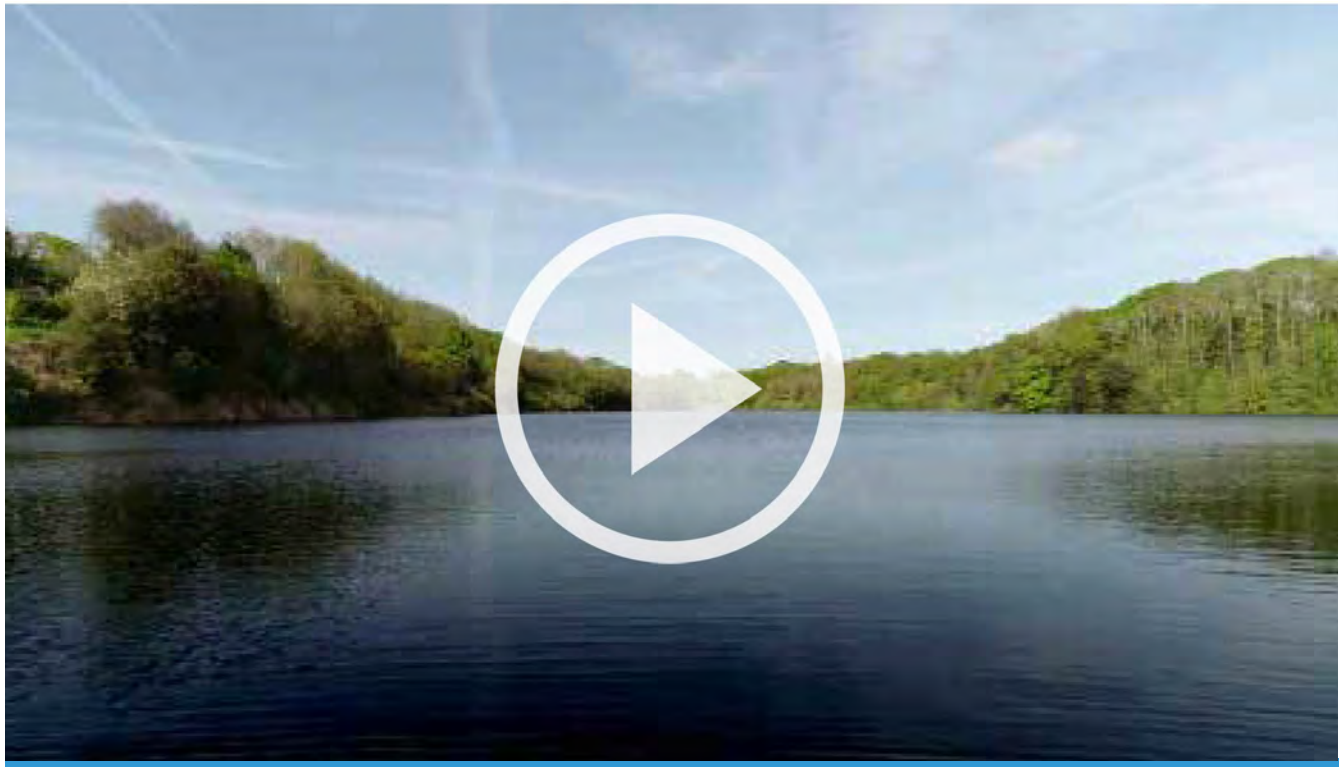
[1] *The three samples were one for Total Coliforms and two for Odour in the water.*

Water Quality Team

Jersey Water's Water Quality Team is part of the wider Water Supply Team and comprises specialists in chemistry, microbiology, data analysis and sampling. The team works out of the Millbrook Laboratory where a range of microbiological and chemical analyses are carried out on a 7-day a week basis.

The team is responsible for the sampling, analysis and reporting required to ensure our customers receive safe, clean drinking water whenever they want it. The team works very closely with other Jersey Water colleagues responsible for all parts of the water supply chain, providing support and advice on issues affecting water quality.

The team also supports wider activities in Jersey. During 2020 they provided help to Government of Jersey departments including Environment and Environmental Health as well as technical support to the Action for Cleaner Water Group and the Government of Jersey Officer Technical Group on PFAS.



Action for Cleaner Water Group Film

[2] www.jerseywater.je/action-for-cleaner-water-group-film-showcases-achievements

Oversight of Water Quality

Jersey Water operates under the legislative requirements set out in the Water (Jersey) Law 1972. Article 10 places a duty on Jersey Water to develop an annual monitoring programme and to submit that programme to the Minister of Environment each year for approval.

In response to the Covid-19 pandemic and with regulatory approval by the Minister, the company amended its monitoring regime for 2020 to take account of the restrictions put in place to ensure the safety of both Jersey Water's customers and employees.

Supply Points and Supply Zone Regulatory Results

Jersey Water adopts a risk-based water quality monitoring programme consistent with other water suppliers in Europe and elsewhere. This approach is consistent with the Company's Drinking Water Safety Plan where potential risks are evaluated and water quality testing is designed to help manage those risks.

The Company examined samples from supply points including our two treatment works at Handois and Augrés, service reservoirs at Westmount and Les Platons and the supply zone (also known as the distribution network) for compliance purposes at regular intervals throughout the year.

The Company undertakes two kinds of regulatory water quality monitoring - check and audit monitoring. Check monitoring is more frequent and is designed to ensure the treatment works are operating as expected and that the water in distribution is suitable for supply. Audit monitoring is performed less frequently and is designed to test the quality of the water supplied against the full requirements of the Water (Jersey) Law 1972.

Overall compliance

Due to alignment with the change in financial reporting for Jersey Water, the 2020 report is based on the year ended 30 September 2020 (the 'Year' or '2020').

Water quality in 2020 was extremely high with only three non-compliant regulatory analyses identified out of **14,586 analyses taken** for compliance purposes, none of which were harmful to health.

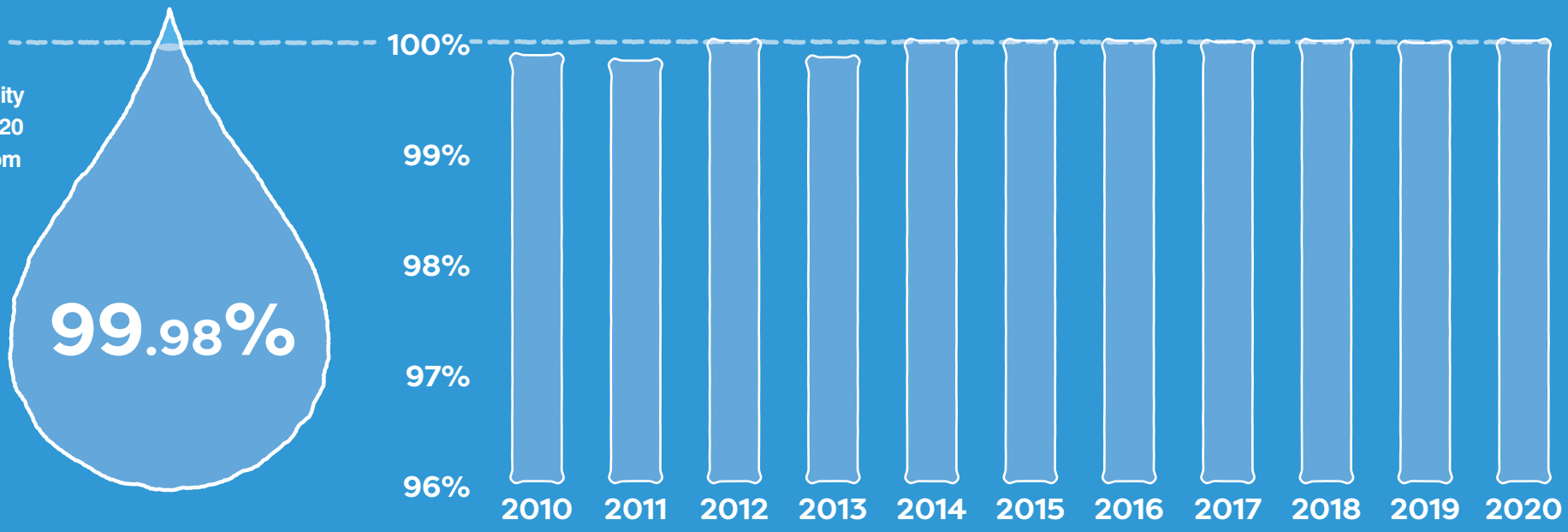
Overall water quality **compliance for 2020 was 99.98%**. This is a slight improvement on the result for 2019 which had a compliance rate of 99.97%.

Treatment works performance (supply points)

The Company samples water leaving the treatment works to ensure that it complies with regulatory parameters before it enters the mains network. During the year the Company undertook **424 sampling events** resulting in **11,502 analyses** covering 139 physical, bacteriological and chemical parameters. All of the analyses were compliant with the regulatory limits.

Detailed supply point results are set out in Appendix 1, 2, 3 and 4.

Overall water quality compliance for 2020 was slightly up from last year.



Service reservoir performance

To comply with regulations, weekly microbiological and residual disinfection samples are taken from the service reservoirs to ensure there has been no deterioration in the water quality during storage. During the year **761 analyses** were undertaken on **177 samples** all of which complied with the regulations except for a single failure for coliform bacteria.

- The single analysis outside the permitted range was for coliform bacteria, detected in a sample taken from the outlet to Les Platons East Service Reservoir. Investigations showed all the disinfection processes and turbidity were satisfactory and the repeat samples taken were negative for coliform bacteria; on this basis it was concluded that there was no risk to drinking water quality for our customers.

Parameter	Coliform Bacteria
Date	10/01/20
Analysis Type	Check Analysis
Concentration Recorded	14 MPN per 100ml
Regulatory Limit	0 MPN per 100ml (in 95% of sample)

For water to be deemed wholesome leaving an individual service reservoir there has to be a 95% or greater compliance with the coliform bacteria regulatory limit. The Company achieved 98.1% compliance with the regulatory limit for coliform bacteria and therefore demonstrably supplied wholesome water.

Detailed service reservoir results are set out in Appendix 5.

Water quality in the distribution system (supply zone)

114 water samples were taken at randomly selected customer properties from all parts of the distribution system between 1 October 2019 and 11 March 2020 then, once restrictions were in place due to Covid-19 and with the approval of the Minister[3], 189 water samples were taken from fixed points around the distribution system. Of 2,323 analyses taken throughout the year all were compliant with regulatory limits except for two.

The two analyses outside the permitted range were for odour, detected in samples taken from a kitchen tap at a randomly selected property and at one of the fixed points in the distribution system. Investigations showed all the disinfection processes and turbidity were satisfactory at the treatment works and repeat samples taken from the affected taps were negative for odour.

Parameter	Odour, random consumer sample	Odour, fixed point
Date	18/12/19	09/06/20
Analysis Type	Check Analysis	Check Analysis
Concentration Recorded	5 Dil. No.	4 Dil. No.
Regulatory Limit	3 Dil. No. @ 25°C	3 Dil. No. @ 25°C

Detailed supply zone results are set out in Appendix 6 and 7.

[3] *Ministerial Decision Reference MD-PE-2020-00040*

Consumer Contacts & Enquiries

Every contact and enquiry received by Jersey Water is recorded and categorised whether or not they require a visit to rectify an issue. The categories used are modeled on The Drinking Water Inspectorate for England and Wales' Information letter 1/2006[4]. The contacts for the year are listed on the table below with the sub-categories referencing the DWI Information Letter categories):

Consumer contacts

	2020	2019	2018
Total Consumer Enquiries[d]	3	5	10
Total Contacts[e]	5	7	8
Zonal Total	8	12	18
Zone rate (per 1000 population)	0.09	0.13	0.20
England & Wales industry average	0.30[a]	0.45[b]	0.50[c]

[4] www.ofwat.gov.uk/wp-content/uploads/2019/12/DWI-Customer-contacts-about-water-quality-taste-and-odour.pdf

[a]2019 figures, [b]2018 figures, [c]2017 figures

[d]A consumer contact about drinking water quality is any communication about drinking water quality initiated by a consumer in the absence of any expression of concern, dissatisfaction or service shortfall.

[e]A consumer contact about a water quality concern is a contact where the consumer expresses a concern about drinking water other than its appearance, taste or smell and they are not attributing symptoms of a current illness to the water.

Acceptability of Water to Consumers

Type of Complaint	2020	2019	2018
Appearance (section 4.3)			
Discoloured water	43	25	32
Blue water	4	0	0
Particles	3	4	2
Air in water	9	8	16
Chalky appearance	2	0	2
Animalcules	0	0	0
General	13	26	9
Appearance (total)	**74**	**63**	**61**
Taste and Odour (section 4.4)			
Chlorine	2	4	8
Earthy/musty	3	4	3
Petrol/diesel	0	0	0
Other	22	9	22
Tate and Odour (total)	**27**	**17**	**33**
Alleged Illness (section 4.5)			
Gastroenteritis	7	0	2
Oral	0	0	0
Skin	1	6	2
Medical opinion	1	1	2
Alleged Illness (total)	**9**	**7**	**6**
Zonal Total	110	87	100
Zone rate (per 1000 population)	1.22	0.97	1.11
England & Wales industry average	1.20[a]	1.31[b]	1.31[c]

Fewer consumers contacted Jersey Water with enquiries and slightly more with water quality issues, compared to the England and Wales industry averages. This increase was principally down to two separate incidents around discoloured water (June 2020 generating 10 contacts: September 2020 generating 17 contacts). Without these two incidents the Zone rate would have been 0.92 which is well below the average in England and Wales. These incidents have been reviewed and the lessons learned are being used to improve Jersey Water's practices to minimise the impact of similar incidents on consumers in the future.

There has been a slight increase in the proportion of contacts regarding the taste or odour of the water supplied by Jersey Water from 17% in 2019 to 23% in 2020. Work to improve the acceptability of water to consumers in terms of taste and odour is on-going.

There were eight contacts for water quality information in 2020 which was a slight decrease in consumer enquiries. They covered a range of topics mainly relating to dishwasher settings and water hardness (typically 120 – 150 mg/l as CaCO3. More information on this can be found on the Company website under the appliance settings (dishwashers) tab)

Bacteriological and chemical samples were taken where the consumer had suspected the water supply to be causing illness. When Jersey Water staff visit a property to investigate consumer contacts bacteriological samples are routinely taken; all such samples in the year were found to be compliant with the Regulations.

[5] www.jerseywater.je/water-quality/water-quality-faq

[a]2019 figures, [b]2018 figures, [c]2017 figures

Raw Water Quality

For operational and monitoring purposes Jersey Water takes samples of water from streams, reservoirs and the inlet to the treatment works. This enables our operational staff to select the most suitable waters to be taken for treatment.

Nitrates

While nitrates in treated water reached a peak of 45.4mg/l in April 2020, below the regulatory limit of 50mg/l, this was only possible through the careful selection and blending of raw water during the potato growing season and the availability of low nitrate water collected in the reservoirs before the growing season began.

Concentrations of nitrates in raw water peaked at 146.4 mg/l in September 2020 in the Queen's Valley Side Stream catchment and averaged 52.3 mg/l throughout the Island during the year, up from 46.1 mg/l in 2019. This is most likely due to the wet winter experienced this year, increasing run off and raising ground water levels.

Pesticides

A risk assessment for the year was undertaken for monitoring pesticides in the raw water resources used by Jersey Water. The decision was made to concentrate on ensuring the water taken from the reservoirs and sent for treatment was the best available. Weekly monitoring of all the reservoirs using an analytical method which provides a broad scan for 450 substances was undertaken which enabled the Company to quickly identify if there were any issues.

During 2020, 54 detections were made at 0.1 μg/l or greater but by careful selection of which reservoir to use and treatment, there were no breaches of the pesticide limit in treated water.

PFAS

Drinking water supplied by Jersey Water has been tested for PFAS (poly and perfluoroalkyl substances) since 1989. Based on the results of this testing the drinking water supply in Jersey has been fully compliant with the water quality requirements of the Water (Jersey) Law 1972 and meets the definition of wholesomeness against which drinking water quality is assessed. Results of drinking water testing for 2020 (Appendix 4) show either no detections for PFAS or detections well within the UK DWI guidance.

Further details on PFAS can be found in the update report form the Government of Jersey Officer Technical Group[6].

[6] https://www.gov.je/SiteCollectionDocuments/Environment%20and%20greener%20living/R%20PFAS%20and%20water%20quality%20in%20Jersey%202020%2006112020%20TDuF%20v1.pdf

Understanding Test Results

Regulatory Analyses

The Water (Jersey) Law 1972 as amended requires two types of monitoring at the treatment works and service reservoir outlets and in the distribution system:

- **Check monitoring**
  Tests performed on a frequent basis to ensure that the treatment works and the water in distribution is suitable for supply.
- **Audit monitoring**
  Testing performed less frequently than check monitoring and which is designed to test the quality of the water supplied against the full requirements of the Water (Jersey) Law 1972.

Term	Description
CFU	Colony forming units (CFU), a physical count of the number of colonies of bacteria visible on a membrane or an agar plate.
% Compliance	The percentage of the results that comply with the regulatory limit.
µg/l	Micrograms per litre or parts per billion, (equivalent to 1p in £10,000,000)
µS/cm	The unit of measure commonly used for electrical conductivity in water, micro Siemens/cm.
Max	The maximum or highest result produced for that test.
Mean	The average value of all the results produced for that test.
Min	The minimum or lowest result produced for that test.
MPN	The most probable number (MPN) is a statistical method used to estimate the viable numbers of bacteria in a sample.
PAC	Powdered Activated Carbon – used to aid in the removal of impurities in water such as pesticides during the treatment process.
PFAS	PFAS is short for poly and perfluoroalkyl substances. PFASs are a class of more than 4,000 different chemicals, and they are everywhere e.g. they turn up in everything from household items to fast food wrappers. Some of the most commonly used PFAS chemicals, like PFOS and PFOA (perfluorooctanesulfonic acid and perfluorooctanoic acid) have long half-lives meaning they will persist in the environment for long periods of time.
Sample Point	The location where the sample was taken
Specific concentration or value (maximum) or state	The maximum or range of values allowed by law in the water supply (regulatory limit).
Substances and parameters	The item we are testing for.

Appendix 1[7]:

2020 Treatment Works Performance
Check Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Sample Point	Min	Mean	Max	Compliance (%)	What it means
E.coli	0 MPN per 100ml	Augrés Final Water	0	0	0	100	Primary indicator of faecal contamina-tion of treated water
		Handois Final Water	0	0	0	100	
Coliform bacteria	0 MPN per 100ml	Augrés Final Water	0	0	0	100	Detection of coliform bacteria may indi-cate sub-optimal operation of the treatment process or ingress of con-tamination from breaches in the integri-ty of the distribution system.
		Handois Final Water	0	0	0	100	
Colony counts	No abnormal change	Augrés Final Water	No abnormal change			100	Monitoring water supplies for colony count bacteria can be useful for moni-toring trends in water quality or detect-ing sudden changes in quality
		Handois Final Water				100	
Nitrite	0.1 mg NO_2/l	Augrés Final Water	<0.003	0.010	0.081	100	Nitrite may be associated with nitrate or with the use of ammonia in water disin-fection.
		Handois Final Water	<0.003	0.011	0.052	100	
Residual disinfectant	No value mg Cl_2/l	Augrés Final Water	0.22	0.49	0.64		Sufficient chlorine is added to all supplies to ensure the absence of harmful microorganisms.
		Handois Final Water	0.35	0..52	0.65		
Turbidity	1 NTU	Augrés Final Water	0.06	0.09	0.13	100	The Standard requires that there should be no haziness caused by fine particles.
		Handois Final Water	0.06	0.10	0.14	100	
Conductivity	2500 μS/cm at 20°C	Augrés Final Water	418	498	560	100	A measure of the ability of the water to conduct an electric current and therefore a measurement of the mineral salts dissolved in the water.
		Handois Final Water	439	510	558	100	

[7]In these tables 'Augrés Final Water' means treated drinking water entering supply from the Augrés Water Treatment Works and, similarly, 'Handois Final Water' means treated drinking water entering supply from the Handois Water Treatment Works.

Appendix 2:

2020 Treatment Works Performance
Audit Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Sample Point	Min	Mean	Max	Compliance (%)	What it means
Clostridium perfringens	0 CFU per 100 ml	Augrés Final Water	0	0	0	100	The presence of Clostridium perfringens in filtered water and/or final water may indicate deficiencies in the filtration process (e.g. filter breakthrough) or in the disinfection process.
		Handois Final Water	0	0	0	100	
Benzene	1.0 µg/l	Augrés Final Water	All results were below limit of detection from all the sample points.			100	Benzene may be introduced into source water by industrial effluents or atmospheric pollution.
Bromate	10 µg BrO_3/l					100	
1,2 dichloroethane	3.0 µg/l					100	Bromate can be associated with industrial pollution or can occur as a by-product of the disinfection process.
Trichloroethene &} Tetrachloroethene}	10 µg/l					100	
Tetrachloromethane	3 µg/l	Handois Final Water				100	The other compounds are all organic solvents, their presence is an indication of industrial pollution.
Boron	1.0 mg B/l	Augrés Final Water	0.069	0.085	0.120	100	Very low levels of these substances may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
		Handois Final Water	0.058	0.087	0.122	100	
Cyanide	50 µg CN/l	Augrés Final Water	<2.0	<2.0	<2.0	100	
		Handois Final Water	<2.0	<2.0	<2.0	100	
Fluoride	1.5 mg F/l	Augrés Final Water	<0.075	<0.075	<0.075	100	Occurs naturally in many water sources. The standard is set to ensure no adverse effects. Jersey Water does not artificially fluoridate the water supplies.
		Handois Final Water	<0.075	<0.075	<0.075	100	
Chloride	250 mg Cl/l	Augrés Final Water	47	57	62	100	Occurs naturally in most water sources. Levels above the standard could give rise to taste issues and contribute to corrosion.
		Handois Final Water	51	62	68	100	
Sulphate	250 mg SO_4/l	Augrés Final W\ater	70	81	89	100	Dissolves in water after contact with certain mineral deposits. Excess levels can contribute to corrosion.
		Handois Final Water	65	82	93	100	
Total Organic Carbon	No abnormal change	Augrés Final Water	1.4	1.8	2.2	100	This parameter assesses the organic content of the water.
		Handois Final Water	1.5	1.9	2.5	100	
Gross Alpha	0.1 Bq/l	Augrés Final Water	<0.020	<0.020	<0.020	100	These parameters are measured as part of screening for radioactivity.
		Handois Final Water	<0.020	<0.020	<0.020	100	
Gross Beta	1.0 Bq/l	Augrés Final Water	<0.28	<0.28	<0.28	100	
		Handois Final Water	<0.28	<0.28	<0.28	100	

Appendix 3:

2020 Treatment Works Pesticide Analysis
Audit Monitoring

A suite of 99 pesticides have been analysed during the year at the treatment works outlets. The following table shows the ones that were detected above the limit of detection – there were 83 substances that were not.

Substances & parameters	Specific concentration/ value (max)/state	Sample Point	Min	Mean	Max	Compliance (%)
2,4-D	0.1 µg/l	Augrés Final Water	<0.007	<0.007	<0.007	100
		Handois Final Water	<0.007	<0.007	0.011	100
Atrazine Desisopropyl	0.1 µg/l	Augrés Final Water	<0.007	<0.007	0.011	100
		Handois Final Water	<0.007	<0.007	0.010	100
Azoxystrobin	0.1 µg/l	Augrés Final Water	<0.003	<0.003	0.012	100
		Handois Final Water	<0.003	<0.003	0.003	100
Bentazone	0.1 µg/l	Augrés Final Water	<0.007	<0.007	0.011	100
		Handois Final Water	<0.007	<0.007	0.009	100
Bromacil	0.1 µg/l	Augrés Final Water	<0.003	<0.003	<0.003	100
		Handois Final Water	<0.003	<0.003	0.005	100
Carbendazim	0.1 µg/l	Augrés Final Water	<0.001	<0.001	<0.001	100
		Handois Final Water	<0.001	<0.001	0.002	100
Clopyralid	0.1 µg/l	Augrés Final Water	<0.007	<0.007	0.015	100
		Handois Final Water	<0.007	<0.007	0.010	100
Dicamba	0.1 µg/l	Augrés Final Water	<0.020	<0.020	0.040	100
		Handois Final Water	<0.020	<0.020	<0.020	100
Diuron	0.1 µg/l	Augrés Final Water	<0.004	<0.004	0.006	100
		Handois Final Water	<0.004	<0.004	<0.004	100

Appendix 3 (continued):

2020 Treatment Works Pesticide Analysis
Audit Monitoring

A suite of 99 pesticides have been analysed during the 2020 reporting period at the treatment works outlets, the following table shows the ones that were detected above the limit of detection – there were 83 substances that were not.

Substances & parameters	Specific concentration/ value (max)/state	Sample Point	Min	Mean	Max	Compliance (%)
Fluopicolide	0.1 µg/l	Augrés Final Water	<0.003	<0.003	0.004	100
		Handois Final Water	<0.003	<0.003	0.007	100
Metobromuron	0.1 µg/l	Augrés Final Water	<0.003	<0.003	0.003	100
		Handois Final Water	<0.003	0.009	0.060	100
Metribuzin	0.1 µg/l	Augrés Final Water	<0.005	<0.005	0.010	100
		Handois Final Water	<0.005	<0.005	<0.005	100
Oxadixyl	0.1 µg/l	Augrés Final Water	0.009	0.019	0.040	100
		Handois Final Water	0.020	0.039	0.070	100
Pendimethalin	0.1 µg/l	Augrés Final Water	<0.007	<0.007	<0.007	100
		Handois Final Water	<0.007	<0.007	0.009	100
Propiconazole	0.1 µg/l	Augrés Final Water	<0.008	<0.008	0.017	100
		Handois Final Water	<0.008	<0.008	<0.008	100
Tebuconazole	0.1 µg/l	Augrés Final Water	<0.002	<0.002	<0.002	100
		Handois Final Water	<0.002	<0.002	0.002	100
Total Pesticides	0.5 µg/l	Augrés Final Water	0.012	0.029	0.073	100
		Handois Final Water	0.021	0.052	0.162	100

Appendix 4:

2020 Treatment Works Per- and polyfluoroalkyl substances (PFAS) Analysis
Audit Monitoring[8]

A suite of 17 Per- and polyfluoroalkyl substances (PFAS) have been analysed during the year at the treatment works outlets.
All results reported as µg/l.

Per- & polyfluoroalkyl substances	Sample Point	Min	Mean	Max	Compliance (%)
PFBA (357-22-4) Perfluoro-n-butanoic acid	Augrés Final Water	0.003	0.008	0.022	100
	Handois Final Water	0.003	0.010	0.027	100
PFPA (2706-90-3) Perfluoro-n-pentanoic acid	Augrés Final Water	0.002	0.004	0.011	100
	Handois Final Water	0.002	0.005	0.008	100
PFHxA (307-24-4) Perfluoro-n-hexanoic acid	Augrés Final Water	0.003	0.004	0.005	100
	Handois Final Water	0.003	0.005	0.008	100
PFBS (375-73-5) Perfluoro-1-butanesulfonate	Augrés Final Water	0.003	0.003	0.004	100
	Handois Final Water	0.004	0.005	0.006	100
PFHpA (375-85-9) Perfluoro-n-heptanoic acid	Augrés Final Water	0.002	0.003	0.003	100
	Handois Final Water	0.002	0.004	0.005	100
6:2PTS (27619-97-2) Perfluoro-octane sulfonate 6:2	Augrés Final Water	<LoD	<LoD	0.002	100
	Handois Final Water	<LoD	<LoD	0.003	100
PFOA (335-67-1) Perfluoro-n-octanoic acid	Augrés Final Water	0.003	0.004	0.005	100
	Handois Final Water	0.004	0.008	0.029	100
PFHxS (355-46-4) Perfluoro-1-hexanesulfonate	Augrés Final Water	0.002	0.004	0.008	100
	Handois Final Water	0.004	0.006	0.012	100
PFNA (375-95-1) Perfluoro-n-nonanoic acid	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	0.001	100

[8]*LoD – Limit of Detection*

Appendix 4 (continued):

2020 Treatment Works Per- and polyfluoroalkyl substances (PFAS) Analysis
Audit Monitoring[8]

A suite of 17 Per- and polyfluoroalkyl substances (PFAS) have been analysed during the 2020 reporting period at the treatment works outlets. All results reported as µg/l.

Per- & polyfluoroalkyl substances	Sample Point	Min	Mean	Max	Compliance (%)
PFHpS (375-92-8) Perfluoro-1-heptanesulfonate	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFDA (335-76-2) Perfluoro-n-decanoic acid	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFUnA (2058-94-8) Perfluoro-n-undecanoic acid	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFDoA (307-55-1) Perfluoro-n-dodecanoic acid	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFOSA (754-91-6) Perfluoro-octanesulfonamide	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFDS (335-73-3) Perfluoro-1-decanesulfonate	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
PFPeS (2706-91-4) Perfluoro-1-pentanesulfonate	Augrés Final Water	<LoD	<LoD	<LoD	100
	Handois Final Water	<LoD	<LoD	<LoD	100
Total PFOS (sum of linear and branched PFOS)	Augrés Final Water	0.004	0.009	0.017	100
	Handois Final Water	0.005	0.013	0.026	100
Total PFAS (sum of all substances listed above)	Augrés Final Water	0.023	0.040	0.052	100
	Handois Final Water	0.034	0.057	0.079	100

[8]*LoD – Limit of Detection*

Appendix 5:

2020 Service Reservoir (SR) Performance
Check Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Sample Point	Min	Mean	Max	Compliance (%)	What it means
E.coli	0 MPN per 100ml	Les Platons East SR	0	0	0	100	Primary indicator of faecal contamination of treated water.
		Les Platons West SR	0	0	0	100	
		Westmount SR	0	0	0	100	
Coliform bacteria	0 MPN per 100ml (95% of samples)	Les Platons East SR	0	0	14	98.1	Detection of coliform bacteria may indicate sub-optimal operation of the treatment process or ingress of contamination from breaches in the integrity of the distribution system. For water to be deemed wholesome leaving a service reservoir there has to be a 95% or greater compliance with the coliform bacteria regulatory limit.
		Les Platons West SR	0	0	0	100	
		Westmount SR	0	0	0	100	
Colony counts	No abnormal change	Les Platons East SR	No abnormal change			100	Monitoring water supplies for colony count bacteria can be useful for monitoring trends in water quality or detecting sudden changes in quality.
		Les Platons West SR				100	
		Westmount SR				100	
Residual disinfectant	No value mg Cl_2/l	Les Platons East SR	0.05	0.15	0.42	100	Sufficient chlorine is added to all supplies to ensure the absence of harmful microorganisms.
		Les Platons West SR	0.06	0.16	0.39	100	
		Westmount SR	0.06	0.12	0.19	100	

Appendix 6:

Water Quality in the Supply Zone
Check Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Min	Mean	Max	Compliance (%)	What it means
E.coli	0 MPN per 100ml	0	0	0	100	Primary indicator of faecal contamination of treated water
Coliform bacteria	0 MPN per 100ml	0	0	0	100	Detection of coliform bacteria may indicate sub-optimal operation of the treatment process or ingress of contamination from breaches in the integrity of the distribution system.
Residual disinfectant	No value mg Cl2/l	0.02	0.14	0.64		Chlorine is added to our water along with ammonia to form a stable chloramine disinfectant compound, to ensure that there are no harmful bacteria in the water we supply.
Aluminium	200 µg Al/l	<5.0	12.3	53.0	100	Occurs naturally in many water resources. Aluminium compounds are also used at some water treatment works to remove impurities, but are themselves removed in the process
Ammonium	0.50 mg NH4/l	<0.01	0.02	0.10	100	May be naturally present in some waters and is not harmful.
Colony counts	No abnormal change	No abnormal change			100	Monitoring water supplies for colony count bacteria can be useful for monitoring trends in water quality or detecting sudden changes in quality
Colour	20 mg/l Pt/Co	<0.30	1.32	7.35	100	Water should be clear and bright but natural organic matter or pipework corrosion products may occasionally impart a slight tint.
Conductivity	2500 µS/cm at 200C	430	514	562	100	A measure of the ability of the water to conduct an electric current and therefore a measurement of the mineral salts dissolved in the water.
Clostridium perfringens	0 CFU per 100ml	0	0	0	100	The presence of Clostridium perfringens in filtered water and/or final water may indicate deficiencies in the filtration process (e.g. filter breakthrough) or in the disinfection process.
Hydrogen ion	10.0 pH value 6.5 (min)	7.06	7.57	7.96	100	A measure of acidity or alkalinity. Excessively acidic or alkaline water can contribute to corrosion of pipes and fittings.
Iron	200 µg Fe/l	<3.0	12.1	168.8	100	Iron may be associated with the corrosion of old iron mains. The standard has been set for aesthetic reasons as levels persistently above the standard can give rise to discoloured water.

Appendix 6 (continued):

Water Quality in the Supply Zone
Check Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Min	Mean	Max	Compliance (%)	What it means
Manganese	50 µg Mn/l	<0.9	7.0	36.6	100	Occurs naturally in many water sources. The standard is set for aesthetic reasons as black deposits of manganese dioxide can give rise to discoloured water.
Nitrate	50 mg NO3/l	12.1	33.7	45.4	100	Nitrate arises from the use of fertilisers in agriculture and may be minimised by good practices and appropriate controls.
Nitrite	0.5 mg NO2/l	<0.003	0.019	0.094	100	Nitrite may be associated with nitrate or with the use of ammonia in water disinfection.
Nitrate/Nitrite ratio	1.000	0.254	0.681	0.916	100	The regulations specify that the ratio according to the following formula must not exceed 1, [nitrate]/50 + [nitrite]/3, where the square brackets signify the concentrations in mg/l for nitrate (NO3) and nitrite (NO2) respectively.
Taste	3 at 25°C Dilution number	0	0	0	100	The water is examined the water for unpleasant taste. This is set for aesthetic reasons.
Odour	3 at 25°C Dilution number	0	0	5	97.5	The water is examined the water for unpleasant odour. This is set for aesthetic reasons and does not affect health
Turbidity	4 NTU	0.07	0.17	2.36	100	The Standard requires that there should be no haziness caused by fine particles.
Cyanide	50 µg CN/l	<2.0	<2.0	<2.0	100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.

Appendix 7:

Water Quality in the Supply Zone
Audit Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Min	Mean	Max	Compliance (%)	What it means
Antimony	5.0 µg Sb/l		0.2		100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
Arsenic	10 µg As/l		<1.0		100	
Benzene	1.0 µg/l		<0.02		100	Benzene may be introduced into source water by industrial effluents or atmospheric pollution.
Boron	1.0 mg B/l	0.067	0.104	0.190	100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
Cadmium	5.0 µg Cd/l		<0.12		100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
Chromium	50 µg Cr/l		<0.5		100	
Copper	2000 µg Cu/l	<4	11	65	100	Any significant amount of copper is likely to come from corrosion of customers' pipes or fittings. Excess amounts can cause a metallic taste.
1,2 dichloroethane	3.0 µg/l	<0.12	<0.12	<0.12	100	The presence of this organic solvent is an indication of industrial pollution.
Enterococci	0 MPN per 100 ml	0	0	0	100	Used to assess the significance of the presence of coliform bacteria in the absence of *E.coli* or to provide additional information when assessing the extent of possible faecal contamination. They are regarded as secondary indicators of faecal pollution.
Fluoride	1.5 mg F/l	<0.075	<0.075	<0.075	100	Occurs naturally in many water sources. The standard is set to ensure no adverse effects. Jersey Water does not artificially fluoridate the water supplies.
Gross Alpha	0.1 Bq/l	<0.020	<0.020	<0.020	100	These parameters are measured as part of screening for radioactivity.
Gross Beta	1.0 Bq/l	<0.28	<0.28	<0.28	100	

Appendix 7 (continued):

Water Quality in the Supply Zone
Audit Monitoring

Substances & parameters	Specific concentration/ value (max)/state	Min	Mean	Max	Compliance (%)	What it means
Lead	10 µg Pb/l	<0.9	<0.9	<0.9	100	Absent in water entering supply but variable concentrations of lead may be found in water at the customer's tap in older properties built at a time when lead was commonly used in domestic plumbing systems. The standard recognises that the intake of lead should be minimised for health reasons.
Nickel	20 µg Ni/l	<0.6	1.4	4.0	100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
Selenium	10 µg Se/l		<0.8		100	Low levels of selenium may occur naturally in water after it has passed through various mineral deposits and rock strata. Selenium is an essential element and is required as part of the diet.
Sodium	200 mg Na/l		56.7		100	Sodium occurs naturally in water after passing through certain mineral deposits and rock strata or in brackish groundwater. Sodium salts are used extensively in the home and in industrial processes. Domestic water softeners regenerated with brine produce water containing an increased concentration of sodium. Always use unsoftened mains water for drinking, cooking and for preparing babies' feeds.
Sum of Trichloroethene & Tetrachloroethene	10 µg/l	<0.10	<0.10	<0.10	100	These substances are organic solvents, their presence is an indication of industrial pollution.
Tetrachloromethane	3 µg/l	<0.11	<0.11	<0.11	100	
Total Trihalomethanes (THM's)	100 µg/l	5.90	15.09	23.50	100	THM's are formed by the reaction of chlorine added as a disinfectant with naturally occurring organic compounds in the water.
Chloride	250 mg Cl/l	50	60	68	100	Chloride can occur naturally in source water and is a component of common salt. The standard is not health-related, but set to avoid taste and corrosion potential.
Sulphate	250 mg SO4/l	66	77	92	100	Occurs naturally in many source waters after contact with particular mineral deposits and rock strata. The concentrations normally found in drinking water do not represent a risk to health
Total organic carbon	No abnormal change mg/l	1.4	1.8	2.2	100	This parameter provides a measure of the total amount of organic matter in water.