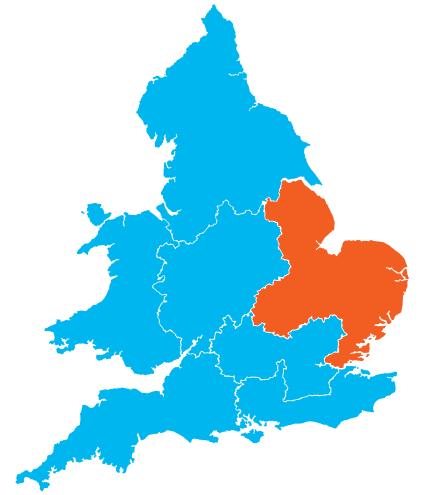


Drinking water 2008

Eastern region of England

July 2009

A report by the Chief Inspector of Drinking Water





Drinking water 2008

Eastern region of England



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Drinking Water 2008 is the annual report of the Drinking Water Inspectorate and comprises a number of parts.

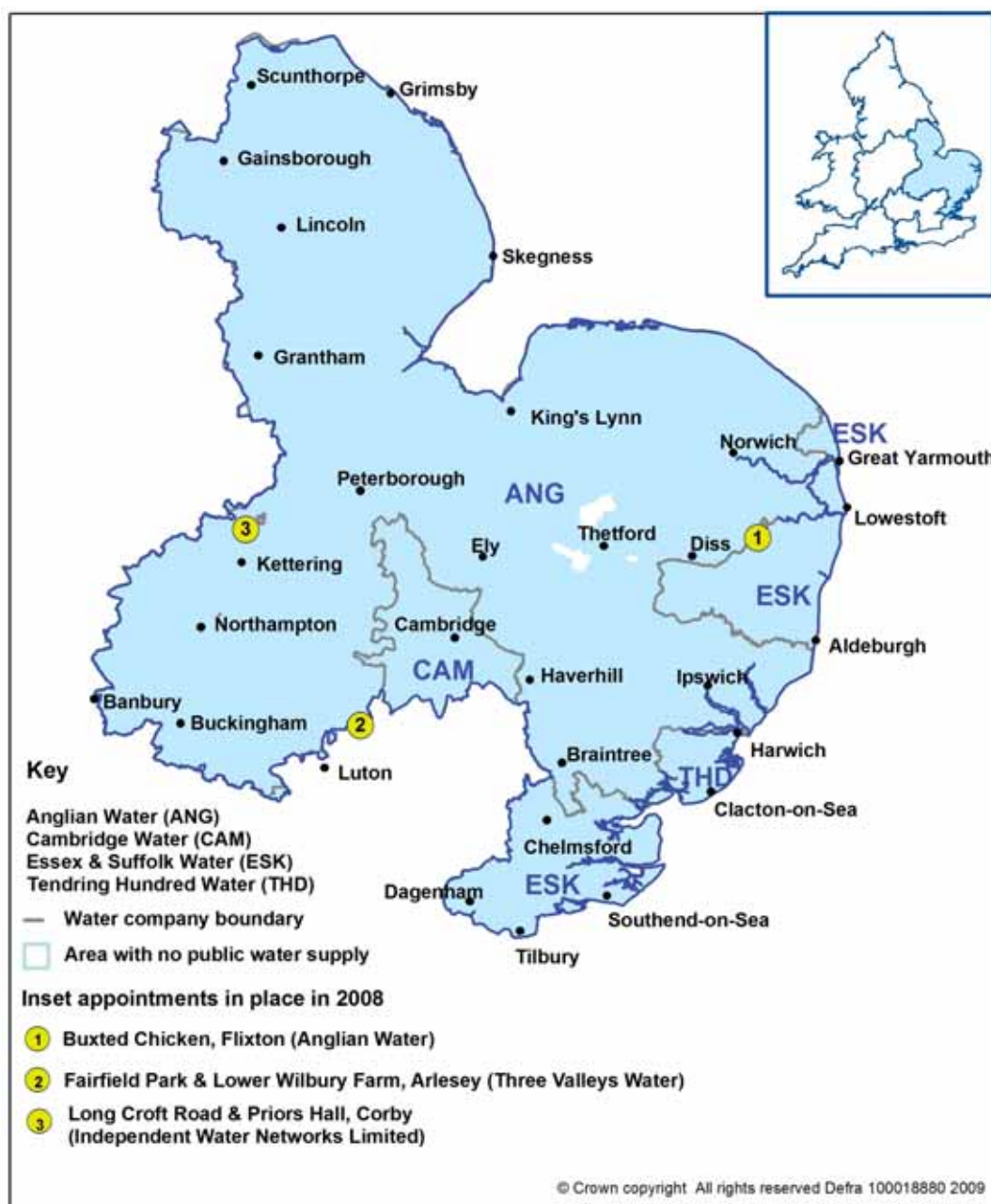
This part describes drinking water quality in the Eastern region. The Inspectorate also publishes a series of companion reports for other regions of England (Central, Northern, Southern, Thames and Western regions) and a separate report for Wales.

All parts are available on the Inspectorate's website <http://www.dwi.gov.uk> and on the CD accompanying this report along with separate summary data for water company sampling programmes.

Introduction to the report for the Eastern region

Drinking Water 2008 is published as a series of seven reports covering Wales and the six regions of England. Each report presents information about drinking water quality in a form that meets the needs of those who have an interest in the quality and safe management of drinking water supplies from the consumer perspective, namely the local authorities and the regional committees of the Consumer Council for Water.

The report describes the key facts about the quality of drinking water in the Eastern region, which is served by five water companies (Anglian Water, Cambridge Water, Essex and Suffolk Water, Tendring Hundred Water and Independent Water Networks) delivering public water supplies to over six million consumers.



The results of testing in 2008 demonstrated that the overall quality of drinking water in the Eastern region was good. The figure for compliance with drinking water standards at consumers' taps was 99.97% compared to 99.96% in 2007. This figure is made up of results of all the tests for 39 parameters¹ with European or national standards. The circumstances of the few failures and the actions taken to safeguard public health are discussed in the main body of the report.

At water treatment works in 2008 there were more detections of coliform bacteria and a similar number of samples exceeding the specification for turbidity as last year (eight compared to seven in 2007). There were no *E.coli* failures. The measurement of these three parameters verifies how well water companies are achieving their primary duty of making sure that all water is microbiologically safe before it is supplied to consumers. A common factor behind the failures was unrepresentative sampling lines. Monitoring is an important water safety control measure at works and the Inspectorate expects companies to prioritise the installation, maintenance and management of turbidity monitors and sample lines.

The microbiological quality of treated water stored in service reservoirs has improved in respect of the number of detections of coliforms and *E.coli* compared to 2007. The purpose of this testing is verification that the quality of treated water held in these strategic storage structures is not being compromised as a consequence of the maintenance of the reservoir or its configuration. In 2008, additional checks at two out of a total of 539 service reservoirs identified defects which were repaired.

During 2008, metaldehyde, the active ingredient of some slug pellets, has been identified by Anglian Water and Essex and Suffolk Water as a new pesticide hazard in some water sources in the region. A similar situation has been reported elsewhere in the country by Bristol Water, Severn Trent Water, South East Water, Southern Water, South Staffordshire Water, Sutton and East Surrey Water, Three Valleys Water, Thames Water and Wessex Water. The Health Protection Agency has advised that no adverse health effects are expected from the levels found. The Inspectorate has initiated enforcement action to enable the companies to develop and implement catchment management control with the Environment Agency, other regulators and other stakeholders to minimise the occurrence of this pesticide in raw water sources in the Eastern region.

Companies in the Eastern region notified the Inspectorate of 73 events, of which eight were classified as water quality incidents requiring an independent investigation by the Inspectorate compared to 13 in 2007.

¹ For 2008 the calculation is based on 39 parameters, in previous years this was 40 parameters. The pH parameter is no longer a national standard.

Although the year is likely to be remembered for one large, serious, boil water incident relating to Pitsford works, the report also reviews one of several incidents during the year caused by fuel contamination of soil impacting adversely on drinking water quality. A summary of the nature, cause and duration of all incidents in the region in 2008 is set out in *Annex 3*.

In June, Anglian Water detected *Cryptosporidium* oocysts in a treated water sample at Pitsford works which serves a population of around 258,000 in the Brixworth, Northampton and Daventry areas. This was unusual and led the company to issue a precautionary boil water notice to consumers while an investigation was carried out. Sampling guided investigations towards two tanks and an internal inspection found the carcass of a small, relatively fresh rabbit immediately below the inlet pipe of the disinfection tank. The point of entry of the rabbit into the process stream was concluded as being a ventilation pipe on the other backwash water tank. Two ventilator meshes on this tank were missing and there was damage to the corner of one access hatch. Both of these defects are sufficient to allow small animals to enter the tank, and evidence of a rabbit colony existed on that part of the site. The national *Cryptosporidium* reference laboratory, based at the National Public Health Service Laboratory in Swansea, confirmed that oocysts in water samples collected from the works, service reservoirs and consumers' taps belonged to the rabbit genotype. Enhanced health surveillance by the local health protection unit of the Health Protection Agency identified 22 confirmed primary cases of cryptosporidiosis infection due to the rabbit genotype among consumers who were exposed to unboiled tap water in the community supplied by Pitsford works. The cause of this incident was a failure by the water company to have in place regular routine checks of all tanks on the Pitsford site. This incident highlights and reinforces the need for Directors of water companies to satisfy themselves that close attention is being paid, at all times, to identifying and rectifying defects that might permit animal access to any treated water asset. The Inspectorate's findings were made available, on request, to consumer representatives, the industry, journalists and members of the public.

The number of consumers in the Eastern region who reported a problem with the quality of drinking water at the tap in their home or workplace now stands at two per 1,000 population. This is similar to the number of problems reported in 2007. Over the last three years there has been a 21% reduction in the overall number of consumer contacts across the Eastern region. White water due to entrained air was the commonest consumer concern reported in 2008, although generally aeration complaints have fallen in number from around 4,500 in 2006 to approximately 2,900 in 2008, a decrease of 36%. This improved situation relates to the figures reported by Anglian Water. Counter to this positive trend there has been a year-on-year increase in aeration complaints from

customers of Tendring Hundred. The cloudiness that is seen when air is entrained in water by the operation of valves and pumps causes consumers to be concerned about the safety of drinking water and all companies should be keen to focus operational staff on avoiding aeration events.

The Inspectorate received fewer complaints from consumers in the Eastern region, seven in 2008 compared to 12 in 2007. The report contains a review of one case of a customer of Essex and Suffolk Water because it highlights the importance of water companies taking a consumer's personal circumstances into account when providing advice on drinking water quality.

During 2008, OFWAT granted a licence to Independent Water Networks Limited (IWN) to supply water to two new developments in the Corby area of Northamptonshire. Connections were made in June 2008.

The requirements of the water quality regulations are specific and apply equally to companies whether they are new or are existing. For a company starting anew, the complexities of the regulations, as well as the interdependencies, require careful consideration and sound professional advice. IWN experienced a number of difficulties before the commencement of their operations, particularly with risk assessments and zone maps. The Inspectorate visited both sites and noted the commencement of supply to builders' cabins on one construction site prior to the necessary documentation being in place. The company quickly remedied the matter, however, they encountered further problems due to a lack of knowledge about sampling, analysis and data reporting requirements.

During 2008, almost 200,000 consumers in the Eastern region benefited from improved drinking water quality through the completion by companies of nine schemes of work to secure compliance with drinking water standards for nitrate and iron at a total of nine works.

In the field of consumer education, Anglian Water, in partnership with the Inspectorate, has made advice on drinking water quality available to all expectant parents across the UK. The publication, *You and Your Family*, steered by the Royal College of Obstetricians and Gynaecologists and distributed by midwife-led health units, will be sent out at the end of June and will also be available online at <http://www.youandyourfamily.co.uk/> from mid-July.

Water supply arrangements

Five water companies supply drinking water in the Eastern region: Anglian Water (ANG), Cambridge Water (CAM), Essex and Suffolk Water (ESK), Independent Water Networks Ltd (IWN) and Tendring Hundred Water (THD).

Figure 1: Map illustrating sources of drinking water by zone across the region



Much of the water supplied in the region is surface water (51%) abstracted from rivers such as the Ancholme, Blackwater, Bure, Chelmer, Colne, Nene, Gipping, Great Ouse, Nar, Stour, Waveney, Welland, Wensum and Wissey. The Louth Canal acts as a source for Anglian Water and water is also drawn from many reservoirs including Abberton, Alton, Ardleigh, Covenham, Grafham, Hanningfield, Pitsford, Ravensthorpe and Rutland. Essex and Suffolk Water abstract water from Ormesby Broad (Norfolk),

Lound Ponds and Fritton Lake (Suffolk). Groundwater provides a valuable resource in the region (37%). Most boreholes draw from the East Anglian and Lincolnshire Chalk aquifers. Anglian Water abstracts from the Lower Greensand and Sherwood Sandstone aquifers, while Essex and Suffolk Water uses the Crag sands and gravel deposits in Suffolk. Cambridge Water relies exclusively on groundwater from the Chalk and Lower Greensand aquifers. Across the region, about one-eighth (12%) of water supplies can be drawn from either surface or groundwater sources.

Summary facts about the drinking water supply infrastructure of the region are given in Table 2 with outline geographical and demographic information.

Table 2: Key facts about the Eastern region supply arrangements

Key facts			
Population supplied	6,373,000	Treatment works	195
Water supplied (l/day)	1,791 million	Service reservoirs	539
Number of local authorities	49	Water supply zones	225
(with a further 11 partially covering the region)		Length of mains pipe (km)	46,435
Approximate number of private water supplies	2,369		
Area of supply		Water composition	
Bedfordshire (part), Buckinghamshire (part), Cambridgeshire, Essex (part), Humberside (part), Leicestershire (part), Lincolnshire, Outer London (part), Norfolk, Northamptonshire, Nottinghamshire (part) and Suffolk		Surface sources	51%
		Groundwater sources	37%
		Mixed sources	12%

Drinking water quality testing

Throughout 2008, water companies sampled drinking water across the region to test for compliance with the standards in the drinking water regulations. Approaching one-half of all the tests were carried out on drinking water drawn from consumers' taps selected at random.

For monitoring purposes, company water supply areas are divided into zones based on population (maximum 100,000). Generally, zones are sampled at consumers' taps with the number of required tests being greatest in zones with larger populations. Other sample locations are water treatment works and treated water (service) reservoirs.

Collectively, the five water companies carried out a total of 485,163 tests during 2008. Only 158 of these tests failed to meet the standards set down in the regulations.

Table 3: Number of tests carried out by companies in the region

Company	Place of sampling			Number of tests per company	Estimate of population
	Water treatment works	Service reservoirs	Consumers' taps (zones)		
Anglian Water	95,733 (140)	103,739 (380)	140,803 (160)	340,275	4,137,000
Cambridge Water	8,501 (22)	8,610 (33)	7,183 (8)	24,294	303,000
Essex and Suffolk Water	30,054 (26)	27,945 (109)	53,026 (51)	111,025	1,780,000
Independent Water Networks	0 (0)	0 (0)	580 (2)	580	200
Tendring Hundred Water	3,152 (3)	2,035 (9)	3,802 (4)	8,989	152,000
Region overall	137,440 (191)	142,329 (531)	205,394 (225)	485,163	6,372,200

Note: Numbers in brackets reflect the number of works, reservoirs or zones operated by that company in the region in 2008. Some companies are permitted to carry out some tests on samples taken from supply points rather than from consumers' taps.

The regulations require companies to test for specified parameters at prescribed frequencies. Most of the testing is for parameters with European or national standards, however, water companies are also required by the regulations to test for other parameters such as ammonium, sulphate and colony counts.

Results of interest are discussed in this report. A full summary of the results of testing by each company can be found on the DWI website (<http://www.dwi.gov.uk>) and on the CD accompanying this report. The tables summarising the results of testing provide the annual minimum, maximum and mean levels for individual parameters for each company.

Drinking water quality results

The key water quality results for the Eastern region are presented in two tables, one showing results for microbiological parameters (Table 4), the other dealing with chemical and physical parameters (Table 6). The microbiological quality of water is discussed first. Companies report

all the results of the tests on a monthly basis to the Inspectorate. A summary of the results of the tests from each company is presented on the Inspectorate's website <http://www.dwi.gov.uk> and is also available on the CD accompanying this report. Additionally, statistics describing the performance of each company in the region are summarised in Annex 7.

Microbiological quality

Table 4: Microbiological tests

The number of tests performed and the number of tests not meeting the standard

Parameter	Current standard	Total number of tests	Number of tests not meeting the standard	Additional information
Water leaving water treatment works				
<i>E.coli</i>	0/100ml	22,740	0	
Coliform bacteria	0/100ml	22,740	11	ANG (5), CAM (1), ESK (5)
<i>Cryptosporidium</i> *	<1 oocyst per 10 litres. Treatment standard (see note*)	3,017	0	Monitored at nine works in the region determined to be at risk out of a total of 191
<i>Clostridium perfringens</i>	0/100 ml	4,771	5	ANG (2), ESK (3)
Turbidity**	1NTU	15,903	8	ANG (5), CAM (1), ESK (2)
Water leaving service reservoirs				
<i>E.coli</i>	0/100ml	28,461	1	ANG (1)
Coliform bacteria	0/100ml in 95% of tests at each reservoir	28,461	19	ANG (12), CAM (2), ESK (5) All 531 reservoirs in the region met the 95% compliance rule
Water sampled at consumers' taps				
<i>E.coli</i>	0/100ml	17,404	4	ESK (4)
Enterococci	0/100ml	1,940	1	ESK (1)
Notes:				
*The standard for <i>Cryptosporidium</i> ceased to exist when regulations changed from 22 December 2007 but the regulatory monitoring related to <i>Cryptosporidium</i> risk assessments continued until 1 October.				
**Turbidity is a critical control parameter for water treatment and disinfection. Summary details of all microbiological tests undertaken by each water company can be found on the DWI website or on the CD accompanying this report.				

To protect public health, microbiological standards have to be met at each individual treatment works and service reservoir. The results confirm the overall microbiological safety of drinking water supplies in the region. The significance of the individual test results for each microbiological parameter at each location varies and a single positive result cannot be interpreted without other information. All companies are expected to follow best practice as set out in *The Microbiology of Drinking Water (2002)* published by the Standing Committee of Analysts (SCA) which can be located on the Environment Agency's website at <http://www.environment-agency.gov.uk> under the 'Commercial Services' section.

***E.coli* at works and service reservoirs**

In 2008, a total of 51,201 tests at works and service reservoirs were carried out by all the companies across the region. *E.coli* was detected on a single occasion from a service reservoir (ANG). On detecting *E.coli*, companies are required to act promptly to protect public health. Their immediate response when finding *E.coli* at a works is to sample again, and more widely, to confirm that water being received by consumers is safe.

E.coli was detected in a sample from Manton Lane New service reservoir 2 (near Bedford) in July. Anglian Water's inspection of the reservoir found some minor defects which were repaired before the reservoir was returned to service. All subsequent samples have been satisfactory.

Table 5: Detection of *E.coli* and Enterococci at treatment works, service reservoirs and consumers' taps

Company	<i>E.coli</i> in water leaving treatment works	<i>E.coli</i> in water leaving service reservoirs	<i>E.coli</i> at consumers' taps	Enterococci at consumers' taps
Anglian Water	0 – 16,438	1 – 20,743	0 – 11,691	0 – 1,465
Cambridge Water	0 – 1,539	0 – 1,722	0 – 814	0 – 60
Essex and Suffolk Water	0 – 4,241	0 – 5,589	4 – 4,492	1 – 377
Independent Water Networks	0 – 0	0 – 0	0 – 11	0 – 6
Tendring Hundred Water	0 – 522	0 – 407	0 – 396	0 – 32
Region overall	0 – 22,740	1 – 28,461	4 – 17,404	1 – 1,940
Note: Results are shown as the number of positive tests – the total number of tests.				

Coliform bacteria at works

Testing for coliform bacteria gives reassurance that water entering the supply was treated adequately to remove bacterial and viral pathogens. Repeated occurrences of coliform bacteria in samples from the same works in one year are thus of concern and require action to be taken. In 2008, this situation occurred at two sites: Langham (ESK) and Pitsford (ANG).

At Langham works, near Colchester, coliforms were detected in two samples collected in June and July. On each occasion coliforms were found in follow-up samples. Initially, Essex and Suffolk Water concluded that the failure was due to the sample line being made from an unsuitable material which was replaced. When the problem recurred in July this was once again the focus of attention and after various abortive modifications the company replaced the entire facility in August. After the new line was commissioned an elevated turbidity result was obtained which was attributed to the work. However, when another unsatisfactory turbidity result occurred in December the location of the sampling point was called into question and the company concluded there was a need to install a new sample line and tap at a different location on the outlet main. This works was finally completed in April 2009.

Anglian Water detected coliforms on two separate occasions in samples from Pitsford works, near Northampton, in December. As part of the sampling survey following the first exceedance, a downstream consumer's tap sample also contained coliforms. Further investigations indicated an issue with hygiene of the consumer's tap. The company's investigation established that disinfection targets for the site had been met in the seven days prior to these failures. As a precaution, the sample line at the works was chlorinated and enhanced monitoring, carried out for six days using large volume samples, gave satisfactory results.

The Inspectorate has noted that coliform bacteria were found in 11 samples from treatment works in the Eastern region during the year and this information will be taken into account during the Inspectorate's risk-based programme of technical audit.

Cryptosporidium at works

The regulations relating to *Cryptosporidium* monitoring of treated water changed with effect from 1 October 2008 when *Cryptosporidium* specific risk assessments and associated monitoring were replaced by comprehensive multi-hazard risk assessments for each treatment works and associated supply system. Under the new regime, raw water monitoring becomes a regulatory requirement. In 2008, monitoring under

the old regulations was required to be undertaken at nine works (5 ANG, 4 ESK).

All results met the former treatment standard of <1 oocyst per 10 litres. There was an unusual community outbreak of cryptosporidiosis in the Brixworth, Northampton and Daventry area in June 2008 (see *Incidents in 2008* section).

Clostridium perfringens

This organism is a spore-forming bacterium that is exceptionally resistant to unfavourable conditions in the water environment, such as extremes of temperature and pH, and disinfection processes such as chlorination and ultraviolet light. It is a normal component of the intestinal flora of up to 35% of humans and other warm-blooded animals. These characteristics make it a useful indicator of either intermittent or historical faecal contamination of a groundwater source or surface water filtration plant performance. The detection of any *Clostridium perfringens* in the supply should trigger an investigation by the water company. In 2008, out of 4,771 samples taken in the region, only five contained *Clostridium perfringens* (2 ANG, 3 ESK).

Essex and Suffolk Water detected *Clostridium perfringens* from three samples collected from consumers' taps in February, April and May. In each case, the water supply derived from a different surface water works and checks of water treatment performance by the company found no problems. Notwithstanding the fact that Essex and Suffolk attributed one of these failures to the condition of the consumer's tap, the Inspectorate is of the view that all three of these failures were more probably due to disturbance of localised historic mains deposits, which typically contain low levels of clostridia when the supply is derived from surface water. The Inspectorate has issued guidance to companies, which indicates that testing for this organism is only meaningful when it is carried out at supply points.

Clostridium perfringens was detected by Anglian Water in samples of treated water on two occasions, from Warren Hill Service Reservoir 1 and Petches in 2008. The company checked the performance of each works at the time and found no abnormalities. All subsequent samples have proved satisfactory.

Turbidity at works

Turbidity is a measure of how much light can pass through water and indicates the condition or 'cloudiness' of water. Turbidity is caused by

particles suspended in the water and is an important critical control measure of the performance of disinfection. Turbidity is measured at two points in the water supply chain, at treatment works where a value of 1NTU applies and at consumers' taps where the standard of 4NTU applies. The following discussion focuses on the results of samples taken at treatment works. For information on tests taken at consumers' taps, see the heading *Turbidity* in the section titled *Chemical quality*. Out of a total of 15,903 tests across the Eastern region, a turbidity value of >1NTU was reported on eight occasions in 2008 (5 ANG, 1 CAM, 2 ESK), compared to seven occasions in 2007.

Turbidity above 1NTU was detected at Langham works (ESK), near Colchester, on two separate occasions in August and December (see *Coliform bacteria at works* section). At Fring works, near Kings Lynn, an elevated turbidity result in November was attributed by Anglian Water to plumbing work carried out that day to remove a sampling unit.

Three high turbidity values reported in March were from groundwater works operated by Anglian Water where there is treatment to remove iron and manganese before disinfection. Treatment was performing normally at the time at these sites. In July, at a similar groundwater works (Meppershall), a turbidity value of >1NTU was reported in a sample taken shortly after the works had shut down following a turbidity spike due to a borehole start up. A further turbidity spike occurred later the same day following backwashing of a filter. The backwash system was improved and the location of the sample point was changed as a precaution. The Inspectorate has reminded companies of their responsibility to take all possible steps to secure representative turbidity monitoring and will initiate enforcement action if this is not addressed.

Cambridge Water detected turbidity above 1NTU in a sample taken from Duxford Grange works, near Cambridge in February. The company was in the process of commissioning one borehole when the sample was taken. The company have no continuous turbidity monitor at the site and turbidity above the specification has been detected here in previous years. Turbidity monitoring is an important water safety control measure and the Inspectorate expects companies to prioritise the installation, maintenance and management of turbidity monitors in accordance with regulatory risk assessments.

Coliform bacteria at service reservoirs

Testing for coliform bacteria gives reassurance that the quality of water held at these strategic points in the distribution system is adequately maintained. The national standard requires that at least 95% of no less than 50 samples collected from each service reservoir throughout one year

are free from all coliform bacteria. In 2008, all 531 service reservoirs (including water towers) across the Eastern region met the standard.

Coliform bacteria were detected in August and again in September in samples taken from Somerby service reservoir, near Market Rasen, Lincolnshire. Anglian Water took the reservoir out of service. An internal inspection did not reveal any defect and the reservoir was returned to service after cleaning. All further samples have given satisfactory results.

In 2008, Cambridge Water detected coliforms on two separate occasions in samples taken from Croydon 1 service reservoir, near Cambridge. Following the second failure in July, the reservoir was taken out of supply and remedial actions carried out to improve integrity. There have been no failures at this site since its return to service in September.

The Inspectorate has noted that coliform bacteria were found in 19 samples from service reservoirs in the Eastern region during the year and this information will be taken into account during the Inspectorate's risk-based programme of technical audit.

***E.coli* and Enterococci at consumers' taps**

A total of 17,404 consumers' taps were tested in 2008 for *E.coli* and four were positive (4 ESK). There was no indication, from information gathered by the water company, of a faecal contamination event affecting other properties in these zones. Like *E.coli*, the presence of Enterococci is indicative of faecal contamination and neither bacterium should be found in any sample. In 2008, the companies carried out 1,940 tests for Enterococci at consumers' taps. Just one sample, which also contained *E.coli*, was positive.

In 2008, the four samples from consumers' taps in the Eastern region which contained faecal indicator organisms were all collected by Essex and Suffolk Water.

Two samples taken from consumers' taps in Rayleigh zone in January and in the Southend East zone in October contained *E.coli*. In both instances Essex and Suffolk Water's investigation ruled out a wider problem, and further samples taken at each property demonstrated the cause was poor tap hygiene.

In March, a sample taken in the Grays zone contained *E.coli*. A swab and a second sample taken by Essex and Suffolk Water from the consumer's tap before it was disinfected also contained coliforms confirming poor tap hygiene as the cause. Similar circumstances applied to a consumer's tap sample in the Chelmsford North zone in August where both *E.coli* and Enterococci were detected. On this occasion the evidence of poor tap hygiene was extensive, with coliforms, *E.coli*, and *Clostridium perfringens*

being isolated from tap swabs taken from the consumer's tap before disinfection.

Chemical quality

The drinking water regulations set out the minimum testing requirements for all chemical and physical parameters. A full summary of the results of testing by each company, including the results for indicator parameters is provided on the DWI website and on the CD accompanying this report.

The following text and Table 6 set out the results for those parameters where there has been a failure to meet a European or national standard (mandatory quality standards) and any other parameter of interest. In addition, at the request of local authorities, the results of testing for fluoride, iron, lead, manganese, nitrate, nitrite and pesticides are given.

Table 6: Chemical and physical parameters
The number of tests performed and the number of tests not meeting the standard

Parameter	Current standard or specified concentration	Total number of tests	Number of tests not meeting the standard	Additional information
Aesthetic parameters				
– colour	20mg/l Pt/Co scale	4,554	0	
– odour	No abnormal change	4,434	10	ANG (5), CAM (2) ESK (3)
– taste		4,370	8	ANG (1), CAM (1), ESK (6)
Aluminium	200µg/l	4,134	2	ANG (2)
Benzo(a)pyrene	0.01µg/l	1,930	1	ANG (1)
Fluoride	1.5mg/l	1,707	0	
Iron	200µg/l	5,486	14	ANG (12), ESK (2)
Lead (current standard)	25µg/l	2,104	0	
Lead (future standard)	10µg/l	2,104	12	ANG (8), ESK (4)
Manganese	50µg/l	4,416	3	ANG (2), ESK (1)
Nickel	20µg/l	2,109	5	ANG (4), ESK (1)
Nitrate	50mg/l	4,571	0	
Nitrite	0.5mg/l	4,573	1	ANG (1)
Pesticides – total	0.5µg/l	1,578	0	
Pesticide – individual (see note 3)	0.1µg/l	29,413	3	Clopyralid ESK (1) Monuron ESK (1) Clopyralid THD (1)
Sulphate	250mg SO ₄ /l	1,692	4	ANG (4)
Turbidity (at consumers' taps)	4NTU	5,021	1	ANG (1)
Notes:				
1. For summary details of all tests undertaken by each water company refer to the DWI website or the CD accompanying this report.				
2. For comparison, 1mg/l is one part in a million, 1µg/l is one part in a thousand million.				
3. A further 1,348 tests were done for aldrin, dieldrin, heptachlor, heptachlor epoxide, all of which met the relevant standard.				

Aesthetic parameters

Consumers expect their drinking water to be clear and bright in appearance and free from discernible taste or odour. In recognition of this the regulations stipulate national standards for colour, odour and taste. From the start of this year companies have been required to report all positive detections of a taste and odour because the national standard was

brought into line with the EU Drinking Water Directive with effect from 22 December 2007. Previously companies only reported on samples where a taste or odour was detected at a level of three dilutions or stronger.

In 2008, a total of 18 samples from consumers' taps in the region exhibited a positive taste or odour. All 4,554 tests in the region met the standard for colour.

The positive detections of taste and odour are summarised below in relation to their nature and cause as determined by the investigations carried out by companies. From this information it can be seen that many were confined to pipes or fittings in a single property. In other instances there was a problem with the way the water company followed the analytical method. The Inspectorate has issued guidance to companies to prevent these problems arising in future years.

- Pencil: seven (4 ANG, 3 ESK): in each case the cause was an unapproved plastic service pipe and the householders were advised by the water company that the permanent remedy is to replace the pipe with approved medium density polyethylene pipe.
- Oil/Solvent: one (1 ANG): an organic solvent odour was detected by Anglian Water in Fulstow zone in September. Tests at neighbouring properties were satisfactory, as were flushed samples at the original property. Investigations revealed that the property was previously a petrol station, therefore hydrocarbon contamination of the plastic service pipe was suspected. It was recommended that the householder replace the service pipe with a barrier pipe.
- TCP: one (1 ESK): when a TCP taste at a consumer's tap in Chelmsford South zone in August was reported, checks by the company identified a similar problem at neighbouring properties. Essex and Suffolk flushed the main which resolved the problem.
- Bitter/sharp: one taste and one odour (2 CAM): a sample taken in September, in Cambridge North zone, was found to contain a bitter taste and odour. After an investigation which found no ongoing problem at the original property and neighbouring properties, the company concluded that the original sample was unrepresentative of water in supply. An error in the sampling/analysis process was suspected, but not proven.
- Minty: one (1 CAM): a minty taste in a consumer's tap sample, taken in December from the Cambridge North zone, was not detected in further samples. It is probable that the cause was an error in the sampling/analysis process.

- Softened: six (1 ANG, 5 ESK): in each case investigations confirmed that the water at the consumers' taps was artificially softened. The householders were given advice to the effect that when fitting a water softener a tap connected direct to the mains should be retained for drinking and cooking.

Aluminium

Aluminium can occur naturally in some drinking water sources. Also, aluminium-based water treatment chemicals may be used at surface water works to aid the process of filtration.

In 2008, a total of 4,134 samples were tested for aluminium in the Eastern region. Cambridge Water, Essex and Suffolk Water, Tendring Hundred Water and Independent Water Networks achieved 100% compliance with the aluminium standard. Just two tests exceeded the standard (2 ANG) and none of these were found to be related to process control at the works.

Two failures of the aluminium standard were reported by Anglian Water in consumer tap samples collected from Woburn zone in July and Bury St Edmunds zone in November. The sample in July also failed the standards for iron, manganese and turbidity. In both instances the company identified the most likely cause to be historic mains deposits accumulated in the distribution network. The Inspectorate expects companies to use such information to inform their Distribution, Operation and Maintenance Strategies.

Fluoride

Traces of fluoride occur naturally in many water sources, particularly in groundwaters. For example, fluoride is found in some parts of North Essex, Suffolk, Redbridge and in small parts of Lincolnshire, near Spilsby. Consumers can obtain specific information on the level of fluoride in the drinking water supply to their home or workplace from their water company.

Fluoride is not removed by conventional water treatment. Some companies fluoridate water supplies at the request of the local health authority as a protection against tooth decay. Fluoride is added on this basis to water supplied by Anglian water in parts of Bedfordshire (including Bedford town), Lincolnshire (in the west and northwest) and Nottinghamshire (in the area around Retford). In 2008, all 1,707 tests for fluoride taken across the region met the regulatory standard (1.5mg/l). See the DWI website <http://www.dwi.gov.uk> for more information on fluoridation.

Iron

Iron may be present naturally in raw water, iron compounds may be added as part of water treatment or it can be released as a consequence of the corrosion of iron mains. Effective water treatment prevents these problems arising at source. Nowadays, most samples failing the standard for iron are from places where the distribution network contains a large proportion of old cast iron pipes. When deposits in these pipes are disturbed by an operational problem (such as a burst main) they turn the water orange-brown. Elevated levels of iron are objectionable to consumers because the water may appear turbid, it may have an astringent or bitter taste and the deposits are unsightly and may stain water fittings.

Apart from Independent Water Networks, which commenced the operation of a completely new network in 2008, companies in the Eastern region completed their long-term section 19 programmes of mains renovation work in 2007, therefore delivery of ongoing compliance with the standard for iron is through companies' Distribution, Operation and Maintenance Strategies (DOMS).

In 2008, there were 14 failures of the iron standard (12 ANG, 2 ESK) at consumers' taps, the same as in 2007.

Anglian Water reported 12 failures of the iron standard, 10 of which were determined to be isolated events caused by localised disturbance of the main dealt with by flushing and not indicative of a wider problem.

Anglian Water detected a failure of the iron standard in Ravensthorpe zone in February. The company attributed this to the localised disturbance of deposits in the main, but initial flushing did not resolve the problem. Further flushing was required to obtain satisfactory results. In July, the company implemented a regular three-monthly flushing programme to prevent a recurrence.

A sample taken by Anglian Water in the Desborough zone in February failed the iron standard and follow-up samples also contained elevated levels of iron. The service pipe supplying the property was of a type prone to corrosion and the householder was advised that it should be replaced.

Following a failure in the Ipswich East zone in May, further samples taken by Anglian Water at the original property and at one downstream also exceeded the iron standard. The company has reviewed its risk assessment for this zone and implemented a regular six-monthly flushing programme commencing in September.

A sample collected from a consumer's tap in the Woburn zone in July failed the standards for iron, aluminium, manganese and turbidity. All further samples from the same property, and others upstream and

downstream gave satisfactory results. Anglian Water attributed this to localised disturbance of deposits in the main dealt with by flushing.

In 2008, Essex and Suffolk Water reported two failures of the iron standard in samples taken in the Walpole zone in February and the Tilbury zone in May. The company's investigation concluded that the problems were associated with the consumer's plumbing, although a full water fittings inspection of the internal pipes could not be carried out as they were all boxed in. The company's main serving the property had been renovated in 2005.

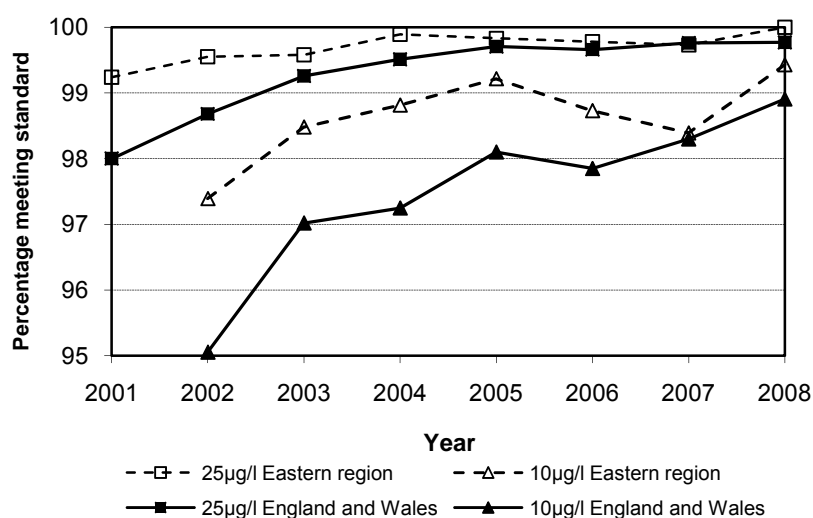
In December 2008, Anglian Water completed a legally binding programme of work at Wighton works, near Wells-next-the-sea, to install treatment to reduce naturally occurring iron in the source water. This will benefit just over 4,000 consumers in the region.

Lead

The pipe connecting a property to the water company main, together with internal plumbing, is the most common source of lead in drinking water. Properties built or renovated since 1970 are unlikely to have lead pipes and lead solder was banned for use with copper drinking water installations in the early 1970's. The only other recognised source of lead in drinking water in some buildings is fittings made from brass. The extent of lead pick up depends on various factors; temperature, acidity (pH), water hardness, the length of pipe and the time that water is left to stand in the pipe (stagnation) before it is drawn off.

The monitoring data collected by companies during 2008 has been added by the Inspectorate to that gathered in previous years to provide an updated picture of progress in the region and for the industry, towards meeting the future standard for lead of 10µg/l by the end of 2013. Figure 7 shows that the progress towards meeting the future lead standard in the Eastern region is better than the industry average, only 12 samples contained a concentration of lead greater than 10µg/l, compared to 25 in 2007.

Figure 7: Percentage of tests meeting the current and future standard for lead between 2001 and 2008



Water companies notify both the consumer and the relevant local authority whenever a failure of the lead standard occurs. In 2008, the Inspectorate was notified of no failures of the 25µg/l standard in the region. In addition, during 2008 companies in the region have responded to 367 consumer requests to check the level of lead in drinking water in their properties.

Companies in the region have included in their final business plans (PR09) an integrated package of measures to address the risk to consumers of exposure to lead at levels above the future standard. The measures include targeted lead communication pipe replacement in high risk areas, joint action with local health professionals (Health Protection Agency and Primary Care Trusts) to address risk to vulnerable consumers and educate consumers on the benefits of lead pipe replacement, opportunistic lead communication pipe replacement as part of pre-planned work on the distribution system and lead communication pipe replacement at a property where a sample result fails the future standard of 10µg/l.

Manganese

Manganese occurs naturally in many sources of water. It can be removed from raw water by converting the soluble form to an insoluble precipitate (oxidation). Treatment can be simple to achieve (aeration), but for some waters more complex processes are needed. If effective treatment is not in place then black deposits may collect in the distribution pipes. When disturbed, such deposits may turn the water black. Even small traces of manganese are objectionable to consumers. Typical complaints relate to the staining of laundry or the discolouration of vegetables during washing

or cooking. The purpose of the standard for manganese is to minimise these problems. In 2008, there were three failures of the manganese standard (2 ANG, 1 ESK). Two of these were associated with exceedances of other standards (aluminium and iron).

Two failures of the manganese standard were reported by Anglian Water in consumer tap samples collected from Woburn zone in July and September. The sample in July also failed the standards for iron and manganese. Essex and Suffolk Water also reported a single manganese failure from a consumer's tap sample in May collected from the Tilbury zone. In each case the company concluded the cause was a disturbance of historic mains deposits accumulated in the distribution network. The Inspectorate expects companies to use such information to inform their Distribution, Operation and Maintenance Strategies.

Nickel

Nickel may be present in coatings on modern tap fittings. In 2008, a total of 2,109 tests were carried out for nickel and all but five (4 ANG, 1 ESK) met the standard (20µg/l).

In January, Anglian Water reported a nickel level of 42.8µg/l in a sample from a consumer's tap in the Mancroft zone. In the same month, another consumer's tap sample in the North Walsham zone contained nickel at a concentration of 25.7µg/l. Essex and Suffolk Water also detected nickel (40µg/l) in a consumer's tap sample from the Walpole zone in August and, in September, 52.2µg/l nickel was reported by Anglian Water in a sample from a consumer's tap in the Bedford Rural zone. The results of tests in first draw samples indicated that the source of nickel in each of these cases was probably a chrome plated plastic tap fitting. Companies are reminded of the need to record the nature of the tap fitting when investigating nickel failures so that appropriate advice can be given to the householder to minimise ongoing exposure to nickel.

In September, Anglian water detected nickel at a concentration of 39.1µg/l in a sample collected from the Baylham Kirbyrise zone. This is one of two zones where nickel occurs naturally in the groundwater source. In December 2006, Anglian Water completed work to provide a permanent blending arrangement to secure compliance with the nickel standard in this zone. In response to the failure, Anglian Water checked these blending arrangements which were operating correctly. A water fittings inspection of the property was carried out and advice offered. The company recognises that if chrome plated taps are installed in properties in this zone then the likelihood of the nickel standard being exceeded is greater than in others.

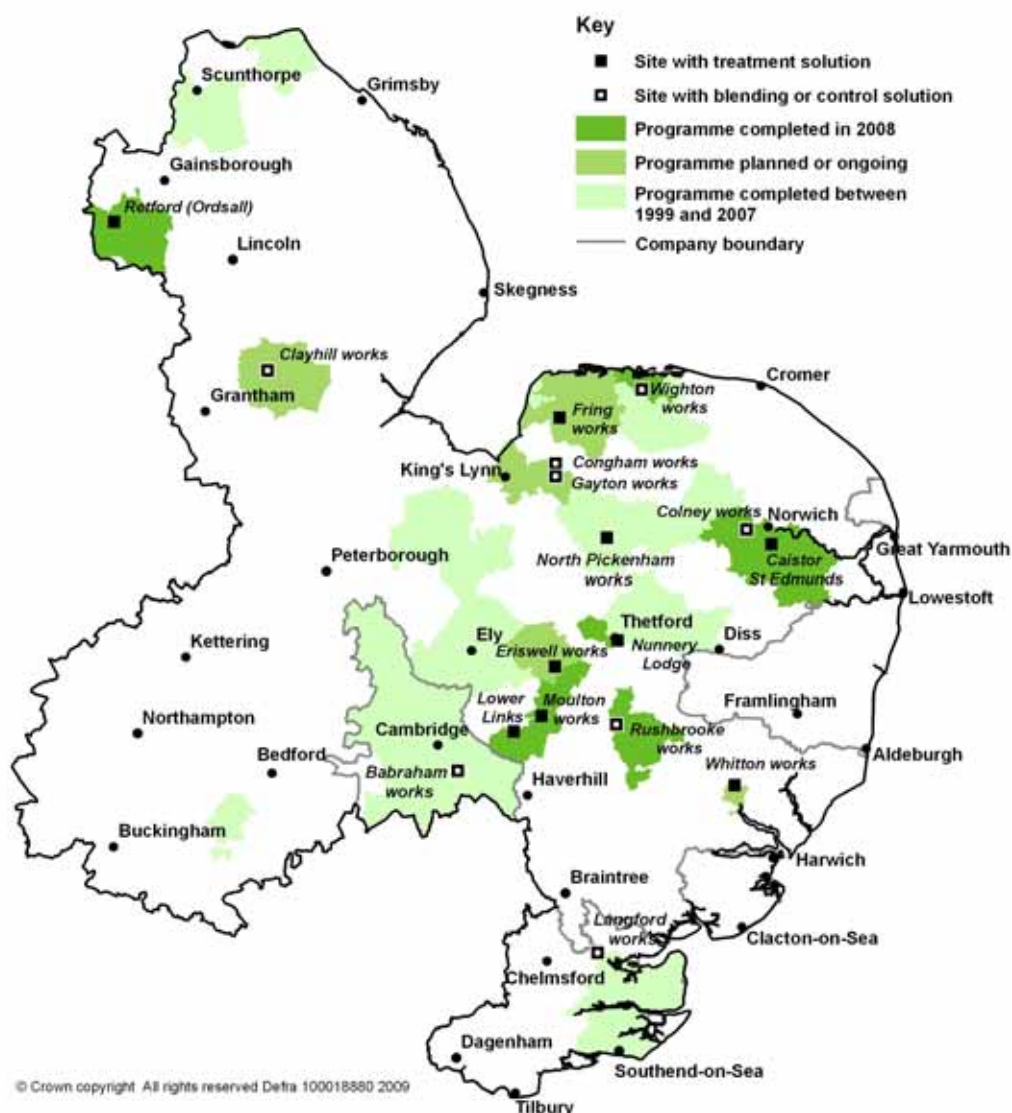
Nitrate and nitrite

Nitrate occurs naturally in all source waters due to the decay of vegetable material in soil. Nitrogenous fertilisers used on arable farmland are a significant source of nitrate in groundwater. Rainfall washes nitrate from the soil in to lakes, rivers and streams. Nitrate levels can be reduced by water treatment or by blending with another, low nitrate, water source. In 2008, all 4,571 tests for nitrate met the standard (50mg/l).

During 2008, Anglian Water completed legally binding programmes of work to secure compliance with the drinking water standard at eight groundwater works: Caistor St Edmunds, Colney, Kings Road, Lower Links, Moulton, Nunnery Lodge/Barnham Cross, Ordsall Road, and Wighton works, improving drinking water quality for almost 150,000 consumers.

From extensive information gathered by Anglian Water, a likelihood of drinking water supplies in the region failing the nitrate standard in the longer term has been confirmed at some sites. As a consequence, legally binding agreements are in place for additional treatment, if required, at four works: Bircham, Fring, Twelve Acre Wood/Eriswell and Whitton. For the same reasons, work to improve existing blending arrangements at Congham works and Gayton works is scheduled for completion in February 2010.

Figure 8: The extent of nitrate improvement programmes



Nitrite may be formed when chloramine is used as the residual disinfectant to maintain the microbiological quality in the distribution network. The formation of nitrite is controlled by careful optimisation of the disinfection process. Chloramine is used extensively across the Eastern region by Anglian Water in its supplies in Northamptonshire and the surrounding areas, including Bedford, Milton Keynes, Northampton, Peterborough and Norwich. Essex and Suffolk Water also practices chloramination in the Essex area during the summer months, and all year round in the Great Yarmouth, Lowestoft and Southwold parts of Suffolk. Nitrite can also form in samples of water, after collection and before analysis, especially if the sample is not kept cool. In 2008, a single sample (1 ANG) out of 4,573 tests carried out across the region for nitrite exceeded the standard.

In November, a failure in a consumer's tap sample collected from the Milton Keynes City South East zone led to the discovery by Anglian Water that excess ammonia was being added to the water at its Sandhouse works. A fault in the dosing system was corrected and subsequent samples at consumers' taps have given satisfactory results.

Pesticides and related products

This group of substances, generically called pesticides, includes many organic chemicals ranging from weed killers, to insecticides and fungicides. Water sources may contain traces of pesticide residues as a result of agricultural use (pest control on crops) and non-agricultural uses (herbicides for weed control on highways etc.). Water companies are required to assess the risk to drinking water supplies of pesticide use in their catchments and test for those which might be present.

Companies have documented potential and actual pesticide hazards through their Regulation 27 risk assessments which are informed by raw water monitoring and identify the control measures in place.

When pesticides are first detected, water companies will enhance their monitoring of raw water and notify the Environment Agency to facilitate appropriate action to safeguard drinking water quality.

In 2008, none of the tests in the region exceeded the standard for total pesticides. Likewise, there was 100% compliance (1,348 tests) for the four pesticides with a standard of 0.03µg/l. Out of a total of 29,413 tests for those individual pesticides (with a standard of 0.1µg/l) just three exceeded the standard. The circumstances and substances involved are summarised below.

Clopyralid

Clopyralid is a herbicide used for weed control in a wide range of agricultural crops and grassland. The standard is 0.1µg/l. In April, Essex and Suffolk water detected this pesticide at a level of 0.23µg/l in a sample taken from a consumer's tap. The water supply comes from Langham works. This followed a similar failure in December 2007. The Inspectorate has initiated enforcement action to enable the company to enter into a legally binding agreement to carry out catchment control measures in association with the Environment Agency, land owners and farmers to minimise the occurrence of this pesticide in the source water.

In April, Tendring Hundred Water detected clopyralid at a level of 0.1µg/l at a consumer's tap. The water supply is derived from Ardleigh works and the company has confirmed the presence of this pesticide in the raw water. The Inspectorate has initiated enforcement action to require the company to enter into a legally binding agreement to identify appropriate control measures in conjunction with the Environment Agency.

Monuron

Monuron is an obsolete herbicide once used to control a wide range of annual and perennial broad-leaved weeds and grasses. It is not registered for use in the UK.

In April, Essex and Suffolk water detected monuron at a level of 0.14µg/l in a consumer's tap sample taken in the Rickinghall zone. The supply to this zone is a blend of water from six different works. Additional samples taken at these works and from within the zone all gave satisfactory results. This pesticide has not been a constituent of commercial products for 30 years. The company has concluded that monuron was not present in the original sample and instead considers that the analytical result was caused by interference with a substance with an identical retention time and UV spectra. The Inspectorate expects the company to monitor for the unidentified contaminant and update its Regulation 27 risk assessment.

Polycyclic aromatic hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are present in coal tar. Before 1970, coal tar was widely used to line iron pipes. Therefore, PAHs including benzo(a)pyrene may be present in the water as a result of degradation of these linings. In 2008, throughout the region, no tests failed the standard for PAH (0.1µg/l), but one test exceeded the benzo(a)pyrene standard of 0.01µg/l (1 ANG).

In January, a sample collected by Anglian Water from the East Harling zone failed the standard for benzo(a)pyrene. The company's investigation revealed that the property was supplied by a main which was probably lined with coal tar originally. The company has increased the frequency of flushing for this main. The Inspectorate expects that information of this type is used to inform the company's Distribution, Operation and Maintenance Strategies.

Sulphate

The level of naturally occurring sulphates in water is highly variable and normally reflects the local geology, with higher amounts tending to be found in brown coal regions and in salt areas. The finding of an increased level of sulphates, along with chlorides, can also indicate human pollution of a water source. Waters of naturally high sulphate content, particularly alkali and magnesium sulphates, act as a purgative. Even relatively small amounts may cause a temporary disturbance to the normal intestinal function. Higher levels have a tendency to cause diarrhoea, especially among children. The standard of 250mg/l is set to avoid these concerns and to assist with the selection of suitable sources of drinking water.

In 2008, there were four failures of the sulphate standard out of 1,692 tests (4 ANG).

In 2008, there were four samples which failed the sulphate standard (maximum level detected was 268mg/l) from Anglian Water's Winterton Holmes works in Lincolnshire. The raw water for this site contains naturally occurring sulphate which is characteristic of the Northern Lincolnshire limestone geology. The Health Protection Agency has advised that there is no risk to health from sulphate at levels up to 500mg/l.

Turbidity

Turbidity is the cloudiness of water as determined by measuring the degree of scattering of a beam of light as it passes through the water. Turbidity may be measured by on-line instruments, usually located at a water treatment works, in addition to tests carried out on samples sent to a laboratory. The national turbidity standard for water at consumers' taps is 4NTU. Failures of this standard are usually associated with the disturbance of sediment within water mains.

Additionally, and importantly, water companies must measure turbidity at the water treatment works. Treated water entering the distribution system must not exceed the regulatory turbidity specification of 1NTU.

The following discussion focuses on the results of samples taken from consumers' taps. For information on tests taken at water treatment works, see the heading *Turbidity* in the section titled *Microbiological quality*.

In 2008, a total of 5,021 samples from consumers' taps across the region were tested for turbidity and all but one met the standard of 4NTU. This sample taken by Anglian Water from the Woburn zone in July, also failed the standards for aluminium, iron and manganese (see *Iron* section).

Consumer perceptions of drinking water quality

When consumers have a question or a concern about drinking water quality their first point of contact is the water company. All companies record these contacts using definitions agreed with the Inspectorate. Table 9 shows the change in the rate of consumer contacts per 1,000 population for the three categories (appearance, taste and odour, and illness) since 2006.

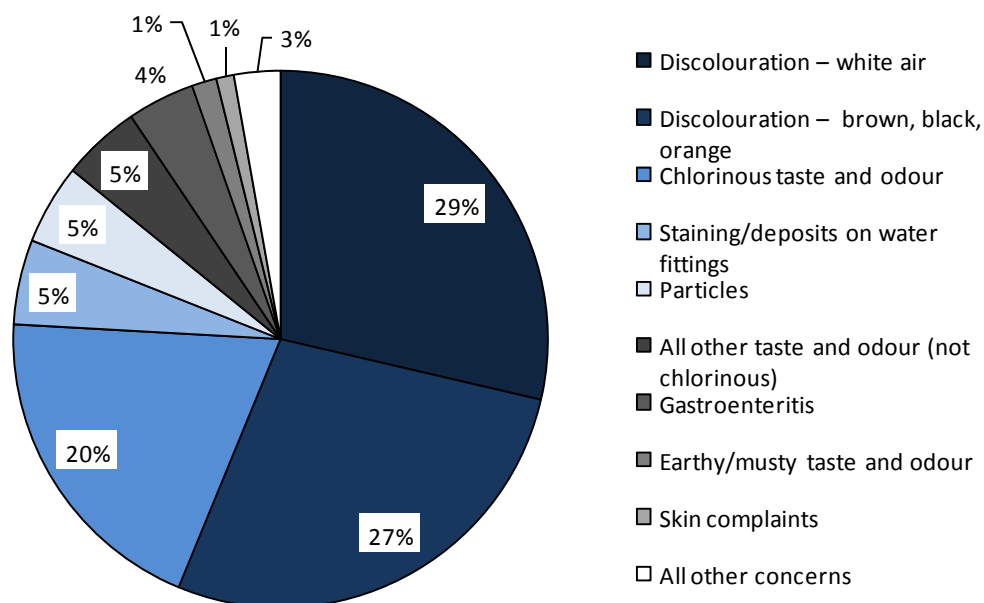
Table 9: Total contact rates of appearance, taste and odour, and illness

Company	Contacts per 1,000 population		
	2006	2007	2008
Anglian Water	2	2	2
Cambridge Water	1	1	1
Essex and Suffolk Water	2	1	1
Independent Water Networks	<i>See note</i>	<i>See note</i>	0
Tendring Hundred Water	1	2	1
Region overall	2	2	2

Independent Water Networks supplied 350 consumers in the region and was a new appointee in 2008.

In the Eastern region, the most frequently reported consumer concerns during 2008 were: white or cloudy water due to air (29%), discolouration – brown, black, orange (27%), chlorinous taste and odour (20%), deposits on water fittings (5%), particles (5%) and non-chlorinous taste and odour (5%). Together these constituted 91% of all consumer contacts about drinking water quality in 2008.

Figure 10: Consumer concerns in the Eastern region in 2008



Over the last three years there has been a 21% reduction in the overall number of consumer contacts across the Eastern region. Further detail on the most common causes of contacts is provided below.

Discoloured water

White water due to entrained air was the commonest consumer concern reported across the Eastern region in 2008, although the aeration complaints have fallen in number from around 4,500 in 2006 to approximately 2,900 in 2008, a decrease of 36%. This improved situation is most notable in the figures reported by Anglian Water. Counter to this positive trend there has been a rise in aeration complaints from customers of Tendring Hundred and while the overall number remains small, there has been a year-on-year increase since 2006.

Contacts due to brown, black or orange discolouration caused by deposits of iron, aluminium and manganese are fewer in number nationally, demonstrating the benefits of over a decade of investment in distribution renovation by the water companies. These programmes of work were completed in the Eastern region in 2007 and have been replaced by ongoing Distribution, Operation and Maintenance Strategies (DOMS).

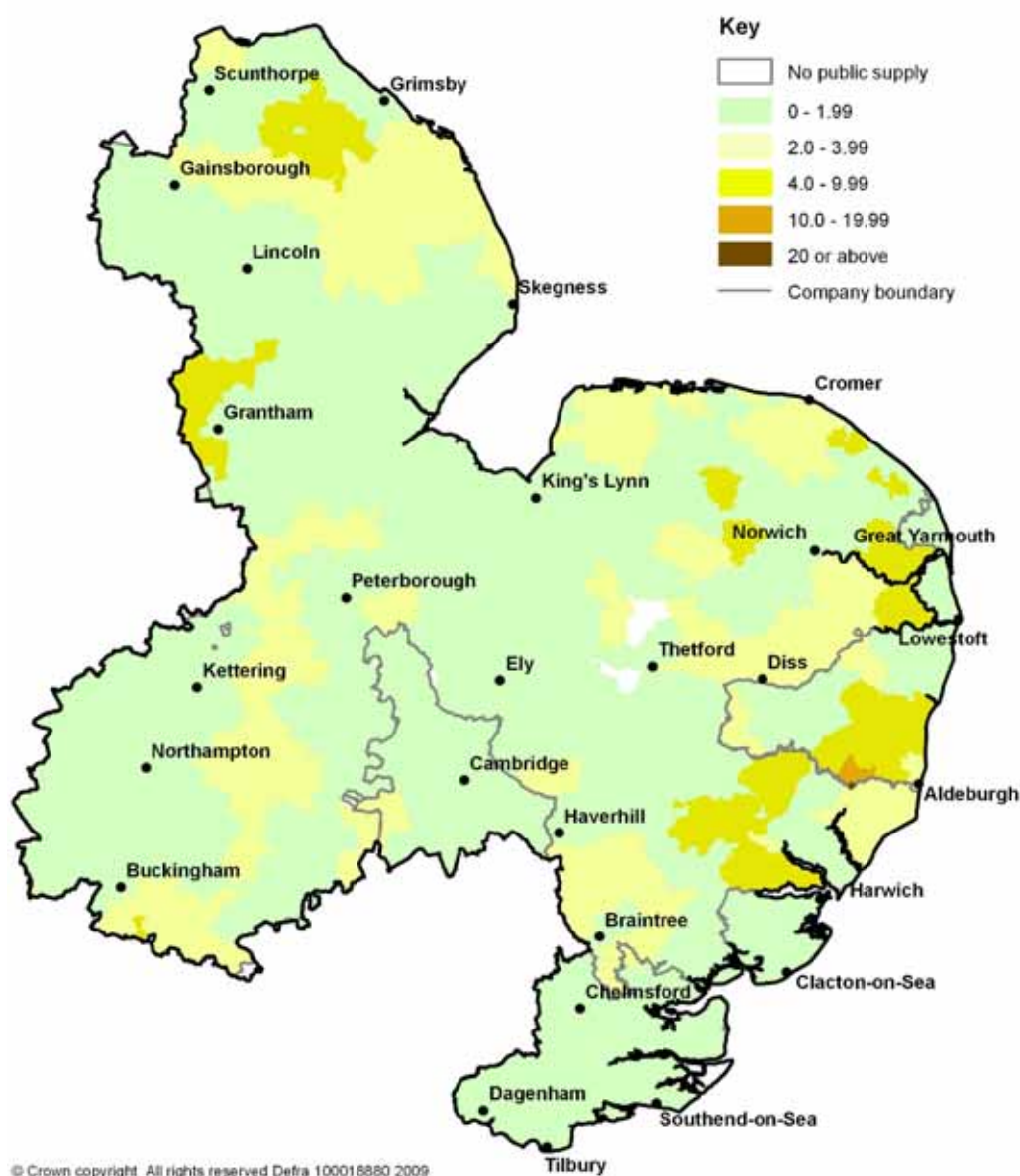
In comparison to other regions, customers in the Eastern region now experience 'dirty' water relatively infrequently, although in 2008 there were still 2,820 contacts of this type. Table 11 shows numbers of consumer contacts for companies and for the region for 2006 to 2008.

Table 11: Consumer contacts for brown, black or orange water 2006-08

Company	Number of consumer contacts reporting brown, black or orange water		
	2006	2007	2008
Anglian Water	2,741	2,359	2,028
Cambridge Water	72	75	65
Essex and Suffolk Water	1,050	686	650
Independent Water Networks	<i>see note</i>	<i>see note</i>	0
Tendring Hundred Water	41	92	77
Total	3,904	3,212	2,820
Independent Water Networks supplied 350 consumers in the region and was a new appointee in 2008.			

However, Figure 12 shows the consumer contact rates for zones across the region and illustrates that not all consumers get water of the same quality. Companies are encouraged to make use of this data to inform their DOMS.

Figure 12: Consumer contact rates per 1,000 population for brown, black or orange water



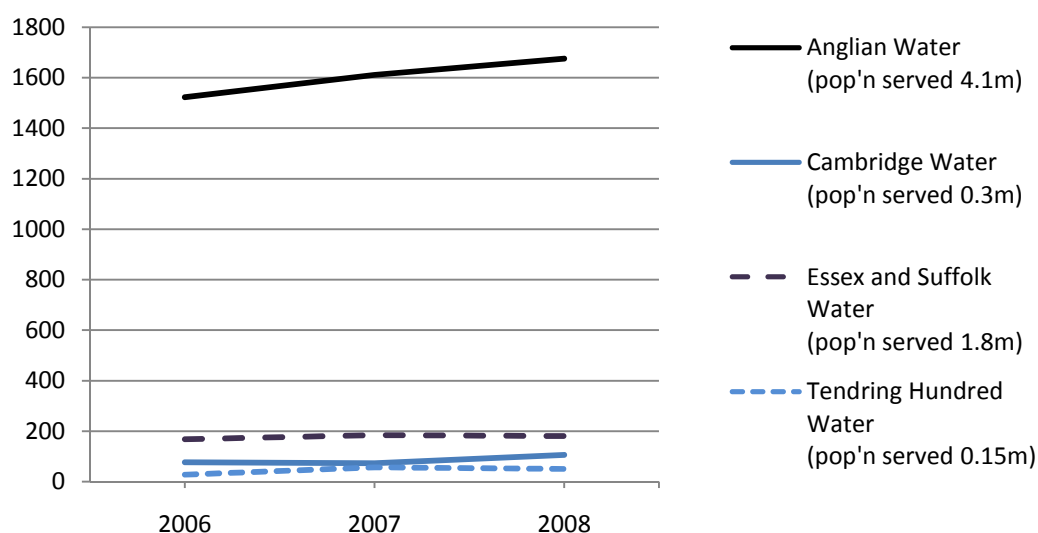
Chlorine taste and odour

Over the past three years, the proportion of contacts attributable to chlorinous tastes and odours across the industry has risen from 8% to nearly 13% of all consumer concerns (from over 12,000 to nearly 18,000 contacts). The reasons for this trend are twofold: investment by the companies has been effectively tackling the causes of discolouration, therefore dirty water complaints are declining in number as water mains are renewed or renovated; and water quality is improved at source through enhanced water treatment, resulting in a more stable chlorine residual

which is carried further through the network of pipes. These are the positive benefits of water industry investment, however, it does mean that some consumers will have been experiencing fresh tap water with a trace of chlorine for the first time.

Although the situation in the Eastern region mirrors the national picture, the trend is less pronounced (chlorinous taste and odour contacts up from 1,794 in 2006 to 2,012 in 2008) and indicates that companies have taken on board the Inspectorate's advice to utilise consumer contact data to develop and improve their chlorine residual management strategies.

Figure 13: Consumer contacts for chlorinous taste and odour 2006-2008



When the response of a company fails to provide the necessary reassurance or remedy, the consumer may turn to the Inspectorate for advice. As can be seen from Table 14, in 2008, there were seven consumers living in the region who complained directly to the Inspectorate, fewer than the 12 complaints received in 2007. Consumers who turn to the Inspectorate often display a lack of trust in their water company. The action taken by the Inspectorate involves obtaining information from the company and providing the consumer with an independent opinion on the matter. Where necessary, the Inspectorate will recommend the company takes further action.

Table 14: Contacts from consumers received by the Drinking Water Inspectorate

Category	Number of contacts
Appearance	3
Taste and odour	4
Report of illness	0
Water quality concern	0
Number of contacts to DWI from consumers by company. ANG (5), ESK (1), THD (1)	
Categories are as defined in Information Letter 1/2006.	

During 2008, an elderly lady living in Basildon was referred to the Inspectorate by the local authority. She was concerned about the relationship between her medical condition and the airborne bacteria causing black slime in her toilet and taps. The Inspectorate established that she had originally spoken to Essex and Suffolk Water who had advised her to deal with the slime by dismantling her taps even though she was over 65 years old. She had been referred to Environmental Health because she was aware that the problem was affecting other properties, as well as her own. Although the water company had provided the correct advice about the cause of fungal slimes in bathrooms, a problem which occurs when there is insufficient ventilation, in the handling of her call, insufficient care had been taken to consider her personal circumstances and her need for extra reassurance. This was provided by the Inspectorate in the form of a letter and a copy of advice about bathroom problems published on Anglian Water's website.

Incidents in 2008

The companies in the Eastern region notified the Inspectorate of 73 events during 2008. The Inspectorate classified eight as 'incidents' requiring a comprehensive report from the company and a full investigation by the Inspectorate, this compares to 13 incidents in the region in 2007.

Table 15: Water quality events in the region in 2008

Water company	Number of events notified	Number classed as incidents
Anglian Water	49	6
Cambridge Water	1	0
Essex and Suffolk Water	23	2
Independent Water Networks	0	0
Tendring Hundred Water	0	0
Region overall	73	8

A summary of the nature, cause and duration of each incident, along with details of the Inspectorate's findings are set out in Annex 3. Most incidents were of relatively short duration and the company took action to inform stakeholders and safeguard consumers as appropriate.

Wider learning points from incident investigations in the region in 2008 are highlighted by the following cases:

Detection of *Cryptosporidium* oocysts, Pitsford works

- In June, Anglian Water detected *Cryptosporidium* oocysts in a treated water sample at Pitsford works which serves a population of around 258,000 in the Brixworth, Northampton and Daventry areas. The unusual nature of this finding led the company to issue a precautionary boil water notice to consumers while an investigation was carried out. Sampling guided investigations towards two tanks – the granular activated carbon (GAC) backwash tank and the disinfection contact tank. An internal inspection of the contact tank found the carcass of a small, relatively fresh rabbit immediately below the inlet pipe. The point of entry of the rabbit into the process stream was concluded as being a ventilation pipe on the GAC backwash tank. Two ventilator meshes on the tank were missing and there was damage to the corner of one access hatch. Both of these defects are sufficient to allow small animals to enter the tank, and evidence of a rabbit colony existed on that part of the site. The national *Cryptosporidium* reference laboratory, based at the National Public Health Service Laboratory in Swansea, confirmed that oocysts in water samples collected from the works, service reservoirs and consumers' taps belonged to the rabbit genotype. Enhanced health surveillance by the local health protection unit of the Health Protection Agency identified 22 confirmed primary cases of cryptosporidiosis infection, due to the rabbit genotype, among consumers who were exposed to unboiled tap water in the community supplied by Pitsford works. The cause of this incident was a failure by the water company to have in place regular routine checks of all tanks on the Pitsford site. The GAC tank was situated in a secure gated compound, but this was outside the main works site. This incident highlights and reinforces the need for Directors of water companies to satisfy themselves that close attention is being paid at all times to identifying and rectifying defects that might permit animal access to any treated water asset. This is not a new matter, it has been widely and repeatedly documented as an essential element of water supply hygiene in all the various editions of the Water Industry's *Operational Guidelines for the Protection of Drinking Water Supplies* and successive documents produced over many decades.

Hydrocarbon contamination, Rushden, Northamptonshire

- In November, an unusual consumer complaint of a 'burnt plastic taste' in tap water was received by Anglian Water. Site investigations identified that the problem extended to a number of other industrial units on this estate in the Raunds Rural Supply zone in the Rushden area of Northamptonshire. Levels of toluene were elevated in the results of samples taken at the site with the maximum level detected of 3,700µg/l. The cause was hydrocarbon contamination of soil probably due to contaminated backfill for the site development; the company's investigation found no evidence of recent contamination. The company slip lined 130 metres of its four inch PVC main with a 90mm barrier MDPE pipe together with replacement of communication pipes and boundary boxes. Letters were also sent to each of the industrial units affected advising them to replace their service pipes with barrier pipe. The Environment Agency were made aware of the problems at this site, and discussion with East Northamptonshire District Council revealed that the site had previously been a claypit which had been backfilled. This is one of several hydrocarbon contamination events reported to the Inspectorate during 2008 and highlights the need for the water industry to work with the Consumer Council for Water to raise awareness among commercial and domestic customers of the risks to drinking water supplies from mishandling or inadequate containment of fuel and oil.

No offences are currently under consideration by the Inspectorate in connection with any of the incidents that occurred in the region in 2008.

Technical audit activity in the region

The Inspectorate has operated a risk-based approach to technical audit since 2005. In line with better regulation principles, no technical audit takes place without a reason and those that are carried out are targeted on the basis of an assessment of risk.

The Inspectorate's tool for generating the technical audit programme looks at the critical components of the safe management of drinking water supplies, including water quality monitoring, incident assessments, previous audits, consumer complaints and other relevant intelligence. This ranking of all relevant water company assets, procedures and practices enables inspectors to prioritise and focus their technical audit work where it will have most benefit.

Information on the key findings of the technical audits undertaken during 2008 in the Eastern region is set out in Table 16.

Table 16: Summary of the Inspectorate's technical audits in the region

Site name	Audit topic	Main findings from audit
Anglian Water		
Tuddenham works	Focus on alarm systems.	Satisfactory.
Pitsford works Huntingdon laboratory	Works and laboratory audit as part of investigation of <i>Cryptosporidium</i> incident.	Generally satisfactory. Recommended formalisation of procedures at the works associated with the carbon backwash water tank and updating of risk assessments. The laboratory audit only found minor issues which would not have affected the validity of, or confidence in, the <i>Cryptosporidium</i> results reported. A recommendation was made about reviewing the standing arrangements for procuring laboratory services for determining oocyst type in such investigations.

Local authority engagement

Public water supplies – risk assessments

Section 77 of the Water Act 1991 places a duty on local authorities to keep themselves informed about the quality of drinking water supplies to premises in their area. Until now, local authorities' routine involvement with public water supplies has mainly related to working level contacts with water companies about consumer complaints and the results of testing at consumers' taps. The amendment of the drinking water regulations in December 2007, which introduced a requirement for comprehensive risk assessments for each water supply system, introduced a new mechanism for local authority engagement with water companies about the safety and security of public water supplies in their area. By 1 October 2008, water companies were required to complete Regulation 27 risk assessments using water safety plan methodology for each water supply system. The output of this work was a Regulation 28 report to the Inspectorate and a plan for communicating the content of each risk assessment to relevant local authorities and local health protection professionals in the Health Protection Agency.

A total of 796 Regulation 27 risk assessments are now in place across England and Wales. In *Annex 6* of this report we have listed, for each of the 60 local authorities in the Eastern region, the number of risk assessments that cover all or part of their area. The Inspectorate encourages local authorities to check that companies have contacted them about each relevant risk assessment.

During 2009, the Inspectorate will be assessing each water company risk assessment. The Inspectorate has the power to issue notices to require improvements to be made and copies of any such notices will be sent directly to the relevant local authorities.

Private water supplies

Local authorities have direct responsibility for ensuring the wholesomeness and safety of private water supplies in the region and can call on the Inspectorate for technical advice when required. In the Eastern region, local authorities hold information regarding 2,369 private water supplies. Table 17 provides information on the numbers of supplies grouped by volume of water supplied per day.

Table 17: Number of private water supplies supplying given volumes of water per day

	Number of private water supplies supplying volume indicated			
	<10m ³ per day	10m ³ – 99m ³ per day	100m ³ – 399m ³ per day	400m ³ – 1,000m ³ per day
England				
Central region	6,341	421	12	11
Eastern region	2,118	215	23	13
Northern region	5,496	352	19	15
Southern region	454	56	129	6
Thames region	1,056	206	126	5
Western region	8,414	550	27	5
Total for England	23,879	1,800	336	55
Wales	3,562	355	4	30
Total for England and Wales	27,441	2,155	340	85

Following a review of the Private Water Supplies Regulations 1991, the Department for the Environment, Food and Rural Affairs (Defra), issued a consultation document on proposed new regulations (the Private Water Supplies (England) Regulations 2009)². The consultation period ran from 11 August to 3 November 2008. The purpose of the change is to transpose the requirements of the 1998 EU Drinking Water Directive into law and to protect the health of consumers who rely on private water supplies for drinking and food preparation. The consultation recognised that existing arrangements for the safety and security of private water supplies were not adequate. Similar changes are proposed for Wales and the Welsh Assembly Government. The closing date for the consultation was 8 June 2009³.

Defra published the 105 responses received during the consultation period⁴. Their key points made by respondents are:

- The maximum fees proposed were considered insufficient to cover local authority costs in carrying out risk assessments and monitoring.
- There is a need for guidance on the definition of private distribution system.
- The proposed timescale of six months for data collection by local authorities is too short.
- The 30 year retention period for data is too long and not consistent with other data collection requirements.
- Small shared domestic supplies was a category that posed a higher risk and the monitoring proposals for these were considered insufficient.

In parallel to the above activities, the Inspectorate has been working closely throughout the year with local authorities to develop the technical guidance that needs to be in place to enable implementation of the new private water supply regulations. A national stakeholder group was formed to identify and understand the issues which emerged during the consultation and to take forward the work of developing and disseminating best practice. Two key areas of work have been identified by the Inspectorate: developing with local authorities and software houses

² Consultation for England available at

<http://www.defra.gov.uk/corporate/consult/private-watersupplies/index.htm>

³ Consultation for Wales available at

<http://wales.gov.uk/consultations/environmentandcountryside/privatewater/?lang=en>

⁴ Summary Document available at

<http://www.defra.gov.uk/corporate/consult/private-watersupplies/summary-responses.pdf>

effective systems and methods for data capture and reporting, and national training tools and programs. Local authorities have requested web-based information and the Inspectorate is working with the Chartered Institute of Environmental Health and the Local Authorities Coordinators of Regulatory Services on putting this in place.

Through its role in the management of Defra's Water Quality and Health Research Programme the Inspectorate has identified, and will be commissioning, appropriate research to improve the evidence base on risks relating to private water supplies.

For further information on the Water Supply (Water Quality) Regulations 2000 (amendment) Regulations 2007, or the microbiological and chemical parameters covered by the regulations please refer to the DWI website: <http://www.dwi.gov.uk>

If you have a need for more specific information than that on our website, please contact us on the DWI enquiry line: 020 7270 3370.

Annex 1

Further sources of information

The publication *Drinking water 2008* comprises the regional reports for England and a report covering Wales. There are six regional reports for England (Central, Eastern, Northern, Southern, Thames and Western) and one for Wales (in two languages). Each report presents monitoring data from 2008 under the following headings:

- Introduction to the report for the region
- Summary of the Drinking Water Inspectorate's conclusions about drinking water quality in the region
- Water supply arrangements
- Drinking water quality testing
- Drinking water quality results
- Consumer perceptions of drinking water
- Incidents in 2008
- Technical audit activity in the region
- Local authority engagement.

Each report begins with a short summary of the Inspectorate's conclusions about drinking water quality in the region in 2008.

The reports and other content are published on the DWI website at <http://www.dwi.gov.uk>

Content of the CD

The CD supplied with the printed report holds all of the above content and additionally it contains:

Water company look-up tables

These summarise all the results of water company monitoring in 2008. They provide information on:

- what was tested
- how many tests were performed
- the range of the results of testing
- how many tests failed to meet the standards.

Incidents in England and Wales 2008

To promote shared learning, the Inspectorate has compiled a list of all incidents that occurred in 2008 which illustrate the nature and cause of each incident, the main actions by the company and findings from the

inspectors' assessments. Relevant content from this overall list is contained in an annex to each regional report.

List of risk assessments by local authority

This is a reference list for local authorities letting them know how many risk assessments have been carried out by each water company supplying drinking water in their area.

Annex 2

Glossary and description of standards

These definitions will assist the understanding of the report where technical terms have been used.

1,2-Dichloroethane	is a solvent that may be found in groundwater in the vicinity of industrial sites. Where necessary it can be removed by special water treatment. A European health-based standard of 3µg/l applies.
Acrylamide	European health-based standard. A monomer is not normally found in drinking water. It is produced in the manufacture of polyacrylamides occasionally used in water treatment. Its presence in drinking water is limited by control of the product specification. Standard is 0.1µg/l.
Aggressive	a term used to indicate that the water has a tendency to dissolve copper (and other metals) from the inner surface of a pipe or water fitting such as a tap.
Aesthetic	associated with the senses of taste, smell and sight.
Alkali	a solution containing an excess of free hydroxyl ions, with a pH greater than seven.
Aluminium	occurs naturally in some source waters. It is removed from drinking water by conventional water treatment (coagulation and filtration). Aluminium sulphate and polyaluminium chloride may be used as water treatment chemicals at some water treatment works. A national standard of 200µg/l applies.
Ammonium	salts are naturally present in trace amounts in most waters. Their presence might indicate contamination of sanitary significance and they interfere with the operation of the disinfection process. An indicator parameter with a guide value of 0.5mg/l.
Analytical quality control (AQC)	the method used to ensure that laboratory analysis methods are performing correctly.

Antimony	is rarely found in drinking water. Trace amounts can be derived from brass tap fittings and solders. A European health-based standard of 5µg/l applies.
Aquifer	water-containing underground strata.
Arsenic	occurs naturally in only a few sources of groundwater. Specific water treatment is required to remove it. A European health-based standard of 10µg/l applies.
Authorised departure	authorisation for a water company to temporarily supply water exceeding a drinking water standard, granted by the authorities only when there is no risk to human health.
Benzene	is present in petrol. It is not found in drinking water, but it can migrate through underground plastic water pipes if petrol is spilt in the vicinity. Some bottled waters and soft drinks which include sodium benzoate as an ingredient have been reported as containing benzene. A European health-based standard of 1µg/l applies.
Benzo(a)pyrene (BaP)	is one of several compounds known as polycyclic aromatic hydrocarbons (PAHs). Their source in drinking water is as a result of deterioration of coal tar, which many years ago was used to line water pipes. Due to extensive water mains refurbishment and renewal it is now rare to detect this substance in drinking water. A European health-based standard of 0.01µg/l applies.
Boron	in surface water sources comes from industrial discharges or from detergents in treated sewage effluents. The very low concentrations found in some drinking waters are not a concern to public health. A European health-based standard of 1mg/l applies.
Bromate	can be formed during disinfection of drinking water through a reaction between naturally occurring bromide and strong oxidants (usually ozone). It may be generated in the manufacture of sodium hypochlorite disinfectant. Exceptionally, groundwater beneath an industrial site can become contaminated with bromate. A European health-based standard of 10µg/l applies.
Bulk supply	water supplied in bulk, usually in treated form, from one water company to another.

Cadmium	is rarely detected in drinking water and trace amounts are usually due to dissolution of impurities from plumbing fittings. A European health-based standard of 5µg/l applies.
Chloramine	a substance formed by reaction between chlorine and ammonia, used as a disinfectant in distribution systems because of its long-lasting properties compared to chlorine.
Chloramination	the process of generating a chloramine disinfectant residual in water leaving a treatment works.
Chloride	is a component of common salt. It may occur in water naturally, but it may also be present due to local use of de-icing salt or saline intrusion. An indicator parameter with a guide value of 250mg/l.
Chlorine residual	the small amount of chlorine or chloramines present in drinking water to maintain its quality as it passes through the water company's network of pipes and household plumbing.
Chromium	is not present in drinking water. A European health-based standard of 50µg/l applies.
<i>Clostridium perfringens</i>	is a spore-forming bacterium that is present in the gut of warm-blooded animals. The spores can survive disinfection. The presence of spores in drinking water indicates historic contamination that requires investigation. The standard is 0 per 100ml.
Coagulation	a process employed during drinking water treatment to assist with the removal of particulate matter.
Coliform bacteria	are widely distributed in the environment often as a result of human or animal activity, but some grow on plant matter. Their presence in a water supply indicates a need to investigate the integrity of the water supply system. The standard is 0 per 100ml.
Colony counts	are general techniques for detecting a wide range of bacteria, the types and numbers being dependent on the conditions of the test. These counts, if done regularly, can help to inform water management, but they have no direct health significance. The standard is 'no abnormal change'.

Colour	occurs naturally in upland water sources. It is removed by conventional water treatment. A national standard of 20mg/l on the Platinum/Cobalt (Pt/Co) scale applies.
Communication pipe	the connection from the water main to the consumer's property boundary.
Compliance assessment	a comparison made by the Inspectorate of data gathered by water companies against standards and other regulatory requirements.
Compound	a compound consists of two or more elements in chemical combination.
Concessionary supplies	historical free supplies of water for a householder, established when a company wanted to lay mains across land and the landowner might agree, subject to a permission, to take a supply of water from the main.
Conductivity	is a non-specific measure of the amount of natural dissolved inorganic substances in source waters. An indicator parameter with a guide value of 2,500 μ S/cm.
Contact tank	a tank, normally situated on a treatment works site, which forms part of the disinfection process. A disinfectant chemical (normally chlorine) is dosed into the water as it flows into the tank. The period of time that the water takes to flow through the tank allows sufficient 'contact' time for the chemical to kill, or deactivate, any viruses or pathogenic organisms that may be present in the water.
Contravention	a breach of a regulatory requirement.
Copper	in drinking water comes mostly from copper pipes and fittings in households. In general, water sources are not aggressive towards copper, but problems very occasionally occur on new housing estates. These 'blue water' events can be avoided by good plumbing practices. A European health-based standard of 2mg/l applies.
<i>Cryptosporidium</i>	is a parasite that causes severe gastroenteritis and can survive disinfection. In the UK, continuous monitoring is undertaken at works classified by the company as being at significant risk.

Cyanide	is not present in drinking water. A European health-based standard of 50µg/l applies.
Dead leg	refers to a piece of piping which is stopped off at one end, but is connected to the supply at the other end and can result in stagnant water in the pipework.
Distribution systems	a water company's network of mains, pipes, pumping stations and service reservoirs through which treated water is conveyed to consumers.
Drinking water standards	the prescribed concentrations or values listed in regulations.
EC Drinking Water Directive	Council Directive 98/83/EC December 1998 – setting out drinking water standards to be applied in member states.
Enforcement action	the means, as set out in the Water Act 1989 and consolidated into the Water Industry Act 1991, by which the Secretary of State requires a water company to comply with certain regulatory requirements.
Enterococci	see <i>Escherichia coli</i> .
Environment Agency	the Environment Agency is responsible for maintaining or improving the quality of fresh, marine, surface and underground water in England and Wales.
Epichlorhydrin	can be found in trace amounts in polyamine water treatment chemicals. Its presence in drinking water is limited by control of the product specification. A European health-based standard of 0.1µg/l applies.
Epidemiology	a process of studying the distribution of cases of disease within a population in relation to exposure to possible sources of the infection, with a view to establishing the actual source of the infection.
<i>Escherichia coli</i> and Enterococci	are bacteria present in the gut of warm-blooded animals. They should not be present in drinking water and, if present, immediate action is required to identify and remove any source of faecal contamination that is found. The standard is 0 per 100ml.
Filtration	the separation of suspended particulate matter from a fluid.

Fluoride	occurs naturally in many water sources, especially groundwater. It cannot be removed by conventional water treatment so high levels must be reduced by blending with another low fluoride water source. Some water companies are required by the local health authority to fluoridate water supplies as a protection against tooth decay. The drinking water standard ensures levels are safe in either circumstance. Fluoridation of water is a Department of Health policy. A European health-based standard of 1.5mg/l applies.
Geosmin	a substance produced by the growth of algae, normally in surface waters which gives rise to a characteristic 'earthy' or 'musty' taste or odour.
Granular activated carbon	an adsorbent filtration media used to remove trace organic compounds from water.
Groundwater	water from aquifers or other underground sources.
Hydrogen Ion (pH)	gives an indication of the degree of acidity of the water. A pH of 7 is neutral; values below 7 are acidic and values above 7 are alkaline. A low pH water may result in pipe corrosion. This is corrected by adding an alkali during water treatment. A specification of between 6.5 and 9.5 applies.
Improvement programmes	water company improvement works, these are legally binding on the company and each programme will remedy an actual or potential breach of a drinking water standard within a specified time period.
Incident	an event affecting or threatening to affect drinking water quality.
Indicator parameter	something that is measured to check that control measures, such as water treatment, are working effectively.
Indicator organism	an organism which indicates the presence of contamination and hence the possible presence of pathogens.
Information Letter	formal guidance to water companies given by the Inspectorate and published on the Inspectorate's website at www.dwi.gov.uk
Inspectorate	The Drinking Water Inspectorate.

Iron	is present naturally in many water sources. It is removed by water treatment. Some iron compounds are used as water treatment chemicals. However, the commonest source of iron in drinking water is corrosion of iron water mains. A national standard of 200µg/l applies.
Lead	very occasionally occurs naturally in raw waters, but the usual reason for its presence in drinking water is plumbing in older properties. If the water supply has a tendency to dissolve lead then water companies treat the water to reduce consumer exposure. The permanent remedy is for householders to remove lead pipes and fittings. A European health-based standard of 25µg/l applies, but 10µg/l will apply from 2013 onwards.
Manganese	is present naturally in many sources and is usually removed during treatment. A national standard of 50µg/l applies.
Mean zonal compliance percentage	a measure of compliance with drinking water standards introduced by the Inspectorate in 2004.
Mercury	is not found in sources of drinking water. A European health-based standard of 1µg/l applies.
Microbiological	associated with the study of microbes.
m³/d	cubic metre per day.
mg/l	milligram per litre (one thousandth of a gram per litre).
MI/d	megalitre per day (one MI/d is equivalent to 1,000 m ³ /d, or to 220,000 gallon/d).
µg/l	microgram per litre (one millionth of a gram per litre).
New regulations	the Water Supply (Water Quality) Regulations 2000 Amended 2007 in England; the Water Supply (Water Quality) Regulations 2001 Amended 2007 in Wales.

Nickel	occurs naturally in some groundwater and where necessary special treatment can be installed to remove it. Another source of nickel in drinking water is the coatings on modern taps and other plumbing fittings. A European health-based standard of 20µg/l applies.
Nitrate	occurs naturally in all source waters although higher concentrations tend to occur where fertilisers are used on the land. Nitrate can be removed by ion exchange water treatment or through blending with other low nitrate sources. A European health-based standard of 50mg/l applies.
Nitrite	is sometimes produced as a by-product when chloramine is used as the essential residual disinfectant in a public water supply. Chloramine is the residual disinfectant of choice in large distribution systems because it is more stable and long-lasting. Careful operation of the disinfection process ensures levels of nitrite are kept below the standard. A European health-based standard of 0.5mg/l applies.
Odour	can arise as a consequence of natural processes in surface waters, particularly between late spring and early autumn. Water treatment with activated carbon or ozone will remove natural substances causing taste. The standard relates to the evaluations of a panel of people assessing samples in the laboratory.
Ofwat	the water industry's economic regulator.
Oocyst	the resistant form in which <i>Cryptosporidium</i> occurs in the environment, and which is capable of causing infection.
Organoleptic	characteristics of a substance as detected by our senses, for example taste, odour or colour.
Outbreak Control Team (OCT)	a team set up to investigate possible waterborne outbreaks of cryptosporidiosis, comprising members of the medical profession, as well as representatives of relevant local authorities and water companies.
Ozone process (ozonation)	the application of ozone gas in drinking water treatment.
Parameters	the substances, organisms and properties listed in Schedule 2 and Regulation 3 of the regulations. Parameter definitions can be found further on in this annex.

Pathogen	an organism which can infect humans and cause disease.
PCV	see 'Prescribed concentration or value'.
Periodic review	the economic regulator's process of setting water prices.
Pesticides	any fungicide, herbicide, insecticide or related product (excluding medicines) used for the control of pests or diseases.
Pesticides – organochlorine compounds (aldrin, dieldrin, heptachlor, heptachlor epoxide)	are no longer used in the UK because they are persistent in the environment. They are not found in drinking water. A European chemical standard of 0.03µg/l for each compound applies.
Pesticides – other than organochlorine compounds	is a diverse and large group of organic compounds used as weed killers, insecticides and fungicides. Many water sources contain traces of one or more pesticide as a result of both agricultural and non-agricultural uses, mainly on crops and for weed control on highways and in gardens. Where needed, water companies have installed water treatment (activated carbon and ozone) so that pesticides are not found in drinking water. Water companies must test for those pesticides used widely in their area of supply. Pesticide monitoring thus varies according to risk. A European chemical standard of 0.1µg/l for each individual substance and 0.5µg/l for the total of all pesticides applies.
Phosphate dosing	treatment of water that results in a protective film building up on the inside of pipes minimizing the likelihood of lead being present in drinking water supplied through lead pipes.
Plumbosolvency	the tendency for lead to dissolve in water.
Polycyclic aromatic hydrocarbons (PAHs)	is a group name for several substances present in petroleum-based products such as coal tar. (see Benzo(a)pyrene listed above for more information). A European health-based standard of 0.1µg/l for the sum of all the substances applies.
Powdered activated carbon (PAC)	powdered activated carbon is employed in treatment processes to remove pollutants.
Pre- and post- renovation assessment (PPRA)	a programme of assessment before and after mains renovation to demonstrate justification for the work, and the improvements achieved by the renovation.

Prescribed concentration or value (PCV)	the numerical value assigned to drinking water standards defining the maximal or minimal legal concentration or value of a parameter.
PR09	the periodic review process for setting water prices for 2010-2015.
Private supplies	water taken from private sources or supplied by non-licensed suppliers; supplies of water provided otherwise than by a statutorily appointed water undertaker.
Protozoan parasites	a single cell organism that can only survive by infecting a host.
Public Register	drinking water quality information made available to the public by water companies as required by regulations.
Public supplies	water supplied by a company licensed for that purpose.
Raw water	water prior to receiving treatment for the purpose of drinking.
Regulations	The Water Supply (Water Quality) Regulations 2000 Amended 2007 (England), 2001 Amended 2007 (Wales).
Remedial action	action taken to improve a situation.
Residual disinfectant	the small amount of chlorine or chloramines present in drinking water to maintain its quality as it passes through the water company's network of pipes and household plumbing.
Secretary of State	Secretary of State for Environment, Food and Rural Affairs.
Selenium	is an essential element and a necessary dietary component. Amounts in drinking water are usually well below the standard. A European health-based standard of 10µg/l applies.
Service connection	connection between the water company's main to a consumer's property.

Service pipe	the service pipe is the pipe that connects the consumer's property to the water company main. It comprises two parts – the communication pipe, which is the connection from the water main to the consumer's property boundary (normally at the outside stop tap), and the supply pipe, which runs from the boundary of the property to the consumer's inside stop tap.
Service reservoir	a water tower, tank or other reservoir used for the storage of treated water within the distribution system.
Sodium	is a component of common salt. It is present in seawater and brackish groundwater. Some treatment chemicals contain sodium. Concentrations in drinking water are extremely low, but some water softeners can add significant amounts to drinking water where they are installed in homes or factories. A national standard of 200mg/l applies.
Springs	groundwater appearing at the surface at the outcrop of the junction of a permeable stratum with an impermeable stratum.
Statement of intent	formal written acknowledgement from a water company about action it plans to take to address an actual or potential regulatory breach.
Sulphate	occurs naturally in all waters and is difficult to remove by treatment. An indicator parameter with a guide value of 250mg/l.
Supply pipe	pipe connecting between the boundary of a consumer's property to the inside stop tap.
Supply point	a point other than a consumer's tap authorised for the taking of samples for compliance with the regulations.
Surface water	untreated water from rivers, impounding reservoirs or other surface water source.
Taste	can arise as a consequence of natural processes in surface waters, particularly between late spring and early autumn. Water treatment with activated carbon or ozone will remove natural substances causing taste. The standard relates to the evaluations of a panel of people assessing samples in the laboratory.
Technical audit	the means of checking that water companies are complying with their statutory obligations.

Tetrachloroethane and Trichloroethene	are solvents that may occur in groundwater in the vicinity of industrial sites. Where necessary they are removed by specialist treatment. A European health-based standard of 10µg/l for the sum of both substances applies.
Tetrachloromethane	is a solvent that may occur in groundwater in the vicinity of industrial sites. Where necessary it is removed by specialist water treatment. A national standard of 3µg/l applies.
Time of supply	the moment when water passes from the water company's pipework into a consumer's pipework.
Total indicative dose	is a measure of the effective dose of radiation the body will receive from consumption of the water. It is calculated only when screening values for gross alpha or gross beta (radiation) are exceeded. An indicator parameter with a guide value of 0.10mSv/year.
Total organic carbon	represents the total amount of organic matter present in water. An indicator parameter with a guide value of 'no abnormal change'.
Toxicology	the study of the health effects of substances.
Treated water	water treated for use for domestic purposes as defined in the regulations.
Trihalomethanes	are formed during disinfection of water by a reaction between chlorine and naturally occurring organic substances. Their production is minimised by good operational practice. A European health-based standard of 100µg/l applies.
Tritium	is a radioactive isotope of hydrogen. Discharges to the environment are strictly controlled and there is a national programme of monitoring surface waters. An indicator parameter with a guide value of 100Bq/l.
Turbidity	is a measure of the cloudiness of water. At treatment works, measurement is an important non-specific water quality control parameter because it can be monitored continuously on line and alarms set to alert operators to deterioration in raw water quality or the need to optimise water treatment. An indicator parameter with a guide value of 1NTU. When detected at the consumer's tap it can arise from disturbance of sediment within water mains. A national standard of 4NTU applies in this case.

Vinyl chloride	may be present in plastic pipes as a residual of the manufacturing process of polyvinyl chloride (PVC) water pipes. Its presence in drinking water is controlled by product specification. A European health-based standard of 0.5µg/l applies.
Water supply zone	a pre-defined area of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.
WHO	World Health Organisation.
Wholesome/wholesomeness	a legal concept of water quality which is defined by reference to standards and other requirements set out in the regulations.

Annex 3

Incidents in the Eastern region in 2008

Date and duration (Company)	Area	Estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
23 Jan 2008 For 2 days (ANG)	Two properties at Harborough Rd, Desborough, Northants	5	Taste or odour due to low flow in main	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area • Provided bottled water • Transferred services to another main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Not linked to operational work and no evidence of any widespread issue within the distribution system
15 Apr 2008 For 18 days (ANG)	Eight domestic properties in Thieves Lane, Rockland All Saints, Attleborough, Norfolk	20	Taste or odour due to ground contamination with hydrocarbons	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Issued a do not drink notice • Provided bottled water • Sampled affected area • Replaced main and communication pipes <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company actions robust and timely

Date and duration (Company)	Area	Estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17 Apr 2008 For 258 days (ANG)	Alton, Ardleigh, Covenham, Elsham, Grafham, Gt. Wrattling, Heigham, Maltby le Marsh, Mumby, Pitsford, Ravensthorpe, Saltersford and Stoke Ferry works, Bulk import at Tiptree, Wing.	2,527,000	Pesticide (metaldehyde) detection	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Sampling survey and engagement with EA including contribution to their metaldehyde action plan. Engagement with other catchment stakeholders including NFU, Catchment sensitive farming teams and Natural England <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Initiated enforcement action, enabling the company to take action to control risk through catchment management

Date and duration (Company)	Area	Estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
25 Jun 2008 For 10 days (ANG)	Pitsford works Northampton, Daventry and Brixworth	258,000	Boil water notice due to detection of <i>Cryptosporidium</i> in treated water	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Sampled affected area • Issued a boil water notice • Drained and inspected tanks • Repaired tank vents/hatch • Installed UV treatment • Liaised with Crypto reference laboratory and Health Protection Agency to support enhanced health surveillance <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Lack of maintenance of tank hatches/vents allowed a rabbit to gain access to treated water; good use of company website to keep consumers informed • Recommended review of policy for registration and promotion of service for consumers with special needs • Recommended review of all treatment and storage units to ensure the exclusion of vermin, birds, insects and other small animals where ingress is a possible risk. This must extend to whole sites and wider environs • Required review of Regulation 27 risk assessment methodology to ensure this hazard is both recognised and assessed, and appropriate control measures and action plans are incorporated into each of its water supply system Risk Assessments and if required, provide the DWI with revised Regulation 28 reports • Recommended the company replace the access hatches and ventilators on the GAC backwash water tank at Pitsford Works to improve security and unwanted ingress at the works • Recommended the company reviews its standing arrangements for procuring laboratory services for determining oocyst type in circumstances where this information is of potential importance to public health

Date and duration (Company)	Area	Estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
25 Jun 2008 For 10 days (ANG) (continued)	(continued)	(continued)	(continued)	<p>DWI comments and findings (continued):</p> <ul style="list-style-type: none"> • Recommended company jointly evaluates the role of opinion surveys in the context of a water supply incident with the Consumer Council for Water • Recommended company ensures that all its personnel are briefed on the powers granted to Inspectors appointed under the Water Industry Act 1991 and the penalties that exist for impeding an inspector in the course of carrying out investigations
02 Nov 2008 For 30 days (ESK)	Three district metered areas supplied by Hockley Tower, near Rayleigh, Essex	8,375	Taste or odour due to tank lining	<p>Essex and Suffolk Water action:</p> <ul style="list-style-type: none"> • Sampled affected area • Removed service reservoir from supply for inspection • Additional ongoing taste and odour monitoring <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Original asphalt tank lining was cause of taste and odour, applied around 1930 although condition inspections found no problems • Required investigation of whether short-circuiting takes place in the tank and any methods available to ensure there are no 'stagnant' areas within the tank. (Possibly encourage a larger diurnal variation in tank level) • Monthly taste and odour testing required (including after boiling) with GCMS screening scan • Recommended review of possible influence of seasonal change from chlorination to chloramination at the supplying treatment works on the tank lining material and any related consumer taste and odour contacts • Advice given on duration of additional sampling (two years)

Date and duration (Company)	Area	Estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12 Nov 2008 For 21 days (ANG)	Thirty-four commercial properties at Norris Way, Rushden, Northants	85	Do not drink notice due to hydrocarbon ground contamination	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Replaced main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Affected main replaced along with boundary boxes and service pipes
17 Nov 2008 For 44 days (ESK)	Hanningfield, Langford, Chigwell, Barsham, Langham, Layer and Ormesby works; parts of Essex and Suffolk.	1,602,000	Pesticide (metaldehyde) detection	<p>Essex and Suffolk Water action:</p> <ul style="list-style-type: none"> • Sampling survey and engagement with EA including contribution to their metaldehyde action plan. Engagement with other catchment stakeholders including NFU, catchment sensitive farming teams and Natural England <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Initiated enforcement action, enabling the company to take action to control risk through catchment management
30 Dec 2008 For 24 days (ANG)	Henlow, Bedfordshire	3	Do not drink advice due to hydrocarbon odour	<p>Anglian Water action:</p> <ul style="list-style-type: none"> • Issued a do not drink notice • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Required further investigation into mains lining and condition in the surrounding area • Required additional periodic sampling to determine if the problem has resolved

Note: A complete table of incidents in England and Wales in 2008 can be found on the CD in the folder. It is named **Incidents in England and Wales 2008.pdf**. It is also available on the DWI website at <http://www.dwi.gov.uk>

Annex 4

Improvement programmes in the region

Company	Parameter or hazard	Site	Status	Construction due for completion
Anglian Water	Nitrate	Bircham	Ongoing	28-Feb-10
Anglian Water	Nitrate	Caistor St Edmunds (Trowse Newton)	Completed 18-Sept-08	
Anglian Water	Nitrate	Clay Hill	Completed 24-Feb-09	
Anglian Water	Nitrate	Colney	Completed 14-Oct-08	
Anglian Water	Nitrate	Congham	Ongoing	28-Feb-10
Anglian Water	Nitrate	Fring (Fring Osier Carr)	Ongoing	28-Feb-10
Anglian Water	Nitrate	Gayton	Ongoing	28-Feb-10
Anglian Water	Nitrate	Kings Road (Rushbrook)	Completed 16-Apr-08	
Anglian Water	Nitrate	Lower Links	Completed 29-Apr-08	
Anglian Water	Nitrate	Moulton	Completed 11-Mar-08	
Anglian Water	Nitrate	Nunnery Lodge/Barnham Cross	Completed 03-Apr-2008	
Anglian Water	Nitrate	Ordsall Road (Retford)	Completed 30-Jun-08	
Anglian Water	Nitrate	Twelve Acre Wood/Eriswell	Ongoing	31-Dec-09
Anglian Water	Nitrate	Whitton	Ongoing	31-Dec-09
Anglian Water	Nitrate and Iron	Wighton	Completed 30-Dec-08	
Anglian Water	Iron	Peterborough City West	Completed 31-Mar-08	

Annex 5 Competition in the water industry

The following table indicates the extent of competition in the water industry in England and Wales

Inset appointments in place in 2008

Name	Licensed supplier	Original supplier*	Status
Buxted Chicken, Flixton	Anglian Water	Essex and Suffolk Water, Eastern region	Supplying water
Fairfield Park and Lower Wilbury Farm, Arlesey	Three Valleys Water	Anglian Water, Eastern region	Supplying water
Northern Foods (Bowyers), Trowbridge	Wessex Water	Wessex Water, Western region	Supplying water
Shotton Paper Works, Shotton	Albion Water	Dŵr Cymru Welsh Water, Wales	Supplying water
Tidworth near Andover	Thames Water	Wessex Water, Western region	Supplying water
Wynyard Business Park, near Wolverston	Hartlepool Water	Northumbrian Water, Northern region	Supplying water
Old Sarum, The Portway	SSE Water	Wessex Water, Western region	Supplying water
Longcroft Road, Corby	Independent Water Networks Ltd	Anglian Water, Eastern region	Supplying water
Priors Hall, Corby	Independent Water Networks Ltd	Anglian Water, Eastern region	Supplying water

New inset appointments in place for 2009

Name	Potential Licensed supplier	Original supplier*	Status
Tidworth near Andover	Veolia Water	Wessex Water, Western region	Appointment granted
Media City, Manchester	Peel Utilities	United Utilities, Northern region	Appointment granted
Valleywood near Llanilid	SSE Water	Dŵr Cymru Welsh Water, Wales	Appointment granted
Hale Village, Tottenham	SSE Water	Thames Water, Thames region	Appointment pending
Great Billing Way, Northampton	Independent Water Networks Ltd	Anglian Water, Eastern region	Appointment granted

*Original supplier at time of privatisation in 1989

Water supply license applications to date

Name of company	License type	Date license granted by Ofwat	Status
Aquavitae	Combined	1 December 05	Not yet operating
Watercall Ltd	Combined	1 December 05	Not yet operating
Severn Trent Water Select Ltd	Combined	1 December 05	Not yet operating
YorWater Ltd	Retail	21 March 06	Not yet operating
Satec Ltd	Combined	24 May 06	Not yet operating
UU Water Sales Ltd	Combined	3 January 07	Not yet operating
Osprey Water Services Ltd	Combined	3 January 07	Not yet operating

Annex 6

Regulation 27 risk assessments by local authority

Local authority	Company	Number of Regulation 27 risk assessments
Aylesbury Vale District Council	Anglian Water	2
Babergh District Council	Anglian Water	4
Basildon District Council	Essex and Suffolk Water	2
Bassetlaw District Council	Anglian Water	3
Bedford Borough Council	Anglian Water	2
Boston Borough Council	Anglian Water	1
Braintree District Council	Anglian Water Essex and Suffolk Water	4 2
Breckland District Council	Anglian Water	10
Brentwood Borough Council	Essex and Suffolk Water	4
Broadland District Council	Anglian Water	8
Cambridge City Council	Cambridge Water	16
Castle Point Borough Council	Essex and Suffolk Water	1
Central Bedfordshire Council	Anglian Water	3
Chelmsford Borough Council	Essex and Suffolk Water	5
Colchester Borough Council	Anglian Water Tendring Hundred Water	2 2
Corby Borough Council	Anglian Water Independent Water Networks Ltd	1 1
Daventry District Council	Anglian Water	2
Doncaster Metropolitan Borough Council	Anglian Water	1
East Cambridgeshire District Council	Anglian Water	5
East Lindsey District Council	Anglian Water	2
East Northamptonshire District Council	Anglian Water	1
Fenland District Council	Anglian Water	2
Forest Heath District Council	Anglian Water	6
Great Yarmouth Borough Council	Anglian Water Essex and Suffolk Water	1 2
Harborough District Council	Anglian Water	1
Huntingdonshire District Council	Anglian Water Cambridge Water	1 17
Ipswich Borough Council	Anglian Water	1
Kettering Borough Council	Anglian Water	1
Kings Lynn and West Norfolk Borough Council	Anglian Water	4
Lincoln City Council	Anglian Water	1

Local authority	Company	Number of Regulation 27 risk assessments
London Borough of Barking and Dagenham	Essex and Suffolk Water	1
London Borough of Havering	Essex and Suffolk Water	2
London Borough of Redbridge	Essex and Suffolk Water	1
Maldon District Council	Essex and Suffolk Water	3
Melton Borough Council	Anglian Water	1
Mid Suffolk District Council	Anglian Water Essex and Suffolk Water	3 2
Milton Keynes Council	Anglian Water	1
Newark and Sherwood District Council	Anglian Water	1
North East Lincolnshire Council	Anglian Water	3
North Kesteven District Council	Anglian Water	2
North Lincolnshire Council	Anglian Water	3
North Norfolk District Council	Anglian Water	11
Northampton Borough Council	Anglian Water Independent Water Networks Ltd	1 1
Norwich City Council	Anglian Water	1
Peterborough City Council	Anglian Water	2
Rochford District Council	Essex and Suffolk Water	2
Rutland County Council	Anglian Water	3
South Cambridgeshire District Council	Cambridge Water	24
South Holland District Council	Anglian Water	2
South Kesteven District Council	Anglian Water	4
South Norfolk Council	Anglian Water	6
South Northamptonshire District Council	Anglian Water	1
Southend on Sea Borough Council	Essex and Suffolk Water	2
St. Edmundsbury Borough Council	Anglian Water	4
Suffolk Coastal District Council	Anglian Water Essex and Suffolk Water	2 3
Tendring District Council	Tendring Hundred Water	2
Thurrock Council	Essex and Suffolk Water	2
Waveney District Council	Essex and Suffolk Water	4
Wellingborough Borough Council	Anglian Water Independent Water Networks Ltd	1 1
West Lindsey District Council	Anglian Water	4

Annex 7

Water company data summary tables

Anglian Water Services Ltd

Water supply arrangements

Company assets		Water supplied	
Number of treatment works	143	Water supplied (MI/day)	1,229
Number of service reservoirs	386	Percentage from surface sources	43
Number of water supply zones	160	Percentage from ground sources	44
Length of mains pipe (km)	34,609	Percentage from mixed sources	13
Population served		Area of supply	
Population supplied	4,1370,00	Bedfordshire, Buckinghamshire, Cambridgeshire, Essex, Leicestershire, Lincolnshire, Norfolk, Northamptonshire, Nottinghamshire, Suffolk	
Number of local authorities	45		

Drinking water quality summary data

	Company figure			Industry average
	2006	2007	2008	2008
Overall drinking water quality*	99.95%	99.96%	99.98%	99.96%
Water treatment				
Process Control Index	99.99%	99.99%	99.99%	99.98%
Disinfection Index	99.99%	99.98%	99.97%	99.93%
Distribution systems				
Distribution Maintenance Index	99.93%	99.87%	99.89%	99.85%
Reservoir Integrity Index	99.97%	99.96%	99.96%	99.96%
Building water systems				
Parameters influenced by domestic water systems	99.87%	99.85%	99.93%	99.88%

Consumer contacts

	Company figure			Industry average
	2006	2007	2008	2008
Informing consumers				
Total number	2,087	3,268	3,053	N/A
Rate per 1,000 population	0.49	0.79	0.74	1.22
Acceptability of water to consumers				
Total number	9,562	8,412	7,674	N/A
Rate per 1,000 population	2.26	2.04	1.85	2.55

Complaints to the Drinking Water Inspectorate

A total of 5 consumers of Anglian Water Services Ltd directly contacted DWI in 2008.

Note: Summary results for each company of tests for individual parameters are supplied on the DWI website at <http://www.dwi.gov.uk>

* Overall drinking water quality as represented by mean zonal compliance for 39 parameters.

Cambridge Water plc

Water supply arrangements

Company assets		Water supplied	
Number of treatment works	23	Water supplied (MI/day)	73
Number of service reservoirs	34	Percentage from surface sources	0
Number of water supply zones	8	Percentage from ground sources	100
Length of mains pipe (km)	2,305	Percentage from mixed sources	0
Population served		Area of supply	
Population supplied	303,000	Cambridge, Huntingdonshire	
Number of local authorities	3		

Drinking water quality summary data

	Company figure			Industry average
	2006	2007	2008	2008
Overall drinking water quality*	99.92%	100%	99.98%	99.96%
Water treatment				
Process Control Index	100%	100%	100%	99.98%
Disinfection Index	99.98%	99.97%	99.96%	99.93%
Distribution systems				
Distribution Maintenance Index	100%	100%	100%	99.85%
Reservoir Integrity Index	99.94%	99.88%	99.93%	99.96%
Building water systems				
Parameters influenced by domestic water systems	99.63%	100%	99.86%	99.88%

Consumer contacts

	Company figure			Industry average
	2006	2007	2008	2008
Informing consumers				
Total number	316	338	326	N/A
Rate per 1,000 population	1.07	1.14	1.07	1.22
Acceptability of water to consumers				
Total number	418	350	362	N/A
Rate per 1,000 population	1.42	1.18	1.19	2.55

Complaints to the Drinking Water Inspectorate

No consumers of Cambridge Water plc directly contacted DWI in 2008.

Note: Summary results for each company of tests for individual parameters are supplied on the DWI website at <http://www.dwi.gov.uk>

* Overall drinking water quality as represented by mean zonal compliance for 39 parameters.

Essex and Suffolk Water

Water supply arrangements

Company assets		Water supplied	
Number of treatment works	26	Water supplied (MI/day)	459
Number of service reservoirs	110	Percentage from surface sources	82
Number of water supply zones	51	Percentage from ground sources	6
Length of mains pipe (km)	8,606	Percentage from mixed sources	12
Population served		Area of supply	
Population supplied	1,780,000	Essex, Suffolk, Norfolk, London Borough of Barking and Dagenham, London Borough of Redbridge, London Borough of Havering	
Number of local authorities	16		

Drinking water quality summary data

	Company figure			Industry average
	2006	2007	2008	2008
Overall drinking water quality*	99.97%	99.99%	99.96%	99.96%
Water treatment				
Process Control Index	100%	100%	100%	99.98%
Disinfection Index	99.99%	100%	99.95%	99.93%
Distribution systems				
Distribution Maintenance Index	100%	99.96%	99.92%	99.85%
Reservoir Integrity Index	99.92%	99.93%	99.96%	99.96%
Building water systems				
Parameters influenced by domestic water systems	99.80%	99.91%	99.78%	99.88%

Consumer contacts

	Company figure			Industry average
	2006	2007	2008	2008
Informing consumers				
Total number	1,309	985	861	N/A
Rate per 1,000 population	0.74	0.55	0.48	1.22
Acceptability of water to consumers				
Total number	2,837	2,079	1,974	N/A
Rate per 1,000 population	1.61	1.16	1.11	2.55
Complaints to the Drinking Water Inspectorate	A total of 1 consumer of Essex and Suffolk Water directly contacted DWI in 2008.			

Note: Summary results for each company of tests for individual parameters are supplied on the DWI website at <http://www.dwi.gov.uk>

* Overall drinking water quality as represented by mean zonal compliance for 39 parameters.

Independent Water Networks Ltd

Water supply arrangements

Company assets		Water supplied	
Number of treatment works	0	Water supplied (l/day)	50,000
Number of service reservoirs	0	Percentage from surface sources	100
Number of water supply zones	2	Percentage from ground sources	0
Length of mains pipe (km)	7	Percentage from mixed sources	0
Population served		Area of supply	
Population supplied	350	Priors Hall and Long Croft Road, Corby	
Number of local authorities	3		

Drinking water quality summary data

	Company figure			Industry average
	2006	2007	2008	2008
Overall drinking water quality*	N/A	N/A	100%	99.96%
Water treatment				
Process Control Index	N/A	N/A	N/A	99.98%
Disinfection Index	N/A	N/A	N/A	99.93%
Distribution systems				
Distribution Maintenance Index	N/A	N/A	100%	99.85%
Reservoir Integrity Index	N/A	N/A	N/A	99.96%
Building water systems				
Parameters influenced by domestic water systems	N/A	N/A	100%	99.88%

Consumer contacts

	Company figure			Industry average
	2006	2007	2008	2008
Informing consumers				
Total number	N/A	0	0	N/A
Rate per 1,000 population	N/A	N/A	0	1.22
Acceptability of water to consumers				
Total number	N/A	0	0	N/A
Rate per 1,000 population	N/A	N/A	0	2.55
Complaints to the Drinking Water Inspectorate				
No consumers of Independent Water Networks Ltd directly contacted DWI in 2008.				

Note: Summary results for each company of tests for individual parameters are supplied on the DWI website at <http://www.dwi.gov.uk>

* Overall drinking water quality as represented by mean zonal compliance for 39 parameters.

Tendring Hundred Water Services Ltd

Water supply arrangements

Company assets		Water supplied	
Number of treatment works	2	Water supplied (MI/day)	30
Number of service reservoirs	9	Percentage from surface sources	10
Number of water supply zones	4	Percentage from ground sources	65
Length of mains pipe (km)	908	Percentage from mixed sources	25
Population served		Area of supply	
Population supplied	152,000	Essex	
Number of local authorities	2		

Drinking water quality summary data

	Company figure			Industry average
	2006	2007	2008	2008
Overall drinking water quality*	99.84%	99.92%	>99.99%	99.96%
Water treatment				
Process Control Index	99.61%	100%	100%	99.98%
Disinfection Index	100%	99.79%	100%	99.93%
Distribution systems				
Distribution Maintenance Index	100%	100%	100%	99.85%
Reservoir Integrity Index	99.86%	100%	100%	99.96%
Building water systems				
Parameters influenced by domestic water systems	99.52%	99.55%	99.98%	99.88%

Consumer contacts

	Company figure			Industry average
	2006	2007	2008	2008
Informing consumers				
Total number	25	54	80	N/A
Rate per 1,000 population	0.17	0.36	0.52	1.22
Acceptability of water to consumers				
Total number	120	233	216	N/A
Rate per 1,000 population	0.80	1.54	1.42	2.55

Complaints to the Drinking Water Inspectorate

A total of 1 consumer of Tendring Hundred Water Services Ltd directly contacted DWI in 2008.

Note: Summary results for each company of tests for individual parameters are supplied on the DWI website at <http://www.dwi.gov.uk>

* Overall drinking water quality as represented by mean zonal compliance for 39 parameters.



guardians of drinking water quality

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