Independent Water Quality Report

Client	Mr Peter Campbell Managing Director
Company	Drinking Water Solutions (DWS)
Visit	Independent Water Quality Review of DWS Water Filter Systems.
Samples collected by	Dean Francis BSc (Hons) MWMSoc
Report written by	Dean Francis BSc (Hons) MWMSoc

Prepared by

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1. Summary

Aqua Legion UK Ltd have been appointed by Mr Peter Campbell of Drinking Water Solutions (DWS) to provide independent verification of the drinking water quality produced from his filtered water supply units, and to compare results against water supplied from the London mains water supply, bottled water, and bottled water dispensing systems.

All samples collected were submitted to a UKAS accredited laboratory within 1 hour of collection.

We are pleased to report that microbial examination of the water supplied from the DWS chilled drinking water units returned excellent drinking water quality with low two and three day total bacterial counts and an absence of coliform bacteria, Escherichia Coli and Pseudomonas bacteria.

It should be highlighted that some of the total bacteria counts were recorded well below the Water Supply (Water Quality) Regulations 1989 control limits still used by Aqua Legion UK Ltd to indicate optimum drinking water quality and all results were well below the Water Supply (Water Quality) regulations 2000.

It should also be highlighted that all results obtained from the DWS water filters returned significantly superior drinking water quality in comparison to both the mains water supply and bottled drinking water supplies.

We can therefore independently verify that in our opinion the water served via the DWS filters is not only a healthier option, but also a significantly greener and cheaper option to the traditional bottled water dispensers and off the shelf bottled water.

The introduction of the DWS filtered systems to the domestic market will offer a significantly improved facility for exceptional drinking water quality in the home. The easy installation of the filtered systems targeted towards the domestic market will help to reduce the need for buying in bottled water routinely that can result in a significantly reduced carbon footprint to any household.

The consumption of bottled water has skyrocketed in recent years and shows no sign of stopping in the immediate future. Today the bottled water beverages market generates global revenues totalling billions of pounds and this is set to increase further in the foreseeable future. Although bottled water is significantly more expensive than tap water, more and more consumers are choosing it because they do not trust the quality of the water coming direct from the mains. DWS's water filters can help to remove these apprehensions about the mains water supply.

It is in our opinion that the emerging markets for DWS are particularly positive as more health aware and environmentally aware individuals recognise the importance of good quality drinking water for the home. The environmental impacts of producing plastic bottles, extracting and treating bottled water and then dealing with the logistics in distribution etc is significant enough, but the real problem lies with how we deal with the disposal of the plastic bottle mountain being created and the resulting polluting effect to our environment.

A DWS filtered mains supply for the home will help to reduce this on-going environmental issue.

2. Recommendations

It is important to highlight that the water filters will require routine replacement to ensure optimum drinking water quality is maintained. Currently it is understood that the filters last for a period of six months. However it was not confirmed whether this would cover continuous operation or a specified volume. This should be clarified to further enhance the value of the DWS products. Extending the cartridges life to twelve months would also be advantageous.

Consider installing a device that tells the user a filter change is required. This is particularly important as a very dirty and overused filter can lead to a rapid and significant deterioration in water quality.

It would also be advantageous to develop a filter system that can be easily installed by the consumer without the need for significant plumbing knowledge. This would open up a much wider target market for the DWS filter systems.

In order to create new revenue source consider offering all new and existing DWS clients a six monthly water-sampling programme to cover their filtered water supply. This will help to boost confidence in the DWS products and increase awareness amongst DWS clients regarding the benefits of having a filtered water supply in the home or office.

3. Examination of Services

During our experiments we visited two different sites where the DWS filters have been installed and are currently being used.

Examination of the DWS filters in both locations showed them to be in a visibly clean condition with no scale or other deposits identified.

As part of the investigation samples were collected from the mains water tap and the filtered water supply for comparison purposes. Water samples were also collected and analysed from a well known bottled water dispensing machine and from water purchased off the shelf in a well know retail outlet. DWS water appeared the freshest of all water sources due to the low temperatures recorded and low bacterial counts recorded.

4. Site Measurements and Analytical Results

Temperature measurements taken, together with the total chlorine concentrations, are recorded in Table 1 below.

Location	**Temperature (^{o}C)**	**Total Chlorine (mg/l as Cl_2)**
DWS – filtered water supply 1	**3.1**	0.15
Site one mains water tap	**9.2**	0.29
DWS – Filtered water supply 2	**4.0**	0.15
Site two mains water tap	**12.8**	0.3
HSC Recommendation	*<20^{o}C and >50°C*	-

Table 1, Water Temperature Measurements.

Water samples were collected from the mains water service and DWS filtered water services for examination by a UKAS accredited laboratory. Samples were also submitted from bottled water purchased of the shelf and a chilled bottled water-dispensing machine from a well-known company. Laboratory analysis showed generally acceptable microbial quality with no coliform bacteria or Escherichia Coli detected. However it should be highlighted that Pseudomonas bacteria were detected in a sample of water collected from the chilled bottled water dispenser. DWS filtered water proved to be of the best quality on the whole. Results are detailed on the attached certificates.

Mr Peter Campbell
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Saturday 3rd May 2008

MICROBIAL EXAMINATION REPORT

Project No.	PN1021A/B
Client:	Drinking Water Solutions
Sites:	London
Samples Collected On:	17th and 24th April 2008
Samples Collected By:	Dean Francis

		Mains Water Supply Site 1 S1101	**DWS Water Supply Site 1** S1100	**Mains Water Supply Site 2** S1103	**DWS Water Supply Site 2** S1102	***Drinking Water Guideline Maximum***
Total Colony Counts 48 Hours @ 37°C	colony forming units per ml	**82***	**70**	**49***	**0**	***10*(1) *1000*(2) -(3)**
Total Colony Counts 72 Hours @ 20-22°C	colony forming units per ml	**348***	**206**	**24***	**14**	***100*(1) *10000*(2) -(3)**
Total Coliforms	colony forming units per 100ml	0	0	0	0	***0*[3]**
Escherichia coli	colony forming units per 100ml	0	0	0	0	***0*[3]**
Pseudomonas	Colony forming units per 100ml	0	0	0	0	***0*[1]**

[1] Aqua Legion UK Ltd and *Water Supply (Water Quality) Regulations 1989 control limits*
[2] *Vending machine guideline limits*
[3] *Water Supply (Water Quality) Regulations 2000 Maximum Admissible Concentration*
***** = Elevated result against DWS filter supply.
Unless otherwise stated analysis is covered by the laboratory's UKAS accreditation.

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Samples Collected On:	17th and 24th April 2008
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		Bottled Water dispensing Machine S1104	**Purchased bottled water** S1105	**DWS Filter Supply Site 1** S1100	**DWS Water Supply Site 2** S1102	***Drinking Water Guideline Maximum***
Total Colony Counts 48 Hours @ 37°C	colony forming units per ml	**679***	**45***	**70**	**0**	***10***(1) ***1000***(2) -(3)
Total Colony Counts 72 Hours @ 20-22°C	colony forming units per ml	**1840***	**263***	**206**	**14**	***100***(1) ***10000***(2) -(3)
Total Coliforms	colony forming units per 100ml	0	0	0	0	***0***[3]
Escherichia coli	colony forming units per 100ml	0	0	0	0	***0***[3]
Pseudomonas	Colony forming units per 100ml	**2**	0	0	0	***0***[1]

[1] Aqua Legion UK Ltd and *Water Supply (Water Quality) Regulations 1989 control limits*
[2] *Vending machine guideline limits*
[3] *Water Supply (Water Quality) Regulations 2000 Maximum Admissible Concentration*
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CHEMICAL ANALYSIS REPORT

Project No.	PN1021A/B
Client:	Drinking Water Solutions
Sites:	London
Samples Collected On:	17th and 24th April 2008
Samples Collected By:	Dean Francis

Chemical Tested	Unit measurement	Mains Water Tap S1103	DWS Filtered Water supply S1102	MAC Limit#
PH	-	7.9	8.0	6.5 – 10.0
Alkalinity	-	**285***	**220**	200
Total Iron	µg/l as Fe	**3.4***	**<2.3**	200
Total Copper	µg/l as Cu	**0.0070***	**0.0055**	200
Total Lead	µg/l as Pb	**4.0***	**0.21**	25
Total Cadmium	µg/l as Cd	**0.017***	**0.008**	5
Total Aluminium	µg/l as Al	<2.9	<2.9	200
Conductivity	µs/cm	**650***	**609**	2500
Chloride	mg/l as Cl	**62***	**23**	250
Calcium Hardness	mg/l as Ca	**123***	**45**	-

MAC Limit# = Water Supply (Water Quality) Regulations 2000 Maximum Admissible Concentration
***** = Elevated result against DWS filter supply.