

Incidents in the Eastern region in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/05/2007 for 12 days (ANG)	North-east Norwich, Norfolk 68,000	Chlorine taste and odour due to a likely problem with the chloramination plant	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Treatment works shut down and affected area sampled • Distribution system modelled and systematically flushed • Water fittings inspections carried out at major user sites • Additional controls and instrumentation installed at the treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Elevated free chlorine levels in supply <p>(See <i>Incidents in 2007</i>)</p>
15/06/2007 for 11 days (ANG)	North Walsham, Norfolk 15,040	<i>Cryptosporidium</i> in supply following raw water deterioration	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice and sampled affected area • Installed temporary filtration and ultra-violet treatment plant • Flushed distribution system • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Commended robust and timely response by company • Good provision of information to affected consumers through mobile customer support unit • Investigatory boreholes required permanent sealing to prevent any recurrence of aquifer contamination <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/07/2007 for 3 days (ANG)	Station Rd and Buckingham Rd Winslow, Bucks 3	Microbiological contamination following burst main	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Review of hygiene procedures
26/07/2007 for 3 days (ANG)	Cathwaite, Paston, Peterborough 625	Microbiological contamination following burst main	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident due to poor sampling technique at hydrants. Operator re-trained • Company-wide re-briefings on hygiene procedures
27/07/2007 for 3 days (ANG)	Saddle Court, Paston, Peterborough 3	Microbiological contamination following burst main	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Related to above incident • Incident due to poor sampling technique at hydrants. Operator re-trained • Company-wide re-briefings on hygiene procedures

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31/07/2007 for 2 days (ANG)	Alvingham, near Louth, Lincs 223	Microbiological contamination following mains rehabilitation	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Reviewed procedures for pipebursting • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Procedures amended following review – customers supplied by sections of main being replaced by pipe bursting or slip-lining, are advised to boil water as a precaution until satisfactory sample results have been obtained
01/08/2007 for 36 hours (ESK)	Chelmsford and Danbury areas of Essex 52,848	Air in water following planned work on the network	<p>Essex and Suffolk Water actions:</p> <ul style="list-style-type: none"> • Review of procedures • Retrained staff • Sampled affected area • Review of diagrammatic information available to operational personnel at the sites <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Thorough investigation • Recommended all sites audited by company to ensure that appropriate valve markers are in place with access to appropriate schematics and plans • Review of training for standby and control room staff • Review of communications for standby staff, Network Control and customer call handling staff will be undertaken to ensure that all parties are aware of operational activities <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
08/08/2007 for 5 days (ESK)	Single property at Ingatestone, Essex 3	Issue of Boil Water notice following evidence of microbiological contamination in distribution	<p>Essex and Suffolk Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area • Provided bottled water • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that full and complete investigations undertaken in all future events, in order that omissions in practices and procedures are identified • Recommended that procedure for commissioning new mains be reviewed to ensure good operational practice and risk assessments are undertaken
10/08/2007 for 30 days (ANG)	14 properties in Saham Waite, Norfolk 35	Taste and odour in distribution	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Issued a Do Not Drink notice • Provided bottled water • Sampled affected area • Flushed and re-zoned area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Proactive routine flushing programme required pending permanent improvements
24/08/2007 for 30 days (ANG)	11 properties at Myers Close, Chalton near Buckingham 28	Issue Boil Water notice following damage to main	<p>Anglian Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Sampled affected area • Chlorinated and flushed main • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company actions robust and timely. Third party damage to main with likely ingress

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25/08/2007 for 3 days (ESK)	25 properties in Rayleigh Road, Hutton, Brentwood 63	Issue of Boil Water notice following mains repair	<p>Essex and Suffolk Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Issued a Boil Water notice • Sampled affected area • Disinfect, flush and sample main • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommend review of company hygiene procedures for mains repairs and cut-ins and post repair sampling
10/10/2007 for 5 days (ESK)	Berdens, Basildon 150	Issue of Boil Water notice following evidence of microbiological contamination in distribution	<p>Essex and Suffolk Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice • Sampled affected area • Disinfected, flushed and sampled main • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommend review of company hygiene procedures for mains repairs and cut-ins and post repair sampling

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/11/2007 for 43 days	Site compound at Trumpington, Cambridge 3	Taste and odour in distribution	<p>Cambridge Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Issued a Do Not Drink notice • Provided bottled water • Sampled affected area • Reviewed procedures • Retrained staff <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Robust response following thorough investigation • Company review and amendment of procedures and effective training of staff

Incidents in the Midlands region in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/01/2007 for 2.5 hours (SVT)	South Shropshire and Worcester 25,000	High pH and turbidity in treated water because of failure of the lime dosing plant	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate follow-up sampling • Sampling was not timely enough
02/02/2007 for 11 hours (SVT)	Area supplied by Church Wilne works, Nottingham city 300,000	Treatment problems (loss of ferric dosing) due to plant failure (probes)	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at treatment works • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Consecutive alarms were accepted by operator. Recommend that the company ensure operators are fully aware of appropriate actions to be taken following continuing repeat alarms, i.e. detailing when further investigations should be carried out • Generally followed correct procedures on information available at the time • Clarification process maintained • No evidence of water quality issues in final supply or in distribution

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
28/02/2007 for 12 hours (SST)	Walsall 3,500	Petrol taste or odour due to suspected introduction of stagnant water	<p>South Staffordshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area • Area isolated and alternative supplies made available <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Appropriate response to consumer complaints • Risk assessments of distribution jobs involving bypass valve arrangements to be made formal • Company looking at alternative configurations to try and remove this section of main <p>(See <i>Incidents in 2007</i>)</p>
03/04/2007 for 12 hours (SVT)	Area supplied by Melbourne works Leicester 307,113	Loss of supplies/poor pressure when works shutdown due to problems with plant	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Rezoned area (brought in water from different source) • Sampled affected area • Shut down treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Turbidity monitors on the washwater return and the Dissolved Air Flotation (DAF) plant were not operational due to ongoing issues with monitors and pipework • Recognised that the company is taking actions to improve all on-line monitors at this site and other company water treatment works • The company is to review the mechanisms for establishing where samples are taken during water quality incidents <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/04/2007 for 30 hours (SST)	Mayfield and Stanton villages, Derbyshire 2,248	Loss of chlorination following failure of automatic shutdown system on site due to mechanical failure of valve	<p>South Staffordshire Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Increased chlorine residuals at treatment works • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Mechanical valve failure led to unchlorinated water continuing to go into supply rather than running to waste • Operation of site now changed to shut down on loss of chlorination rather than run to waste • Permanent solution to be installed
16/06/2007 for 12 hours (SVT)	Loughborough, Leicestershire 20,898	Brown discolouration due to operation of a valve which failed to shut	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Opened the valve to restore supplies • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Sampling was not timely enough • Inspection required of similar assets
27/06/2007 for 8 days (SVT)	Meeson, Shropshire 88	Boil water advice given due to microbiological contamination following ingress during mains repair	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Sampled affected area • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Review use of chlorination after mains repair when there is any concern over the drainage of surrounding land or during adverse weather conditions

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/07/2007 for 7 days (SVT)	Leamoor Common, Shropshire 2	Microbiological contamination at a single property; issue possibly related to a burst main repair	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice to a single property • Increased chlorine residuals at service reservoir • Sampled affected area • Issued a Boil Water notice • Increased chlorine residuals in the distribution system • Further sampled affected area • Issued second Boil Water notice to second property <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate investigations into root cause • Supplied unwholesome water in breach of regulations • Inappropriate response to failure • Inadequate provision of information • Recommended follow-up investigation
08/07/2007 for 9 days (SVT)	Westbury zone near Shrewsbury, Shropshire 1,574	Microbiological contamination due to structural problems with a service reservoir (Ford (Broadway) DSR).	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Sampled affected area • Removed service reservoir from supply • Rezoned area (brought in water from different source) • Undertook internal inspection, identified deficiencies and remedied them <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Ingress via roof of service reservoir identified and remedied • Inlet valve found to be closed resulting in poor turnover • Further coliform failure in August

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
16/07/2007 for 5 days (SVT)	Swathwick Lane, West Chesterfield 10	Boil water advice given due to microbiological contamination following the repair of a private main	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Sampled affected area • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommendations made regarding timeliness of analysis of samples and quality of information provided in report • Recommendations about advice to consumers and the monitoring and control of chlorine levels in distribution when introduced in response to emergency situation

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
22/07/2007 for 16 days (SVT)	Tewkesbury, Cheltenham, Gloucester 387,500	Loss of supplies/ poor pressure due to flooding of Mythe works site	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Shut down treatment works • Rezoned area (brought in water from different source) • Incident Management Team established • Contingency planning for provision of alternative supplies <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Controlled shut down of the works contributed significantly to the success and speed of the reinstatement of the works • Recommended that the company's crisis management procedures be updated to clearly reflect that decisions about water supply operations are for the company alone to make, after consulting relevant persons as identified in the Water Supply (Water Quality) Regulations • Recommended that the company amends its procedures and trains its staff in such a way as to ensure that in any future similar incident the company is able to feed operational information into the wider communication processes within government, which are essential when an incident threatens to become an emergency • Recommended that the company ensures that access is suitable for all operational purposes at each of its strategic sites • Recommended that an alternative supply arrangement for part of the Tewkesbury area be fully documented and investigates permanent engineering solutions to address problems with the accessibility of critical valves • Recommended that the company researches and documents all feasible alternative piped supply arrangements for each of its works and strategic service reservoirs • Recommended that the company caters for proactive communication to other agencies about actions already taken in its standing information

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
22/07/2007 for 16 days (SVT) (continued)	Tewkesbury, Cheltenham, Gloucester 387,500 (continued)	Loss of supplies/ poor pressure due to flooding of Mythe works site (continued)	<p>DWI comments and findings: (continued)</p> <ul style="list-style-type: none"> • Recommended that standing information in the company's incident and emergency resource manuals be accompanied by Question and Answer style documents in non-technical terms for responding to requests from other agencies • Recommended that an internal inspection of the contact tanks and the treated water tanks be undertaken at the earliest opportunity to check the extent of any damage during construction of the flood barriers • Recommended that the company undertakes a company-wide review of its power supply arrangements and contingencies for all of its strategic water supply assets • Recommended that the company incorporates future guidance from the health protection agency on the operation and purpose of Strategic Technical Advisory Cells (STACs) into all relevant company procedures • Recommended that the company works with its local public health professionals to better understand how in future there can be collaborative working to avoid such a protracted process of restoring normal water supply usage in health care premises • Recommended that the company ensures that in all future incidents it retains full responsibility for the preparation and issuing of advice to its customers on any precautions they need to take regarding use of the water supply and that it takes steps to ensure that important consumer warning advice can be placed on its website • Recommended that the company considers making improvements to the resilience of the alternative supply arrangements for consumers served by Mythe works • Recommended that arrangements are put in place to ensure bowsers can be rapidly deployed, tracked and the contents monitored <p>(See <i>Incidents in 2007</i>)</p>

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28/07/2007 for 30 hours (SVT)	Newcastle under Lyme, Staffordshire 18,841	Brown discolouration due to change of flows from a service reservoir	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Plan to clean and inspect Bignall Hill reservoir in February 2008 <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Due to a plant failure at Coopers Green service reservoir, the water levels here and at another downstream reservoir dropped causing a discolouration incident. The pumps could not be started manually due to a control panel fault that the company had failed to identify • Recommended that, in future, timely sampling should be carried out to establish the extent and nature of any contamination • Recommended that the company carry out an internal inspection of Bignall Hill service reservoir to establish its condition and the presence of any sediment • Recommended a review of the generic risk assessment to include all assets that may be involved in an event • Recommended that the company ensure that Consumer Council for Water are notified of water quality events
24/09/2007 for 7 hours (SST)	Yew Tree Estate area of Walsall, West Midlands 10,750	Brown discolouration due to planned work	<p>South Staffordshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Repaired main • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Adequate risk assessments prior to work. Flushing and test shuts carried out • Adequate actions taken in response to discolouration

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19/10/2007 for 5 days (SVT)	Munslow, Shropshire 3	Boil water advice given due to microbiological contamination following the recommissioning of a service reservoir	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Issued a Boil Water notice • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Investigations ongoing. Munslow reservoir due to be recommissioned April 2008 and Pel Beggar reservoir can then be taken out of service for inspection
23/10/2007 for 4 hours (SVT)	Davenport Rd, Stoke on Trent 13,282	Brown discolouration due to mains burst	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Repaired main • Rezoned area (brought in water from different source) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommend that the company undertake accurate modelling prior to rehab jobs • Recommend adequate arrangements made so that all required materials are available for the job (concrete for thrust blocks were not available because it was a Sunday) • Recommend that contractors are suitably and appropriately supervised

Incidents prior to 2007 where the assessment was completed in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/07/2006 for 1.5 hours (SVT)	Area fed by Frankley works (Birmingham, Coventry and Stourbridge) Approx 1.37 million people supplied by this works	Failure of the disinfection system at Frankley works	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Review of procedures for reporting events. • Blended supply with another source • Sampled affected area • Investigation of impact/quantity of water in question that was below target chlorine residual level. <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Lack of routine maintenance of critical plant and equipment. • Recommended that the company review the manner in which it manages routine maintenance tasks at this and other sites to ensure that they are completed in a timely manner. • Standby equipment not available due to planned maintenance. evaporator. • Company failed to both identify the risk to the continuity of disinfection and to put in place adequate contingency arrangements • No risk assessment was conducted prior to the isolation of part of the disinfection system. • Recommended that the company fully reviews its arrangements for assessing the criticality of plant and equipment, and how it plans for such equipment to be taken out of service.
21/07/2006 for five days	Ludlow, Shropshire 20,000	Emergency use of alternative raw water source due to high demand from Holywaste service reservoir	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Sampled affected area • Increased chlorine residuals at service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate contingency planning • Inadequate risk assessment • Supplied raw water in breach of regulation 26.

Incidents in the Northern region in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
05/01/2007 for 72 hours (UU)	Bebington Merseyside 32,978	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Reviewed procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate procedures at the works to determine the type and extent of discolouration, and to run any discoloured water to waste • Samples were not analysed for appropriate parameters • Process monitoring is required to prevent the solution of historic deposits in the contact tanks and related pipework
18/01/2007 for 1.5 hours (NNE)	near Peterlee 12,500	Loss of chlorination due to plant failure	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Increased chlorine residuals at treatment works • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No recommendations. The company responded promptly to alarms and risk to public health was minimal
24/02/2007 for 12 hours (NNE)	Gosforth, Cramlington and Killingworth 375,000	Discolouration (brown) due to failure of a valve in distribution	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Operated valve manually until repair could be affected • Upgraded valve upon repair <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Delay in notifying local/health authorities • The company to consider whether upgrade to valve is sufficient to prevent a recurrence of the electrical short circuit

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23/03/2007 for 24 hours (YKS)	Otley 6,500	Discolouration (brown) due to a mains burst	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed mains <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended the company reviews how the planning error occurred and puts in place appropriate actions and checks to ensure similar errors do not occur in the future • Recommended the company discusses appropriate notification of events with the Consumer Council for Water and informs the Inspectorate of the outcome of these discussions
30/03/2007 for 24 hours (YKS)	Doncaster Wheatley 3,273	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company puts in place appropriate management to ensure that risk assessments are signed off by competent personnel • Recommended that the impact of planned changes is appropriately risk assessed • When a deviation to the method statement is conducted this is communicated to the appropriate personnel • Recommended that, where appropriate, modelling is conducted as part of the risk assessment process to proactively identify potential water quality impacts • Acknowledged the quality of the final report associated with this incident
11/04/2007 for 7 hours (YKS)	Huddersfield City Centre and south west Huddersfield 19,782	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed mains <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Queries surrounding the risk assessment were made • Recommended that the company puts in place a system to keep the control room informed when significant work is being conducted on the distribution system

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12/04/2007 for 17 hours (UU)	North West Wigan 8,646	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Due to discolouration, Boars Head service reservoir cleaning aborted • Mains returned to original configuration until a new plan to clean the reservoir has been undertaken <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate risk assessment • Recommended an investigation into the source of the iron rich mains deposits and the affected main flushed, swabbed or refurbished as appropriate and that the company determine the source of the restriction in the network
02/05/2007 for 15 hours (YKS)	Doncaster, Warmsworth and Balby 8,060	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company took appropriate action to actively manage the water quality prior to transferring supplies and undertook an informed flushing exercise • Company to update the Inspectorate on the outcome of this investigation and the solutions identified <p>(See <i>Incidents in 2007</i>)</p>

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15/05/2007 for 6 days (YKS)	North East Hull 150,000	Musty taste and odour due to raw water deterioration	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Optimised treatment • Shut down treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company monitor the source water for algae and taste and odour forming organisms, over an appropriate timescale • Recommended that the granular activated carbon filters are monitored for ability to perform effectively for the required demand and when taste and odours are present in the raw water • Recommended a review of the <i>Cryptosporidium</i> risk assessment in light of potentially reduced filter availability and implements continuous monitoring for <i>Cryptosporidium</i> in the meantime • Recommended that other similar works are thoroughly checked to determine that they are in a satisfactory condition • Recommended that a detailed water safety plan is prepared for this works clearly setting down all the identifiable risks that could occur <p>(See <i>Incidents in 2007</i>)</p>
23/05/2007 for 32 hours (UU)	Sefton, Liverpool 4,500	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Investigation ongoing <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company improves the supervision and management of its Network Partner • Evidence of inadequate risk assessment was found • Recommended that the company ensures its Network Partner understands that only those valves identified and approved by the company may be operated by their appropriately trained staff. If any valves are not covered in the agreed work schedule then a revised work method must be agreed and documented

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25/05/2007 for 6 days (NNE)	Stocksfield, Prudhoe and Ryton areas of County Durham 28,518	Discolouration (brown) due to emergency work	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommend that those responsible for conducting site work are in possession of the full documentation • Recommend that any changes made to a method statement are communicated to relevant staff • Recommend that risk assessments take place with the appropriate experienced staff involved and that site staff are made fully aware why a decision to do something has been taken • Recommend that appropriate management is put in place to ensure that existing procedures are followed to ensure the quality of water supplied
30/05/2007 for 8 hours (NNE)	Dudley, Wideopen and Seaton Burn, North Tyneside 4,993	Discolouration (brown) due to planned work	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The main affected is due to be cleaned in the next 18 months. Suggested that the company reviews timescale and advises Inspectorate when it is planned and completed • Recommended that mitigation plans are produced to improve any future response
04/06/2007 for 7 days (YKS)	Harrogate and Knaresborough 500	Earthy taste or odour due to raw water deterioration	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Blended supply with another source • Installed temporary PAC dosing equipment to minimize the musty/earthy taste and odour in the water entering supply <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No recommendations made

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/06/2007 for 23 hours (UU)	Blackpool 11,199	Discolouration (brown) due to planned work	<p>United Utilities Wactions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended the company plan the return of a distribution system to its normal configuration on completion of renovation work to minimize the possibility of discolouration incidents occurring
02/07/2007 for 12 days (UU)	Paddock Road, Liverpool 40,000	Possible microbiological contamination due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company did not forewarn customers, or keep them informed • Inadequate risk assessment • Inadequate training/competence of staff to ensure that work on the network is carried out according to procedure to reduce the risk of contamination • Supplied unwholesome water in breach of regulations
02/07/2007 for 6 days (YKS)	Grimwith 8	Evidence of microbiological contamination due to ingress into service reservoir	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir • Increased chlorine residuals at treatment works • Issued a Boil Water notice • Removed service reservoir from supply • Sampled affected area • Increased chlorine residuals at treatment works • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that turnover issues be considered in new supply arrangements for the three properties (2km connection). • Recommended that the company reviews sample points at similar reservoirs to ensure that the regulatory requirements are met in respect of representativeness of the sample and avoidance of contamination

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
08/07/2007 for 8 hours (UU)	Counthill, Denshaw, Moorside areas of Oldham 97,500	Discolouration (brown) due to plant failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Flushed mains • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company investigates the failings of its remote monitoring as well as reviewing its water quality alarms and triggers • Recommended that full details of all samples analyses are reported in future • Recommended that the company informs the Inspectorate of what actions are being undertaken at Waterhead works to prevent a recurrence of this incident
12/07/2007 for 13 hours (UU)	Newton le Willows 7,750	Discolouration (brown) due to mains damage by third party	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Blended supply with another source <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment ongoing
14/07/2007 for 6 days (UU)	Haydock 6,750	Discolouration (brown) due to mains burst	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Repaired main • Rezoned area (brought in water from different source) <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate follow-up sampling • Inadequate investigations into root cause • Samples not analysed for appropriate parameters • Sampling was not timely enough

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/07/2007 for 8 days (YKS)	Ecclesfield, Grenoside and Burncross, Sheffield 3,318	Discolouration (brown) due to pump failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area • Rezoned area (brought in water from different source) <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommend that the company carefully uses the identified cause of this discolouration in lessons learnt for flushing • Recommended that the company ensures water is made available to consumers on request during an event • Recommended that where reports of illness are received the company takes samples without delay <p>(See <i>Incidents in 2007</i>)</p>
24/07/2007 for 7 days (YKS)	Castleford and East Leeds 113,500	White water (air) due to a faulty compressor	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Review of procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Unacceptable delay in notifying Inspectorate • Unacceptable delay in notifying local/health authorities • Inadequate procedures
25/07/2007 for 7 hours (UU)	Ashworth Moor works 25,571	Partial loss of treatment (ferric sulphate dosing)	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Installed failsafe coagulation software at Ashworth Moor works, and is ensuring its effectiveness • Reduced the level of clarified turbidity alarm to detect problems sooner • Reviewed coagulation failsafe software at other sites <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company has completed the required actions

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
25/07/2007 for 5 hours (UU)	Wickenhall works 34,241	Partial loss of treatment (ferric sulphate dosing)	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Repaired faulty plant <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Did not notify Inspectorate • Did not liaise with local/health authorities • Process controllers have been instructed to reset the control panel to clear a low alarm on the ferric sulphate tanks, and this will be activated during chemical deliveries at Wickenhall works • Arrangements at similar sites will be reviewed and updated
30/07/2007 for 10 days (YKS)	Keasden 40	Evidence of microbiological contamination due to flooding of valve chambers on inlet pipes	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice • Removed service reservoir from supply • Bypassed service reservoir • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate investigations into root cause • Inappropriate application of chlorine • Inadequate procedures • Inadequate follow-up sampling • Installed a temporary bypass when a permanent facility could have been used • Not all consumers were issued with warning notices • Not all consumers were advised that supplies had returned to normal • The company did not have a record of all properties connected to the supply • The company did not make use of test results (residual chlorine, colony counts) obtained during investigation

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
30/07/2007 for 31 hours (UU)	Birkenhead 12,830	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Carried out a risk assessment in preparation for the cross connection which identified the job as low risk for discoloured water since the mains were of similar size and were operating at similar pressure and flows • Sampled the affected area • Made bottled water available on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Assessment complete • No recommendations made
24/08/2007 for 8 days (YKS)	Pontefract – Willow Park, Baghill Lane 75	Issue of Boil Water advice following microbiological contamination	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals in the distribution system • Provided an alternative supply by overland supply • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company investigates all water quality failures • Recommended that the company carefully considers lessons learnt from this incident and in particular that the company ensures it uses all available information to help inform it of the appropriate area to provide protection advice and corrective chlorination action • Recommended the company ensures that it notifies the consumer council for water at the earliest opportunity

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
31/08/2007 for 8 hours (UU)	Bury, Rochdale 25,571	Loss of coagulation dosing due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Repaired faulty plant <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the ferric sulphate dosing lines are moved away from the sodium hypochlorite tanks and bund to prevent the production of chlorine in the event of a leak on the ferric sulphate dosing lines • Recommended that other works are checked to ensure that chemical dosing lines do not cross over chemical tanks or bunds
06/09/2007 for 8 hours (UU)	Ashton-under-Lyme, Lancashire 135,000	Disinfection failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Increased chlorine residuals at treatment works • Repaired faulty equipment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that procedures are reviewed at Buckton Castle works to ensure the back-up disinfection is checked frequently, run for a substantial period and for long enough to replenish the chemicals • Recommended the company set down procedures to take equipment out of supply • Recommended that procedures to communicate the status of plant are put in place • Recommended that equipment taken out of service is physically as well as electrically isolated, and signs placed on the equipment <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
14/09/2007 for 9 hours (UU)	Blackpool 22,000	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Flushed mains • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company take positive steps to determine the number of properties likely to be affected when significant reorganisation of the distribution system is to be undertaken and not rely on assumed numbers • Recommended that assessment of network configuration is undertaken as part of the planning procedure prior to any refurbishment scheme being undertaken • Recommended that the company pay careful attention to flushing large diameter mains to ensure that any deposits are fully removed by the flushing
17/09/2007 for 10 hours (UU)	Ashton-under-Lyme, Lancashire 135,000	Disinfection failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Increased chlorine residuals at treatment works • Repaired faulty equipment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that procedures are reviewed at Buckton Castle works to check the back-up disinfection is checked frequently, run for a substantial period and for long enough to replenish the chemicals • Recommended the company set down procedures to take equipment out of supply • Recommended that procedures to communicate the status of the plant are put in place • Recommended that equipment taken out of service is physically, as well as electrically, isolated, and signs are placed on the equipment <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
20/09/2007 for 5 days (YKS)	West of Keighley, West Yorkshire 2,235	Evidence of microbiological contamination due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Sampled affected area • Took reservoir compartment out of supply to investigate • Provided bottled water to schools and nurseries and nursing home • Increased chlorine residuals at upstream service reservoir • Issued a Boil Water notice <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company take samples before and after any chlorination following a bacteriological exceedence to assist in establishing the source of the contamination and the effectiveness of the remedial action • Recommended the company highlights risks to personnel as part of its lessons learnt and training • Noted that the company have highlighted shortfalls in following procedures to the service partner organisation

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/09/2007 for 2 days (YKS)	Near Market Weighton, East Yorkshire 105	Evidence of microbiological contamination due to structural failure of a reservoir	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Removed service reservoir from supply • Increased chlorine residuals at service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company cleans the reservoir compartment thoroughly if it considers bringing it back into supply • Recommended that the company improves its record keeping and written reports for internal and external reservoir inspections • Recommended that the company returns to all properties to resample where breaches of the standard were detected, and does not close down an incident while parameters are still exceeding the standards • Recommended that the company deal with standing water on top of the reservoir immediately • Requested confirmation that slug dosing of chlorine was not carried out before investigatory sampling has been undertaken
26/09/2007 for 10 hours (NNE)	Newton Aycliffe, Durham 13,648	Discolouration (brown) due to mains burst	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Rezoned area (brought in water from different source) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate risk assessment
01/10/2007 for 24 hours (YKS)	Norton and Gleadless Valley area of South Sheffield 35,915	Discolouration (brown) due to emergency work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed mains <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company considers and identifies any potential impacts of an event at an early stage and puts in place a plan to mitigate the associated risks • Enforcement action initiated under Section 18 of the Water Industry Act 1991 <p>(See <i>Incidents in 2007</i>)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
02/10/2007 for 6 hours (UU)	Parts of Carlisle, Cumbria 8,000	Discolouration (brown) due to operation of wrong valves	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Wrong valve closed on a complex junction arrangement • The Inspectorate were critical that the company had no simple method to identify valves quickly and accurately <i>in-situ</i>, and recommended that the company ensure that plans are updated accurately
14/10/2007 for 5 hours (UU)	Waterhead works 26,000	Loss of coagulation due to plant failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Diluted the affected service reservoir • Stopped transfer pumping from the affected reservoir stopped <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the duty and standby pumps are changed to switch at low flow, rather than no flow
15/10/2007 for 12 hours (UU)	Chorley, Lancs 25,000	Discolouration (brown) due to planned work	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Restarted Rosehill pump which raised the level in the service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that one person is designated as responsible for valving operations on a job, and that they stay on-site as far as possible. Sub-contractors are not to start work without direct instructions from the company or their contractor

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/10/2007 for 2 days (YKS)	Bilborough and Healaugh, north east of Tadcaster 475	Microbiological contamination due to structural failure of a reservoir	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Reservoir taken out of supply • Temporary chlorination • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company monitor assets with identified defects to ensure that further deterioration does not become a risk to water quality • Recommended the company takes action to ensure that it notifies the consumer council for water at the earliest opportunity
23/10/2007 for 2 days (UU)	Wigan 11,600	Loss of supplies due to burst main	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Supplies restored • Sampled affected area • Flushed mains • Provided bottled water on request <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that a low level alarm is fitted to the reservoir to minimise loss of supply in the area if problems arise, and this arrangement is assessed for other pumped reservoirs in the company's area of supply and an appropriate maintenance regime is put in place

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
24/10/2007 for 3 days (YKS)	Walkley, Pitsmoor, Norton Woodseats and Meersbrook, Sheffield 63,400	Discolouration (brown) due to plant failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company ensures that adequate and appropriate risk assessment is conducted prior to valve and pump maintenance being undertaken and that appropriate activity is conducted to mitigate the risk of such maintenance affecting water quality • Recommended that the company reviews its use and management of control loops and ensures its instrumentation staff are conversant with the workings of primary current drive loops and that when designing or adding to these control loops that it is checked that the output signal is still accurate for zero, maximum and mid point electrical signal conditions <p>(See <i>Incidents in 2007</i>)</p>
30/11/2007 for 2 hours (YKS)	Studforth 2,500	Disinfection failure	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company did not keep customers informed, in so far as no customer warning to boil water during the 100 minutes of supplying undisinfected water • Possible lack of maintenance of equipment • Recommended that the company review the alarms at Studforth

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
02/12/2007 for 2 days (UU)	Macclesfield 33,000	Increased turbidity due to loss of coagulation	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company reviews all incidents of loss of coagulation in 2007, to determine common factors and address them • Recommended an update to procedures to include checks on valves on tanks during maintenance visits • Recommended that the telemetry system is able to identify the position of valves (open/closed) • Recommended that signs are placed on chemical storage tanks when they are physically isolated and the daily control log shows the status of the tank and valve
12/12/2007 for 20 hours (NNE)	Cramlington 25,473	Discolouration due to planned work	<p>Northumbrian Water actions:</p> <ul style="list-style-type: none"> • Samples taken, advised consumers to flush taps • Stopped planned work • Returned network to original configuration <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Commented on failures of the company's procedures and communication and suggested that these systems are reviewed • Recommended that appropriate information is given to the customer call centre to enable accurate advice to be given to consumers • Recommended that the company resamples all properties which fail the standards

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12/12/2007 for 24 hours (YKS)	Bramley, Leeds 26,150	Discolouration (brown) due to planned work	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company puts in place a process to ensure that adequate risk assessment is conducted before operating all strategic valves • Recommended that the company ensures that adequate and appropriate risk assessment is conducted prior to valve and pump maintenance being undertaken and that appropriate activity is conducted to mitigate the risk of such maintenance affecting water quality • Recommended the company considers whether Bramley service reservoir requires cleaning in order to prevent subsequent discolouration during future flow changes • Recommended that following a discolouration event the company ensures that adequate sampling is conducted to determine the extent and duration of any discolouration and to ensure that water being supplied has returned to a quality that meets the standards required

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/12/2007 for 24 hours (YKS)	Huby works, North Yorkshire 3,250	Disinfection failure and boil water advice	<p>Yorkshire Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice • Flushed mains • Increased chlorine residuals at service reservoir • Increased chlorine residuals in the distribution system • Provided bottled water • Replaced faulty equipment • Retrained staff • Reviewed procedures • Sampled affected area • Shut down treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Failure of Process Engineer to follow escalation procedures • Inappropriate use of shutdown override facility • Inadequate training/competence of staff (no evidence of training in escalation procedures) • Location of chlorine dosing line contributed to inaccurate positioning of temporary chlorine dosing point • Chlorine monitors defaulted to 0.45mg/l rather than zero
13/12/2007 for 9 hours (UU)	Oswestry 400,000	Loss of coagulation due to plant failure	<p>United Utilities actions:</p> <ul style="list-style-type: none"> • Coagulation restored and set up a sampling regime to check quality of water entering supply <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company amends its procedures to ensure that duty/standby equipment are regularly operated in both modes • Recommended a review of alarm settings • Recommended an increase in the frequency of pump maintenance at the works

Incidents in the Southern region in 2007

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
04/04/2007 for 33 hours (PRT)	Barnham, W. Sussex 615	Discolouration: Green/brown due to cross connection	<p>Portsmouth Water actions:</p> <ul style="list-style-type: none"> • Isolated area • Issued a Do Not Drink/Cook notice • Provided an alternative supply by tanker/bowser • Sampled affected area • Systematic flushing undertaken • Identified cause and undertook water fittings inspection. Deficiencies identified and rectified <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Well managed event

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
02/05/2007 for 29 hours (SRN)	South Gillingham, Kent 22,868	Discolouration: Brown due to planned work	Southern Water actions: <ul style="list-style-type: none"> • Action plan was developed prior to taking reservoir out of service • Implemented contingency plan bringing in water from adjacent area • Flushed dead end to the boundary valve • Dispatched inspectors to visit consumers who had complained of discoloured water to assess if flushing did resolve the problem. Sampled affected area • Post-incident review and modelling undertaken to identify the cause and learning points • Procedures for risk assessment reviewed • Additional training provided to experienced network inspectors to achieve accreditation before being able to undertake 'Safe Control of Operations' in an area • Procedure for dirty water calls modified and reissued to call centre staff

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
02/05/2007 for 29 hours (continued)	South Gillingham, Kent 22,868 (continued)	Discolouration: Brown due to planned work (continued)	<p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company did not take all practical measures to prevent this incident from happening • Critical of the company for the delay in the internal escalation of the incident which also delayed sampling • Critical of the company for not undertaking any modelling in advance of such a significant reconfiguration of the network • Critical of the company for not undertaking proactive flushing in the dead end to the boundary valve in advance of the planned work • Recommended that the company reviews the need for undertaking regular proactive maintenance at dead ends and closed valves in zones which have been identified by the company as being at moderate to high risk of discolouration • Recommended that the company identify the location of all dead end mains and closed valve locations where the flushing facilities are inadequate to generate sufficient flow to clear the main • Company to ensure they have a mechanism to either prevent the accumulation of deposits, or allow adequate flushing at sufficient velocities to remove deposits of sediment prior to operation of the valve • Company to ensure operations staff have portable turbidity monitors

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/07/2007 for 3 days (MKT)	Wittersham and Stone areas of Kent 1,250	Microbiological contamination	<p>Mid Kent Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice • Removed service reservoir from supply • Rezoned area (brought in water from different source) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company should ensure that an adequate number of samples are taken to ensure water quality is maintained and review procedures • Consideration should be given to addressing the full risks to public health • The company should review the procedures in place for the issue of Boil Water notices and the dissemination of information to consumers following failures of the water quality standards • The company should modify its procedures so that the Consumer Council for Water is notified of all incidents

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>26/07/2007 for 4 days</p> <p>(SRN)</p>	<p>New development, Bell Lane, Hoo, Kent 48</p>	<p>Taste and illness in a household due to third party mains installation on new development and unauthorised connection</p>	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Issued a Do Not Drink notice and provided bottled water • Sampled affected area and confirmed company main supplying the new development was not affected by the contamination • Flushed mains to provide a turnover of twice the calculated mains capacity • Provided an alternative overland supply and sterilised the connection made to each occupied property and associated pipework • Investigated cause of the contamination raising doubts regarding the quality of the joints on the off-site main • Handed back the off-site main to the self-lay organisation to satisfactorily complete the re-commissioning of the main • Maintained the overland supply until satisfactory test results were received <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Noted that that the company acted promptly to take samples, provide alternative supplies, investigate the cause of the problem and require corrective action from the self-lay organisations • Critical of the company for allowing an unauthorised connection to the company main • Critical of the company for not making staff available to ensure that all third party work was undertaken in accordance with the company procedures • Critical of the company for a laboratory reporting error • Company to update the Inspectorate on review of procedures • Suggested that the company should pursue further action against the self-lay organisations for poor workmanship and failure to follow procedures <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
01/08/2007 for 2 days (SRN)	Shorne reservoir, Shorne and Higham villages, Kent 6,313	Microbiological contamination: service reservoir integrity	Southern Water actions: <ul style="list-style-type: none"> • Process scientist carried out a site inspection • Investigation sampling upstream and downstream • Bypassed service reservoir • Reservoir drained and inspected. • Repaired small leaks around joints in the roof structure • Returned reservoir to service and improved turnover • Bypassing the reservoir resulted in an increase in water pressure in the Higham distribution network causing three mains bursts which resulted in discolouration events in the Higham area • Repaired the main and advised consumers of the cause of the problem • Sampled the affected area • Made bottled water available for any consumer requesting a supply • For the latter two incidents the company undertook flushing operations to clear the mains. For the event in October the flushing took place proactively before a complaint was received

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
01/08/2007 for 2 days (continued)	Shorne reservoir, Shorne and Higham villages, Kent 6,313 (continued)	Microbiological contamination: service reservoir integrity (continued)	<p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company response to microbiological contamination in the reservoir was appropriate, but critical of the company for not noting sooner that there was an issue with reservoir turnover dating back to April 2007 • Recommended that the company undertake a review of the frequency at which reservoir information on turnover chlorine residual and microbiological monitoring data is reviewed by a competent person • Suggested that the company review the frequency at which service reservoirs are proactively removed from supply to allow for thorough inspection • Noted that the company investigation to identify enabling works for the reservoir inspection identified that there was a problem with the pressure reducing valve (PRV). Commended the ingenuity of the company staff in finding a solution to the defect, but critical of the company for not undertaking a more prompt repair of a critical control valve • Suggested that the company review the reason for the delay to the repair of the PRV valve and also review the priority given to the repair of critical control valves, to ensure that problems of this kind do not recur in the future

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
15/08/2007 for 12 hours (SRN)	Higham Village, Kent (Shorne Zone) 100	Discolouration: Brown due to mains burst	<p>Southern Water actions:</p> <p>Linked to Shorne Reservoir incident described above</p> <ul style="list-style-type: none"> • Repaired the main as quickly as practicable, advised consumers of the cause of the problem and that deposits would clear • Sampled the affected area • Supplied bottled water was made available for any consumer requesting a supply • Undertook flushing operations to clear the mains <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Adequate response in relation to the discolouration incidents. No recommendations • Noted that the company has classified the zone as a priority for action and surveys will be completed in the next 12 months. This will identify any action needed to address mains deposits in the area <p><i>(See Incidents in 2007)</i></p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/09/2007 for 13 weeks (SRN)	Fawkham works and Gravesend and area to south, Kent Three zones supplied by works Nurstead (K507), Pitfield (K508) and Singlewell (K512) 68,890	Chemical contamination: Deterioration in raw water quality at Fawkham works due to Tetrachlorethene in local catchment	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Initially sampled nearby properties, then the upstream reservoir • Results positive so sampled at supplying works. • Process scientist visited works, no problems identified • Company reviewed previous monitoring data results and identified a rising trend, not previously noted • Notified the Environment Agency (EA) and requested they investigate potential pollution sources in the catchment. Liaised with the EA and provided additional information as requested • Commenced an enhanced monitoring programme for the raw water at Fawkham works • Company investigating the potential for use of an on line monitor as well as the potential for treatment using Granular Activated Carbon (GAC) should levels rise again <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Once aware of the contamination the company response was generally satisfactory, including enhanced monitoring and liaison with Kent Health Protection Unit • Critical that the company did not detect earlier a clearly rising trend in tetrachloroethene concentrations from their own data • Critical that once the failure in the zone was detected, the company did not review historic data and realise immediately that the problem was in the raw water at the works. Consequently, there was delay before the works was sampled • Recommended that the company review their procedures to ensure a competent person reviews all relevant data when a breach is reported

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
26/09/2007 for 13 weeks (continued)	Fawkham works and Gravesend and area to south, Kent Three zones supplied by works Nurstead (K507), Pitfield (K508) and Singlewell (K512) 68,890 (continued)	Chemical contamination: Deterioration in raw water quality at Fawkham works due to Tetrachlorethene in local catchment (continued)	<p>DWI comments and findings (continued):</p> <ul style="list-style-type: none"> • Very critical that the company were rounding sample results to the nearest full integer when calculating the sum of tetrachloroethene/trichloroethene. This resulted in a failure to report an earlier zone breach • Information provided by the Environment Agency has indicated that there are significant risks of hydrocarbon and tetrachloroethene contamination within the Fawkham works catchment. As a result the Inspectorate consider that the contamination is likely to recur • Concluded that the company does not currently have an adequate action plan in place for addressing the risk in the catchment • Recommended that the company put in place, as a matter of urgency, an action plan for addressing the risk from tetrachloroethene, to ensure that no consumer receives water which will breach the regulatory standard • Letter sent to company indicating minded to initiate enforcement action (See <i>Incidents in 2007</i>)
03/10/2007 for 48 hours (MKT)	12 houses in Paddock Wood, Kent. and Paddock Wood Service Reservoir 16,250	Microbiological contamination at several properties and service reservoir	<p>Mid Kent Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir and removed it from supply • Flushed mains • Sampled affected area • Provided an alternative supply by tanker/bowser <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate operational monitoring strategy in particular on-line measurement. key parameters such as microbiological determinands, turbidity, total organic carbon, and also zooplankton/biological to determine and monitor the potential for regrowth and impact on the receiving distribution system before microbiological growth is detected in the zone (See <i>Incidents in 2007</i>)

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>11/10/2007 for 3 days</p> <p>08/12/2007 for 2 days</p> <p>and</p> <p>21/12/2007 for 1 day</p> <p>(SRN)</p>	<p>Twyford works, Twyford, Moorhill, Eastleigh & Hedge End, Hampshire</p> <p>149,174</p>	<p>Microbiological contamination at treatment works, service reservoir and consumers' taps</p>	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Inspected works • sampling point location moved to the inlet of the reservoir; and the replacement of the duty and standby dosing pumps replaced for both salt and hypochlorite in November 2007 • Chlorine control instrument (CRIT) and OSEC plant were given a full service to ensure that they were operating correctly • Commissioned a consultant to produce an independent report • Commenced drain down and inspection of the reservoir • Soil cover to the reservoir was removed and a membrane seal placed over the structure • Remedial work was needed on construction joints • Borehole 2 was removed from service and a CCTV survey was scheduled • an earlier survey of the sewers on, and adjacent to, the site had indicated a number of defects with the potential to allow ex-filtration of sewage, including displaced joints and fractures • the works toilet which is also used by a club on the site was closed and replaced with a portaloo

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>11/10/2007 for 3 days</p> <p>08/12/2007 for 2 days</p> <p>and</p> <p>21/12/2007 for 1 day</p> <p>(SRN)</p> <p>(continued)</p>	<p>Twyford works, Twyford, Moorhill, Eastleigh & Hedge End, Hampshire</p> <p>149,174 (continued)</p>	<p>Microbiological contamination at treatment works, service reservoir and consumers' taps (continued)</p>	<p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The company should ensure that all critical monitors are routinely serviced and calibrated in accordance with the company maintenance procedures • The Inspectorate was disappointed that five months after the first coliform breach in October 2007 the company have been unable to provide an accurate calculation of contact time (Ct) • The Inspectorate was disappointed that this work did not commence until after the meeting with the Inspectorate on 23 January 2007 • The microbiological failures reported at the works from 1 October to 29 February are likely to be related to a combination of the following factors: A deterioration in the raw water quality, insufficient control of free chlorine dosing, potential for contamination in the contact mains located between the site and the reservoir and insufficient contact time • The company has been required to take action to ensure that they are able to achieve a Ct of 15mg.min/l • The company should undertake a CCTV survey and mains cleaning operation to identify and eliminate any risk to the water supply <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
22/11/2007 for 2 hours (SEW)	Areas supplied by Heathfield Service reservoir, East Sussex 3,750	Discolouration: Brown due to mains burst	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir • Flushed mains • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The actions taken to flush the area during the incident were ineffective and discolouration persisted for a long duration • Recommended that the company reviews its Distribution Operations and Maintenance Strategies (DOMS) and discolouration classification of the area to ensure that learning points from this incident can be incorporated • Recommended that the company reviews its policy on the flow velocity used for flushing following a mains repair • Modelling would have allowed a more targeted approach to flushing which would have mitigated against the ongoing nature of the discolouration

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
29/11/2007 for 3 days (SRN)	Supplies from Brede works, Sussex 104,000	Pesticides detected in raw water due to ground contamination/spillage pesticide	<p>Southern Water actions:</p> <ul style="list-style-type: none"> • Investigation samples taken from all sources supplying Brede water treatment works, from the works and zone • Water transfer from Brede River to Powdermill Reservoir stopped. Transfer of water from Powdermill to Brede water treatment works stopped • Further investigation sampling at the sources, works, service reservoir and in three zones supplied • Brede water treatment works is now supplying water from boreholes and Darwell raw water reservoirs which has been shown to be uncontaminated. Water in supply is also being blended with water from Beauport water treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended improvements to the way the company takes samples to inform decisions • That the company reviews and updates its water safety plan for Brede to reflect knowledge of the catchment <p><i>(See Incidents in 2007)</i></p>

Incidents in the Thames region in 2007

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
11/01/2007 for 5 days (TMS)	Fairford, Gloucester 6,250	Sudden rise in turbidity following heavy rain and landslide	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Raised height of, and sealed the covers on, the well • High level vent installed • Inundation tests undertaken to establish the integrity of the seals on the hatches and the various joints on the collecting chamber resealed where leaking • Turbidity lockout installed • Review of <i>Cryptosporidium</i> risk assessment taking into account operational filter max monitoring • Considered implication for other sites <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company to update <i>Cryptosporidium</i> risk assessment • Company to review Boil Water notice procedure to ensure all consumers receive it • Alarms relating to the quality of water should be acted upon and verified prior to returning the supply to service where they are accepted by the control room. • Insufficient sampling for <i>Cryptosporidium</i> to assess risk to water in supply <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>30/04/2007 for 48 hours</p> <p>(TVW)</p>	<p>Fairfield Reservoir No 2, Epping, Theydon Bois, Abridge and Marden Ash in Essex</p> <p>13,493</p>	<p>Discolouration: Brown due to increased flow to reservoir disturbing deposits</p>	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Customer Call Centre informed of action being taken to rectify the situation • Used network modelling and plotting consumer complaints to identify the cause as increased flow to the reservoir disturbing sediments • Sampled affected area • Instructed Control Centre to limit the rate of flow into Fairfield Reservoir • Installed actuator on the inlet valve after the incident • Scheduled reservoir to be taken out of service and cleaned • Company investigating the options for removing manganese from the raw water at Roydon water treatment works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Expressed disappointment that the company did not take action sooner to address a faulty valve at the inlet to the reservoir • Critical of the company for not initially exercising sufficient control over water flow into the reservoir during a planned operation to prevent sediments which had accumulated in the reservoir from being mobilised • Concluded that the company acted appropriately in dealing with this incident once it started to receive discolouration calls • Considered that appropriate action was taken by the company to prevent a recurrence

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/05/2007 for 2 days (TMS)	Maida Vale, W9 5,600	Taste or odour: Chlorine due to planned work by company staff	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Closed valve and removed mobile chlorination unit • Network Technicians sent to measure the chlorine level • Company bulletin board informed callers not to drink and bathe using water • Delivery of Do Not Drink notices to three roads after initiation of the bulletin board notice • Company reminded its network operatives of the need to adhere to its Best Operating Practice procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Critical lack of experience of some of the company's field staff was criticised, company to interview those involved to determine the reasons for the incident • Company recommended to ensure its field staff are adequately equipped and that this equipment is maintained and available for use • Company was criticised for apparently having two different method statements for the same job • Company criticised for not monitoring chlorine concentrations during its main disinfection activities • Company reminded to ensure the correct advice is issued to consumers <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>20/07/2007 for 4 days</p> <p>(SES)</p>	<p>Sutton, Cheam, Morden, Worcester Park and Stoneleigh</p> <p>49,180</p>	<p>Issue of advice following ingress of rainwater in the contact tank</p>	<p>Sutton and East Surrey Water actions:</p> <ul style="list-style-type: none"> • Issued a Boil Water notice delivered by Royal Mail • Sampled affected area • Shut down works and drained to waste • Followed medical advice • Provided bottled water on request • Issued press release and updated website • Sensitive and key account consumers contacted • Loud hailer vans dispatched <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended the company inform DWI of measures taken to ensure the quality of work undertaken by contractors • Recommended the company sample over a wider spatial area in response to similar events • Recommended the company review incident procedures to ensure roles and responsibilities are clearly identified • A criticism was also made over the decision to issue a Boil Water notice <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
20/08/2007 for 2 hours (TVW)	Holywell Water Treatment Works 18,750	Disinfection failure works shut down on a low chlorine alarm	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Shut down treatment works • Increased chlorine residuals at service reservoir • Repaired faulty equipment • Reviewed procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company review the training provided to authorised persons and the criteria which deems personnel competent to operate an override of consumer protection devices • Recommended that a review be made of all alarm levels associated with the chlorine residuals at this site and their handling and acceptance, and the subsequent trigger level of the consumer protection device • Recommended that all on-site investigations of disinfection related alarms include a requirement for manual testing of on-site chlorine residuals be made. It was concluded that had this been carried out by the technician, the loss of chlorination would have been identified at an early stage
04/09/2007 for 18 hours (TMS)	Burnt Ash Hill SE12 9,155	Loss of supplies due to mains burst during planned work	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Repaired main following an extended mains shut down • Sampled affected area • Opened seven infusions to support water supplies in the area affected <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • It was suggested that the company investigate valves found in an unexpected status to confirm their identity • It was suggested that the company investigate a means of positively identifying its assets to avoid future confusion

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
21/09/2007 for 4 days (TMS)	Pamber Heath Reading 1,875	Issue of Do Not Drink advice following a problem with planned work on distribution system	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Bottled water hand delivered to special needs customers • Flushed mains • Issued a Do Not Drink notice to approx 750 properties • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Incident caused following flushing of a newly identified cross-connection, via a previously isolated main, and both then being placed in supply • Company recommended to consider the direction of water flow during flushing activities, so that water flows are into, and not out of, isolated mains • Clearance criteria after mains flushing is to be amended • Company recommended to review all aspects of its risk-management process • Company responded quickly and appropriately once the incident had occurred <p><i>(See Incidents in 2007)</i></p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>26/09/2007 for 2 days</p> <p>(TVW)</p>	<p>Sawbridgeworth (Essex and Herts) 17,500</p>	<p>Microbiological contamination at Redricks Lane treatment works</p>	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Treatment works automatically shut down • Production Technician attended site to identify and rectify the cause of the failure • Sustained level in tank by increasing flow from normal support system • Took samples from the treated water tank and zones • Carried out systematic inspection of the works • Increased chlorine residuals by dosing with sodium hypochlorite solution • The works was taken out of supply and water from the trunk main connected to the Harlow distribution network while the matter was resolved <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended the company amends its procedures to ensure that staff take readings from the monitor during site visits and considers linking this monitor to its telemetry system or to a local alarm • Recommended that the company takes steps to ensure that appropriate levels of chlorine residual are maintained in water leaving Sawbridgeworth site at all times. <p><i>(See Incidents in 2007)</i></p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
30/09/2007 for 9 weeks (TMS)	Epping Forest Water Supply Zone 48 43	Petrochemical taste due to mains burst	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Issued a Do Not Drink notice • Provided bottled water on request • Sampled affected area • Completely replaced the affected section of main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Burst main promptly repaired, but flow changes caused detachment of coal tar lining inside the main • Taste complaints due to the coal tar lining prompted flushing of the main, but this only worsened the situation • Problem also did not resolve upon allowing the main to settle and thus the affected section of main was replaced
05/10/2007 for 10 weeks (SES)	Bough Beech Supply Zone 10,783	Propyzamide contamination of source	<p>Sutton and East Surrey Water actions:</p> <ul style="list-style-type: none"> • Reduced the works output to increase treatment times • Regenerated the activated carbon pesticide removal media • Refilled the reservoir with river water as soon as abstraction licence allowed, to dilute the pesticide concentrations in the reservoir • Investigated the source of the pesticide • Revised pesticide monitoring suite <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Periodic analysis of all pesticides used in a catchment should be undertaken to determine background concentrations • Company should take more proactive and affirmative action to ensure water quality standards are met in future • River water quality monitoring data should be obtained and consulted prior to abstraction to avoid contamination events and pollution plumes • A Drinking Water Safety Plan should be rapidly progressed and measures appropriate to the potential risks identified and acted upon (See <i>Incidents in 2007</i>)

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>26/10/2007 for 24 hours</p> <p>(TMS)</p>	<p>Oxford City Centre, OX1 28</p>	<p>Excessively high chlorine associated to work by contractors</p>	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Flushed mains • Issued a Do Not Use notice, followed by a Boil Water notice until the all clear could be given • Provided bottled water • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • High chlorine caused by a third party • Company issued Do Not Use notices and bottled water while the water supply was isolated and flushed • Event rapidly resolved during the night with minimal disruption • Regular communication given by the company to the affected consumers <p>(See <i>Incidents in 2007</i>)</p>
<p>22/11/2007 for 3 days</p> <p>(TVW)</p>	<p>Dancers Hill Rd, Barnet, Herts. 5</p>	<p>Issue of warning/advice: Do Not Drink notice due to microbiological contamination in distribution</p>	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Repaired main, flushed from hydrant and collected sample. Sample positive for coliform bacteria and <i>E.coli</i> • Sampled adjacent properties and all clear • Repeated samples at the original property failed • Consulted with the Health Protection Unit, then issued advice to consumers • Further investigation identified that the supply was off a dead-end section of main beyond the hydrant used for flushing. The section of main to a closed buried valve was flushed and further samples collected • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Adequate investigation and appropriate action taken by the company. No recommendations made

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>30/11/2007 for 1 week</p> <p>(TMS)</p>	<p>Robinson Close, Argyle Road, Ealing, W13 425</p>	<p>Taste and odour: Petrol due to ground contamination/spillage</p>	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Flushed mains • Issued a Do Not Drink notice • Sampled affected area • Provided bottled water <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Leaking main repaired, although damaged again by a collapse of the excavation wall. Company recommended to assess the safety and potential for collapse of excavations and take precautions as appropriate • Main repaired for a second time but leaked again • Petrochemical odour detected from the trench, but not reported. Company recommended to investigate the cause of any such contamination and its potential to affect supplies • Mains isolated, flushed and area sampled before Do Not Drink advice lifted

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>17/12/2007 for 4 weeks</p> <p>(TVW)</p>	<p>Little Gaddesden, Hertfordshire 1,055</p>	<p>Evidence of chemical contamination: Elevated levels of PAH and Benzo(a)pyrene due to coal tar deposits suspended as supplies restored following repair to two burst mains</p>	<p>Three Valleys Water actions:</p> <ul style="list-style-type: none"> • Flushed mains overnight • Sampled affected area • Further passive flushing to address ongoing turbidity • Liaised closely with Health Protection Unit and agreed repeat sampling and enhanced monitoring programme • Company issued Do Not Drink advice to 11 properties, these consumers were supplied with bottled water until the notice was lifted • Lifted the notice once two sets of sample results were received <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company makes a review of sampling during events to ensure that areas such as dead legs or low flow are taken into account to ensure that water quality changes across all areas of the distribution network affected can be appraised • Recommended that to make effective use of modelling in such circumstances to inform risk assessment • Recommended that consideration be given to long-term replacement of strategic mains in the Gaddesden area to prevent a recurrence.

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
<p>28/12/2007 for 4 days</p> <p>(SEW)</p>	<p>Greyshott and Hindhead, Surrey</p> <p>43</p>	<p>Discolouration : brown due to planned work</p>	<p>South East Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Flushed area • Reviewed procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Minded to recommend enforcement action • Measures put in place by the company have failed to prevent a recurrence • Welcomed actions by company since the incident to Install controls and mprove pumping arrangements and alarms • It was recommended that the company review the treatment processes at the Tilford Rushmoor site supplying this zone • As this is a repetition of a previous incident. The company has been asked to provide robust evidence and support to demonstrate that a recurrence can be prevented and to mitigate against the need for The Inspectorate to consider enforcement action. The Inspectorate will be closely monitoring the companies actions taken in response to this incident during 2008

Incidents prior to 2007 where assessment was completed in 2007

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/11/2006 for 2 days (TMS)	Ashford Common works 0	Failure of disinfection control	<p>Thames Water actions:</p> <ul style="list-style-type: none"> • Shut-in the ring main to prevent highly chlorinated water from reaching consumers • De-chlorinated the water and discharged it into the River Thames <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • No recommendations were made since the company had identified the cause and carried out appropriate remedial action. There were no wider lessons
29/11/2006 for 1 day (TVW)	Colney Heath, near Hatfield, Herts 8	Discolouration due to mains cross-connection	<p>Three Valleys Water action:</p> <ul style="list-style-type: none"> • Customer Services Technician visited properties and investigated the cause • Isolated supplies to the properties • Delivered bottled water • Connected properties to treated water main • Disinfected associated pipework • Checked no other properties were connected to untreated main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Failure of recording changes to status of mains • Prosecution pursued (<i>See Incidents in 2007</i>)

Incidents in the Western region in 2007

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
06/02/2007 for 24 hours (BRL)	Hotwells Road area of Bristol 44,576	Discolouration: Brown due to mains burst	<p>Bristol Water actions:</p> <ul style="list-style-type: none"> • Rezoned area (brought in water from different source) • Flushed mains • Repaired main • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Actions of company swift and appropriate • Affected area quickly rezoned and main repaired within 23 hours • Few discolouration calls received relative to affected population across the city • Inspectorate satisfied with company's response. Therefore, no recommendations or suggestions made
10/04/2007 for 2 weeks (WSX)	Area supplied by Black Lane works 17,480	High nitrate concentration due to failure of ion exchange plant	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Repaired faulty equipment • Replaced faulty equipment • Review of procedures • Retrained staff <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Failure of monitors and equipment to generate alarms or auto-shutdown of works • Failure to communicate potential issues onsite • Inadequate configuration of alarms upon plant commissioning • Inadequate notification of the relevant authorities
11/06/2007 for 47 hours	Area supplied by Fovant works	Disinfection failure	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
(WSX)	1,549		<ul style="list-style-type: none"> • Repaired faulty equipment • Reviewed procedures • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Failure of disinfection process • Failure of chlorine monitors and system to generate alarms for loss of disinfection to trigger an auto-shutdown of works • Inadequate configuration of alarms • Site records not maintained to a satisfactory standard • Accuracy and timeliness of relevant information reported to the Inspectorate inadequate • Procedures for response to/investigation of auto-shutdown need improving • Procedures for the design and commissioning of new plant unsatisfactory • Company failed to meet the requirements of The Water Undertakers (Information) Direction 2004 <p>(See <i>Incidents in 2007</i>)</p>
27/07/2007 for 18 hours (SWT)	Newquay and Crantock areas of Cornwall served from Restormel works by Coswarth service reservoir 3,400	Loss of supplies due to burst main	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir • Increased chlorine residuals at service reservoir • Provided an alternative supply by tanker/bowser • Repaired main • Sampled • Reviewed procedures and alarm settings <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Sampling was inadequate to determine the extent of the discolouration and it was recommended that the company take samples from the area at the time that discolouration occurred

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
16/07/2007 for 11 days (WSX)	Sutton Bingham Zone near Yeovil 34,423	Mecroprop detected in treated water	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Source removed from supply • Liaised with Environment Agency • Purchased equipment to enable rapid analysis for Mecoprop • Enhanced monitoring strategy implemented • Applied to Inspectorate for authorised departure <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recurrence of breach of regulations due to pesticides (Previous occurrence December 2005) • Company's actions insufficient to prevent recurrence • Failed to notify all relevant authorities • Company failed to meet the requirements of The Water Undertakers (Information) Direction 2004 • Enforcement action considered <p>(See <i>Incidents in 2007</i>)</p>
10/08/2007 for 7 hours (SWT)	Moretonhampstead (Bovey Cross) 3	Health and Safety incident due to incorrect chemical delivery	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Precautionary hospitalisation of three people • Reported 'Dangerous Occurrence' to the Health and Safety Executive • Building vented and tank contents removed from standby tank for disposal • Company answered enquiries from the press • Reviewed procedures with supplier and third party chemical delivery company <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Erroneous chemical delivery • No effect on water quality • Health and Safety Executive lead investigating agency • Inspectorate's assessment ongoing <p>(See <i>Incidents in 2007</i>)</p>

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
04/09/2007 for 48 hours (SWT)	Ash Service Reservoir, near Dartmouth 2,500	Loss of supplies due to burst main	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Provided an alternative supply by tanker/bowser • Re-valved supplies • Gave interviews to two local radio stations • Repaired main • Sampled <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company repaired main effectively • Sampling was inadequate to determine the extent of the discolouration and it was recommended that the company take samples from the area and time that discolouration occurred
21/09/2007 for 5 days (SWT)	Carbis Bay, Cornwall (St Ives) 7,500	Loss of supplies due to burst main	<p>South West Water actions:</p> <ul style="list-style-type: none"> • Isolated burst • The company re-valved to restore supplies to the bulk of the affected area effective within nine hours • Provided an alternative supply by tanker/bowser • Issued media briefing to newspapers, television and radio companies • Sampled affected area • Repaired main <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company repaired main effectively • Sampling was inadequate to determine the extent of the discolouration and it was recommended that the company take samples from the area and time that discolouration occurred.

Date and duration	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
17/10/2007 for 3 days (WSX)	Fir Hill service reservoir complex, Fovant, near Salisbury 1,550	Microbiological contamination	<p>Wessex Water actions:</p> <ul style="list-style-type: none"> • Service reservoir taken out of service, emptied and inspected • Deficiencies identified and prioritised <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Sampling facilities not representative • Evidence that ingress could occur <p><i>(See Incidents in 2007)</i></p>
15/11/2007 for 8 weeks (BRL)	Purton works near Gloucester 383,594	Metaldehyde in treated water	<p>Bristol Water actions:</p> <ul style="list-style-type: none"> • Treatment process effectiveness enhanced • Additional treatment implemented • Sampling • Notified bulk importer • Arranged for flushing of canal (Source of raw water) • Contacted the Farming and Wildlife Advisory Group who wrote to land owners about metaldehyde • Commissioned the Water Research Council to carry out an evaluation of treatment removal for metaldehyde • Liaised with the Environment Agency • Liaised with the manufacturer and suppliers of metaldehyde • Applied to Inspectorate for authorised departure <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Notification of relevant authorities inadequate • Advanced priority not given to analysis when increased risk of hazards known • Company failed to meet the requirements of The Water Undertakers (Information) Direction 2004 • Enforcement action considered <p><i>(See Incidents in 2007)</i></p>

Incidents in Wales in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
11/01/2007 for 9 hours (DWR)	Areas supplied by Talybont works including Brecon, Crickhowell, Abergavenny, Usk, Pontypool, Blaenavon. Cwmtillery. 100,000	Loss of power supply due to adverse weather conditions affecting treatment process	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Maintained power to essential treatment processes including disinfection by using a battery back up and standby generator • Enhanced manual on-site testing when on-line monitoring capability was lost • Arranged for additional standby generation capability to be available in the event of the power outage being prolonged • Reduced flows through works by shutting down pumping station <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate investigations into the root cause of the discrepancies between manual and on-line monitor chlorine readings <p>Recommended that chlorine be run in manual mode in future similar situations at this and other works</p> <ul style="list-style-type: none"> • Improvements in provision for on-site treated water and additional stand-by generation under consideration

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/04/2007 for 4 days (DWR)	North/West Whitchurch, Cardiff 5,113	Discolouration (brown) due to burst main	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Repaired and flushed the main during the incident, further strategic flushing undertaken in June 2007 • Provided bottled water on request • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Supplied unwholesome water in breach of regulations • The Inspectorate noted the sudden increase in flow was due to Cantref works coming back on line and were critical that the company did not appear to have carried out a risk assessment before bringing Cantref back into supply, including the reduction in the output from Llwynon works around the time Cantref water treatment works was brought back on line – this may have reduced the likelihood of discoloured water • Company commended for extensive flushing operation carried out in June 2007
16/05/2007 for 7 days (DWR)	Plas Glantraeth Estate, Bangor, Gwynedd 155	Issue of Do Not Drink notice due to diesel/PAH taste and odour	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Issued a Do Not Drink notice • Provided bottled water for affected consumers • Sampled affected area • Undertook catchment investigation to identify potential sources of contamination • Mains cutouts taken and submitted to laboratory for polycyclic aromatic hydrocarbon (PAH) analysis <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company consider an investigation of the 250mm main to include mains cut-outs as appropriate • Estate has been revalved and the 250mm main taken out of use • Company commended for its liaison with consumers, the thoroughness of its investigation and for continuing with the monitoring programme despite the apparent resolution of the problems on the estate

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
24/06/2007 for 5 days (DWR)	Lower Swansea Valley area 53,000	Discolouration: (brown) following burst mains	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Provided bottled water on request • Repaired and flushed the mains • Sampled affected area • Increased chlorine residuals at treatment works • Increased flow through treatment works to support distribution system • Reviewed procedures <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Company have undertaken a review of procedures for altering flow through works and in distribution and have made some changes • Delay in notification to DWI and other stakeholders, company reminded of need for prompt notification
08/07/2007 for 9 days (SVT)	Westbury zone near Shrewsbury, Shropshire 1,574	Microbiological contamination due to structural problems with Ford (Broadway) service reservoir	<p>Severn Trent Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Sampled affected area • Removed service reservoir from supply • Rezoned area (brought in water from different source) • Undertook internal inspection, identified deficiencies and remedied them <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Ingress via roof of service reservoir identified and remedied. • Inlet valve found to be closed resulting in poor turnover • Further coliform failure in August <p>(see <i>Incidents in 2007</i> section)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
13/07/2007 for 3 days (DWR)	Rhyl, Kinmel Bay, Towyn, Rhuddlan and Bodelwyddan 19,000	Discolouration (brown) following burst mains	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Repaired main • Provided bottled water on request • Sampled affected area • Rezoned area (brought in water from different source) <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Discolouration caused by increase in flows due to the rezoning • Company commended for its speed of response in restoring supplies to consumers
23/07/2007 for 7 days (DWR)	Whitbourne works area of supply – Bromyard and surrounding area 17,500	Issue of Boil Water notice as precaution following flooding of works	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Works reinstated • Issued a Boil Water notice • Provided an alternative supply by tanker to some service reservoirs • Press and media releases issued • Rezoned part of supply area with Severn Trent Water bulk supply (700 consumers) • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The Inspectorate concluded that the incident was well managed, but considered that there was some conflicting advice given in terms of the Boil Water notice which may have caused some confusion for consumers <p>(see <i>Incidents in 2007</i> section)</p>

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
03/08/2007 for 2 days (DWR)	Merthyr Tydfil and surrounding area 100,000	Elevated aluminium levels in water leaving Pontsticill works due to problems with lime dosing plant	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Process investigation undertaken at works • Faulty equipment repaired and restored to normal operation • Sampled affected area • Review to be undertaken to identify similarly vulnerable sites and remedial actions to be taken where appropriate <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Supplied unwholesome water in breach of regulations • Company commended for extensive programme of remedial actions in response to the problems with the lime dosing plant • Company reminded of the importance of including all relevant information in the final incident report
17/08/2007 for 2 days (DWR)	Area supplied by Penmynydd service reservoir Llanfairpwll, Llanddaniel, Gaerwen, Llangefni, Beaumaris, Llangoed and Menai Bridge 17,156	Microbiological contamination of service reservoir: <i>E.coli</i> in supply	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir – initially by manual chlorination and subsequently by chlorination trailer • Sampled affected area • Removed compartment No.1 of service reservoir from supply to improve efficiency of chlorination and to minimise potential for contaminated water entering supply • Undertook external and internal inspections at the site • Undertook a review to ascertain any potential short-circuiting within the service reservoir and considered installing a more permanent chlorination system at an upstream service reservoir <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that company rectify deficiencies noted in the external and internal site inspections as soon as practicable • Recommended that company work with the laboratory to ensure that final reports are only issued when results are complete. • Recommended that compartment No.2 of service reservoir be drained down and inspected at earliest opportunity (see <i>Incidents in 2007</i> section)

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
21/08/2007 for 3 days (DWR)	Area supplied by Llithfaen service reservoir. Lleyn Peninsula including the villages of Llithfaen and Pistyll 593	Microbiological contamination of service reservoir: <i>E.coli</i> in supply	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Bypassed service reservoir • Increased chlorine residuals in the distribution system • Removed service reservoir from supply • Sampled affected area <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Inadequate communication with customers following positive <i>E.coli</i> results • Inadequate investigations into root cause • Resamples taken from service reservoir only after chlorination • Unacceptable delay in taking the service reservoir out of service • Inadequate communication with health professionals following positive detection of <i>E.coli</i> in consumer properties • Inadequate follow-up sampling. Only resampled one failing property (see <i>Incidents in 2007</i> section)
25/09/2007 for 9 days (DVW)	Sugn y Pwll service reservoir area of supply. Cefn, Trevor, Froncysyllte, Acrefair and Ruabon. 15,113	Microbiological contamination of service reservoir: <i>E.coli</i> in supply	<p>Dee Valley Water actions:</p> <ul style="list-style-type: none"> • Increased chlorine residuals at service reservoir • Undertook daily sampling while investigations were ongoing • External site inspections undertaken • Drained down each half of the service reservoir in turn and undertook internal inspections <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Recommended that the company consider installing a more robust form of temporary chlorination • Company commended for its action in taking daily samples for an extended period of time while investigations were ongoing • Recommended that the company review its procedures to ensure that site inspections are undertaken in a more timely manner • Company commended for keeping stakeholders informed by regular verbal updates on progress (see <i>Incidents in 2007</i> section)

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
27/09/2007 for 2 days (DWR)	Area supplied by Bryn Cowlyd works. Llandudno and Colwyn Bay area 85,529	Loss of telemetry/control systems including chlorine dosing after an electrical failure	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Staff attended site and restored emergency power supplies • Treated water tank manually dosed with chlorine • Sampling surveys undertaken at works and in distribution • Chlorine dosing undertaken on the trunk main system and at potentially vulnerable service reservoirs • Modifications made to works control system to prevent a recurrence <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • The Inspectorate were minded to make a recommendation regarding the works control system and the need for appropriate failsafe shutdown. However, the appropriate remedial actions had already been undertaken by the company
19/10/2007 for 3 hours (DWR)	Area supplied by Builth works - Builth Wells and surrounding area 6,284	Sub-optimal treatment due to coagulant line blockage	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • The coagulant blockage was cleared and the coagulant dose restored • Unlikely to cause customer concern • Sampled affected area • Coagulant dosing now linked to alarms and shutdown of works if it fails <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Suggested that consideration be given to an automatic switchover between the main and the back up coagulant dosing tanks

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
24/10/2007 for 18 hours (DWR)	Area supplied by Llyswen works – Llyswen, Hay on Wye, Talgarth and surrounding areas 10,100	Elevated levels of aluminium following plant power failure	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Undertook thorough process investigations with an emphasis on optimising coagulant dosing and the works coagulant control system • Manual filter washing operation carried out • Sampled affected area • Discharged proportion of works flow to waste while incident was ongoing <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Suggested that the company reviews the maintenance frequencies for the pH monitors at the works • Recommended that the company continues to develop its coagulant control system to ensure that it is able to cope with all raw water conditions • Company commended for the thoroughness of its process investigations
04/07/2007 for 23 hours 15/08/2007 for 8 hours and 30/10/2007 for 17 hours (DWR)	Three separate incidents – Area supplied by Capel Dewi works, Carmarthen and surrounding areas 27,343	Elevated iron levels in final water due to deterioration in raw water quality following heavy rainfall	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Level of customer complaints monitored • Process control scientists on site to optimise treatment • Short-term remedial actions and site modifications undertaken to minimise the risk of a further similar incident, investment proposal developed as a permanent solution <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Noted that the short-term remedial actions undertaken appear to have been successful, however, recommended that the long-term solution be progressed at the earliest possible opportunity • Enforcement action will be taken for any repeat occurrence in the interim period (see <i>Incidents in 2007</i> section)

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
11/12/2007 for 2 days (DWR)	Area supplied by Pendine works – Pendine, Whitland, Laugharne, St Clears and parts of rural Carmarthenshire 7,781	Elevated turbidity due to deterioration in raw water quality	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Sampled affected area • Manual filter washing undertaken • Filter taken offline following the identification of a specific problem • Works flow reduced to reduce solids loading on filters <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Suggested that the mixing arrangements in the raw water reservoir be reviewed • Recommended that the company undertake a review of all site alarms, including links to emergency shutdown

Incidents prior to 2007 where assessment was completed in 2007

Date and duration (Company)	Area and estimate of population affected	Nature and cause of the incident	Main actions and findings from the Inspectorate investigation
12/12/2006 for 13 hours (DWR)	Area supplied by Pontsticill works: Merthyr Tydfill area 100,000	Elevated aluminium concentration in water supplied by Pontsticill works following power failure	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Restored power supplies and restarted treatment process • Samples affected area • Reduced flow through works to allow filters to be washed <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Further related incident occurred 20/12/2006 – see below

Date and	Area and	Nature and cause of	Main actions and findings from the Inspectorate investigation
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duration (Company)	estimate of population affected	the incident	
20/12/2006 for one day (DWR)	Parts of Merthyr Tydfill and Bedlinog 8,000	Discolouration (brown) following loss of supplies from Pengarnddu service reservoir	<p>Dŵr Cymru Welsh Water actions:</p> <ul style="list-style-type: none"> • Provided tanker supply to local hospital and food premises • Provided bottled water on request • Rectified hydraulic fault at Pontstcill works to restore flow to Pengarnddu service reservoir • Undertook process review at Pontstcill works <p>DWI comments and findings:</p> <ul style="list-style-type: none"> • Related to incident on 12/12/2006 above, linked to treatment process problems and filter washing at Pontstcill works <p>Recommended that air compressor was adequate to provide back-up for treatment process</p> <p>Recommended that a full investigation be carried out to identify the nature of the fault on the filter washing process and to identify any remedial actions required to prevent a recurrence</p> <p>Recommended that the company undertake a full review of all process plants on site, including current maintenance programme to identify areas of vulnerability</p>

Note: A complete table of incidents in England and Wales in 2007 can be found on the CD in the folder. It is named **Incidents in England and Wales 2007.pdf**. It is also available on the DWI website at <http://www.dwi.gov.uk>