



**2015**

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**Water Quality  
Report**

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The Jersey New Waterworks  
Company Limited



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## Executive summary

The quality of water supplied by the Company in 2015 was of a very high standard with an overall compliance rate of 99.99% with water quality requirements of the Water (Jersey) Law 1972 (2014: 99.99%). During 2015, the company carried out 14,246 regulatory analyses of treated water. Of these, just two were outside their respective regulatory parameter but posed no threat to health.

The bacteriological compliance of water leaving the treatment works was 100% (2014: 100%) and there were no instances of herbicides or pesticides exceeding regulatory limits in the treated water supplied.


During 2015, the maximum concentration of nitrates detected in treated water was 42.8mg/l; below the regulatory limit of 50mg/l and lower than the 2014 maximum of 46.9mg/l. The reduction in the maximum concentration was made possible by the careful dilution and blending of water resources and having a sufficient capacity of low nitrate water in store at the start of the year to enable concentrations in the treated water supply to be managed.

Whilst there have been two consecutive years where full compliance of nitrate limits in potable water has been achieved, the underlying problem is far from resolved. Nitrate pollution of stream water remained persistently high with the average concentration peaking at 65.7mg/l during March 2015.

During 2015, the Nitrate Working Group (comprising representatives from Jersey Water, the Environment Department, the Public Health Department, the Jersey Farmers Union, the Farming Community and the Royal Jersey Agricultural & Horticultural Society) concluded its work on identifying ways in which the nitrates pollution in Jersey could be reduced. The group made a number of recommendations that are to be taken forward by the States of Jersey under the Rural Economy Strategy and the Water Management Plan for Jersey (both due for publication during 2016). Given the significant impact that nitrate pollution has on water quality in the Island, it is vitally important that sufficient funding and resources are secured to implement the proposed measures to bring this long running issue to a close.

Jersey Water has dispensations for nitrates under the Water (Jersey) Law 1972, which allows for a maximum concentration of 65mg/l and places additional restrictions on the number of samples exceeding the 50mg/l limit. The dispensation expires on 31 December 2016. Discussions are underway with the Environment Department regarding the potential for renewal of the dispensations for a further period pending the introduction and success of the measures referred to above.

During 2015, the company detected pesticides in raw water sources at concentrations exceeding the regulatory limit of 0.1ug/l on 14 instances (2014:15).



**“The bacteriological compliance of water leaving the treatment works was 100%.”**

# Executive summary

During the year, Jersey Water installed treatment processes at both water treatment works to help manage the risks to water quality arising from the historic use of lead in supply pipes and private pipework in customer properties.

This follows a reduction in the limits for lead concentrations in supply from 25µg/l to 10µg/l. Jersey Water will continue to replace lead communication pipes whenever water mains are renewed and the company will also replace lead communication pipes free of charge at the request of the customer, if the customer has or is in the process of removing lead pipework from their side of the stop tap.

Following on from the commissioning of the ultraviolet (UV) treatment plant at Handois Water Treatment Works in 2014, the plant at Augrès Water Treatment Works was commissioned in April 2015. UV treatment forms an integral part of the multi-stage water treatment and disinfection process to protect against organisms including pathogens and cryptosporidium.

During 2015, there were 131 water quality contacts (2014: 143) from customers relating to concerns about the quality of water supplied and 27 contacts (2014: 23) requesting information. Over 60% of contacts related to incidences of discoloured water which, whilst aesthetically displeasing, presents no risk to health.

Discoloured water generally occurs when rust sediments from unlined cast iron and galvanised water mains are disturbed as a result of planned works or bursts. The primary purpose of the Company's mains renewal programme is the replacement of pipework that causes these problems.

In 2015, the Company Water Regulations Enforcement Officer undertook 483 inspections (2014: 515) of new and existing plumbing installations to assess and advise on compliance with the Water Fittings Byelaws. During 2015, a total of 27 rectification notices were issued (2014: 33).

**“ In 2015, the Company Water Regulations Enforcement Officer undertook 48 inspections.”**

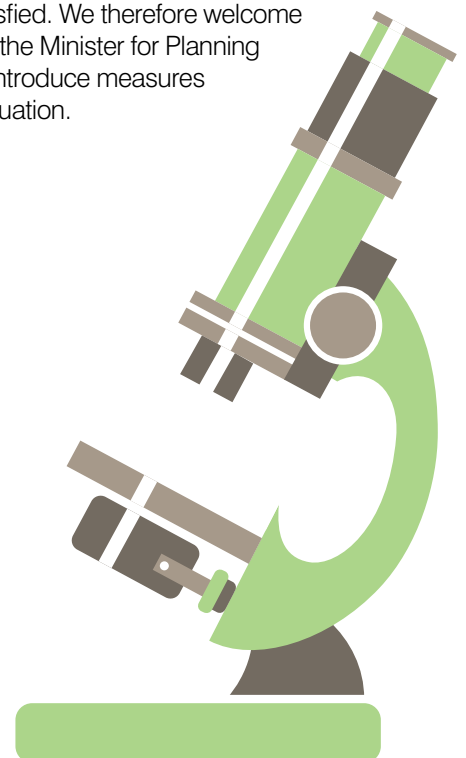
## 2016 Update

Subsequent to the year end the company changed its analyst laboratory which resulted in the inclusion, for the first time, of Oxadixyl within the suite of pesticides that the Company analyses for. Results indicate the presence of Oxadixyl in water resources across the Island in concentrations of up to 0.536ug/l. Readings taken at the treatment works indicate that concentrations reached a maximum of 0.1008ug/l at Handois Water Treatment Works; just over the regulatory limit of 0.1ug/l and presenting no risk to health. In addition to the presence of Oxadixyl, the company has also identified the presence of 5 other pesticides in raw water sources since the beginning of the year.

The company continues to manage the quality of the treated water supply through the careful selection and blending of water resources to ensure compliance with the 0.1ug/l regulatory limit.

The small size of the water catchments in Jersey and the intensity of farming and other activities within those catchments means that water resources in Jersey are vulnerable to persistent diffuse and point source pollution from nitrates and pesticides. The existence of fertilisers and pesticides in any quantity in water resources presents the company with serious operational constraints in its ability to supply consistently high quality water in the normal, cost effective manner. Treatment solutions for pesticides and the removal of nitrates are costly and technically challenging. Instead, efforts should be focussed on effective catchment management measures. For many years the company has advocated the implementation of such measures to better control the activities that contribute to pollution. We believe that the time has now come for a fresh look at the way water resources are protected to ensure that the needs of all stakeholders are satisfied. We therefore welcome the recent pledge by the Minister for Planning and Environment to introduce measures to help resolve the situation.

**Helier Smith**  
Chief Executive



# 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 Water Safety Plan, where potential risks are evaluated and water quality testing is designed to help manage those risks.

We examine samples from supply points (comprising our two treatment works and three service reservoirs) and the supply zone (distribution network) for compliance purposes at regular intervals throughout the year.

The company is required to undertake 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

Water quality in 2015 was high with only two non-compliant regulatory analyses identified out of 14,246 analyses taken for compliance purposes. Neither presented any risk to human health. Overall water quality compliance for 2015 was 99.99%, in line with the result for 2014 where a compliance rate of 99.99% was recorded following one instance of non-compliance.

## Treatment works and service reservoir 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 2015, the company took 2180 samples throughout the year and tested them against 80 physical, bacteriological and chemical parameters. All samples were compliant with regulatory limits, an improvement on 2014 where one sample was outside the of permitted range.

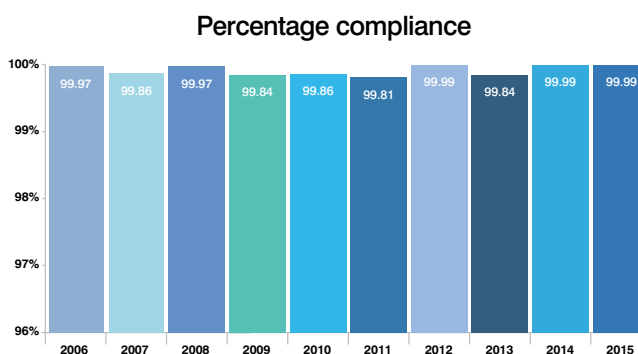
Detailed supply point results are set out in Appendix 1 and 2.

## Water quality in the distribution system (supply zone)

Sampling of water throughout the distribution network is undertaken in accordance with a risk assessed programme to ensure the water we supply meets physical, bacteriological and chemical standards. During 2015, 438 water samples were taken from all parts of the distribution system and analysed against 84 physical, bacteriological and chemical parameters. Two analyses were identified where concentrations were in excess of the regulatory parameter as detailed below. Neither presented any risk to health.

Parameter	Date	Analysis type	Concentration recorded	Regulatory limit	Note
Iron	16/02/15	Check analysis	339µg Fe/l	200µg Fe/l	The standard has been set for aesthetic reasons as levels persistently above the standard can give rise to discoloured water.
Lead	01/06/15	Audit analysis	10.90µg Pb/l	10µg Pb/l	Investigations into this breach found that a brass fitting at the sample point was responsible for leaching out some lead.

Detailed supply zone results are set out in Appendix 3 and 4.





# Consumer contacts and enquiries

In 2014 Jersey Water adopted the method used by the England and Wales water companies for recording consumer contacts and enquiries regarding water quality. Every contact is recorded and categorised whether or not they entail a visit to rectify an issue. This method was continued into 2015 and they are listed on the table below:

## Consumer contacts & enquiries by sub-category

### Informing consumers

	Total	Consumer enquiries				
		Fluoride	Water hardness	Water quality report	Other information	
<b>Total consumer enquiries</b>	7	0	2	0	5	
		Consumer contact (drinking water quality concern)				
		Pets & other animals	Lead & other analysis	Incident related	Campaigns	Lifestyle
<b>Total contacts (drinking water quality concern)</b>	20	2	15	1	0	2
<b>Zone total</b>	27					
<b>Zone rate (contact per 1,000 population)</b>	0.30					

E&W Industry average 2014: 4.42  
Population of Jersey residents: 90,000

### Acceptability of water to consumers

	Total	Consumer contact (appearance)						
		Discoloured - Black/Brown/Orange	Discoloured - blue/green	Particles	White - air	White - chalk	Animalcules	General condition
<b>Total contacts (appearance)</b>	96	84	1	2	9	0	0	0
		Consumer contact (taste and odour)						
		Chlorine	Earthy/musty	Petrol/diesel	Other taste or odour			
<b>Total contacts (taste and odour)</b>	26	7	10		9			
		Consumer contact (illness)						
		Gastroenteritis	Oral	Skin	Medical opinion			
<b>Total contacts (illness)</b>	9	4	1	3	1			
<b>Zone total</b>	131							
<b>Zone rate (contact per 1,000 population)</b>	1.46							

E&W Industry average 2014: 1.75  
Population of Jersey residents: 90,000

The table shows that Jersey Water has fewer consumers contacting the Company on both enquiries and water quality issues compared to the England and Wales industry averages.

As shown in previous years discoloured water caused by rust is the most common issue consumers contact the Company about, with 53% of all contacts being in this sub category (Black/Brown/Orange).

In the Spring of 2015 algae in Queens Valley reservoir imparted an earthy/musty taste to the water. Once the source was identified the reservoir was taken out of service.

Bacteriological and chemical samples were taken at the premises where the consumer had suspected the water supply to be causing illness. Examinations showed the supply to be meet quality standards.

In total, 107 bacteriological samples were taken during the investigation of consumer contacts that the Jersey Water inspectors visited, all of which were compliant bacteriologically.

# Raw water quality

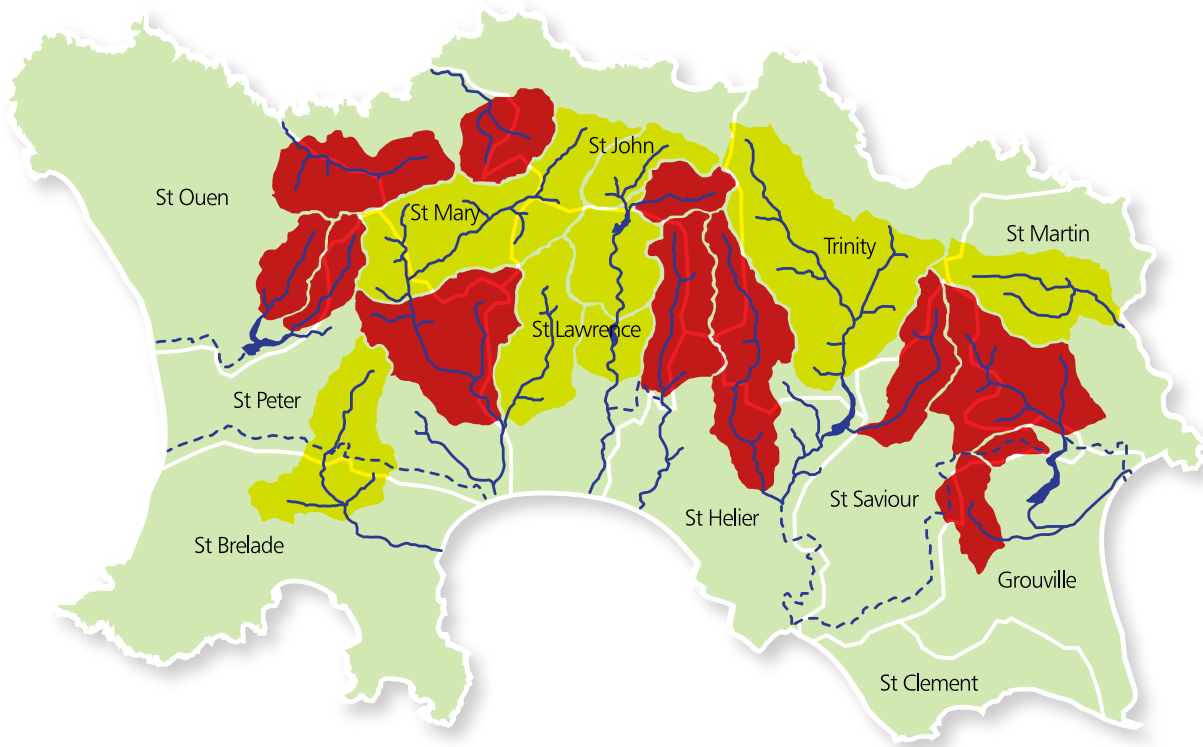
For operational and monitoring purposes Jersey Water takes samples of water from streams, reservoirs and the inlet to the treatment works. This enables our operational staff to select the most suitable waters to be taken for treatment.

Analysis is carried out in the Jersey Water laboratory for physical, bacteriological and chemical parameters with samples being sent to our consulting analysts in the UK for pesticide analysis. In 2015, our results showed that out of 6278 analyses for herbicides and pesticides in the stream courses, 14 were above the 0.1 µg/l limit compared to 15 in 2014 and 45 in 2013.

## Nitrates

Whilst nitrates in treated water reached a peak of 42.8mg/l in March 2015, well 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 164.1mg/l in January 2015 in the Queens Valley Side Stream catchment and averaged 53.1 mg/l throughout the Island during the year.

During 2015, Jersey Water developed an interactive map showing nitrate levels in the various catchments in a graphical interface. The screenshot below shows the catchments as at 9th March 2016, where red indicates the streams in the catchment which are over 50mg/l and yellow indicating those between 40mg/l and 50mg/l.



## Pesticides

The Company samples streams and reservoirs on a regular basis to test for the presence of pesticides and other parameters. During 2015, 14 pesticides were detected at levels in excess of the 0.1µg/l regulatory limit for treated water. In each instance, appropriate action was taken including taking the source out of service until such time as the presence of the substance had reduced sufficiently.

Incidence of pesticides in raw water



# Understanding test results

This summary may help you better understand the 2015 test results on the following pages.

## 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.

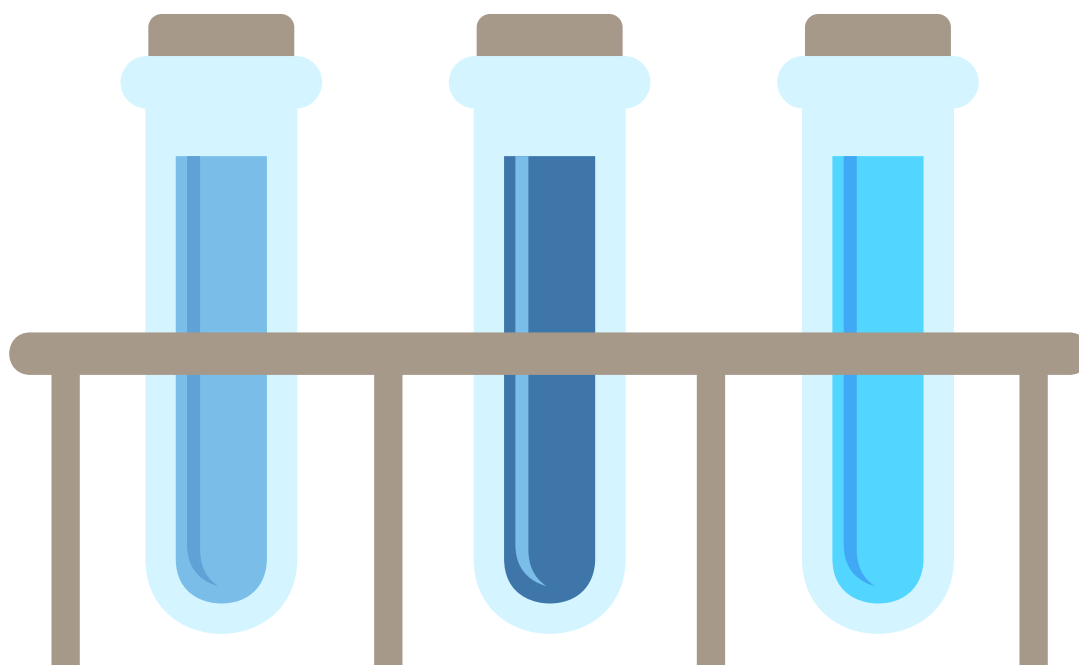
- **Audit monitoring**

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.

The regulations require that samples are taken from every outlet of a treatment works. There are therefore three sets of results from Handois Treatment Works and one set for Augres Treatment Works.

## Key Terms

Term	Description
Substances and parameters	The item we are testing for
Specific concentration or value (maximum) or state	The maximum or range of values allowed by law in the water supply (regulatory limit).
mg/l	milligrams per litre or parts per million, equivalent to 1p in £10,000
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, microSiemens/cm
Sample Point	The location where the sample was taken
Min	The minimum or lowest result produced for that test.
Mean	The average value of all the results produced for that test.
Max	The maximum or highest result produced for that test
% Compliance	The percentage of the results that comply with the regulatory limit.
What it means	A description of what it is we are looking for and what it possibly indicates.





# Appendix 1 - 2015 treatment works & service reservoir performance - check monitoring

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance	What it means
<i>E.coli</i>	0 per 100ml	Handois 12"	0	0	0	100	Bacteria which are indicative of faecal pollution.
		Handois 18"	0	0	0	100	
		Handois PS	0	0	0	100	
		Augres Tank	0	0	0	100	
		Les Platons East SR	0	0	0	100	
		Les Platons West SR	0	0	0	100	
		Westmount SR	0	0	0	100	
		Handois 12"	0	0	0	100	
		Handois 18"	0	0	0	100	
Coliform bacteria	0 per 100ml	Handois PS	0	0	0	100	These bacteria are widely distributed in the environment and provide a sensitive measure of microbiological quality. They are removed during the treatment process.
		Augres Tank	0	0	0	100	
		Les Platons East SR	0	0	0	100	
		Les Platons West SR	0	0	0	100	
		Westmount SR	0	0	0	100	
		Handois 12"	0	0	0	100	
		Handois 18"	0	0	0	100	
		Handois PS	0	0	0	100	
		Augres Tank	0	0	0	100	
Colony counts	No abnormal change	Les Platons East SR	No abnormal change	No abnormal change	No abnormal change	100	A range of harmless bacteria that may be present in water supplies. These are monitored to ensure the efficiency of the treatment process and the cleanliness (increasing trends in the distribution system are investigated).
		Les Platons West SR				100	
		Westmount SR				100	
		Handois 12"				100	
		Handois 18"				100	
		Handois PS				100	
		Augres Tank				100	
		Les Platons East SR				100	
		Les Platons West SR				100	

# Appendix 1 - 2015 treatment works & service reservoir performance - check monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance	What it means
Nitrite	0.1 mg NO <sub>2</sub> /l	Handois 12"	<0.003	0.005	0.011	100	Nitrite may be associated with nitrate or with the use of ammonia in water disinfection.
		Handois 18"	<0.003	0.004	0.014	100	
		Handois PS	<0.003	0.007	0.016	100	
		Augres Tank	<0.003	0.004	0.010	100	
Residual disinfectant	No value mg Cl <sub>2</sub> /l	Handois 12"	0.42	0.50	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.
		Handois 18"	0.38	0.50	0.68		
		Handois PS	0.38	0.50	0.64		
		Augres Tank	0.32	0.42	0.48		
Turbidity	1 NTU	Handois 12"	0.07	0.10	0.17	100	The Standard requires that there should be no haziness caused by fine particles.
		Handois 18"	0.07	0.10	0.17	100	
		Handois PS	0.07	0.11	0.17	100	
		Augres Tank	0.06	0.09	0.13	100	
Conductivity	2500 µS/cm at 200C	Handois 12"	458	495	530	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 18"	459	497	527	100	
		Handois PS	457	497	527	100	
		Augres Tank	451	497	527	100	
		Les Platons East SR	472	501	531	100	
		Les Platons West SR	470	501	531	100	
		Westmount SR	453	490	526	100	

# Appendix 2 - 2015 treatment works & service reservoir performance - audit monitoring

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance	What it means
Benzene Bromate 1,2 dichloroethane Trichloroethene & } Tetrachloroethene } Tetrachloromethane	1.0 µg/l 10 µg BrO <sub>3</sub> /l 3.0 µg/l 10 µg/l 3 µg/l	Handois 12"	All results were below limit of detection from all the sample points.	0.032	3.00	100	Benzene may be introduced into source water by industrial effluents or atmospheric pollution. Bromate can be associated with industrial pollution or can occur as a by-product of the disinfection process. The other compounds are all organic solvents, their presence is an indication of industrial pollution.
		Handois 18"				100	
		Handois PS				100	
		Augres Tank				100	
		Les Platons East SR				100	
		Les Platons West SR				100	
		Westmount SR				100	
Boron	1.0 mg B/l	Handois 12"	0.069	0.070	3.00	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.
		Handois 18"				100	
		Handois PS				100	
		Augres Tank				100	
		Les Platons East SR				100	
		Les Platons West SR				100	
		Westmount SR				100	
Cyanide	50 µg CN/l	Handois 12"	1.63	1.13	3.00	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.
		Handois 18"				100	
		Handois PS				100	
		Augres Tank				100	
		Les Platons East SR				100	
		Les Platons West SR				100	
		Westmount SR				100	

# Appendix 2 - 2015 treatment works & service reservoir performance - audit monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance	What it means
Fluoride	1.5 mg F/l	Handois 12"		0.101		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 18"		0.088		100	
		Handois PS		0.210		100	
		Augres Tank		0.085		100	
		Les Platons East SR		0.078		100	
		Les Platons West SR		0.094		100	
		Westmount SR		0.079		100	
		Handois 12"	57	59	61	100	
		Handois 18"	57	59	66	100	
Chloride	250 mg Cl/l	Handois PS	55	59	61	100	Occurs naturally in most water sources. Levels above the standard could give rise to taste issues and contribute to corrosion.
		Augres Tank	52	53	56	100	
		Les Platons East SR	56	58	60	100	
		Les Platons West SR	57	59	60	100	
		Westmount SR	53	55	56	100	
		Handois 12"	79	85	90	100	
		Handois 18"	81	84	89	100	
		Handois PS	80	84	89	100	
		Augres Tank	79	84	94	100	
Sulphate	250 mg SO <sub>4</sub> /l	Les Platons East SR	81	84	88	100	Dissolves in water after contact with certain mineral deposits. Excess levels can contribute to corrosion.
		Les Platons West SR	80	84	88	100	
		Westmount SR	82	84	90	100	

# Appendix 2 - 2015 treatment works & service reservoir performance - audit monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance	What it means
Total Organic Carbon	No abnormal change	Handois 12"	1.8	1.96	2.2	100	This parameter assesses the organic content of the water.
		Handois 18"	1.8	1.99	2.4	100	
		Handois PS	1.7	2.00	2.4	100	
		Augres Tank	1.7	1.98	2.3	100	
		Les Platons East SR	1.8	1.88	2.1	100	
		Les Platons West SR	1.7	1.93	2.3	100	
		Westmount SR	1.7	1.86	2.1	100	
		Handois 12"	<0.020	<0.020	0.028	100	
		Handois 18"	<0.020	<0.020	0.032	100	
Gross Alpha	0.1 Bq/l	Handois PS	<0.020	<0.020	0.035	100	These parameters are measured as part of screening for radioactivity.
		Augres Tank	<0.020	<0.020	0.034	100	
		Les Platons East SR	<0.020	<0.020	0.031	100	
		Les Platons West SR	<0.020	<0.020	0.033	100	
		Westmount SR	<0.020	0.029	0.083	100	
		Handois 12"	0.142	0.152	0.164	100	
		Handois 18"	0.128	0.137	0.143	100	
		Handois PS	<0.040	0.109	0.162	100	
		Augres Tank	0.143	0.176	0.199	100	
Gross Beta	1.0 Bq/l	Les Platons East SR	0.139	0.159	0.180	100	
		Les Platons West SR	0.146	0.156	0.172	100	
		Westmount SR	0.094	0.162	0.201	100	

## Appendix 2 - 2015 treatment works & service reservoir performance - audit monitoring continued

A suite of 43 pesticides have been analysed during 2015 at the treatment works and service reservoir outlets, the following table shows the ones that were detected – no results were above the regulatory limit.

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance
Isoproturon	0.1 µg/l	Handois 12"	<0.008	<0.008	0.011	100
		Handois PS	<0.008	<0.008	0.030	100
Linuron	0.1 µg/l	Handois 12"	<0.008	<0.008	0.026	100
		Handois 18"	<0.008	<0.008	0.032	100
		Handois PS	<0.008	<0.008	0.050	100
		Augres Tank	<0.008	<0.008	0.024	100
		Les Platons East SR	<0.008	<0.008	0.028	100
		Les Platons West SR	<0.008	<0.008	0.023	100
		Westmount SR	<0.008	<0.008	0.014	100
2,4-D	0.1 µg/l	Handois PS	<0.011	<0.011	0.011	100
		Augres Tank	<0.011	<0.011	0.015	100
Bentazone	0.1 µg/l	Augres Tank	<0.008	<0.008	0.016	100
		Les Platons East SR	<0.008	<0.008	0.008	100
		Westmount SR	<0.008	<0.008	0.008	100
Dicamba	0.1 µg/l	Handois PS	<0.013	<0.013	0.013	100
Simazine	0.1 µg/l	Handois 12"	<0.004	<0.004	0.005	100
		Handois 18"	<0.004	<0.004	0.005	100
		Handois PS	<0.004	<0.004	0.006	100
		Les Platons East SR	<0.004	<0.004	0.005	100
		Les Platons West SR	<0.004	<0.004	0.005	100
Terbutryn	0.1 µg/l	Handois PS	<0.009	<0.009	0.012	100
		Augres Tank	<0.009	<0.009	0.015	100
Boscalid	0.1 µg/l	Augres Tank	<0.005	<0.005	0.006	100
Metazachlor	0.1 µg/l	Augres Tank	<0.008	0.015	0.035	100
		Westmount SR	<0.008	<0.008	0.016	100



## Appendix 2 - 2015 treatment works & service reservoir performance - audit monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Sample point	Min	Mean	Max	% compliance
Carbendazim/ Benomyl	0.1 µg/l	Handois 12"	<0.005	<0.005	0.007	100
		Handois 18"	<0.005	<0.005	0.008	100
		Handois PS	<0.005	<0.005	0.008	100
		Les Platons East SR	<0.005	<0.005	0.007	100
Flutriafol	0.1 µg/l	Handois PS	<0.007	<0.007	0.021	100
Azoxystrobin	0.1 µg/l	Handois 12"	<0.003	<0.003	0.007	100
		Handois 18"	<0.003	<0.003	0.008	100
		Handois PS	<0.003	<0.003	0.010	100
		Augres Tank	<0.003	0.012	0.028	100
		Les Platons East SR	<0.003	0.003	0.008	100
		Les Platons West SR	<0.003	<0.003	0.007	100
		Westmount SR	<0.003	0.009	0.015	100
Pesticides Total	0.5 µg/l	Handois 12"	<0.003	0.009	0.044	100
		Handois 18"	<0.003	0.008	0.048	100
		Handois PS	<0.003	0.013	0.068	100
		Augres Tank	<0.003	0.027	0.070	100
		Les Platons East SR	<0.003	0.009	0.043	100
		Les Platons West SR	<0.003	0.006	0.030	100
		Westmount SR	<0.003	0.033	0.077	100

# Appendix 3 - 2015 water quality in the distribution system - check monitoring

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	% compliance	What it means
<i>E.coli</i>	0 per 100ml	0	0	0	100	Bacteria which are indicative of faecal pollution.
Coliform bacteria	0 per 100ml	0	0	0	100	These bacteria are widely distributed in the environment and provide a sensitive measure of microbiological quality. They are removed during the treatment process.
Residual disinfectant	No value mg Cl <sub>2</sub> /l	<0.02	0.10	0.58		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	<20	<20	38	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 NH <sub>4</sub> /l	<0.01	0.03	0.13	100	May be naturally present in some waters and is not harmful.
Colony counts	No abnormal change	No abnormal change	No abnormal change	No abnormal change	100	A range of harmless bacteria that may be present in water supplies. These are monitored to ensure the efficiency of the treatment process and the cleanliness (increasing trends in the distribution system are investigated).
Colour	20 mg/l Pt/Co	<5	<5	15	100	Water should be clear and bright but natural organic matter or pipework corrosion products may occasionally impart a slight tint. The standard is set for reasons of appearance and requires the water to be virtually colourless.
Conductivity	2500 µS/cm at 200C	457	502	537	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.

## Appendix 3 - 2015 water quality in the distribution system - check monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	% compliance	What it means
Hydrogen ion	10.0 pH value	7.32	7.57	7.80	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	<4	14	339	98.6	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.
Manganese	50 µg Mn/l	<20	<20	20.1	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 NO <sub>3</sub> /l	20.7	34.3	42.8	100	Nitrate arises from the use of fertilizers in agriculture and may be minimised by good practices and appropriate controls.
Nitrite	0.5 mg NO <sub>2</sub> /l	<0.003	0.020	0.171	100	Nitrite may be associated with nitrate or with the use of ammonia in water disinfection.
Nitrate/Nitrite ratio <sup>1</sup>	1.000	0.420	0.692	0.876	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 (NO <sub>3</sub> ) and nitrite (NO <sub>2</sub> ) respectively.
Taste & Odour	3 at 250C Dilution number	1	1	1	100	The water is examined the water for unpleasant taste or odour. These are set for aesthetic reasons.
Turbidity	4 NTU	0.08	0.13	0.63	100	The Standard requires that there should be no haziness caused by fine particles.
Cyanide	50 µg CN/l	<1.0	<1.0	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.

# Appendix 4 - 2015 water quality in the distribution system - audit monitoring

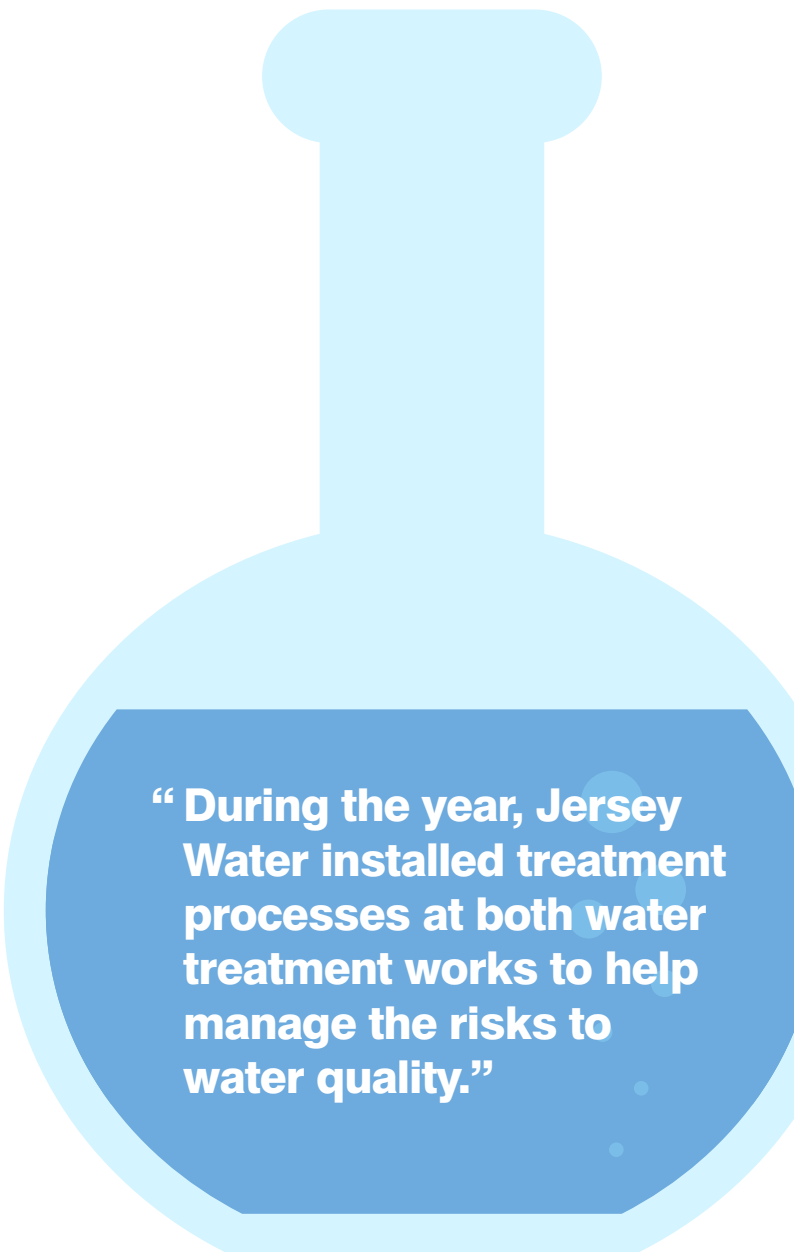
Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	% compliance	What it means
Antimony	5.0 µg Sb/l		0.244		100	Very low levels may occur naturally, but higher amounts could be associated with industrial pollution. The standards are health related but have a large built-in safety factor.
Arsenic	10 µg As/l		0.173		100	
Cadmium	5.0 µg Cd/l		<0.02		100	
Chromium	50 µg Cr/l		<0.15		100	
Benzene	1.0 µg/l		<0.07		100	Benzene may be introduced into source water by industrial effluents or atmospheric pollution.
Boron	1.0 mg B/l		0.064		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.
Copper	2000 µg Cu/l	2	20	108	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		100	The presence of this organic solvent is an indication of industrial pollution.
Enterococci	0 per 100ml	0	0	0	100	Bacteria which are indicative of faecal pollution.
Lead	10 µg Pb/l	<0.03	1.41	10.90	87.5	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		1.62		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 4 - 2015 water quality in the distribution system - audit monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	% compliance	What it means
Linuron	0.1 µg/l	<0.008	<0.008	0.008	100	The presence of pesticides and related products is associated with the use of these substances by agriculture, local authorities and domestic. The standards are set well below the levels which might cause health problems, but levels should be minimised by good practice and appropriate controls.
Bentazone	0.1 µg/l	<0.008	<0.008	0.008	100	
Simazine	0.1 µg/l	<0.004	<0.004	0.004	100	
Carbendazim	0.1 µg/l	<0.005	<0.005	0.007	100	
Metazachlor	0.1 µg/l	<0.008	<0.008	0.024	100	
Azoxystrobin	0.1 µg/l	<0.003	0.005	0.016	100	
Pesticides total	0.5 µg/l	<0.003	0.019	0.047	100	
Selenium	10 µg Se/l		0.18		100	
Sodium	200 mg Na/l		46		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.
Trichloroethene and Tetrachloroethene	10 µg/l		<0.1		100	May be naturally present after passing through certain mineral deposits/rock strata or introduced by some water softening processes. The standard is set well below the level which could affect health.
Tetrachloromethane	3 µg/l		<0.1		100	The presence of these organic solvents is an indication of industrial pollution.
Trihalomethanes Total	100 µg/l	3.97	11.43	20.34	100	THMs are formed by the reaction of chlorine with naturally occurring organic compounds in the water. The standard is set well below the level of significance to health.
Chloride	250 mg Cl/l	52	58	61	100	Occurs naturally in most water sources. Levels above the standard could give rise to taste issues and contribute to corrosion.

# Appendix 4 - 2015 water quality in the distribution system - audit monitoring continued

Substances and parameters	Specific concentration or value (maximum) or state	Min	Mean	Max	% compliance	What it means
Sulphate	250 mg SO <sub>4</sub> /l	80	85	94	100	Dissolves in water after contact with certain mineral deposits. Excess levels can contribute to corrosion.
Total Organic Carbon	No abnormal change	1.80	2.14	3.50	100	This parameter assesses the organic content of the water.
Gross alpha	0.1 Bq/l	<0.020	<0.020	0.035	100	These parameters are measured as part of screening for radioactivity.
Gross beta	1.0 Bq/l	0.112	0.154	0.177	100	







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