



ANNUAL REPORT ON  
DRINKING WATER QUALITY  
2007

**YEAR ENDED 31<sup>st</sup> DECEMBER 2007**

## FOREWORD

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The provision of safe, clean drinking water to our customers remains the most important responsibility we have. In 2006 we achieved our best ever performance recorded at water treatment works with the achievement of 100% compliance for both total and faecal coliforms – a first ever for the combined water and sewage water companies. In 2007 this level of performance was maintained in South Wales however it was not maintained for all sites in North Wales, which resulted in a slight decline in overall bacteriological compliance. Also in North Wales as a result of several WTWs not having organic removal, performance against the Trihalomethane (THM) standard declined in 2007 as a direct result of the changes seen in raw water sources following high rainfall in summer and autumn 2007.

In general the company has recorded a steady improvement since the implementation of the Water Supply (Water Quality) Regulations and this level of compliance demonstrates the commitment of the company and its partners to deliver water of the highest standard.

2007 saw the first anniversary of a 'Water Health Partnership for Wales', an initiative launched by Welsh Water that brings together various relevant public agencies to agree how we can work together more effectively to protect public health. Work to date has led to improved communications and understanding of the respective public health roles and responsibilities of the Welsh Assembly Government, the Drinking Water Inspectorate (DWI), the Consumer Council for Water Wales, local authorities, health professionals, emergency planning agencies, and the National Public Health Service Wales (NPHS). Welsh Water appointed a Public Health Scientist to lead on the Water Health Partnership initiative and to provide expertise on drinking water related public health issues.

In the last year the water quality management of the business has been enhanced by the creation of 5 new water quality posts in Welsh Water and United Utilities Operating Services (UUOS). The primary focus of these roles is on the development, implementation and subsequent management of Drinking Water Safety Plans (DWSP's). This risk based approach to the management of the water supply chain will provide a structured process to identify, investigate and control risks to water quality.

Applying the new DWSP methodology and in light of the deterioration in raw water quality, Welsh Water is currently developing plans for 18 WTWs where investment in additional treatment would further mitigate water quality risk at a cost of around £100 million.

Further information on our performance and key issues of interest or concern to our customers is included in this report.

To assist the Board in its scrutiny and oversight of the business, the Quality and Environment Committee of the Board ("QEC"), chaired by Dame Deirdre Hine, meets monthly to review key performance and strategic issues. At these meetings, QEC is advised by independent advisors with experience and knowledge of water quality and environmental strategy and performance. QEC produces an Annual Report which is available on the Welsh Water's website ([WWW.DWRCYMRU.COM](http://WWW.DWRCYMRU.COM))



Nigel Annett  
**Managing Director**  
Dŵr Cymru Welsh Water

## Register of Drinking Water Quality

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Welsh Water maintains a public register of water quality in each of its water supply zones, together with details of all programmes of improvements to water supplies which Welsh Water has undertaken to complete.

Most areas can be served from more than one source of drinking water. This is an important safeguard for the security and reliability of water supplies, but does mean that the chemical characteristics of water supplied will vary from place to place and from time to time. These variations in the water supply and its quality are recorded in the Register.

Any person may inspect this register, free of charge, during normal working hours at any of the offices of Welsh Water. The water supply to any property, community or area can be identified from maps displayed at these offices. The two primary offices are:

Dŵr Cymru Welsh Water  
Dinas, LLANWNDA  
Gwynedd LL54 5UD  
Telephone 01248 374200

Dŵr Cymru Welsh Water  
Pentwyn Road, Nelson  
TRESHARRIS, Mid Glam CF46 6LY  
Telephone 01443 452480

In addition arrangements can be made through these offices for viewing of the register at local offices including Hereford and Worthybush.

Customers can also contact the company through its web site, [www.dwrcymru.co.uk](http://www.dwrcymru.co.uk) or on 0800 0520130 or 0800 052 6058 (Welsh line)

Further information on the quality of water supplied by Welsh Water is published by the Drinking Water Inspectorate. Their address is

The Drinking Water Inspectorate  
55 Whitehall  
LONDON  
SW1A 2EY  
Telephone 020 7944 5956

**This Annual Report (2007), is prepared by Welsh Water in accordance with the requirements of The Water Supply (Water Quality) Regulations, 2001, Part VIII, (36).**

These regulations were revised and amended during 2007 and from 2008 it will no longer be a regulatory requirement to present drinking water quality information in the format given in this report. With the revocation of regulation 36, Welsh Water will consult with local authorities with a view to determine what information they wish to receive over and above that contained in the DWI annual regional report.

# **INTRODUCTION**

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## **The Water Supplied by Welsh Water**

Welsh Water is licensed to supply water for industrial and domestic purposes in an area covering most of Wales, and some adjoining parts of England including parts of Herefordshire and Gloucestershire. The resident population of approximately 2.9 million people is served by water derived from 82 water treatment works. In parts of Herefordshire and North Wales supplies are augmented with treated water imported from Severn Trent Water Limited. The treated water is distributed via a network of 478 service reservoirs through some 27,000 kilometres of main. During 2007 the supply area was divided into 92 water supply zones.

In 2007 some 4.4% of the water supplied by Welsh Water was drawn directly from the ground, through springs, wells and boreholes, and required little treatment other than disinfection before use. The remainder was drawn from reservoirs and rivers and treated by various processes including chemical coagulation, sedimentation/flotation, sand filtration, activated carbon filtration, phosphate dosing, pH correction and disinfection.

All water supplies are disinfected with chlorine before leaving the water treatment works. Some of our larger water treatment works use chloramines, or ultra violet light to improve the effectiveness of disinfection.

All water treatment processes are carefully monitored, controlled and supervised to ensure the safety and wholesomeness of water supplied. Data from on-line instrumentation that continuously monitor water quality is automatically relayed to our control centre enabling us to react immediately to unusual conditions thereby ensuring that the quality of our supplies is safeguarded.

## **How Welsh Water monitors the quality of its water supplies**

In addition to the process monitoring undertaken at our treatment works, water samples are collected for analysis to provide reassurance that we have maintained good control of the water treatment process. In 2007, we carried out over 282,00 tests on our water supplies from the water leaving treatment works, water stored in closed tanks, known as service reservoirs, to the water distributed through pipelines to our customers' taps.

The minimum requirements for the number, frequency and type of spot-check samples are set down in detailed statutory regulations. Acting on behalf of the National Assembly for Wales the Drinking Water Inspectorate (DWI) is responsible for ensuring water undertakers comply with these statutory standards. The Inspectorate scrutinises the results of these water samples and also carries out a technical inspections of Welsh Water during each year. The findings are published in the annual report of the Chief Inspector of drinking water.

The Inspectorate is based in London, but local accountability and monitoring of Welsh Water is exercised by the Local Authorities. Local Authorities have specific responsibilities to satisfy themselves as to the quality and quantity of water supplies to their areas and to notify the Secretary of State (in practice DWI) of any deficiencies that are of concern to them. In carrying out their responsibilities, Local Authorities can take samples of water supplies for independent analysis.

It is very important that samples are collected carefully and correctly to ensure that they accurately represent the water that our customers receive. Welsh Water's samples are collected in accordance with the demanding standards of ISO9001:2000 and there are regular and

independent assessments of our water quality monitoring procedures to ensure continued compliance with this quality standard.

The results from the large number of spot-check samples provide a detailed and comprehensive picture of the quality of Welsh Water's water supplies. The results from each of the 92 water supply zones, which together comprise of Welsh Water's supply area, are sent to the appropriate local authorities. Along with an account of the quality of water supplied to their zones, each local authority is notified of the steps Welsh Water is taking to address any deficiencies in the quality of the water that may exist. This information is also available directly to the public, through the Drinking Water Register, and is summarised in this Annual Report.

### **How to use this Annual Report**

Welsh Water publishes this Annual Report containing a summary of the quality of water supplied, a statement as to the extent to which it complied with statutory regulations, particulars of relaxations and undertakings related to the quality of water supplies, and details of its public Drinking Water Register. This information is set out in the required format in the Appendix to this report.

In reviewing its performance for 2007 Welsh Water also seeks to identify any key issues of concern or interest to the local authorities and the customers it serves. Some of these issues arise from Welsh Water's own performance, others are more general concerns over the quality of drinking water which have received national attention. These issues are discussed in the remainder of this report.

## QUALITY IMPROVEMENTS TO WATER SUPPLIES IN 2007

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The revised Water Supply (Water Quality) Regulations implemented in 2004 are now well embedded within the Company. The impact of these regulations has been a move to risk based sampling programmes, consideration being given to the nature of the raw water, the treatment process, the size of the population served and the condition of the network system.

2006 saw the company achieve a major milestone when it became the first water and sewage company to record 100% compliance for coliforms and *E. coli* at all its water treatment works. However in 2007, this compliance fell to 99.84%. This said though, in South Wales all WTW maintained 100% compliance for coliforms and *E. coli* maintaining our best ever position. In North Wales all WTW achieved 100% compliance for *E. coli* however not all North Wales WTW achieved 100% compliance for coliforms, these coliform failures in North Wales represent the overall decline in bacteriological compliance.

The company has recorded a steady improvement since the implementation of the Water Supply (Water Quality) Regulations and this level of compliance demonstrates the commitment of the company and its partners to deliver water of the highest standard.

Mean zonal compliance and OPI (TIM) are used by DWI to measure company performance based on compliance. During 2007, Welsh Water has reported an improvement in Distribution Maintenance Index (Formerly OPI-TIM) since 2006 and has maintained a high mean zonal compliance.

Work to refurbish water mains continued through 2007. Significant progress with this improvement program meant that the percentage of properties affected in Water Supply Zones (WSZ's) changed significantly from last year's figure of 99.00%, to 63.006%. This is due to completion of refurbishment work in many zones; and subsequently these zones have been deleted from the revised Undertaking accepted by the DWI in February 2008. The company is currently ahead of its refurbishment programme agreed in the revised Undertaking. DCWW has agreed with the DWI to complete all associated construction works in distribution by September 2009, 6 months ahead of the original Undertaking date.

A total of 8 Water Treatment Works (WTWs) Undertakings were applicable during the Reporting Year. Of these, completion reports have been sent to DWI in respect of two (Strata Florida and Felindre WTWs) in line with the Undertakings for DWI evaluation and sign-off. The Bolton Hill scheme was completed in accordance with its Undertaking in March 2007 and a completion report will be submitted to DWI shortly. Bretton WTW scheme was also completed in March 2008 in accordance with its Undertaking and will be monitored until May 2009.

The priority during the reporting year was to ensure that DWSPs are produced for all the water supply systems and reported to the DWI in the agreed format by the set target date – 1<sup>st</sup> October 2008. Following this date, any gaps in the plans due to lack of knowledge, data or understanding will be addressed.

Data analysis will form an important part of the DWSP process in order to monitor water quality trends at all stages of the water supply system and to note any long term changes in water quality. Any deviation from the norm will be investigated in depth and with reference to the risks already identified in DWSPs. Data analysis staff will be appointed to undertake these tasks.

It is essential that DWSPs are fully integrated into the day to day operation of the business and that any decisions on capital investment, etc. are fully linked to the DWSP process. An

action plan will be developed to include all actions required to mitigate all significant risks, whether by capital investment, changes in procedures, or other, and that progress against the plan are monitored. In addition, an awareness training programme will be drawn up to ensure that staff in both DCWW and its partners are fully aware of the DWSP process and its implications.

The Public Health Partnership for Wales continued to develop in 2007, involving key stakeholders in drinking water public health in Wales. The aim of the partnership is to ensure joined up responses to public health issues that arise from drinking water. Objectives include being proactive in developing informed, professional relationships between stakeholders and improving the flow of information both internally and externally to enhance customer confidence.

Further development of key strategies, risk matrices and actions plans has been the focus for all those involved, to continue improvement in compliance, improve the quality of water supplied to customers and reduce the level of customer complaints. In addition, the company continues to optimise the network of water assets to improve customer service and efficiency.

## MEASURES OF WATER QUALITY

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The quality of water supplies is measured against a set of standards that are specified in the Water Supply (Water Quality) Regulations (Wales) 2001.

Following the introduction of the Water Supply (Water Quality) Regulations (Wales) 2001, DWI have replaced overall compliance at the tap with two zonal measures, Operational Performance Index (OPI (TIM)), based on compliance for turbidity, iron and manganese, and Mean Zonal Compliance. For 2007, the mean zonal compliance for Welsh Water was 99.93 % and OPI (TIM) was 99.84% as compared to 99.95% and 99.70% in 2006. These measures demonstrate the areas where water quality improvement strategies should be focused.

### Microbiological Quality

Modern water treatment practices in the UK, in particular disinfection, have ensured the protection of public health from water-borne disease. Indicator testing for the remote possibility of infectious organisms being present in water supplies is based on regular analysis for a common group of bacteria (coliforms), and the more specific indicator of faecal contamination (*E. coli*).

Ideally, coliforms should be absent from all samples of water leaving water treatment works. In 2007, *E. coli* was absent from 100% of such water samples from Welsh Water's supplies, and Coliforms were absent from 99.84% of samples. The rare presence of such indicator organisms leads to immediate investigation, remedial action and re-sampling. This continuing high standard reflects the commitment of Welsh Water and its operating partners to deliver drinking water that meets the required quality standards.

After disinfection at the water treatment works, bacterial quality may deteriorate slightly in service reservoirs, distribution mains and customer pipework. Coliforms were absent from 99.86% of samples from service reservoirs and absent from 99.60% of samples from customers' taps. *E. coli* were absent from 99.96% of samples from service reservoirs and absent from 99.99% of customers' taps.

Further development of the bacteriological performance strategy and action plan across water treatment works and distribution system will continue to target remedial action for improving bacteriological compliance.

### Cryptosporidium

Cryptosporidium is a microscopic organism which has been recognised as causing water borne illness in humans. New regulations were implemented in England and Wales on 1<sup>st</sup> April 2000, for this parameter, whereby sites assessed as being at risk were subject to continuous sampling or installation of additional treatment. During 2007, of the 19 works monitored routinely for cryptosporidium there were no contraventions of the treatment standard and there were no associated outbreaks of cryptosporidiosis.

## **Chlorination/Chloramination**

Chlorination and chloramination are disinfection processes used by water companies to prevent the occurrence of water borne illness and safeguard public health. Optimisation of these processes is essential to protect public health and achieve compliance across a range of parameters.

The taste or odour of chlorine in water is one of the most commonly expressed causes of customers being dissatisfied with the quality of their water supplies. It is not usually the level of chlorine that a customer will notice but more often a sudden change in chlorine level which may be affected by changes in water treatment or the re-zoning of supplies.

During 2007, analytical sampling for taste and odour reported 100% compliance for taste and 100% compliance for odour.

Chlorination of water supplies gives rise to trihalomethanes (THM), which are formed when chlorine reacts with organic molecules present naturally in most waters from rivers and reservoirs. In 2007, out of 604 water samples from customer taps, 98.84% were compliant with the THM standard with 7 samples in distribution exceeding the standard.

Nitrite may be formed when chloramination is used as the means to provide residual disinfection to maintain microbiological quality in the distribution system. During 2007, sampling from customer taps reported 100% compliance for nitrite.

The bacteriological wholesomeness of water supplies is always given our highest priority when considering the benefits of chlorination or chloramination. Optimisation of the treatment process to include close control of the use of chlorine and the completion of necessary modifications at many works has continued and resulted in a significant improvement in bacteriological, THM and nitrite compliance over the last few years. Implementation of the key quality strategic plans will continue to improve operational practice and targeting of investment to further improve compliance.

## **Aluminium**

Over 90% of Welsh Water's water supplies are derived from rivers and reservoirs, the majority of this must be treated by chemical coagulation, before sand filtration, to ensure a high quality product. Chemical coagulants play a vital role in attracting molecular and microscopic impurities in water into particles large enough to be removed (after settlement) by rapid filtration of the water through sand.

During 2007, Welsh Water continued to operate water treatment works using aluminium compounds as coagulants since this provides the most effective treatment, either because the water chemistry is not suitable or the sedimentation capacity was not sufficient to make satisfactory use of iron coagulants.

Welsh Water is committed to continued compliance with the aluminium standard in all of its supplies. The use of aluminium coagulants will continue where it provides the most effective treatment, but Welsh Water continues to ensure that good working practices are maintained.

Of the samples taken from customer taps and examined during 2007 for aluminium, 100% compliance was achieved against the standard of 200ug/l (or parts per billion).

Exceedances where reported, are usually the result of disturbances of mains deposits. An investment programme for cleansing mains has been approved which will minimise the likelihood of failure.

## **Iron and Manganese causing Discoloured Water**

Iron and manganese exceeded prescribed standards in some samples from customers' taps. Both elements are a common cause of complaints of discoloured water but do not pose a risk to public health. The quality standards for iron and manganese in water supplies are based on aesthetic grounds to minimise staining and discolouration, rather than on any health-related considerations.

Both iron and manganese occur naturally in many upland waters. Iron is also used in the coagulation process at several water treatment works, and is the material of construction for over half of the existing water mains.

Iron and manganese tend to form loose deposits in water mains, and contribute to the turbidity (cloudiness) of water supplies when the flow in the main is disturbed or reversed. They are visible to customers as orange, brown or black particles which settle out on standing.

Ongoing improvements at water treatment works such as optimisation of the coagulant dose and pH correction have prevented iron and manganese entering the water supply, but the combined effect of rusting and encrusted iron mains means that iron will continue to arise within the supply systems. Neither iron nor manganese (nor indeed the overall turbidity) can be cleansed from the system until all affected water mains are renewed or relined. Mains renovation is an ongoing programme which is due for completion by the end of 2010.

In 2007, 99.55% of samples from customers' taps were compliant within the required standard for iron of 200ug/l (or parts per billion).

Iron compliance for 2007 was our best ever result, and largely due to our mains replacement programme, with some 440km of iron mains being refurbished. Refurbishment and flushing work is ongoing in this area and should minimise the risk of such failures in the future.

Similarly, 99.78% of samples from customers' taps were compliant within the required standard for manganese of 50ug/l (or parts per billion), with 4 water supply zones having exceedances of the manganese standard.

## **Turbidity**

Turbidity in water is caused by the presence of particulate matter and is sometimes referred to as the clarity of water. Elevated levels of turbidity can compromise the effectiveness of disinfection so it is important to review turbidity levels regularly. The 2001 regulations require companies to monitor for turbidity at all of their water treatment works. As an indicator standard, the revised standards for turbidity at water treatment works was set at 1 NTU and within water supply zones the standard remained the same at 4 NTU.

During 2007, there was 100% compliance for turbidity at customer's taps; whilst compliance was 99.9% at Water treatment works with only 12 failures. This represented a significant improvement on 2006.

## **Lead**

Lead in tap water comes from the lead pipes used in older houses, either in the household plumbing, or in the connection pipe to the mains. All water supplied by Welsh Water is free of lead prior to reaching this connection pipe. The Water Supply (Water Quality) Regulations (Wales) 2001 set the standard for lead of 25ug/l (or parts per billion) from 25 December 2003 and 10ug/l (or parts per billion) by end of 2013. Action taken by the company to meet the new standard includes installation of first time treatment using orthophosphate, optimisation of existing orthophosphate plants, abandonment where phosphate conditioning of supplies is not an option and replacement of lead pipework. Supplies that are dosed with orthophosphate enables an insoluble coating to form on lead pipework preventing the lead from dissolving into supply.

Monitoring in 2007 showed that in water samples from customers' taps, only one sample exceeded the standard of 25ug/l (or parts per billion). This demonstrates the continuing efforts by the company to ensure compliance to 10ug/l (or parts per billion) standard by the end of 2013.

Where a customer knows or suspects that his or her property is served by lead piping, Welsh Water will sample and analyse water from that premises free of charge.

If the level of lead in water is found to exceed 25ug/l (or parts per billion), the customer is informed of the result and is advised to run the tap before use, and to consider replacing any lead pipe within the premises. The Local Authority is also informed.

When the owner of a property replaces a lead pipe for which he or she is responsible, Welsh Water will upon request, replace free of charge any lead pipe for which it is responsible outside of the property.

## **Pesticides (including herbicides)**

Many pesticides are in common use, both in agricultural and non-agricultural applications, and some of these find their way into the rivers, reservoirs and aquifers used as sources of drinking water supplies.

In Wales there is little intensive arable farming, although sheep dip pesticides are widely used. High rainfall ensures good dilution and dispersion of any pesticides that might enter the water cycle. Consequently, very few of Welsh Water's water sources are adversely affected by significant concentrations of pesticides.

The standards for pesticides in water supplies require that individual pesticides should not exceed 0.1ug/l (or parts per billion), and that the total of all pesticides present should not exceed 0.5ug/l (or parts per billion). There are tighter standards, set at 0.03ug/l (or parts per billion), for four individual pesticides, namely Aldrin, Dieldrin, Heptachlor and Heptachlor epoxide.

In 2007, only one sample failed the 0.5ug/l (or parts per billion) standard. Of the individual pesticides, two samples exceeded the standard of 0.1ug/l (or parts per billion), namely Mancozeb and MCPA.

## Fluoride

Welsh Water does not presently fluoridate any of its water supplies and has not received any indication that the National Assembly for Wales is intending to ask for fluoridation to be introduced.

The Water Act 2003 amends the Water Industry Act 1991 which now states that water companies must follow the instruction of the Health Authority or in Wales, the Welsh Assembly Government. In practice, this means that the decision making process sits with those directly accountable to their local population.

Welsh Water as an organisation has no views on the merits or otherwise of fluoridating water supplies. We will follow the line taken by government and will comply with our legal requirements.

## Other Parameters of Interest

In 2007 there were no exceedances for pH or Benzo(a)pyrene, which was an improvement on the last two years.

**pH** is a measure of the acidity of the water. Naturally occurring iron and humic acids from peaty soils can result in slightly acidic waters with low pH. This is commonly known as “soft water” and is characteristic of upland waters in Wales. The exceedance of the pH standard during 2006 will be addressed by a quality scheme at the water treatment works serving the area. Compliance with the standard will be achieved by installing carbon dioxide dosing.

**Benz(a)pyrene** is one of several compounds known as polycyclic aromatic hydrocarbons, which if detected in water supplies are indicative of leaching from coal tar lined mains. This type of lining is no longer used and given the extent of mains refurbishment and renewal, it is seldom reported in supplies. When detected mains cutouts are undertaken to confirm pipe material and if appropriate mains replacement carried out.

## **CUSTOMER CONTACTS**

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During 2006, DWI required companies to report on the number of customer contacts it received about the quality of its drinking water. The usual form of contact is the telephone but some customers will contact the company via letter or email. Customers will also contact DWI directly.

All these contacts are registered on the company's work planning system. This assists the company in identifying areas of concern perhaps arising from potential events such as burst mains and areas where operational improvements to the network system are required to improve the security of supplies.

During 2007 Welsh Water received approximately 19,000 contacts. The greatest concern for customers is the appearance of drinking water. Customer dissatisfaction with the appearance of their water accounted for 65% of customer contacts during 2007. Investment in the mains distribution system as part of the ongoing mains renovation programme and enhanced operational practices and maintenance will continue to improve the quality of water supplied to customers and so reduce the level of dissatisfaction.

Another area of concern shown by customer contacts relates to taste and odour. During 2007, taste and odour accounted for 10% of all customer contacts. Chlorine is generally the most common cause of taste and odour issues and where possible chlorine levels are reviewed to determine the optimum level which gives both effective disinfection and minimal taste/odour effect for customers.

All contacts are reviewed on a quarterly basis to determine the necessary remedial actions required to improve customers' perception of water quality.

## **INCIDENTS**

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During 2007, 52 events were notified to the Drinking Water Inspectorate by Welsh Water. Of these 16 were regarded as incidents in which drinking water quality was affected. All notifiable events reported to DWI are also reported to the Local Authorities, Health Authorities, Consumer Council for Water (Wales) and Welsh Assembly Government.

DWI has assessed all of the incidents and made appropriate recommendations to the company.

### **Discoloured Water**

Three incidents of discoloured water resulting from iron and manganese sediments were reported in 2007. These were as follows:

- Discolouration potentially affected 2223 properties as a result of pump failure leading to velocity fluctuations in the Whitchurch area of Cardiff in April.
- Discolouration potentially affected 53,000 properties due to a burst main near Crai WTW in the Swansea Valley in June
- Discolouration potentially affected 19,000 people due to a burst main in Rhyl in July

### **Boil Notices**

One Boil Notice was issued during 2007.

- The Boil Notice was issued to approximately 7000 properties receiving water from Whitbourne WTW near Hereford following flooding in July.

### **Others**

Twelve other notifications were also assessed as incidents by DWI during 2007. These are as follows:

- Loss of treatment following loss of power at Talybont WTW near Merthyr Tydfil potentially affected 100,000 properties in January
- A do not drink notice was issued to 7 properties on a Bangor Estate, North Wales, following a possible diesel contamination in May
- Elevated Iron levels potentially affected 27,343 people receiving water from Capel Dewi WTW near Carmarthen in July, August and October and this accounted for 3 incidents
- Elevated Aluminium levels potentially affected 100,000 people receiving water from Pontsticill WTW near Merthyr Tydfil in August

- A coliform exceedance potentially affected 17,156 people receiving water from Penmynydd Service Reservoir near Menai Bridge in August
- Another coliform exceedance potentially affected 237 properties receiving water from Lithfaen Service Reservoir near Pwllheli also in August
- Loss of chlorine dosing following power loss at Bryn Cowlyd WTW near Betws-Y-Coed potentially affected 85,529 properties in September
- Loss of coagulation at Builth Wells WTW potentially affected 6284 properties in October
- Elevated aluminium levels potentially affected 10,000 people receiving water from Llysven WTW near Builth Wells in October
- Elevated turbidity potentially affected 8000 people following a filter wash failure at Pendine WTW near Carmarthen in December

## **APPENDIX**

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The following schedules are prepared in accordance with the Water Supply (Water Quality) Regulations (Wales) 2001, Regulation 36.



**ADRODDIAD BLYNYDDOL AR  
ANSAWDD DŴR YFED  
2007**

**AM Y FLWYDDYN A DDAETH I BEN AR  
31 RHAGFYR 2007**

## RHAGAIR

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Darparu dŵr yfed diogel, glân i'n cwsmeriaid yw'n prif gyfrifoldeb o hyd. Yn 2006 cafwyd ein perfformiad gorau erioed mewn gweithfeydd trin dŵr wrth i ni lwyddo i gydymffurfio 100% â'r safonau ar gyfer cyfanswm y coliformau a choliformau ysgarthol – y tro cyntaf i'r cwmnïau dŵr a dŵr carthffosiaeth cyfunol wneud hynny. Yn 2007 llwyddwyd i gynnal yr un lefel o berfformiad yn y de ond nid felly ar bob safle yn y gogledd, gan arwain at rywfaint o ddirywiad yn y lefelau cydymffurfio bacteriolegol cyffredinol. Hefyd yn y gogledd, oherwydd bod sawl gwaith trin dŵr heb offer i drin deunydd organig, cafwyd gostyngiad yn erbyn y safon ar gyfer Trihalomethan (THM) yn 2007 o ganlyniad uniongyrchol i'r newidiadau a welwyd mewn ffynonellau dŵr crai yn dilyn lefelau glaw uchel yn ystod haf a hydref 2007.

Yn gyffredinol mae'r cwmni wedi cofnodi gwelliant cyson ers gweithredu'r Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr) ac mae'r lefel hon o gydymffurfiaid yn dangos ymrwymiad y cwmni a'i bartneriaid i gyflenwi dŵr o'r ansawdd uchaf.

2007 oedd pen-blwydd cyntaf 'Partneriaeth Iechyd Dŵr Cymru', menter a lansiwyd gan Dŵr Cymru sy'n dod ag asiantaethau cyhoeddus perthnasol at ei gilydd i gytuno ar gamau mwy effeithiol i ddiogelu iechyd y cyhoedd. Mae'r gwaith hyd yma wedi arwain at well cyfathrebu a gwell dealltwriaeth o swyddogaethau a chyfrifoldebau iechyd cyhoeddus Llywodraeth Cynulliad Cymru, yr Arolygiaeth Dŵr Yfed (DWI), Cyngor Defnyddwyr Dŵr Cymru, awdurdodau lleol, gweithwyr iechyd proffesiynol, asiantaethau cynllunio at argyfwng a Gwasanaeth Iechyd Cyhoeddus Cenedlaethol Cymru (GICCC). Penododd Dŵr Cymru Wyddonydd Iechyd y Cyhoedd i arwain menter Partneriaeth Iechyd Dŵr Cymru ac i ddarparu arbenigedd ym maes materion iechyd y cyhoedd a dŵr yfed.

Yn ystod y flwyddyn ddiwethaf mae'r gwaith o reoli ansawdd dŵr wedi gwella yn sgil creu 5 swydd newydd yn ymwneud ag ansawdd dŵr yn Dŵr Cymru ac *United Utilities Operating Services (UUOS)*. Mae'r swyddi hyn yn canolbwyntio'n bennaf ar ddatblygu, gweithredu a rheoli Cynlluniau Diogelwch Dŵr Yfed (DWSPs). Bydd y dull gweithredu hwn, sy'n ystyried risgiau wrth reoli cadwyn y cyflenwad dŵr, yn cynnig proses strwythuredig i ganfod risgiau i ansawdd y dŵr, ymchwilio iddynt a'u rheoli.

Wrth defnyddio'r fethodoleg DWSP newydd ac o ystyried y dirywiad mewn ansawdd dŵr crai, mae Dŵr Cymru wrthi'n datblygu cynlluniau ar gyfer 18 gwaith trin dŵr lle byddai buddsoddi mewn triniaethau ychwanegol yn lleihau'r risg i ansawdd y dŵr ymhellach ar gost o tua £100 miliwn.

Yn yr adroddiad hwn, ceir rhagor o wybodaeth am ein perfformiad a materion allweddol sydd o ddiddordeb i'n cwsmeriaid neu'n peri pryder iddynt.

Er mwyn helpu'r Bwrdd i gadw golwg ar y busnes a'i oruchwylio, mae Pwyllgor Ansawdd a'r Amgylchedd y Bwrdd ("QEC") yn cyfarfod bob mis o dan gadeiryddiaeth y Fonesig Deidre Hine i adolygu materion allweddol o ran perfformiad a strategaeth. Yn y cyfarfodydd hyn, mae'r Pwyllgor yn gwrandao ar gynghorwyr annibynnol sydd â phrofiad a dealltwriaeth o strategaeth a pherfformiad ym meysydd ansawdd dŵr a'r amgylchedd. Mae'r Pwyllgor yn paratoi Adroddiad Blynyddol sydd i'w weld ar wefan Dŵr Cymru ([www.dwrcymru.com](http://www.dwrcymru.com))



Nigel Annett  
**Rheolwr Gyfarwyddwr**  
Dŵr Cymru Welsh Water

## **Cofrestr Ansawdd Dŵr Yfed**

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Mae Dŵr Cymru yn cadw cofrestr gyhoeddus o ansawdd y dŵr ym mhob un o'i barthau cyflenwi dŵr, ynghyd â manylion yr holl raglenni i wella cyflenwadau dŵr y mae Dŵr Cymru wedi ymrwymo i'w cyflawni.

Gellir cyflenwi'r rhan fwyaf o ardaloedd â dŵr yfed o fwy nag un ffynhonnell. Mae hyn yn ffordd bwysig o sicrhau fod cyflenwadau dŵr yn ddiogel ac yn ddibynadwy, ond mae'n golygu y bydd nodweddion cemegol y dŵr a gyflenwir yn amrywio o le i le ac o bryd i'w gilydd. Mae'r Gofrestr yn cofnodi'r amrywiadau hyn yn y cyflenwad dŵr a'i ansawdd.

Caiff unrhyw un archwilio'r gofrestr hon, yn ddi-dâl, yn ystod oriau gwaith arferol mewn unrhyw un o swyddfeydd Dŵr Cymru. Mae mapiau a ddangosir yn y swyddfeydd hyn yn dangos y cyflenwad dŵr i bob eiddo, cymuned neu ardal. Y ddwy brif swyddfa yw:

Dŵr Cymru  
Dinas, LLANWNDA  
Gwynedd LL54 5UD  
Ffôn 01248 374200

Dŵr Cymru  
Heol Pentwyn, Nelson  
TREHARRIS, CF46 6LY  
Ffôn 01443 452480

Yn ogystal, gellir gwneud trefniadau trwy'r swyddfeydd hyn i weld y gofrestr mewn swyddfeydd lleol, yn cynnwys Henffordd a Llwynhelyg.

Gall cwsmeriaid gysylltu â'r cwmni trwy ei wefan, [www.dwrcymru.co.uk](http://www.dwrcymru.co.uk) neu trwy ffonio 0800 052 0130 neu 0800 052 6058 (Linell Gymraeg).

Mae'r Arolygiaeth Dŵr Yfed (DWI) yn cyhoeddi rhagor o wybodaeth am ansawdd y dŵr a gyflenwir gan Dŵr Cymru. Eu cyfeiriad yw:

Yr Arolygiaeth Dŵr Yfed  
55 Whitehall  
LLUNDAIN  
SW1A 2EY  
Ffôn 020 7944 5956

### **Paratowyd Adroddiad Blynyddol 2007 gan Dŵr Cymru yn unol â gofynion Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr), 2001, Rhan VIII, (36).**

Diwygiwyd y rheoliadau hyn yn ystod 2007 ac o 2008 ymlaen ni fydd yn ofyniad rheoliadol i gyflwyno gwybodaeth am ansawdd dŵr yfed yn y fformat a roddir yn yr adroddiad hwn. Yn sgil diddymu rheoliad 36, bydd Dŵr Cymru yn ymgynghori â'r awdurdodau lleol i ganfod pa wybodaeth ychwanegol i'r hyn a welir yn adroddiad rhanbarthol blynyddol y DWI yr hoffent ei chael.

## CYFLWYNIAD

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### Y Dŵr a Gyflenwir gan Dŵr Cymru

Mae gan Dŵr Cymru drwydded i gyflenwi dŵr at ddibenion diwydiannol a domestig mewn ardal sy'n cynnwys y rhan fwyaf o Gymru a rhai rhannau o Loegr sy'n cynnwys rhannau o Swydd Henffordd a Swydd Gaerloyw. Mae poblogaeth breswyl o ryw 2.9 miliwn o bobl yn derbyn dŵr o 82 o weithfeydd trin dŵr. Mewn rhai ardaloedd yn Swydd Henffordd a Gogledd Cymru, ategir y cyflenwad gan ddŵr wedi'i drin o Severn Trent Water Limited. Caiff y dŵr sydd wedi'i drin ei ddsbarthu trwy rwydwaith o 478 o gronfeydd gwasanaeth trwy ryw 27,000km o brif bibellau. Yn ystod 2007, roedd yr ardal gyflenwi wedi'i rhannu'n 92 o barthau cyflenwi dŵr.

Yn 2007, tynnwyd tua 4.4% o'r dŵr a gyflenwyd gan Dŵr Cymru yn uniongyrchol o'r ddaear, drwy darddellau, ffynhonnau a thyllau turio, ac nid oedd angen llawer o driniaeth arno, ar wahân i'w ddiheintio, cyn ei ddefnyddio. Daeth y gweddill o gronfeydd dŵr ac afonydd a defnyddiwyd gwahanol brosesau i'w drin, yn cynnwys ceulo cemegol, gwaddodi/arnofio, hidlo trwy dywod, hidlo trwy garbon actifedig, ychwanegu ffosffad, cywiro pH a diheintio.

Caiff yr holl gyflenwadau dŵr eu diheintio â chlorin cyn gadael y gwaith trin dŵr. Mewn rhai o'n gweithfeydd trin dŵr mawr, defnyddir cloraminau neu olau uwchfioled i wneud y broses ddiheintio'n fwy effeithiol.

Caiff yr holl brosesau trin dŵr eu monitro, eu rheoli a'u goruchwyllo i sicrhau bod y dŵr a gyflenwir yn ddiogel ac yn iach. Mae data o offer ar-lein sy'n monitro ansawdd dŵr yn barhaus yn cael ei drosglwyddo'n awtomatig i'n canolfan reoli, gan ein galluogi i ymateb ar unwaith i amodau anarferol a sicrhau bod ansawdd ein cyflenwadau yn cael ei ddiogelu.

### Sut y mae Dŵr Cymru yn monitro ansawdd ei gyflenwadau dŵr

Yn ogystal â'r gwaith o fonitro prosesau yn ein gweithfeydd trin dŵr, mae samplau o ddŵr yn cael eu casglu a'u dadansoddi er mwyn cadarnhau ein bod wedi rheoli'r broses trin dŵr yn dda. Yn 2007, aethom ati i gynnal dros 282,00 o brofion ar ein cyflenwadau dŵr, o'r dŵr yn gadael gweithfeydd trin, dŵr oedd yn cael ei storio mewn tanciau caeedig o'r enw cronfeydd gwasanaeth, i'r dŵr a ddsberthir trwy'r pibellau i dapiau ein cwsmeriaid.

Nodir y safonau gofynnol ar gyfer nifer, amllder a natur yr hapsamplau a archwilir mewn rheoliadau statudol manwl. Mae'r DWI yn gweithredu ar ran Cynulliad Cenedlaethol Cymru ac mae'n gyfrifol am sicrhau bod cwmnïau dŵr yn cydymffurfio â'r safonau statudol hyn. Mae'r Arolygiaeth yn archwilio canlyniadau'r samplau dŵr hyn ac yn cynnal archwiliad technegol o Dŵr Cymru yn flynyddol. Cyhoeddir y canfyddiadau yn adroddiad blynyddol y Prif Arolygydd dŵr yfed.

Yn Llundain y mae pencadlys yr Arolygiaeth, ond yr Awdurdodau Lleol sy'n gyfrifol am fonitro Dŵr Cymru yn lleol ac iddynt hwy y mae'n atebol. Mae gan Awdurdodau Lleol gyfrifoldebau penodol o ran sicrhau bod ansawdd a maint y cyflenwadau dŵr yn eu hardaloedd yn foddhaol a dylent hysbysu'r Ysgrifennydd Gwladol (y DWI yn ymarferol) am unrhyw ddiffygion sy'n peri pryder iddynt. Wrth gyflawni eu cyfrifoldebau, gall Awdurdodau Lleol gymryd samplau o gyflenwadau dŵr i'w dadansoddi'n annibynnol.

Mae'n bwysig iawn fod y samplau'n cael eu casglu'n ofalus ac yn gywir i sicrhau eu bod yn rhoi darlun cywir o'r dŵr y mae ein cwsmeriaid yn ei dderbyn. Cesglir samplau Dŵr Cymru yn unol â safonau uchel ISO9001:2000 ac fe gynhelir asesiadau rheolaidd ac annibynnol o'n trefniadau monitro ansawdd dŵr er mwyn sicrhau ein bod yn dal i gydymffurfio â'r safon hon.

Mae canlyniadau'r nifer fawr o hap-samplau yn rhoi darlun manwl a chynhwysfawr o ansawdd cyflenwadau Dŵr Cymru. Anfonir y canlyniadau o bob un o'r 92 parth cyflenwi dŵr sy'n ffurfio ardal gyflenwi Dŵr Cymru at yr awdurdodau lleol priodol. Yn ogystal ag adroddiad ar ansawdd y dŵr a gyflenwir i'w parthau, hysbysir pob awdurdod lleol o'r camau y mae Dŵr Cymru yn eu cymryd i fynd i'r afael ag unrhyw ddiffygion posibl yn ansawdd y dŵr. Mae'r wybodaeth hon ar gael yn uniongyrchol i'r cyhoedd hefyd, drwy'r Gofrestr Dŵr Yfed, a cheir crynodeb ohoni yn yr Adroddiad Blynyddol hwn.

## **Sut i ddefnyddio'r Adroddiad Blynyddol hwn**

Mae Dŵr Cymru yn cyhoeddi'r Adroddiad Blynyddol hwn sy'n cynnwys crynodeb o ansawdd y dŵr a gyflenwyd, datganiad sy'n nodi i ba raddau yr oedd yn cydymffurfio â'r rheoliadau statudol, manylion ymrwymadau mewn perthynas ag ansawdd cyflenwadau dŵr ac achosion lle caniatawyd ystwytho'r safon, a manylion ei Gofrestr Dŵr Yfed gyhoeddus. Cyflwynir y wybodaeth hon yn y ffurf ofynnol yn yr Atodiad i'r adroddiad hwn.

Wrth adolygu ei berfformiad ar gyfer 2007 mae Dŵr Cymru hefyd yn awyddus i nodi unrhyw faterion allweddol a oedd yn destun pryder neu ddiddordeb i'r awdurdodau lleol a'r cwsmeriaid y mae'n eu gwasanaethu. Mae rhai o'r materion hyn yn codi o berfformiad Dŵr Cymru ei hun, ac eraill yn bryderon mwy cyffredinol ynghylch ansawdd dŵr yfed a gafodd sylw cenedlaethol. Trafodir y materion hyn yng ngweddill yr adroddiad hwn.

## **GWELLIANNAU I ANSAWDD CYFLENWADAU DŴR YN 2007**

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Erbyn hyn, mae'r Rheoliadau Cyflenwad Dŵr (Answydd Dŵr) diwygiedig a ddaeth i rym yn 2004 wedi ennill eu plwyf yn y Cwmni. O ganlyniad i'r rheoliadau hyn, cyflwynwyd rhaglenni samplu a seilir ar risg a theilir sylw i natur y dŵr crai, y broses drin, maint y boblogaeth a wasanaethir a chyflwr system y rhwydwaith.

Yn 2006, cyrhaeddodd y cwmni garreg filltir bwysig gan mai ef oedd y cwmni dŵr a charthffosiaeth cyntaf i gydymffurfio 100% â'r safonau ar gyfer coliformau ac *E. Coli* ym mhob un o'i weithfeydd trin dŵr. Fodd bynnag, gostyngodd y lefel hon i 99.84% yn 2007. Er hynny, llwyddodd pob gwaith trin dŵr yn y de i gydymffurfio 100% â'r safonau ar gyfer coliformau ac *E. coli*, gan sicrhau ein perfformiad gorau erioed. Llwyddodd pob gwaith trin dŵr yn y gogledd i gydymffurfio 100% â'r safonau ar gyfer *E. coli*, ond methodd rhai ohonynt â chydymffurfio 100% â'r safonau ar gyfer coliformau. Y methiannau hyn yn y gogledd mewn perthynas â safonau coliformau oedd y rheswm am ostyngiad cyffredinol mewn cydymffurfriad bacteriolegol.

Mae safonau'r cwmni wedi gwella'n gyson ers i'r Rheoliadau Cyflenwad Dŵr (Answydd Dŵr) ddod i rym ac mae'r llwyddiant hwn yn dangos bod y cwmni a'i bartneriaid yn dal yn benderfynol o gyflenwi dŵr o'r safon uchaf.

Mae'r DWI yn defnyddio lefelau cydymffurfio cymedrig y parthau ac OPI (TIM) i fesur perfformiad cwmnïau ar sail lefelau cydymffurfio. Yn ystod 2007, mae Dŵr Cymru wedi cyhoeddi gwelliant yn y Mynegai Cynnal a Chadw Dosbarthu (OPI-TIM cynt) o gymharu â 2006 ac mae lefel gydymffurfio gymedrig y parthau yn dal yn uchel.

Parhaodd y gwaith o adnewyddu'r prif bibellau dŵr gydol 2007. O ganlyniad i gynnydd sylweddol yn y rhaglen wella, newidiodd canran yr eiddo yr effeithiwyd arnynt mewn Parthau Cyflenwi Dŵr yn sylweddol o 99.00% y llynedd i 63.006%. Mae hyn wedi digwydd oherwydd bod y gwaith adnewyddu wedi'i gwblhau mewn sawl parth ac mae'r parthau hyn wedi'u dileu o'r Ymrwymiad diwygiedig a dderbyniwyd gan y DWI ym mis Chwefror 2008. Ar hyn o bryd mae'r cwmni yn rhagori ar ei raglen adnewyddu y cytunwyd arni yn yr Ymrwymiad diwygiedig. Mae Dŵr Cymru wedi cytuno â'r DWI i gwblhau'r holl waith adeiladu yn y maes dosbarthu erbyn Medi 2009, 6 mis cyn y dyddiad a nodwyd yn yr Ymrwymiad gwreiddiol.

Roedd cyfanswm o 8 Ymrwymiad gan Weithfeydd Trin Dŵr yn berthnasol yn ystod y flwyddyn adrodd. O'r rhain, mae adroddiadau cwblhau wedi'u hanfon i'r DWI mewn perthynas â dau (Gwaith Trin Dŵr Ystrad-fflur a Felindre) yn unol â'r Ymrwymadau ar gyfer gwerthuso a chymeradwyo gan y DWI. Cwblhawyd cynllun Gallt Bolton yn unol â'i Ymrwymiad ym mis Mawrth 2007 a bydd adroddiad cwblhau yn cael ei anfon i'r DWI maes o law. Cwblhawyd cynllun Gwaith Trin Dŵr Bretton ym mis Mawrth 2008 hefyd yn unol â'i Ymrwymiad, a bydd yn cael ei fonitro tan fis Mai 2009.

Y flaenoriaeth yn ystod y flwyddyn adrodd oedd sicrhau bod Cynlluniau Diogelwch Dŵr Yfed (DWSPs) yn cael eu cynhyrchu ar gyfer yr holl systemau cyflenwi dŵr a'u hadrodd i'r DWI yn y fformat y cytunwyd arno erbyn y dyddiad targed – 1 Hydref 2008. Ar ôl y dyddiad hwn, bydd unrhyw fylchau yn y cynlluniau oherwydd diffyg gwybodaeth, data neu ddealltwriaeth yn derbyn sylw.

Bydd dadansoddi data yn elfen bwysig o'r broses DWSP er mwyn monitro tueddiadau o ran ansawdd y dŵr ym mhob cam o'r system gyflenwi dŵr ac er mwyn nodi unrhyw newidiadau hirdymor yn ansawdd y dŵr. Bydd unrhyw achos lle nad yw'r ansawdd yn cyrraedd y safon yn cael ei ymchwilio'n fanwl, gan gyfeirio at y risgiau sydd eisoes wedi'u nodi yn y DWSPs. Penodir staff dadansoddi data i gyflawni'r gwaith hwn.

Mae'n hanfodol bod DWSPs yn cael eu hintegreiddio'n llawn i waith y busnes o ddydd i ddydd a bod unrhyw benderfyniadau ar fuddsoddi cyfalaf ac ati yn cael eu cysylltu'n llawn â'r broses DWSP. Bydd cynllun gweithredu yn cael ei ddatblygu yn cynnwys yr holl gamau sydd eu hangen i liniaru'r holl risgiau arwyddocaol, boed hynny drwy fuddsoddi cyfalaf, newid gweithdrefnau, neu gamau eraill ac i sicrhau bod cynnydd yn erbyn y cynllun yn cael ei fonitro. Yn ogystal, bydd rhaglen hyfforddi ym maes ymwybyddiaeth yn cael ei llunio i sicrhau bod staff Dŵr Cymru a'i bartneriaid yn gwbl ymwybodol o'r broses DWSP a'i goblygiadau.

Parhaodd Partneriaeth Iechyd y Cyhoedd Cymru i ddatblygu yn 2007, gan gynnwys rhanddeiliaid allweddol sy'n ymwneud â dŵr yfed ac iechyd y cyhoedd yng Nghymru. Nod y bartneriaeth yw sicrhau y ceir ymatebion cydgysylltiedig i faterion iechyd y cyhoedd sy'n deillio o ddŵr yfed. Mae'r amcanion yn cynnwys mynd ati'n rhagweithiol i ddatblygu cysylltiadau gwybodus, proffesiynol rhwng y rhanddeiliaid a gwella'r llif gwybodaeth yn fewnol ac yn allanol er mwyn ennyn hyder cwsmeriaid.

Mae pawb sy'n ymwneud â'r gwaith wedi canolbwyntio ar ddatblygu strategaethau allweddol, matricesau risg a chynlluniau gweithredu, er mwyn parhau i gynyddu lefelau cydymffurfio, gwella ansawdd y dŵr a gyflenwir i gwsmeriaid a gostwng nifer y cwynion gan gwsmeriaid. Yn ogystal, mae'r cwmni'n dal i geisio gwneud y defnydd gorau o'r rhwydwaith o asedau dŵr er mwyn rhoi gwell gwasanaeth i gwsmeriaid a bod yn fwy effeithlon.

## MESUR ANSAWDD DŴR

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Mesurir ansawdd cyflenwadau dŵr yn erbyn set o safonau a nodir yn Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr) (Cymru) 2001.

Ar ôl cyflwyno Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr) Cymru 2001, newidiodd y DWI o fesur cyfradd gydymffurfio gyffredinol y dŵr a ddaw o'r tap gyda dau fesur a seilir ar y parthau. Seilir y Mynegai Perfformiad Gweithredol (OPI (TIM)) ar lefelau cydymffurfio o ran cymylogrwydd, haearn a manganîs, a defnyddir Lefel Gydymffurfio Gymedrig Parthau hefyd. Yn 2007, roedd lefel gydymffurfio gymedrig parthau Dŵr Cymru yn 99.93% a'r OPI (TIM) yn 99.84% o'u cymharu â 99.95% a 99.70% yn 2006. Mae'r mesurau hyn yn dangos y meysydd y dylai strategaethau gwella ansawdd dŵr ganolbwyntio arnynt.

### Ansawdd Microbiolegol

Mae dulliau cyfoes o drin dŵr yn y DU, yn enwedig diheintio, wedi sicrhau bod y cyhoedd yn cael eu diogelu rhag clefydau a gludir mewn dŵr. Mae'r profion dangosydd i ganfod yr arwyddion manylaf posib o organebau heintus mewn cyflenwadau dŵr yn seiliedig ar ddadansoddiadau rheolaidd sy'n chwilio am grŵp cyffredin o facteria (coliformau) a'r dangosydd mwy penodol o heintio gan ysgarthion (*E. coli*).

Yn ddelfrydol, ni ddylai coliformau fod yn bresennol mewn unrhyw sampl o ddŵr sy'n gadael gwaith trin dŵr. Yn 2007, roedd *E. coli* yn absennol o 100% o samplau o'r fath o gyflenwadau Dŵr Cymru, ac roedd coliformau yn absennol o 99.84% o samplau. Ar yr adegau prin pan geir yr organebau dangosydd hyn mewn samplau, eir ati ar unwaith i ymchwilio i'r mater, cywiro'r diffyg ac ail-gymryd samplau. Mae'r ffaith ein bod yn parhau i gynnal y safon uchel hon yn arwydd o ymroddiad Dŵr Cymru a'i bartneriaid gweithredol i sicrhau bod dŵr yfed yn cyrraedd y safonau ansawdd angenrheidiol.

Ar ôl diheintio'r dŵr yn y gwaith trin, gall ansawdd bacterol ddirywio rhywfaint mewn cronfeydd gwasanaeth, prif bibellau dosbarthu a phibellau cwsmeriaid. Roedd coliformau'n absennol o 99.86% o samplau a gymerwyd o gronfeydd gwasanaeth ac yn absennol o 99.60% o'r samplau o dapiau cwsmeriaid. Roedd *E. coli* yn absennol o 99.96% o samplau o gronfeydd gwasanaeth ac yn absennol o 99.99% o'r samplau o dapiau cwsmeriaid.

Bydd gwaith datblygu'r strategaeth perfformiad bacteriolegol a'r cynllun gweithredu ar gyfer y gweithfeydd trin dŵr a'r system ddosbarthu yn parhau i dargedu gwaith cywiro er mwyn gwella'u gallu i gydymffurfio â safonau bacteriolegol.

### Cryptosporidiwm

Organeb ficrosgopig yw cryptosporidiwm sy'n achosi clefydau a gludir mewn dŵr ymhlith pobl. I'r perwyl hwn, cyflwynwyd rheoliadau newydd yng Nghymru a Lloegr ar 1 Ebrill 2000 sy'n sicrhau bod safleoedd yr aseswyd eu bod mewn perygl yn gweithredu samplu parhaus neu ddefnyddio triniaeth ychwanegol. Yn ystod 2007, o'r 19 o weithfeydd a gafodd eu monitro'n gyson am gryptosporidiwm, ni chafwyd yr un achos o fethu'r safonau nac unrhyw achos cysylltiedig o salwch yn sgil cryptosporidiwm.

## **Clorineiddio/Cloraminio**

Mae clorineiddio a chloraminio yn brosesau diheintio a ddefnyddir gan gwmnïau dŵr i atal clefydau a gludir mewn dŵr ac i ddiogelu iechyd y cyhoedd. Mae'n hanfodol bod y defnydd gorau yn cael ei wneud o'r prosesau hyn er mwyn diogelu iechyd y cyhoedd a chydymffurfio ag amrywiaeth o baramedrau.

Blas neu arogl clorin mewn dŵr yw un o'r rhesymau pennaf a roddir gan gwsmeriaid dros fod yn anfodlon ag ansawdd eu cyflenwadau dŵr. Fel arfer, nid lefel y clorin sy'n dod i sylw'r cwsmer ond newid sydyn yn lefel y clorin a all ddigwydd o ganlyniad i newidiadau i'r driniaeth ddŵr neu ail-ddosbarthu cyflenwadau.

Yn ystod 2007, wrth ddadansoddi samplau am flas ac arogl, gwelwyd eu bod yn cydymffurfio 100% â'r safonau blas ac arogl.

Gall y broses glorineiddio arwain at ffurfio trihalomethanau (THMs). Mae hyn yn digwydd pan fydd clorin yn adweithio gyda moleciwlau organig a geir yn naturiol yn y rhan fwyaf o ddŵr o afonydd a chronfeydd. Yn 2007, o gyfanswm o 604 o samplau dŵr tap cwsmeriaid, roedd 98.84% yn cydymffurfio â'r safon THMs, a dim ond saith sampl yn y system ddsbarthu oedd yn uwch na'r safon.

Gall nitraid gael ei gynhyrchu pan ddefnyddir cloraminio fel dull diheintio parhaol i gynnal safonau microbiolegol yn y system ddsbarthu. Yn ystod 2007, roedd 100% o'r samplau o dapiau cwsmeriaid yn cydymffurfio â'r safon ar gyfer nitraid.

Sicrhau bod cyflenwadau dŵr yn iachus o safbwynt bacteriolegol yw ein prif flaenoriaeth bob amser wrth ystyried manteision clorineiddio a chloraminio. Defnyddiwyd y prosesau trin i'r eithaf gan reoli'n ofalus y defnydd a wneir o glorin a thrwy gwblhau addasiadau angenrheidiol mewn llawer o weithfeydd, gwelwyd gwelliant sylweddol yn lefelau cydymffurfio â safonau bacteriolegol, THM a nitraid dros y blynyddoedd diwethaf. Bydd y cynlluniau strategol allweddol ym maes ansawdd yn parhau i wella'n harferion gweithredol a bydd targedu buddsoddiadau'n sicrhau lefelau cydymffurfio uwch.

## **Alwminiwm**

Daw dros 90% o gyflenwadau Dŵr Cymru o afonydd a chronfeydd ac mae'n rhaid trin y rhan fwyaf o'r dŵr hwn drwy geulo cemegol cyn ei roi drwy hidlenni tywod i sicrhau ei fod o safon uchel. Mae i geulyddion cemegol waith hanfodol pwysig sef tynnu amhureddau moleciwlaidd a microsgopig mewn dŵr at ei gilydd yn ronynnau digon mawr i'w tynnu o'r dŵr (ar ôl gwaelodi) drwy ei hidlo'n gyflym trwy dywod.

Yn ystod 2007, roedd Dŵr Cymru yn parhau i ddefnyddio cyfansoddion alwminiwm ar gyfer ceulo mewn gweithfeydd trin dŵr gan mai dyma'r driniaeth fwyaf effeithiol, naill ai oherwydd nad oedd ansawdd cemegol y dŵr yn addas neu am nad oedd yn gwaddodi ddigon i ddefnyddio ceulyddion haearn yn foddhaol.

Mae Dŵr Cymru wedi ymrwmo i sicrhau bod ei holl gyflenwadau'n dal i gydymffurfio â'r safon ar gyfer alwminiwm. Bydd yn parhau i ddefnyddio ceulyddion alwminiwm os mai dyma yw'r driniaeth fwyaf effeithiol, ond mae Dŵr Cymru yn parhau i sicrhau bod arferion gweithio da yn cael eu defnyddio.

O'r samplau a gymerwyd o dapiau cwsmeriaid a'u harchwilio am alwminiwm yn 2007, roedd 100% yn cydymffurfio â'r safon 200ug/l (neu rannau o bob biliwn).

Pan geir lefelau uwch na'r safon, fel rheol bydd rhywbeth wedi tarfu ar y dyddodion yn y prif bibellau. Mae rhaglen fuddsoddi i lanhau'r prif bibellau wedi'i chymeradwyo a bydd hyn yn lleihau'r tebygolrwydd o fethiant.

## **Haearn a Manganîs yn achosi Lliw ar y Dŵr**

Roedd lefelau haearn a manganîs mewn rhai samplau o dapiau ein cwsmeriaid yn uwch na'r safonau penodedig. Mae'r elfennau hyn yn gyfrifol am lawer o gwynion am liw ar y dŵr ond nid ydynt yn peryglu iechyd y cyhoedd. Seilir y safonau ansawdd ar gyfer haearn a manganîs mewn cyflenwadau dŵr ar ystyriaethau esthetig gyda'r nod o leihau staenio ac afliwio, yn hytrach nag ar unrhyw ystyriaethau sy'n gysylltiedig ag iechyd.

Ceir haearn a manganîs yn naturiol mewn llawer o ddyfroedd uwchdirol. Defnyddir haearn hefyd yn y broses geulo mewn amryw o weithfeydd trin dŵr a dyma yw deunydd dros hanner ein pibellau dŵr.

Mae haearn a manganîs yn tueddu i ffurfio dyddodion llac mewn prif bibellau dŵr, gan wneud cyflenwadau dŵr yn gymylog os bydd y llif yn y brif bibell yn cael ei darfu neu ei droi am yn ôl. Gall cwsmeriaid weld gronynnau oren, brown neu ddu yn y dŵr sy'n gwaelodi pan fydd y dŵr yn llonydd.

Llwyddwyd i atal haearn a manganîs rhag cyrraedd y cyflenwad dŵr trwy wneud gwelliannau mewn gweithfeydd trin dŵr, fel ychwanegu'r swm cywir o geulydd a chywiro'r pH. Ond gan fod pibellau haearn yn rhydu a chramennu, mae haearn felly'n parhau yn y systemau cyflenwi. Ni ellir glanhau haearn na manganîs (na'r cymylogrwydd cyffredinol chwaith) o'r system hyd nes i bob prif bibell yr effeithir arni gael ei hadnewyddu neu ei hail-leinio. Ceir rhaglen barhaus o adnewyddu prif bibellau, a disgwylir iddi gael ei chwblhau erbyn diwedd 2010.

Yn 2007, roedd 99.55% o'r samplau o dapiau ein cwsmeriaid yn cydymffurfio â'r safon ofynnol ar gyfer haearn, sef 200ug/l (neu rannau o bob biliwn).

Sicrhawyd ein perfformiad gorau erioed o safbwynt cydymffurfio â'r safon ar gyfer haearn yn 2007, yn bennaf oherwydd ein rhaglen i newid y prif bibellau, gyda thua 440km o'r pibellau haearn yn cael eu hadnewyddu. Mae gwaith adnewyddu a llifolchi yn parhau yn y maes hwn a dylai hyn leihau'r perygl o fethiannau o'r fath yn y dyfodol.

Yn yr un modd, roedd 99.78% o'r samplau o dapiau ein cwsmeriaid yn cydymffurfio â'r safon ofynnol ar gyfer manganîs, sef 50ug/l (neu rannau o bob biliwn), gyda'r lefel yn uwch nag a ganiateir mewn 4 parth cyflenwi dŵr.

## **Cymylogrwydd**

Mae dŵr yn edrych yn gymylog pan fydd llawer o ronynnau bach ynddo. Weithiau gelwir hyn yn 'loywder' dŵr. Os bydd dŵr yn gymylog iawn, gall amharu ar effeithiolrwydd y broses ddiheintio ac felly mae'n bwysig adolygu lefelau cymylogrwydd yn rheolaidd. O dan reoliadau 2001, mae'n ofynnol i gwmnïau fesur pa mor gymylog yw'r dŵr yn eu holl weithfeydd trin. Pennwyd safon o 1 NTU fel safon ddangosydd ar gyfer cymylogrwydd mewn gweithfeydd trin dŵr gyda'r safon yn dal yn 4 NTU yn y parthau cyflenwi dŵr.

Yn ystod 2007, roedd 100% o ddŵr tap y cwsmeriaid yn cydymffurfio â'r safonau ar gyfer cymylogrwydd; roedd 99.9% o'r dŵr yn ein gweithfeydd trin yn cydymffurfio â'r safonau, gyda dim ond 12 yn methu. Roedd hwn yn welliant sylweddol o gymharu â 2006.

## Plwm

Daw plwm mewn dŵr tap o'r pibellau plwm a geir mewn hen dai, naill ai yng ngwaith plymio'r tŷ neu yn y bibell gyswllt i'r brif bibell. Nid oes unrhyw blwm mewn dŵr a gyflenwir gan Dŵr Cymru cyn iddo gyrraedd y bibell gyswllt hon. Ar Ragfyr 25 2003, yn unol â'r Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr) (Cymru) 2001, pennwyd safon o 25ug/l (neu rannau o bob biliwn) ar gyfer plwm a 10ug/l (neu rannau o bob biliwn) erbyn diwedd 2013. Mae'r camau a gymerwyd gan y cwmni i gyrraedd y safon newydd yn cynnwys cyflwyno triniaeth am y tro cyntaf gan ddefnyddio orthoffosffad, gwneud y defnydd gorau o'r offer ychwanegu orthoffosffad sydd gennym, rhoi'r gorau i ddefnyddio'r cyflenwad os na ellir ei drin â ffosffad a gosod pibellau newydd yn lle rhai plwm. Mae orthoffosffad yn ffurfio haen anhydawdd ar bibellau plwm sy'n atal y plwm rhag hydoddi a chyrraedd y cyflenwad.

Wrth fonitro yn 2007, gwelwyd mai dim ond un sampl o ddŵr tap ein cwsmeriaid a oedd â lefel uwch o blwm na'r hyn a ganiateir, sef 25ug/l (neu rannau o bob biliwn). Mae hyn yn dangos bod y cwmni'n dal i ymdrechu i sicrhau ei fod yn cydymffurfio â'r safon 10ug/l (neu rannau o bob biliwn) erbyn diwedd 2013.

Os yw cwsmer yn gwybod neu'n amau fod yna bibellau plwm yn ei eiddo, bydd Dŵr Cymru yn samplu ac yn dadansoddi'r dŵr o'r eiddo hwnnw yn ddi-dâl.

Os gwelir bod dros 25ug/l (neu rannau o bob biliwn) o blwm yn y dŵr, hysbysir y cwsmer o'r canlyniad ac fe'i cynghorir i redeg y tap cyn defnyddio'r dŵr ac i ystyried cael gwared ar unrhyw bibellau plwm sydd yn yr eiddo. Hysbysir yr Awdurdod Lleol hefyd.

Pan fydd perchennog eiddo yn newid pibell blwm y mae ef neu hi'n gyfrifol amdani, bydd Dŵr Cymru, ar gais y cwsmer, yn newid unrhyw bibell blwm y mae'r Cwmni yn gyfrifol amdani y tu allan i'r eiddo yn ddi-dâl.

## Plaladdwyr (gan gynnwys chwynladdwyr)

Defnyddir llawer o blaladdwyr yn helaeth – yn y diwydiant amaethyddol ac mewn meysydd eraill – ac mae rhai o'r rhain yn cyrraedd afonydd, cronfeydd a dyfrhaenau y ceir cyflenwadau dŵr yfed ohonynt.

Yng Nghymru nid oes llawer o amaethu â'r dwys, ond defnyddir llawer o blaladdwyr mewn dipiau defaid. Mae'r glaw mawr yn sicrhau bod plaladdwyr a allai gyrraedd y gylchred ddŵr yn cael eu gwanhau a'u gwasgaru. O ganlyniad, ychydig iawn o ffynonellau Dŵr Cymru sy'n cael eu heffeithio'n ddrwg gan grynodiadau mawr o blaladdwyr.

Yn ôl safonau plaladdwyr mewn cyflenwadau dŵr, ni ddylid cael mwy nag 0.1ug/l (neu rannau o bob biliwn) o blaladdwyr unigol ac ni ddylai cyfanswm yr holl blaladdwyr fod yn fwy na 0.5ug/l (neu rannau o bob biliwn). Ceir safonau llymach, sef 0.03ug/l (neu rannau o bob biliwn), ar gyfer pedwar plaladdwr unigol, sef Aldrin, Dieldrin, Heptachlor ac Epocsid Heptachlor.

Yn 2007, dim ond un sampl a fethodd y safon 0.5ug/l (neu rannau o bob biliwn). O'r plaladdwyr unigol, roedd lefelau dau sampl yn uwch na'r safon 0.1ug/l (neu rannau o bob biliwn), sef Mancozeb ac MCPA.

## Fflworid

Ar hyn o bryd, nid yw Dŵr Cymru yn fflworideiddio yr un o'i gyflenwadau dŵr ac nid yw wedi cael unrhyw awgrym fod Cynulliad Cenedlaethol Cymru yn bwriadu gofyn am gyflwyno fflworideiddio.

Mae Deddf Dŵr 2003 yn diwygio Deddf y Diwydiant Dŵr 1991, gan nodi bellach fod yn rhaid i gwmnïau dŵr ddilyn cyfarwyddyd yr Awdurdod Iechyd neu, yng Nghymru, Lywodraeth Cynulliad Cymru. Yn ymarferol, mae hyn yn golygu mai'r rhai sy'n uniongyrchol atebol i'w poblogaeth leol sy'n gwneud y penderfyniad.

Nid oes gan Dŵr Cymru fel sefydliad farn ar werth neu ddiffyg gwerth fflworideiddio cyflenwadau dŵr. Byddwn yn dilyn arweiniad y llywodraeth ac yn cydymffurfio â'n gofynion cyfreithiol.

## Paramedrau eraill o Ddiddordeb

Yn 2007, ni chafwyd lefelau uwch na'r safon ar gyfer pH neu Fensopyren, sy'n rhagori ar berfformiad y ddwy flynedd flaenorol.

Defnyddir **pH** i fesur asidrwydd dŵr. Gall haearn ac asidau hwmig mewn priddoedd mawnoglyd olygu bod y dŵr braidd yn asidaidd a'r pH yn isel. Gelwir hyn yn "ddŵr meddal" ac mae'n nodweddiadol o ddyfroedd uwchdiroedd Cymru. Bydd y lefelau uwch na'r safon pH a gafwyd yn 2006 yn cael eu datrys trwy weithredu cynllun ansawdd yn y gwaith trin dŵr sy'n cyflenwi'r ardal. Bwriedir gosod offer ychwanegu carbon deuocsid er mwyn cydymffurfio â'r safon.

Mae **Bensopyren** yn un o nifer o gyfansoddion a elwir yn hydrocarbonau aromatig polysyclig. Os caiff ei ganfod mewn cyflenwadau dŵr, mae'n arwydd bod dŵr wedi treiddio i'r cyflenwad o brif bibellau a leiniwyd â chŏl tar. Ni ddefnyddir y math hwn o leinin bellach a, gan fod cynifer o brif bibellau wedi cael eu hadnewyddu a'u hadfer, anaml iawn y clywir amdano mewn cyflenwadau. Os caiff ei ganfod, gwneir profion ar y prif bibellau ac, os yw'n briodol, gosodir rhai newydd yn eu lle.

## CWSMERIAID YN CYSYLLTU

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Yn ystod 2007, gofynnodd y DWI i gwmnïau nodi sawl gwaith yr oedd cwsmeriaid wedi cysylltu â nhw ynghylch ansawdd y dŵr yfed. Ffonio yw'r dull cysylltu arferol, ond mae rhai cwsmeriaid yn ysgrifennu llythyr neu'n anfon neges e-bost. Mae rhai cwsmeriaid yn cysylltu'n uniongyrchol â'r DWI.

Caiff yr holl negeseuon hyn eu cofrestru ar system cynllunio gwaith y cwmni. Mae hyn yn helpu'r cwmni i nodi pa feysydd sy'n achosi pryder, o bosibl o ganlyniad i ddigwyddiadau fel prif bibellau yn torri a meysydd lle mae angen gwneud gwelliannau i'r rhwydwaith er mwyn gwella diogelwch y cyflenwadau.

Yn ystod 2007, derbyniodd Dŵr Cymru tua 19,000 o negeseuon fel hyn. Y ffordd y mae'r dŵr yn edrych sy'n peri'r pryder mwyaf i gwsmeriaid. Roedd 65% o'r negeseuon a gafwyd gan gwsmeriaid yn ystod 2007 yn ymwneud â'r ffordd yr oedd y dŵr yn edrych. Trwy fuddsoddi yn y system ddsbarthu fel rhan o'r rhaglen barhaus i adnewyddu prif bibellau a thrwy wella ein trefniadau gweithredol a'n gwaith cynnal a chadw, bydd ansawdd y dŵr a gyflenwir i gwsmeriaid yn dal i wella a bydd llai o bobl yn anfodlon.

Mater arall sy'n achos pryder i gwsmeriaid yw blas ac arogl dŵr. Yn ystod 2007, blas ac arogl dŵr oedd testun 10% o'r negeseuon a gafwyd gan gwsmeriaid. Fel rheol, clorin sy'n achosi'r rhan fwyaf o broblemau gyda blas ac arogl dŵr ac, os oes modd, mae lefelau'r clorin yn cael eu haddasu i ganfod y lefel orau er mwyn diheintio'r dŵr yn effeithiol heb amharu ar flas/arogl dŵr.

Mae'r holl negeseuon yn cael eu hadolygu bob chwarter i weld beth y mae angen ei wneud i wella canfyddiad cwsmeriaid am ansawdd dŵr.

## DIGWYDDIADAU

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Yn ystod 2007, hysbyswyd yr Arolygiaeth Dŵr Yfed (DWI) am 52 o ddigwyddiadau gan Dŵr Cymru. O'r rhain, ystyriwyd bod 16 yn ddigwyddiadau a effeithiodd ar ansawdd y dŵr yfed. Yn ogystal â hysbysu'r DWI, cysylltir â'r Awdurdodau Lleol, yr Awdurdodau Iechyd, Cyngor Defnyddwyr Dŵr (Cymru) a Llywodraeth Cynulliad Cymru i roi gwybod am y digwyddiadau hysbysadwy hyn.

Mae'r DWI wedi asesu'r holl ddigwyddiadau ac wedi gwneud argymhellion priodol i'r cwmni.

### Lliw ar y Dŵr

Hysbyswyd am dri achos o liw ar y dŵr o ganlyniad i waddodion haearn a manganîs yn 2007 fel a ganlyn:

- Effeithiwyd ar 2223 o adeiladau posibl gan liw ar y dŵr o ganlyniad i fethiant pwmp a arweiniodd at newidiadau cyflymder yn ardal yr Eglwys Newydd o Gaerdydd ym mis Ebrill.
- Effeithiwyd ar 53,000 o adeiladau posibl gan liw ar y dŵr ar ôl i'r prif gyflenwad dorri ger Gwaith Trin Dŵr Crai yng Nghwm Tawe ym mis Mehefin.
- Effeithiwyd ar 19,000 o adeiladau posibl gan liw ar y dŵr ar ôl i'r prif gyflenwad dorri yn y Rhyl ym mis Gorffennaf.

### Rhybuddion Berwi

Cyhoeddwyd un Rhybudd Berwi yn ystod 2007.

- Cyhoeddwyd y Rhybudd Berwi i tua 7000 o adeiladau sy'n derbyn dŵr o Waith Trin Dŵr Whitbourne ger Henffordd yn dilyn llifogydd ym mis Gorffennaf.

### Eraill

Penderfynodd y DWI fod deuddeg achos arall yn ddigwyddiadau yn 2007 fel a ganlyn:

- Effeithiwyd ar 100,000 o adeiladau posibl ym mis Ionawr oherwydd methiant Gwaith Trin Dŵr Talybont ger Merthyr Tudful yn dilyn toriad yn y cyflenwad trydan.
- Cyhoeddwyd rhybudd i beidio ag yfed y dŵr i saith eiddo ar Ystâd ym Mangor, yn dilyn achos posibl o lygru'r dŵr gan ddisel ym mis Mai.
- Effeithiwyd ar 27,343 o bobl bosibl sy'n derbyn dŵr gan Waith Trin Dŵr Capel Dewi ger Caerfyrddin ym mis Gorffennaf, Awst a Hydref oherwydd lefelau haearn uchel ac roedd hyn yn gyfrifol am 3 digwyddiad.

- Effeithiwyd ar 100,000 o bobl bosibl sy'n derbyn dŵr gan Waith Trin Dŵr Pontsticill ger Merthyr Tudful ym mis Awst oherwydd lefelau alwminiwm uchel.
- Effeithiwyd ar 17,156 o bobl bosibl sy'n derbyn dŵr gan Gronfa Ddŵr Gwasanaeth Penymynydd ger Pont Menai ym mis Awst oherwydd lefel coliform uchel.
- Effeithiwyd ar 237 o adeiladau posibl sy'n derbyn dŵr gan Gronfa Ddŵr Gwasanaeth Llithfaen ger Pwllheli oherwydd achos arall o lefel coliform uchel ym mis Awst.
- Effeithiwyd ar 85,529 o adeiladau posibl pan fethwyd â thrin y dŵr â chlorin oherwydd toriad yn y cyflenwad trydan yng Ngwaith Trin Dŵr Bryn Cowlyd ger Betws-y-Coed ym mis Medi.
- Effeithiwyd ar 6284 o adeiladau posibl pan fethwyd â gwneud gwaith ceulo yng Ngwaith Trin Dŵr Llanfair-ym-Muallt ym mis Hydref.
- Effeithiwyd ar 10,000 o bobl bosibl sy'n derbyn dŵr gan Waith Trin Dŵr Llyswen ger Llanfair-ym-Muallt oherwydd lefelau alwminiwm uchel ym mis Hydref.
- Effeithiwyd ar 8000 o bobl bosibl oherwydd bod y dŵr yn rhy gymylog pan fethodd un o'r hidlenni golchi yng Ngwaith Trin Dŵr Pentwyn ger Caerfyrddin ym mis Rhagfyr.

## ATODIAD

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Caiff yr atodlenni a ganlyn eu paratoi yn unol â Rheoliadau Cyflenwad Dŵr (Ansawdd Dŵr) (Cymru) 2001, Rheoliad 36.

# Company Compliance 2007

## 1. European Standards

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Minimum	Maximum	No. of works with failures
Nitrite	A013B	0.1 mg NO <sub>2</sub> /l	812	0	<0.0006	0.0122	0
<b>TOTAL</b>	-	-	<b>812</b>	<b>0</b>	-	-	-

### Quality of water leaving bulk supply points

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Min	Max	Failure by supply point
1,2 Dichloroethane	F001	3 µg/l	258	0	<0.08	0.08	0
Benzene	F002	1 µg/l	258	0	<0.06	0.06	0
Boron	D005A	1 mg B/l	257	0	<0.017	0.036	0
Bromate	F003	10 µg BrO <sub>3</sub> /l	69	0	<0.0006	0.0045	0
Cyanide	B003	50 µg CN/l	257	0	<0.0002	0.0092	0
Fluoride	A027	1.5 mg F/l	257	0	<0.0009	0.113	0
Mercury	B005	1 µg Hg/l	257	0	<0.012	0.028	0
Tetrachloroethene/Trichloroethene	D009B	10 µg/l	255	0	0	0.25	0
Pesticides (2,4,5-T)	P076	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (2,4-Db)	P082	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (2,4-D)	P020	0.1 µg/l	184	0	<0.002	0.02	0
Pesticides (Aldrin)	P002	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Alpha-HCH)	P003	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Asulam)	P133	0.1 µg/l	184	0	<0.005	0.008	0
Pesticides (Atrazine)	P004	0.1 µg/l	257	0	<0.001	0.028	0
Pesticides (Benazolin)	P138	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (Beta-HCH)	P007	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Bromoxynil)	P008	0.1 µg/l	184	0	<0.002	0.003	0
Pesticides (Captan)	P182	0.1 µg/l	257	0	<0.002	0.07	0
Pesticides (Carbendazim)	P150	0.1 µg/l	115	0	<0.002	0.002	0
Pesticides (Chlorfenvinphos)	P013	0.1 µg/l	258	0	<0.005	0.009	0
Pesticides (Chlorothalonil)	P015	0.1 µg/l	257	0	<0.003	0.003	0
Pesticides (Chlorpyrifos)	P017	0.1 µg/l	258	0	<0.003	0.01	0
Pesticides (Chlortoluron)	P014	0.1 µg/l	115	0	<0.002	0.004	0
Pesticides (Diazinon)	P024	0.1 µg/l	258	0	<0.005	0.006	0
Pesticides (Dicamba)	P025	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (Dichlofuanid)	P140	0.1 µg/l	258	0	<0.004	0.013	0
Pesticides (Dichlorprop)	P026	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (Dieldrin)	P028	0.1 µg/l	257	0	<0.002	0.002	0
Pesticides (Diuron)	P032	0.1 µg/l	115	0	<0.003	0.004	0
Pesticides (Endosulfan A (alpha-Endosulfan))	P101	0.1 µg/l	257	0	<0.002	0.003	0
Pesticides (Endosulfan B (beta-Endosulfan))	P102	0.1 µg/l	257	0	<0.002	0.003	0
Pesticides (Endrin)	P034	0.1 µg/l	257	0	<0.002	0.003	0
Pesticides (Ethofumersate)	P221	0.1 µg/l	257	0	<0.002	0.02	0
Pesticides (Fenpropidin)	P168	0.1 µg/l	257	0	<0.003	0.03	0
Pesticides (Fenpropimorph)	P037	0.1 µg/l	257	0	<0.002	0.06	0
Pesticides (Gamma-HCH (Lindane))	P041	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Glyphosate)	P042	0.1 µg/l	32	0	<0.008	0.008	0
Pesticides (Heptachlor)	P043	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Heptachlor epoxide)	P044	0.1 µg/l	257	0	<0.002	0.002	0
Pesticides (Hexachlorobenzene)	P045	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Ioxynil)	P049	0.1 µg/l	184	0	<0.001	0.001	0
Pesticides (Isoproturon)	P048	0.1 µg/l	115	0	<0.002	0.004	0
Pesticides (Linuron)	P051	0.1 µg/l	115	0	<0.003	0.005	0
Pesticides (MCPA)	P054	0.1 µg/l	184	1	<0.002	0.161	1
Pesticides (MCPB)	P055	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (MCPP(Mecoprop))	P053	0.1 µg/l	184	0	<0.002	0.009	0
Pesticides (Metamitron)	P184	0.1 µg/l	115	0	<0.002	0.003	0
Pesticides (Methabenzthiazuron)	P167	0.1 µg/l	115	0	<0.002	0.004	0
Pesticides (op-DDD (TDE))	P114	0.1 µg/l	257	0	<0.001	0.002	0

Pesticides (op-DDE)	P115	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (op-DDT)	P116	0.1 µg/l	257	0	<0.002	0.003	0
Pesticides (Parathion (Parathion ethyl))	P059	0.1 µg/l	258	0	<0.005	0.006	0
Pesticides (Pentachlorophenol)	P060	0.1 µg/l	184	0	<0.002	0.002	0
Pesticides (Permethrin)	P119	0.1 µg/l	257	0	<0.004	0.012	0
Pesticides (pp-DDD (TDE))	P123	0.1 µg/l	257	0	<0.002	0.003	0
Pesticides (pp-DDE)	P124	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (pp-DDT)	P125	0.1 µg/l	257	0	<0.001	0.002	0
Pesticides (Propachlor)	P126	0.1 µg/l	257	0	<0.002	0.02	0
Pesticides (Propazine)	P066	0.1 µg/l	257	0	<0.001	0.01	0
Pesticides (Propetamphos)	P069	0.1 µg/l	258	0	<0.004	0.007	0
Pesticides (Propyzamide)	P071	0.1 µg/l	257	0	<0.002	0.02	0
Pesticides (Simazine)	P073	0.1 µg/l	257	0	<0.001	0.01	0
Pesticides (Terbutryn)	P077	0.1 µg/l	257	0	<0.002	0.02	0
Pesticides (Trietazine)	P132	0.1 µg/l	257	0	<0.001	0.01	0
Pesticides (Trifluralin)	P081	0.1 µg/l	257	0	<0.002	0.02	0
Pesticides - Total Substances	B010	0.5 µg/l	257	0	0	0.161	0
<b>TOTAL</b>	-	-	<b>14869</b>	<b>1</b>	-	-	-

Quality of Water at consumers' taps

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Min	Max	No. of zones with failures
1,2 Dichloroethane	F001	3 µg/l	355	0	<0.08	0.08	0
Antimony	B008A	5 µg Sb/l	602	0	<0.0001	0.0002	0
Arsenic	B001A	10 µg As/l	602	0	<0.0004	0.0016	0
Benzene	F002	1 µg/l	355	0	<0.06	0.06	0
Benzo (a) Pyrene	D007	0.01 µg/l	606	0	<0.001	0.01	0
Boron	D005A	1 mg B/l	354	0	<0.017	0.531	0
Bromate	F003	10 µg BrO <sub>3</sub> /l	545	0	<0.0006	0.0061	0
Cadmium	B002	5 µg Cd/l	602	0	<0.0001	0.0008	0
Chromium	B004	50 µg Cr/l	602	0	<0.0007	0.0026	0
Copper	A024A	2 mg Cu/l	604	0	<0.0027	0.846	0
Cyanide	B003	50 µg CN/l	354	0	<0.0004	0.0049	0
<i>E. coli</i>	C002	0 number/100 ml	7710	1	0	5	1
Enterococci	C003	0 number/100 ml	602	0	0	0	0
Fluoride	A027	1.5 mg F/l	354	0	0.001	0.397	0
Lead	B007A	25 µg Pb/l	604	1	<0.0005	0.03	1
Mercury	B005	1 µg Hg/l	355	0	<0.012	0.031	0
Nickel	B006A	20 µg Ni/l	602	1	<0.0009	0.023	0
Nitrate	A012	50 mg NO <sub>3</sub> /l	833	0	<0.0587	7.5417	0
Nitrite	A013A	0.5 mg NO <sub>2</sub> /l	838	0	<0.0006	0.1485	0
Nitrate/Nitrite Formula	A013C	1 mg NO <sub>3</sub> /l	831	0	0	0.668	0
Polycyclic aromatic hydrocarbons (PAHs)	B011F	0.1 µg/l	604	0	0	0.01	0
Selenium	B009	10 µg Se/l	602	0	<0.0002	0.0011	0
Tetrachloroethene/Trichloroethene	D009B	10 µg/l	354	0	0	0.18	0
Trihalomethanes (THMs)	D011	100 µg/l	604	7	1.3	125.8	6
Pesticides (2,4,5-T)	P076	µg/l	317	0	<0.002	0.002	0
Pesticides (2,4,-Db)	P082	µg/l	317	0	<0.002	0.002	0
Pesticides (2,4-D)	P020	µg/l	317	0	<0.002	0.012	0
Pesticides (Aldrin)	P002	µg/l	355	0	<0.001	0.002	0
Pesticides (Alpha-HCH)	P003	µg/l	355	0	<0.001	0.002	0
Pesticides (Asulam)	P133	µg/l	345	0	<0.005	0.008	0
Pesticides (Atrazine)	P004	µg/l	358	0	<0.001	0.014	0
Pesticides (Benazolin)	P138	µg/l	317	0	<0.002	0.002	0

Pesticides (Beta-HCH)	P007	µg/l	355	0	<0.001	0.002	0
Pesticides (Bromoxynil)	P008	µg/l	317	0	<0.002	0.003	0
Pesticides (Captan)	P192	µg/l	358	0	<0.002	0.07	0
Pesticides (Carbendazim)	P150	µg/l	257	0	<0.002	0.002	0
Pesticides (Chlorfenvinphos)	P013	µg/l	355	0	<0.005	0.018	0
Pesticides (Chlorothalonil)	P015	µg/l	355	0	<0.003	0.006	0
Pesticides (Chlorpyrifos)	P017	µg/l	355	0	<0.003	0.01	0
Pesticides (Chlortoluron)	P014	µg/l	257	0	<0.002	0.04	0
Pesticides (Diazinon)	P024	µg/l	355	0	<0.005	0.014	0
Pesticides (Dicamba)	P025	µg/l	317	0	<0.002	0.002	0
Pesticides (Dichlofuanid)	P140	µg/l	355	0	<0.004	0.026	0
Pesticides (Dichlorprop)	P026	µg/l	317	0	<0.002	0.002	0
Pesticides (Dieldrin)	P028	µg/l	355	0	<0.002	0.004	0
Pesticides (Diuron)	P032	µg/l	257	0	<0.003	0.041	0
Pesticides (Endosulfan A (alpha-Endosulfan))	P101	µg/l	355	0	<0.002	0.004	0
Pesticides (Endosulfan B (beta-Endosulfan))	P102	µg/l	355	0	<0.002	0.004	0
Pesticides (Endrin)	P034	µg/l	355	0	<0.002	0.004	0
Pesticides (Ethofumersate)	P221	µg/l	358	0	<0.002	0.02	0
Pesticides (Fenpropidin)	P169	µg/l	355	0	<0.003	0.03	0
Pesticides (Fenpropimorph)	P037	µg/l	358	0	<0.002	0.06	0
Pesticides (Gamma-HCH (Lindane))	P041	µg/l	355	0	<0.001	0.002	0
Pesticides (Glyphosate)	P042	µg/l	147	0	<0.008	0.008	0
Pesticides (Heptachlor)	P043	µg/l	355	0	<0.001	0.002	0
Pesticides (Heptachlor epoxide)	P044	µg/l	355	0	<0.002	0.004	0
Pesticides (Hexachlorobenzene)	P045	µg/l	355	0	<0.001	0.002	0
Pesticides (Ioxynil)	P049	µg/l	317	0	<0.001	0.091	0
Pesticides (Isoproturon)	P048	µg/l	257	0	<0.002	0.023	0
Pesticides (Linuron)	P051	µg/l	257	0	<0.003	0.013	0
Pesticides (Mancozeb (a Dithiocarbamate Fungicide))	P187	µg/l	42	1	<0.1	2.66	1
Pesticides (MCPA)	P054	µg/l	317	0	<0.002	0.02	0
Pesticides (MCPB)	P055	µg/l	317	0	<0.002	0.011	0
Pesticides (MCPP(Mecoprop))	P053	µg/l	317	0	<0.002	0.016	0
Pesticides (Metamitron)	P194	µg/l	257	0	<0.002	0.003	0
Pesticides (Methabenzthiazuron)	P167	µg/l	257	0	<0.002	0.003	0
Pesticides (op-DDD (TDE))	P114	µg/l	355	0	<0.001	0.002	0
Pesticides (op-DDE)	P115	µg/l	355	0	<0.001	0.002	0
Pesticides (op-DDT)	P116	µg/l	355	0	<0.002	0.006	0
Pesticides (Parathion (Parathion ethyl))	P059	µg/l	355	0	<0.005	0.01	0
Pesticides (Pentachlorophenol)	P060	µg/l	317	0	<0.002	0.002	0
Pesticides (Permethrin)	P119	µg/l	355	0	<0.004	0.008	0
Pesticides (pp-DDD (TDE))	P123	µg/l	355	0	<0.002	0.004	0
Pesticides (pp-DDE)	P124	µg/l	355	0	<0.001	0.002	0
Pesticides (pp-DDT)	P125	µg/l	355	0	<0.001	0.002	0
Pesticides (Propachlor)	P126	µg/l	358	0	<0.002	0.02	0
Pesticides (Propazine)	P066	µg/l	358	0	<0.001	0.01	0
Pesticides (Propetamphos)	P069	µg/l	355	0	<0.004	0.008	0
Pesticides (Propyzamide)	P071	µg/l	358	0	<0.002	0.02	0
Pesticides (Simazine)	P073	µg/l	358	0	<0.001	0.012	0
Pesticides (Terbutryn)	P077	µg/l	358	0	<0.002	0.02	0
Pesticides (Trietazine)	P132	µg/l	358	0	<0.001	0.01	0
Pesticides (Trifluralin)	P081	µg/l	358	0	<0.002	0.02	0
Pesticides (Triphenyltin (fentin))	P169	µg/l	24	0	<0.02	0.02	0
Pesticides - Total Substances	B010	0.5 µg/l	355	0	0	0.076	0
<b>TOTAL</b>	-	-	<b>40158</b>	<b>11</b>	-	-	-

## 2. NATIONAL STANDARDS

### Quality Water Leaving treatment works

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Minimum	Maximum	No. of works with failures
Coliform Bacteria	C001	0 number/100 ml	4963	8	0	42	6
<i>E. coli</i>	C002	0 number/100 ml	4963	0	0	0	0
<b>TOTAL</b>	-	-	<b>9926</b>	<b>8</b>	-	-	-

### Quality of water leaving bulk supply points

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Minimum	Maximum	Failures by supply point
Tetrachloromethane	D008	3 µg/l	258	0	<0.02	0.11	0
<b>TOTAL</b>	-	-	<b>258</b>	<b>0</b>	-	-	-

Quality of Water at Consumer's Tap (zones)

Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests failed	Minimum	Maximum	No. of zones with failures
Aluminium	A021	200 µg Al/l	1797	0	<0.011	0.196	0
Colour	A001	20 mg/l Pt/Co scale	1481	0	<0.4	6.9	0
Hydrogen ion (pH)	A006	6.5 - 10 pH value	1908	2	6.65	9.67	0
Iron	A022	200 µg Fe/l	2456	11	<0.007	0.347	10
Manganese	A023	50 µg Mn/l	1816	4	<0.0015	0.096	4
Organoleptic Odour	A003	Dilution no. 3 at 25°C	1834	0	0	2	0
Organoleptic Taste	A004	Dilution no. 3 at 25°C	1616	0	0	0	0
Sodium	A009	200 mg Na/l	602	0	1.3	5.6	0
Tetrachloromethane	D008	3 µg/l	355	0	<0.02	0.04	0
Turbidity	A002	4 NTUs	1566	0	<0.005	1.36	0
<b>TOTAL</b>	-	-	<b>15431</b>	<b>17</b>	-	-	-

3. Additional Monitoring Requirements

Quality of water leaving Treatment works

Indicator Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests Exceeding Specification	Min	Max
Colony Counts After 3 Days At 22°C	C007	No abnormal change	4963	0	<0	1010
Colony Counts After 48 Hours At 37°C	C013	No abnormal change	4963	0	<0	300
Residual Disinfectant - Free	C009	No abnormal change	4974	0	<0.01	1.91
Residual Disinfectant - Total	C010	No abnormal change	4974	0	0.18	2.06
Turbidity	A002A	1 NTU	10525	12	0.05	20
<b>TOTAL</b>	-	-	<b>30399</b>	<b>12</b>	-	-

Quality of water leaving bulk supply points

Indicator Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests Exceeding Specification	Minimum	Maximum
Chloride	D002A	250 mg Cl/l	257	0	6.3	69.3
<i>Clostridium perfringens</i>	C004A	0 number/100 ml	1725	1	0	1
Conductivity	D001	2500 µS/cm	1724	0	13	790
Radioactivity - Gross Alpha	F004	0.1 Bq/l	257	0	<0.002	0.091
Radioactivity - Gross Beta	F005	1 Bq/l	257	0	0.001	0.112
Radioactivity - Tritium	F006	100 Bq/l	258	0	<1.6	5.75
Sulphate	A007	250 mg SO <sub>4</sub> /l	257	0	<0.21	91.2
Total Organic Carbon (TOC)	A017	No abnormal change	257	0	<0.18	3.16
<b>TOTAL</b>	-	-	<b>4992</b>	<b>1</b>	-	-

Quality of Water at consumer's tap (zones)

Indicator Parameter	Parameter Code	Prescribed Concentration or Value	Total number of tests	Tests Exceeding Specification	Minimum	Maximum
		0.5 mg NH <sub>4</sub> /l	1593	0	<0.007	0.3535
Chloride	D002A	250 mg Cl/l	354	0	5.3	50.3
<i>Clostridium perfringens</i>	C004A	0 number/100 ml	1884	0	0	0
Coliform Bacteria	C001A	0 number/100 ml	7711	31	0	100
Colony Counts After 3 Days At 22°C	C007	No abnormal change	2165	1	<0	360
Colony Counts After 48 Hours At 37°C	C013	No abnormal change	2166	11	<0	520
Conductivity	D001	2500 µS/cm	992	0	42	468
Hydrogen ion (pH)	A006	9.5 pH Value	1908	2	6.65	9.67
Radioactivity - Gross Alpha	F004	0.1 Bq/l	604	1	<0.002	0.203
Radioactivity - Gross Beta	F005	1 Bq/l	604	0	0.001	0.165
Radioactivity - Tritium	F006	100 Bq/l	357	0	<1.6	7.17

Residual Disinfectant - Free	C009	No abnormal change	7659	0	<0	1.53
Residual Disinfectant - Total	C010	No abnormal change	7723	0	0.02	2.8
		250 mg SO <sub>4</sub> /l	354	0	<0.21	65
Total Organic Carbon (TOC)	A017	No abnormal change	354	0	0.09	8
TOTAL	-	-	364.28	46	-	-

## THE WATER INDUSTRY ACT 1991 : SECTION 19 (1) (b) UNDERTAKINGS

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones which are for the time being listed in Annex A to this Schedule of Works, and which are subject to revision as necessary.</p>	<p>The concentration or value of one or more of the parameters listed has exceeded the prescribed concentration or value and is likely to do so again in the zones listed in Annex A to this Schedule because of deficiencies in the distribution system. The relevant parameters for each water supply zone are listed in Annex A to this Schedule of Works. See 'Notes to the Schedule of Works'.</p>	<p>(a) Submit to the National Assembly for Wales the Company's distribution system strategy which describes the steps to be taken to identify the nature and extent of contraventions to justify the need for improvement works; to implement improvements to its distribution system to prevent a recurrence of the contraventions; and to demonstrate the benefits of the improvements made. The current strategy supplied by the Company is that entitled 'Mains Rehabilitation Strategy Document, Issue 4', and dated April 2005.</p> <p>(b) Implement the strategy, including all Pre- and Post-Renovation Assessments (PPRA).</p> <p>(c) Renovate (i.e. replace or reline) a total of 4,787 km of the distribution system. This renovation is to be carried out according to the priorities and methodologies described in the Company's strategy, as identified in the Notes to the Schedule of Works, and in 'Milestone Packages' as summarised below and detailed in Annex A to this Schedule of Works.</p> <p>Milestone Package 1, 699 km                      - date for completion of renovation work 31/12/2001                      - date for completion of PPRA 31/12/2002</p> <p>Milestone Package 2, 954 km                      - date for completion of renovation work 31/12/2003                      - date for completion of PPRA. 31/12/2004</p> <p>Milestone Package 3, 948 km                      - date for completion of renovation work 31/12/2005                      - date for completion of PPRA 31/12/2006</p> <p>Milestone Package 4, 1,036 km                      - date for completion of renovation work 31/12/2007                      - date for completion of PPRA 31/12/2008</p> <p>Milestone Package 5, 1,150 km                      - date for completion of renovation work 31/03/2010                      - date for completion of PPRA. 31/03/2011</p> <p>If renovation work is not justified by Pre-Renovation Assessment in the any of the zones listed, the zones of next highest priority should be substituted so as to maintain the output length specified for each Milestone Package in this Schedule of Works.</p> <p>(d) Apply non-aggressive cleaning techniques to remove loose deposits from a total of 3,944 km of the distribution system. This cleaning is to be applied systematically to each Water Supply Zone listed in Annex A and Annex C to this Schedule of Works, including any necessary trunk or feeder mains, concurrently with the completion of renovation work in each zone, in accordance with the Method Statement referred to in paragraph (e).</p> <p>(e) Submit a Method Statement for this cleaning which includes:</p> <ul style="list-style-type: none"> <li>- the methodology used to determine or confirm that it is appropriate to clean the area concerned, in particular to determine the origin of any particulate matter or discolouration events, and to confirm that significant quantities of particulate matter would not be brought into the area from upstream mains or treatment works,</li> <li>- the timing of cleaning works relative to other relevant actions in the supply system concerned, including any improvements to treatment, the renovation work in this Undertaking and Post-Renovation Assessment,</li> <li>- the criteria used to determine the particular mains to be cleaned,</li> <li>- the criteria for selecting the cleaning techniques to be used,</li> <li>- the methodology and design approach for determining the sequence of cleaning actions,</li> <li>- consideration of enabling works,</li> <li>- disposal arrangements,</li> <li>- arrangements to advise and protect consumers, and</li> </ul>	<p>(a) March 2005</p> <p>(b) For the duration of the Undertaking.</p> <p>(c) 31 March 2010, and by the completion dates for each milestone package below.</p> <p>(d) 31 March 2010</p> <p>(e) 30 September 2005</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
		<p>- the methods used to confirm that the cleaning work was effective, and that the condition of the distribution system in each Water Supply Zone is satisfactory.</p> <p>(f) Submit, in the form of a revised Annex C to this Schedule of Works, a programme for the cleaning works referred to in paragraph (d), setting out the types of techniques to be applied, lengths required and completion dates in each Water Supply Zone (WSZ). Revised Annexes shall include the programme for each Milestone Package as follows:            WSZs to be completed in Milestone Package 3            WSZs to be completed in Milestone Package 4            WSZs to be completed in Milestone Package 5</p> <p>(g) Submit to the National Assembly for Wales a full statement of progress with this Undertaking in the format specified periodically by the DWI.</p> <p>(h) Submit to the National Assembly for Wales a summary of progress with this Undertaking in the format notified periodically by the DWI.</p> <p>(i) Submit to the National Assembly for Wales when necessary proposed updates to Annex A to this Schedule. See Notes to the Schedule of Works.</p> <p>(j) Submit to the National Assembly for Wales the Company's strategy for strategic operation and maintenance of its distribution system to prevent a recurrence of the contraventions. The current strategy supplied by the Company is the "Distribution Operations and Maintenance Strategy, draft 3" dated 22 June 2003.</p> <p>(k) Monitor the concentration or value of the named parameters for each zone listed in Annex A to this Schedule for the duration of this programme at the check sampling frequency indicated in Table 2 of Schedule 3 of the Water Supply (Water Quality) Regulations 2000 Regulations. If the concentration in any sample exceeds the current standards (iron 200 mg/l; manganese 50 mg/l; turbidity 4 NTU; aluminium 200 mg/l) take appropriate remedial action and report to DWI in accordance with current monthly reporting procedures. If the Estimated Likely Maximum Deviation of Quality is exceeded in more than one sample per zone in each calendar year (iron 500 mg/l; manganese 125 mg/l; turbidity 10 NTU; aluminium 500 mg/l) take all appropriate means to protect public health in consultation with the local office of the Health Protection Agency. Report to DWI in accordance with current monthly reporting procedures.</p> <p>(l) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details.            Details of the programme of works outlined in (c) and (d).            Current state of progress with the programme of works in (1) above.            A statement of the implications of any slippage of the programme in (1) above.            Details of the prospect of recovery of any slippage mentioned in (3) above, including degree to which slippage is expected to be recovered and how it will be recovered.            Whether the Company has any reason to believe that it will not be able to meet any of the key dates in the Undertaking.</p>	<p>(f) 30-Sep-05 30-Jun-07 30-Sep-08</p> <p>(g) Annually by 28 February or as notified by DWI.</p> <p>(h) Quarterly by 30 April, 31 July and 31 October or as notified by DWI.</p> <p>(i) Annually by 31 March or as notified by DWI.</p> <p>(j) 31 December 2005</p> <p>(l) For the duration of this programme of works.</p> <p>(l) As (f), (g) and (h) above, and by exception report if the programme shows any signs of slippage.</p> <p>DC 109</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Court Farm WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Taste and Odour</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because of seasonal high geosmin levels in the raw water.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the parameter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide GAC adsorption to secure compliance with the standard for Taste and odour in water supply zones supplied from Court Farm WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate GAC adsorption.</p> <p>e) Take and analyse 12 samples for Taste and odour throughout the year from the area supplied from Court Farm WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;</p> <p>ii) Current state of progress with the programme of works in (i) above;</p> <p>iii) A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Taste and odour for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 31 March 2005</p> <p>c) 31 March 2006</p> <p>d) 31 March 2008</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 March 2009</p> <p>h) 30 April 2009</p> <p>DC 200</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Felindre WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Taste and Odour</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because of elevated geosmin levels in raw water, not removed during treatment.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the perimeter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide GAC adsorption to secure compliance with the standard for Taste and odour in water supply zones supplied from Felindre WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate GAC adsorption.</p> <p>e) Take and analyse 12 samples for Taste and odour throughout the year from the area supplied from Felindre WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;</p> <p>ii) Current state of progress with the programme of works in (i) above;</p> <p>iii) A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Taste and odour for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 30 June 2005</p> <p>c) 31 December 2005</p> <p>d) 31 December 2006</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 December 2007</p> <p>h) 31 January 2008</p> <p>DC 203</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Talybont WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Taste, Odour and Lead</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because of elevated geosmin and lead levels in raw water, not removed during treatment.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the perimeter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide a dedicated coagulation stage, releasing capacity in GAC contactors to protect against taste and odour to secure compliance with the standard for taste, odour and lead in water supply zones supplied from Talybont WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate dedicated coagulation stage, releasing capacity in GAC contactors to protect against taste and odour.</p> <p>e) Take and analyse 12 samples for taste, odour and lead throughout the year from the area supplied from Talybont WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:  i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;  ii) Current state of progress with the programme of works in (i) above;  iii) A statement of the implications of any slippage of the programme in (i) above;  iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;  v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of taste, odour and lead for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 31 December 2006</p> <p>c) 31 December 2007</p> <p>d) 31 December 2009</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 December 2010</p> <p>h) 31 January 2011</p> <p>DC 207/209</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Crai WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Manganese</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because existing treatment is inadequate for Manganese removal.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the perimeter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide additional clarification and filtration to remove Mn/Fe, incorporating new CoCoDAF process upstream of existing filters, new media in existing filters and new chlorine and lime dosing points upstream of the filters to secure compliance with the standard for Manganese in water supply zones supplied from Crai WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate additional clarification and filtration to remove Mn/Fe, incorporating new CoCoDAF process upstream of existing filters, new media in existing filters and new chlorine and lime dosing points upstream of the filters.</p> <p>e) Take and analyse 12 samples for Manganese throughout the year from the area supplied from Crai WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:  i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;  ii) Current state of progress with the programme of works in (i) above;  iii) A statement of the implications of any slippage of the programme in (i) above;  iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;  v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Manganese for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 31 December 2005</p> <p>c) 30 September 2007</p> <p>d) 31 December 2008</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 December 2009</p> <p>h) 31 January 2010</p> <p>DC 376</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Bolton Hill WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Mecoprop, Asulam, and MCPA</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because of contamination of river sources</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the parameter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide GAC adsorption to secure compliance with the standard for Mecoprop, Asulam, and MCPA in water supply zones supplied from Bolton Hill WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate GAC adsorption.</p> <p>e) Take and analyse 12 samples for Mecoprop, Asulam, and MCPA throughout the year from the area supplied from Bolton Hill WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;</p> <p>ii) Current state of progress with the programme of works in (i) above;</p> <p>iii) A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Mecoprop, Asulam, and MCPA for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 30 June 2005</p> <p>c) 31 December 2005</p> <p>d) 31 March 2007</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 March 2008</p> <p>h) 30 April 2008</p> <p>DC 198</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Bretton WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>MCPA, Carbendazim and Benomyl</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because of contamination in the River Dee catchment area.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the parameter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide GAC adsorption to secure compliance with the standard for MCPA Carbendazim and Benomyl in water supply zones supplied from Bretton WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate GAC adsorption.</p> <p>e) Take and analyse 12 samples for MCPA Carbendazim and Benomyl throughout the year from the area supplied from Bretton WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;</p> <p>ii) Current state of progress with the programme of works in (i) above;</p> <p>iii) A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of MCPA Carbendazim and Benomyl for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 30 June 2006</p> <p>c) 31 December 2006</p> <p>d) 31 March 2008</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 March 2009</p> <p>h) 30 April 2009</p> <p>DC 199</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Strata Florida WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>The concentration of <b>Hydrogen ion</b> exceeds or is likely to exceed the prescribed concentration in the zones listed in the Annex to this schedule because the combination of soft water and AC pipes causes elevated pH in distribution.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the perimeter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide CO<sub>2</sub> dosing at WTW, plus provision of hydrochloric acid dosing to the backwash line to secure compliance with the standard for Hydrogen ion in water supply zones supplied from Strata Florida WTW.</p> <p>d) Complete construction, installation, and commissioning of the appropriate CO<sub>2</sub> dosing at WTW, plus provision of hydrochloric acid dosing to the backwash line.</p> <p>e) Take and analyse 12 samples for Hydrogen ion throughout the year from the area supplied from Strata Florida WTW. If the concentration in any sample exceeds the maximum concentration permitted by Column 3, take all appropriate means to protect public health in consultation with the local Health Authority. Report exceedences of the standard to DWI alongside current monthly exception reporting procedures.</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i) Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction and commissioning;</p> <p>ii) Current state of progress with the programme of works in (i) above;</p> <p>iii) A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv) Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v) Whether the Company has any to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Hydrogen ion for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 30 June 2005</p> <p>c) 30 September 2005</p> <p>d) 31 March 2006</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are 30 June and the 31 December.</p> <p>g) 31 March 2007</p> <p>h) 30 April 2007</p> <p>DC 206</p>

Water Supply Zone	Nature of Contravention	Steps to be taken	Date by which steps to be completed/Serial No.
<p>All zones supplied by <b>Penybont WTW</b> which are for the time being listed in the annex to this schedule, which is subject to revision as necessary.</p>	<p>Inability to meet the specification for the turbidity indicator parameter in treated water supplied from <b>Penybont</b> because of variable raw water quality.</p>	<p>a) Take account of the potential risk to water quality within the relevant area of supply in the development of any Drinking Water Safety Plans. This should include giving consideration to the parameter to which the programme of work relates, the duration of the work, and the extent and nature of the remedial works.</p> <p>b) Submit a summary of investigations carried out to confirm the appropriateness of the solution proposed.</p> <p>c) Complete planning, design, and procurement arrangements to provide the addition of a DAF plant with wash water handling facilities and modified flow control to meet the specification for the turbidity indicator parameter in treated water supplied from Penybont WTW.</p> <p>d) Complete construction, installation, and commissioning of the additional DAF plant with wash water handling facilities and modified flow control.</p> <p>e) Monitor the turbidity value of treated water:</p> <p>i). Take and analyse samples for turbidity at a frequency of 12 number per annum from Penybont WTW. If the specification for the indicator parameter is not met (i.e. the turbidity exceeds 1 NTU) take all appropriate means to protect public health in consultation with the local Health Authority. Report failures to meet the specification to DWI alongside current monthly exception reporting procedures.</p> <p>ii). Continuously monitor treated water turbidity on-line, to inform the operation and control of the plant to minimise turbidity levels entering supply</p> <p>f) At regular intervals provide DWI with reports on progress made with carrying out this programme of improvement works. Reports to include at least the following details:</p> <p>i). Details of the programme of works including commencement and completion dates for investigations, design, tendering, construction, and commissioning;</p> <p>ii). Current state of progress with the programme of works in (i) above;</p> <p>iii). A statement of the implications of any slippage of the programme in (i) above;</p> <p>iv). Details of the prospect of recovery of any slippage mentioned in (iii) above, including degree to which slippage is expected to be recovered and how it will be recovered;</p> <p>v). Whether the Company has any reason to believe that it will not be able to meet any of the key dates in the Schedule of Work.</p> <p>g) Monitor the concentration of Turbidity for a period of 12 months following commissioning, taking a minimum of 12 number samples regularly during the period, to demonstrate the effectiveness of the solution.</p> <p>h) Submit to DWI evidence to support the closure and sign-off process for this scheme, within one month of completion of post-commissioning sampling, and continue monitoring until released from the Undertaking.</p>	<p>a) Ongoing</p> <p>b) 31 March 2005</p> <p>c) 31 December 2007</p> <p>d) 31 December 2008</p> <p>e) For the duration of this programme of works.</p> <p>f) Commencing the first reporting period after commencement of the work, and continuing at 6 monthly intervals. Reporting periods are the 30<sup>th</sup> June and the 31<sup>st</sup> December.</p> <p>g) 31 December 2009</p> <p>h) 31 January 2010</p> <p>DC 205</p>