DŴR CYMRU
WELSH WATER

Monitoring Plan 2005-2010

April 2005

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APPENDICES

Introduction

Welsh Water's Monitoring Plan

This "Final Determination Monitoring Plan" summarises Welsh Water's strategic delivery plans for the five year period 2005-2010 (AMP4). It has been prepared following the recent Price Review by the Director General of Water Services (Ofwat) which has taken place over the last two years. The Monitoring Plan sets out our commitments on the work to be done, the drinking water and environmental quality improvements and the service delivery targets to be met and the resulting bills our customers will be asked to pay and it provides the background and context for these proposals.

The "Monitoring Plan" enables customers and stakeholders to see the improvements that will be delivered within the price limits set. Ofwat will monitor our compliance with the expectations set down in the Final Determination and this Monitoring Plan.

The PR04 Price Review

In preparing our Final Business Plan submission we set out our objectives as being to ensure that:

- current generally high standards of service are maintained;
- areas for improvement reflect, as far as possible, customer priorities; and
- the "package" of improvements to drinking water quality and environmental quality, determined by Ministers and regulators, represents good value for money for our customers.

Our Final Business Plan submission reflected the results of a series of detailed consultation exercises carried out with customers, stakeholders, key regulatory bodies and others over the past two years.

The Welsh Assembly Government Guidance (March & September 2004) set out clear recommendations on the quality improvements we are required to deliver before 2010. Our plans reflect this guidance in full. We will invest some £600million (circa half the total AMP4 investment programme of £1.2billion) to deliver further water quality and environmental improvements (mainly statutory obligations) across the region.

To deliver the Final Determination and to fund the activities planned for AMP4 involves the financing of capital investment of some £1.2billion (2002-03 prices), which will cause average household bills to rise by 23% by 2010, although this increase will be offset to some extent by the payment of a customer dividend of £18 a year by the Company. Bills rising by this much will place a significant additional burden on customers. This is a particular concern for us as Welsh Water's average household bill is higher than the sector average and household incomes are lower in our region compared with elsewhere.

Welsh Water's plans 2005-2010

Our plans for the AMP4 period (2005-10)

The task of balancing the need to maintain assets, tackle service shortfalls, support economic development and deliver improvements to meet statutory and Government policy objectives while at the same time keeping bill increases affordable is a complex one. In preparing our Final Business Plan last year we recognised that to do everything by 2010 would cause customer bills to rise very sharply. Therefore some hard decisions had to be made on what does and does not get done in the next five years. The following summarises our plans for the five year AMP4 period:

Prioritising asset maintenance to ensure no deterioration in standards

- Targeted increase in maintenance work on particular assets to manage the risk of asset failure which can cause service breakdown problems for customers, pollution incidents, or risk of failure to comply with quality standards.

Service improvements of highest priority for customers

- Step reduction in the number of properties at risk of repeat flooding from overloaded sewers, tackling 736 internal flooding problems and 429 external flooding problems.
- Reducing odour problems at 33 wastewater treatment works where we have had complaints from customers.

Support for economic development

- Lifting current planning constraints and support for all economic development contained in local plans that is expected to proceed in the period up to 2010.

Further improvements in drinking water quality

- Completion of the 10 year "Section 19" programme to refurbish unlined iron water mains agreed with the Drinking Water Inspectorate in 1999, with over 2,500km of water mains - 10% of the entire network - replaced or relined.
- Improvements at 8 water treatment works to meet enhanced water quality standards and reduce the risk of discolouration and taste and odour of water supplies to customers.

Further improvements in environmental quality

- Continued progress on tackling "unsatisfactory sewer overflows", upgrading or investigating a further 462 during 2005-2010.
- Further improvements or investigations to 200 wastewater treatment works (ie "continuous discharges") to meet tighter discharge consents.
- First time sewerage for over 500 properties.

Total AMP4 investment of £1.2 billion

- Delivering this programme of work over the next five year AMP4 regulatory period 2005-2010 will mean investment of £1.2billion (net of efficiency savings).

Challenging business efficiency targets

- Base operating costs are targeted to be reduced by some 10% over the five year period and capital investment unit costs reduced by a further 6%.

Customer bills rising to finance continuing investment

- The impact of the £1.2billion of investment programme causes household bills to rise in 2005-06 by 13% (in real terms) and then on average by a further 2% in each of the following four years. In these circumstances the average household bill would rise in real terms from £286 (after the £9 rebate) in 2005 to £352 in 2010 (in 2004-05 prices).

Customer dividend

- To mitigate the impact of the allowed price increases on our customers we have decided to introduce a 'customer dividend' of £18 per household for each of the next 5 years. This dividend replaces the current bill rebate of £9 per customer.

Customer views and priorities for improvement

Establishing customer priorities

Prior to the submission of the Final Business Plan to Ofwat in April 2005 an extensive customer and stakeholder consultation exercise was carried out to find out what customers felt was the right balance between bills and service levels.

Customer research, carried out in 2002 and 2003, showed the following

- the three most urgent priorities for improvement are "maintaining the infrastructure and the safety of tap water", "maintaining the quality of river waters and of coastal and bathing waters" and "avoiding the risk of homes and gardens being flooded with sewage"; and
- while willingness to pay for improvements was low, with only 12% of the sample being prepared to see their bill increase by more than 2% a year to pay for improvements, 69% would be "very or fairly concerned" if improvements in priority areas "had to be delayed to keep customers' bills down".

We also consulted with a wide range of stakeholders, including MPs, AMs, Local Councils, the National Parks, the CBI, Housebuilders Federation and other organisations representing business interests, the Welsh Development Agency, WaterVoice and other organisations representing customer interests. Priorities for further improvements were signalled as:

- providing first time sewerage in rural areas (also adoption of private sewers);
- tackling odours from wastewater treatment works;
- tackling repeat sewer flooding;
- providing infrastructure and network capacity to support development plans;
- ensuring the current high number of Blue Flag beach awards is retained.

Water service

In this section we set out for the Water supply service the key customer service performance targets to be met, the quality improvements to be delivered and the main asset serviceability outputs resulting from the capital maintenance programme.

Customer service performance targets

Customer service performance targets for AMP4 for the Water Service are set out in Tables 3 of Appendix 1 of this Monitoring Plan. The targets are the same as those proposed in our Final Business Plan in April 2004 and subsequently confirmed by Ofwat in the Final Determination in December 2005. Our aim is to maintain this high level of service throughout AMP4 whilst striving for continuous improvement in those areas which yield greatest value to customers.

Customer account handling

Welsh Water's overall performance in handling customer accounts is one of the best in the water industry. As set out on Table 3 we will maintain the high level of service for DG6, DG7, DG8 and DG9 throughout AMP4

Water supply service measures

Key customer service measures relevant to the water service include such measures as low pressure (DG2) and interruptions to supply (DG3) as well as related performance indicators such as mains bursts, compliance with water quality standards, aesthetics of water quality and leakage. Our performance targets for the next five years for these measures are set out in Table 3.

Improvements to customer service peformance will result from several areas of the AMP4 investment programme, as outlined below:

Iron and manganese compliance

- Some 2,557km of unlined iron water mains will be renovated as part of the S19 Distribution Undertaking and an additional 3944km of water mains will be cleansed as part of this same programme.

This investment, coupled with the implementation of both the operation and maintenance implications of Welsh Water's Distribution Operation and Maintenance Strategy (DOMS), will deliver improved aesthetic quality of water. Annual quality compliance targets for AMP4 are set out in Table 4 Block A.

Maintaining burst rates

- The combined effect of replacing 500km of the worst condition mains under the proposed AMP4 maintenance programme and replacement of mains under the Section 19 programme is estimated to achieve a burst rate of 194 bursts per 1000km, which will maintain existing burst frequency levels.

DG2 properties at risk of receiving low pressure

- The Monitoring Plan targets for AMP4, set out in Table 3 Line 1, will maintain DG2 performance at current levels. New additions following technical assessments or investigations of low pressure following customer complaints will be managed within other operational and maintenance budgets.

DG3 supply interruptions

- The Monitoring Plan targets for AMP4, set out in Table 3 Line 2, will maintain DG3 performance at the current level for the weighted measure. Performance levels will remain vulnerable to strategic trunk mains bursts and we intend to target £16million of investment to reduce the highest risk of high impact failures of trunk mains based on a prioritisation process involving health and safety, water quality and reliability.

Acceptability of water supplied to customers

- The completion of schemes as part of the S19 Undertaking for water distribution mains and water treatment works, coupled with the implementation of both the operation and maintenance implications of Welsh Water's DOMS, will deliver improved aesthetic quality water to customers and reduce complaints.

Water service: Customer service performance measures

Security of water supplies to meet future demands

- Welsh Water have not imposed a hosepipe ban or other water restrictions on the use of water by our customers since 1990.
- Analysis of available supply and projected customer demands for AMP4 identifies the potential for water deficits in 8 of our 25 water resource zones by 2030. Schemes have been identified to provide sufficient additional resource to mitigate this risk and in the majority of cases this involves reducing leakage below the short run marginal cost economic level of leakage together with water efficiency measures.
- Work during AMP4 will also facilitate the economic development aspirations of Local Authorities as identified in their Unitary Development Plans. The targets for AMP4 will improve Welsh Water's rating under Ofwat's Security of Supply Index from "C" to "B".

Leakage performance

- Investment planned for AMP4 will reduce leakage from 230Ml/d at the end of AMP3 to the target Long Run Marginal Cost Economic Level of Leakage ("ELL") of 195Ml/d by the end of AMP4. The annual ELL targets for AMP4 are set-out in Table 3 , Line 16 and these reflect the profile in the Supplementary Report to the Final Determination which has been rounded to the nearest 5ML/d compared wth the leakage targets proposed in the Company's Final Business Plan.

Water service: Water quality improvements

Water quality improvements

Welsh Water plans for AMP4 are aimed at maintaining and, where necessary, improving the quality of the water to ensure that customers are supplied with water that is "wholesome" and "fit for human consumption" as defined in the Water Industry Act.

For the water quality programme a number of specific requirements have been identified and are summarised as follows:

- Achieving compliance with the standards detailed in the Water Supply (Water Quality) Regulations 2001 through investment at water treatment works.
- Improving iron compliance via a mains refurbishment programme and the distribution operations and maintenance strategy.
- Improving customer perception of aesthetic water quality issues by reducing discolouration problems.
- Improving customer perception of aesthetic water quality issues by addressing taste and odour risk.

Delivering these objectives will continue to build on the significant improvements already delivered to customers. Key drinking water quality outputs for AMP4 and compliance targets are set out in Table 4 , Blocks A and B. The proposed AMP4 workload for the major investment areas is described below:

Improvements at water treatment works to achieve better drinking water quality standards (Table 4, Line 6)

- Provide additional treatment (GAC) at 4 water treatment works (Bretton, Bolton Hill, Felindre, Court Farm) to improve removal of pesticides and to reduce risk of a recurrence of taste and odour problems (eg geosmin)
- Provide new treatment stage at Crai to reduce further the level of manganese and reduce the risk of discolouration in drinking water supplied to customers
- Provide new treatment stage at Penybont to meet new turbidity standard
- Provide new treatment stage and final water storage at Talybont to reduce the risk of taste and odour problems, ensure compliance with quality standard for THMs, help achieve compliance with the 2013 Water Quality Standard for lead, and provide additional security of supply
- Provide new treatment stage at Strata Florida for pH correction

Mains rehabilitation to improve water quality under S19 Undertaking (Table 4, Lines 7 and 8)

- Renovate, by relining or replacing 2,557km of unlined water mains by March 2010, completing the second half of the "S19 Undertaking" agreed programme with DWI in 1999.
- Cleansing 3,944km of other water mains within the water quality zones where "S19 Undertaking" work is taking place in order to maximise benefits of mains refurbishment programme.

Water service: Capital maintenance and serviceability to customers

Capital maintenance requirements for AMP4

The key objective of the maintenance programme for AMP4 is to maintain stable service to customers and stable asset serviceability over the five year period.

Activity projections for AMP4 to maintain serviceability

Key activity projections for each year of AMP4 are included in Table 7. These profiles differ from those put forward in Table 4 of the Final Business Plan mainly due to the change in the definition of what constitutes "substantive capital investment". In addition the activity summaries included in Table 4 of the Final Business Plan reflected the outputs to be delivered for the whole capital programme which reconciled with the C5-2 Capital Projects Database and included outputs for grouped investment, where single investments did not exceed £250k. The outputs included in the Monitoring Plan only relate to those projects that meet the definitions contained within Ofwat's information requirements.

Water treatment works

Activity during AMP4 associated with the refurbishment of existing works or provision of new water treatment works is set out in Table 7 Block B. We envisage that in any one year circa 50 water treatment works will receive some maintenance investment on planned quality improvements with a value of work exceeding £100k in the 5 year period. However, of these only 18 works are likely to receive investment which will be greater than 10% of their MEA value. Due to the nature of the work involved it is likely that investment will be spread over a number of years and therefore the reporting of specific outputs in any given year (as required under the Monitoring Plan definitions) is difficult to predict. The planned outputs included in Line 3 and corresponding capacity of refurbished water treatment works in Line 4 reflect the completion of planned investment based on current known quality and maintenance plans.

Our objectives for AMP4 are to:

- Ensure water treatment assets are able to maintain current high drinking water quality standards.
- Ensure network of water treatment assets has capacity to meet customer demands and support economic development.
- Undertake proactive maintenance of critical components and equipment.
- Reactive maintenance of non-critical assets, replacing components and equipment when they fail.
- 18 (out of 87 operational) water treatment works identified as requiring maintenance expenditure with a value >10% of the works MEA value.

Water distribution

Activity during AMP4 associated with the refurbishment of the water distribution mains network is set out in Table 7 Block C, Lines 5 to 8. The proposed volume of work is the same as that proposed in our Final Business Plan and as that set out in Ofwat's Final Determination. The length of main to be renewed during the period (2268km) includes the lengths estimated for renewal under the Section 19 renovation programme and the planned length of mains to be replaced under the prime purpose maintenance programme. We are currently trialling new technologies for structural relining as a potential alternative to mains replacement for part of the S19 mains renovation programme. The outcome of this trial may impact upon the actual ratio of relining versus renewal activity during the period. We will seek confirmation from Ofwat on whether structural lining is classified as renewal or relining. The length main included for relining (735km) in Table 7 Line 6 is for non-structural spray lining only.

Water service: Capital maintenance and serviceability to customers

Planned AMP4 capital maintenance work on the mains network can be summarised as follows:

- 500km of water mains outside "S19 Undertaking" programme replaced, compared with 250km in AMP3.
- Programme prioritised to tackle "burst clusters" in DMAs where customer complaints due to interruptions of supply, low pressure and poor water quality are highest.
- Programme focuses on replacing poor quality asbestos cement mains
- For mains ancillary equipment all reactive maintenance jobs, renewing failed or defective assets on the network, assumed to continue at current rate of spend.
- Mitigate the risk of trunk mains failures in terms of health and safety and security of water supplies.
- A programme of work to cleanse water mains outside the S19 programme to maintain water quality standards and reduce instances of "discoloured water" problems for customers under the distribution operations and maintenance strategy.

Water pumping stations and service reservoirs

Investment amounting to >£100k and >10% of an asset's MEA value (the defined criteria for inclusion as activity in Table 7) for water pumping stations and service reservoirs will be limited. Our Business Plan in total allows for a total investment of circa £3.5m per annum to maintain the serviceability of both groups of assets over AMP4. Much of this investment involves replacement of component equipment or minor civil refurbishment. Such investment at small water pumping stations may breach the 10% MEA threshold but will not exceed £100k. On the other hand investment at large water pumping stations may exceed £100k but not 10% of the asset's MEA value. We will continue to report in the June Return commentary the actual investment in Bands >£100k to give a better reflection of actual activity levels.

AMP4 workload in summary is:

- Inspection of each of our 715 service reservoirs on a 5 year cycle
- Asset maintenance work identified at circa 500 sites covering refurbishment of civil structures, installation and repair of roof membranes, refurbishment of valves and other control equipment, installation or refurbishment of secondary disinfection equipment, renewal of obsolete telemetry control
- Inspection of each of our 532 water pumping stations
- Asset maintenance work identified at circa 520 sites to refurbish civil structures, mechanical plant, renew obsolete telemetry and obsolete control panels, provision of standby generation.

Sewerage service

In this section we set out for the sewerage service the key customer service performance targets to be met, the quality improvements to be delivered and the main asset serviceability outputs resulting from the capital maintenance programme.

Customer service performance targets

Customer service performance targets for AMP4 for the Sewerage Service are set out in Tables 5 of Appendix 1 of this Monitoring Plan. Our aim is to maintain this high level of service throughout AMP4 whilst striving for continuous improvement in those areas which yield greatest value to customers. Sewer flooding at properties is recognised as the area that needs greatest improvement and both customers and other stakeholders support investment in this area.

Environmental performance / pollution incidents

We have over 3,000 intermittent discharges on our sewer network and in 1999 the Environment Agency identified that over 1,100 of these were unsatisfactory. Improvements have been made at approximately 450 sites in the AMP2 period and approximately 700 in the AMP3 period. However, during the AMP3 period we have discovered more sites that are unsatisfactory that will need to be improved in the future. The profile of work / outputs to address unsatisfactory intermittent discharges during AMP4 is set out in Table 6, Line 7. This is in line with the Final Determination profile and we have only included intermittent discharges that are currently classed as "unsatisfactory". This proposed volume of work will ensure that all discharges, currently known to be unsatisfactory, will be improved by 2010 as shown in line 5 of Table 6. The proposed profile of activity does not make any allowance for any new unsatisfactory discharges identified during AMP4. Any newly categorised discharges would be addressed as part of the Company's AMP5 investment proposals.

Flooding from sewers

Reducing the number of properties that experience sewer flooding is a high priority for our customers and has been highlighted by WaterVoice as a key objective for AMP4.

In the national surveys customers highlighted sewer flooding as the most important area of concern about the industry's performance. Consultation with WaterVoice Wales and the National Assembly for Wales, as well as case history with regard to flooding complaints, confirms this is a priority issue for Welsh Water's customers.

Our objective for AMP4, is to tackle a total of 1165 problems, 736 internal and 429 external. All problems will be prioritised by severity, frequency and cost. We expect that tackling this number of outputs will achieve the targets set out in Lines 1,2 and 3 of Table 5. We have based our plans on a forecast number of "new additions" in the order of 217 properties over the five year period, based on previous years trends. Achieving our targets for AMP4 will be challenging if the number of new additions is higher than this forecast. The annual targets for reducing the DG5 register and addressing other properties at risk of both internal and external flooding are set out in Table 5, Block A.

Performance targets to acheive by 2010 are:-

- To reduce the number of "DG5 register" properties (up to 1 in 10 year frequency) from 528 to 36.
- To maintain the incidence of internal property flooding, from other causes, at a practical de minimis of about 120 over the AMP4 period.
- To tackle 429 of the worst external flooding problems and reverse the current underlying trend of increasing numbers at risk.
- Maintain the 1 in 20 "DG5" Register at stable levels in line with the predictions for the rate of new additions.

Sewerage service: Customer service performance measures

Economic development

Supporting the economy of Wales within our operating region is an important investment driver and was particularly highlighted by the Welsh Assembly Government in their guidance for AMP4.

Our assessment of objections to development shows that we currently have 447 separate objections to development in 121 drainage catchments for a variety of problems associated with treatment works capacity, improvements required to intermittent discharges, internal and external flooding problems or maintenance problems at pumping stations.

Our integrated plan in AMP4 is planned to remove all of these objections and also pre-empt a further 423 objections to development identified in the Unitary Development Plans which would be expected to proceed in the 2005-2010 period.

Odour

Over the past few years odour nuisance has become a significant concern to customers and some sites have been the subject of enforcement order from Local Authorities. Our strategic objectives for reducing odour at treatment works are to achieve the current "good practice" of 5 odour units at the nearest receptor. As set out in Table 5, Line 13 we propose to address odour problems at 33 wastewater treatment works by 2010 by providing odour control equipment and covering the most odorous parts of our treatment processes.

We will implement changes to the odour control at 33 wasterwater treatment works listed below, to the level defined in our odour management plans.

Project	Unique ID	Project	Unique ID
Aberystwyth STW	CMDCWW046	Merlins Bridge	CMDCWW098
Afan STW	CMDCWW047	Milford Haven	CMDCWW099
Cardiff STW	CMDCWW053	Monmouth STW	CMDCWW101
Cardigan STW	CMDCWW054	Nash STW	CMDCWW103
Chester STW	CMDCWW055	Neston STW	CMDCWW104
Cog Moors STW	CMDCWW058	New Llanelli STW	CMDCWW105
Flint STW	CMDCWW068	Newlands STW	CMDCWW106
Ganol STW	CMDCWW069	Parc-y-Splott STW	CMDCWW107
Gowerton STW	CMDCWW071	Pembroke Dock	CMDCWW108
Hereford Eign STW	CMDCWW073	Penybont STW	CMDCWW110
Hereford Rotherwas STW	CMDCWW074	Porthmadog STW	CMDCWW112
Kinmel Bay STW	CMDCWW077	Pwllheli STW	CMDCWW114
Lampeter STW	CMDCWW078	Queensferry STW	CMDCWW115
Llanfaes STW	CMDCWW086	Swansea STW	CMDCWW122
Llanfoist STW	CMDCWW087	Tenby STW	CMDCWW124
Machynlleth STW	CMDCWW096	Treborth STW	CMDCWW126
		Tywyn STW	CMDCWW127

Sewerage service: Environmental quality improvements

Environmental quality improvements

The environmental quality improvements included in our Final Business Plan and the Final Determination from Ofwat only deliver statutory improvements necessary to meet European Legislation plus additional priorities in line with guidance provided by the Welsh Assembly Government in March 2004.

By 2005, we will have spent over £1.5billion – 62% of the total investment programme for sewerage and wastewater treatment assets over AMP2 and AMP3 - on enhancing wastewater assets to achieve compliance with European Directives such as the Urban Waste Water Directive (UWWTD), the Bathing Water Directive, River Quality objectives, Habitats Directive and the Shellfish Directive.

As a result of this investment, by the end of 2005, a large proportion of our assets will be compliant with current European legislation and the proportion of the population served by secondary treatment or appropriate will rise from 57% in 1996 to 100%.

Key environmental quality objectives for AMP4 and compliance targets are set out in Table 6, Blocks A and B. The proposed AMP4 workload for the major investment areas is described below.

Improvements at wastewater treatment works (Table 6)

The main activity at wastewater treatment works to address continuous discharges will be improvements to meet Urban Waste Water Treatment, Groundwater and Habitats Directives. This is a continuation of a programme of work started in AMP3 that focused on the delivery of the Urban Waste Water Treatment Directive at large works and reduced the risk of failure at shellfisheries and bathing waters.

The profile of work for the number of wastewater treatment works to be improved or investigated during AMP4 is set out in Table 6, Line 9. In summary the AMP4 workload is as follows:

- Additional treatment facilities to meet UWWTD requirements where treatment facilities required upgrading or where population served now exceeds 2,000 or to provide nutrient removal at "sensitive" waters.
- Additional treatment or feasibility studies to meet Shellfish Waters Directive requirements ("Category B" standard).
- Additional treatment and/or other improvements to meet Habitats Directive requirements
- Additional treatment and/or other improvements to achieve "River Quality Objectives".
- Investigation or improvements to meet requirements of Groundwater Directive.
- Additional treatment to meet requirements of Bathing Waters Directive

Dealing with unsatisfactory intermittent disharges (Table 6)

For intermittent discharges, the main activity will be to improve unsatisfactory discharges through provision of screening to remove sewage litter and provision of storage under Urban Waste Water and Bathing Water Directives to reduce spill frequency. Again this is a continuation of the programme of work to fix all unsatisfactory intermittent discharges by the end of AMP4.

In summary the AMP4 workload is as follows:

- Deal with remaining known "unsatisfactory" sewer overflows by the end of AMP4.
- In total, 462 "intermittents" improved or investigated, including all 446 sewer overflows recognised as "unsatisfactory"

Sewerage service: Environmental quality improvements

Dealing with additional sewage sludge (Table 6, Lines 10 & 11)

During AMP4 no new legislation is expected to impact upon our sludge management activities. However, the increased volume of sludge arising from the increased treatment standards required at the quality schemes will result in additional capital and operational costs for the treatment and disposal of sludge. The specific site costs are included within the relevant treatment works quality projects. The annual quantity of additional sludge that we forecast will be produced during each year of AMP4 together with total annual sludge production (expressed as ttds) is set out in Table 6, Lines 10 and 11.

First time sewerage schemes (S101A) (Table 6, Line 8)

Provision of first time sewerage is a statutory obligation for Welsh Water. There are currently 519 properties that have already qualified for provision of sewerage services and our plans for AMP4. Further schemes / properties that may be identified during the 2005-2010 period have not been included in our AMP4 plans on the assumption that they will be delivered during or after AMP5. Also schemes that have been deemed to fail the qualifying criteria may be the subject of appeal to the Environment Agency and accordingly these have not been included in our plans for AMP4.

Quality and Environmental Compliance (Table 6, Lines 1 to 6)

We are targeting the best achievable compliance for each compliance measure during AMP4. Compliance with WRA numeric consents cannot be improved beyond 98.7% due to underlying levels of metals at a small number of treatment works. The performance figures specifically exclude compliance with flow consent conditions as they currently stand.

In most categories we are targeting 100% compliance but experience has shown that at current high levels of compliance (>99.8%) performance around this level is very sensitive to minor performance fluctuations.

Sewerage service: Capital maintenance and serviceability to customers

Capital Maintenance requirements for AMP4

Our plans for AMP4 provide for a level of maintenance aimed at addressing some of the previous investment shortfall to ensure no deterioration in existing levels of service and compliance with current standards over the AMP4 period. Detailed asset cases setting out the need and justification for capital maintenance in AMP4 were included in our Final Business plan submission.

The main areas targeted for increased levels of capital maintenance investment during AMP4 included:

- Sewerage maintenance – where a reduction in the maintenance benefit from the quality enhancement programme requires an uplift in base maintenance to deliver service level requirements.
- Wastewater treatment works – where analysis of asset risk using Maintenance Optimisation has identified a significant uplift in investment needs to implement a proactive maintenance policy to manage risk in the most cost effective manner. In addition, investment will be targeted at 50 of the worst performing assets to maintain existing performance standards.
- Odour management – where investment is required to meet the higher expectations of customers and implement Welsh Water's odour strategy .
- Sludge – where the additional assets built in previous AMP periods, the increased sludge from quality enhancement programmes and tighter recycling obligations requires increased investment.

Ofwat accepted the cases for increased investment for both the sewer network and for above ground assets. However, the Final Determination, whilst allowing an uplift on AMP3 levels of maintenance expenditure, did not allow the full level of investment proposed in our Final Business Plan.

The activity levels proposed for AMP4 as set out in Table 8 of this Monitoring Plan have therefore been adjusted accordingly to reflect the Final Determination expenditure allowances.

Activity projections for AMP4 to maintain serviceability

Key activity planned in the period 2005-10 to maintain the serviceability of above ground and below ground sewerage assets is set out in Table 8. Each of the major work areas planned for AMP4 is summarised below:

Sewer replacement (Table 8, Block A)

Activity projections on the sewer network during AMP4 is set out in Table 8, Block A. Prime purpose maintenance investment in AMP4 will be targeted at rehabilitating, repairing or replacing sewers and ancillary equipment at highest risk of not maintaining stable service to customers.

AMP4 workload in summary is:

- Continuation of current reactive workload and spend to repair broken fittings, remove blockages, etc.
- 70km of critical sewers replaced or refurbished and 62km of new critical sewers laid.
- 50km of non-critical sewers replaced or refurbished with 144km of new non-critical sewers laid.
- 446 intermittent discharges (14% of total) either new or refurbished (the profile in Table 8 includes all intermittents and the Ofwat threshold of >£100k and /or >10% of MEA has not been applied).

Sewerage service: Capital maintenance and serviceability to customers

Sewer flooding (Table 8, Block B)

Activity projections for addressing problems associated with sewer flooding during AMP4 are set out in Table 8, Block B. At the start of the period we expect to have 584 properties in the "1 in 10" and "2 in 10" at risk categories. This is based on a different classification to our risk register used during AMP3, as required by Ofwat.

AMP4 workload in summary is to:

- Tackle a total of 1,165 problems comprised of 736 internal and 429 external problems, including 217 new additions; and
- prioritise all problems on severity, frequency and cost.
- The performance objectives for this activity for AMP4 are to:
- Reduce the "1 in 10" and "2 in 10" register to 36 and 0 respectively (this depends critically on the level of new additions that occur during the period),
- reduce incidents of property flooding from hydraulic overload to 67 properties per annum by 2010; and
- maintain stable performance for incidents of external flooding of properties each year.

Wastewater treatment works refurbishment

Our Final Business Plan proposed a prioritised maintenance plan for treatment works refurbishment based on a 'just in time' proactive approach to capital maintenance. This regime is considered to provide the most cost effective management of risk of failure for our 850 operational treatment works to ensure delivery of key service objectives and to maintain asset performance for the short and long term.

As set out in Table 8, Blocks C and D the proposed AMP4 workload in summary is:

- Proactive maintenance of critical components and equipment
- Reactive maintenance on non-critical assets, replacing components and equipment when it fails
- Line 14 shows 159 wastewater treatment works will receive investment for refurbishment during AMP4, 24 of these are sites targeted for investment under prime purpose maintenance, with a value above £100,000 or 10% of the MEA. All quality projects have been included.
- Lines 16, 17 and 18 show the number of assets that will be refurbished with an investment greater than £100,000 or 10% of the MEA value for the asset.

Price limits and customer bills

Household bills in 2004-05

In 2004/5, the average household bill for water and sewerage services was £286 (after the customer dividend of £9). This bill covers the following costs:

Average household bill	
Running costs	£110
Asset maintenance	£70
Return on capital	£106
	£286

Running costs cover items such as wages, power, chemicals, rates and Environment Agency charges. Asset maintenance covers the cost of repairing and replacing worn out assets. Return on capital covers the interest and dividends payable on the £2.6 billion that has been raised from investors to fund the previous environmental and drinking water quality improvement programmes in the 15 years since privatisation in 1989.

Household bills during the period 2005-2010

The final price limits (Ks) allowed by Ofwat in the Final Determination are shown in the table below. The impact of these price limits on typical customers' bills, receiving water and sewerage services on either a measured or unmeasured basis are also set out in the table below and in more detail in Appendix 1.

PRICE LIMITS AND EFFECT ON HOUSEHOLD BILLS (2004/05 prices) (£)						
Year to 31 March	*2005*	**2006**	**2007**	**2008**	**2009**	**2010**
Price Limit "k"	*4.5*	14.2	3.6	4.1	3.3	2.2
Price Limits - Water Service	*2.4*	18.0	2.1	2.9	2.7	1.6
Ave. Measured household bill	*83*	101	99	101	102	102
Ave. Unmeasured household bill	*134*	159	161	167	173	177
Ave. household bill - Water	**123**	**146**	**146**	**149**	**152**	**153**
Price Limits - Sewerage Service	*6.2*	10.9	4.8	5.1	3.7	2.6
Ave. Measured household bill	*95*	116	116	122	125	126
Ave. Unmeasured household bill	*183*	203	207	217	226	234
Ave. household bill - Sewerage	**163**	**182**	**183**	**190**	**195**	**199**
Combined Ave. Household Bill	**286**	**328**	**329**	**339**	**347**	**352**

The table below sets out the analysis required by Ofwat to show what is driving changes in bills over the next five years as a result of the Final Determination. To date Welsh Water has made significant cost efficiency savings, and we are targeting further savings in the years ahead; together these past and target cost savings paid will reduce the average household by £19 by 2010.

Customer "dividend"

Under Glas Cymru's ownership, all Welsh Water's financial surpluses are retained in the business to the benefit of the customer. Instead of paying a dividend to shareholders we are able to pay a dividend to our customers. In both 2003 and 2004 we were able to pay £9 and for 2005 we have been able to double this and pay a dvidend of £18. Forecasts of average bills during the remainder of AMP4 in this Monitoring Plan are based on the price limits in the Final Determination and are before any possible future customer dividend payments.

OFWAT'S ANALYSIS OF WHAT IS DRIVING CHANGES IN BILLS (2004-05 prices)	Water £	Sewerage £	Total £
AVERAGE HOUSEHOLD BILL IN 2004-05	**123**	**163**	**£286**
Less: Past efficiency savings and outperformance	-	-2	-2
Less: Scope for reduction through future efficiency improvements	-7	-10	-17
Plus: Maintaining base services, of which:	23	15	38
Changes in revenue	8	9	17
Changes in operating costs	7	11	18
Changes in asset maintenance	9	-1	8
Impact of taxation	-2	-5	-7
Financing	1	1	2
Plus: maintaining security of supply to all customers	3	2	5
Plus: the impact of improvements to drinking water quality	11	--	12
Plus: the impact of environmental improvements	--	29	29
Plus: improvements in service performance	--	2	2
AVERAGE HOUSEHOLD BILL IN 2009/10	153	199	352*

**Before customer dividend of £15*

APPENDIX 1

MONITORING PLAN TABLES

Table 1 - Welsh Water - A summary of our Monitoring Plan for 2005-2010

OVERALL STRATEGY FOR 2005-2010 PERIOD AND STRATEGIC OBJECTIVES

Welsh Water's goal is to be seen by our customers and other stakeholders as a leading water company in the sector.

Our starting position for the regulatory price review was that our plans should ensure that:

- current generally high standards of service are maintained;
- areas for improvement reflect, as far as possible, customer priorities; and
- the "package" of improvements to drinking water quality and environmental quality, determined by Ministers and regulators, represents good value for money for our customers.

The focus of investment during AMP4 and the customer service and quality improvements we are targeting to achieve reflect the results of a detailed consultation exercise we carried out with customers and other stakeholders during the last two years. In addition, the Welsh Assembly Government has given clear direction for the quality improvements we are required to deliver before 2010. Our plans reflect this guidance in full. We will invest some £600million (around half of the total AMP4 investment programme of £1.2billion) to deliver further water quality and environmental improvements (mainly to comply with statutory obligations) across the region.

Our plans for AMP4 address those service concerns identified by customers as being of the highest priority, notably maintaining the current high level of services (through appropriate asset maintenance), resolving flooding of properties caused by overloaded sewers and reducing repeat problems caused by odour from 33 of our 850 wastewater treatment works.

To deliver the Final Determination and to fund the activities planned for AMP4 involves the financing of capital investment of some £1.2billion (2002-03 prices), which would cause average household bills to rise by some 23% in real terms by 2010. However, because Welsh Water is owned by Glas Cymru, a Company limited by guarantee, the Company recently announced that it would pay an £18 'customer dividend' to each of its customers in each of the 5 years 2005 - 2010. This customer dividend will reduce water and sewerage bills by £18 per customer in each of the next five years compared with prices set in the Final Determination.

TOP 5 QUALITY AND SERVICE IMPROVEMENTS IN 2005-2010 PERIOD

1) Prioritised asset maintenance to ensure no deterioration in current standards of service to customers during the AMP4 period.
2) Service improvements of highest priority to customers, including;
   - tackling 736 properties at risk of internal flooding from overloaded sewers and 429 properties at risk of external flooding
   - reducing odour problems at 33 wastewater treatment works where we have had complaints from customers
   - reducing the risk of occasional taste and odour problems from tap water for around 400,000 customers
3) Continued progress on tackling unsatisfactory sewer overflows by upgrading (or investigating) a further 462 overflows agreed with the Environment Agency (Wales) during 2005-10, whereby improving river quality and coastal water quality.
4) Improvements to 200 wastewater treatment works to meet tighter discharge consents in order to meet new statutory requirements.
5) Completion of the 10 year Section 19 programme to refurbish unlined iron water mains agreed with the Drinking Water Inspectorate in 1999 with over 2,500km of water mains refurbished in the period 2005 - 2010.

WHAT IS DRIVING THE CHANGES IN BILLS? (NOVEMBER 2003 PRICES)				Water	Sewerage
Average household bill in 2004-2005 (Pre-rebates)				**123**	**163**
Less	(1) past efficiency savings and outperformance			-	-2
	(2) scope for reduction through future efficiency improvements			-7	-10
Plus	(3) maintaining base services			23	15
	of which	*Water*	*Sewerage*		
	a) changes in revenue	8	9		
	b) changes in operating costs	7	11		
	c) changes in capital maintenance	9	-1		
	d) impact of taxation	-2	-5		
	e) financing	1	1		
	(4) maintaining security of supplies to all customers			3	2
	(5) the impact of improvements in drinking water quality			11	-
	(6) the impact of environmental improvements			-	29
	(7) improvements in service performance			-	2
Average household bill in 2009-2010				**153**	**199**

PRICE LIMITS AND EFFECT ON AVERAGE BILLS (NOVEMBER 2003 PRICES)

		2004-05	2005-06*	2006-07*	2007-08*	2008-09*	2009-10*
Proposed price limit			**14.2**	**3.6**	**4.1**	**3.3**	**2.2**
W	**Indicative price limit (water service)**		**18**	**2.1**	**2.9**	**2.7**	**1.6**
1	Typical measured household bill	83	101	99	101	102	102
2	Typical unmeasured household bill	134	159	161	167	173	177
3	Average household bill	123	146	146	149	152	153
S	**Indicative price limit (sewerage service)**		**10.9**	**4.8**	**5.1**	**3.7**	**2.6**
1	Typical measured household bill	95	116	116	122	125	126
2	Typical unmeasured household bill	183	203	207	217	226	234
3	Average household bill	163	182	183	190	195	199

* before customer dividend of £18

ESTIMATE OF EXPENDITURE NEEDS (2002-03 PRICES)

		Annual average for the 2005-2010 period (£/property/annum)
1	Total operating expenditure	156
2	Total capital maintenance expenditure	83
3	Total capital enhancement expenditure	93
4	Average annual number of properties used as the denominator in the above calculation	1.3 million

For further information go to: http://www.welshwater.com http://www.dwrcymru.com/

Table 2, The monitoring plan for 2005-10 - prescribed tables

Price limits and household bills

	Description	Units	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
A	**Price limits & infrastructure charge limits**							
1	Price limits "K"	%	4.5	14.2	3.6	4.1	3.3	2.2
2	Water service indicative “K”	%	2.4	18.0	2.1	2.9	2.7	1.6
3	Sewerage service indicative “K” (if applicable)	%	6.2	10.9	4.8	5.1	3.7	2.6
4	Infrastructure charge limit – water service	£		251				
5	Infrastructure charge limit – sewerage service	£		251				
B	**Projected household bills - water service (Nov 2003 prices)**							
6	Typical unmeasured household bill	£	134	159	161	167	173	177
7	Typical measured household bill	£	83	101	99	101	102	102
8	Average household bill	£	123	146	146	149	152	153
C	**Projected household bills - sewerage service (Nov 2003 prices)**							
9	Typical unmeasured household bill	£	183	203	207	217	226	234
10	Typical measured household bill	£	95	116	116	122	125	126
11	Average household bill	£	163	182	183	190	195	199
D	**Further illustrative bills for unmeasured households - water service (Nov 2003 prices)**							
12	Annual water bill for an unmeasured household with a rateable value of £100	£	122	144	145	149	154	157
13	Annual water bill for an unmeasured household with a rateable value of £300	£	209	247	260	273	286	296
E	**Further illustrative bills for measured households - water service (Nov 2003 prices)**							
14	Annual water bill for a measured household with a billed demand of 60m3	£	72	89	87	88	89	89
15	Annual water bill for a measured household with a billed demand of 160m3	£	165	195	196	200	203	204
F	**Further illustrative bills for unmeasured households - sewerage service (Nov 2003 prices)**							
16	Annual sewerage bill for an unmeasured household with a rateable value of £100	£	163	181	184	192	199	205
17	Annual sewerage bill for an unmeasured household with a rateable value of £300	£	287	319	329	353	373	390
G	**Further illustrative bills for measured households - sewerage service (Nov 2003 prices)**							
18	Annual sewerage bill for a measured household with a billed demand of 60m3	£	81	102	100	104	107	108
19	Annual sewerage bill for a measured household with a billed demand of 160m3	£	205	225	248	260	266	269

Table 3, The monitoring plan for 2005-10 - prescribed tables

Water service - current performance & planned outputs

	Description	Units	Current performance	AMP4 profile	Level of performance by				
			2003-04		2005-06	2006-07	2007-08	2008-09	2009-10
A	**Service performance**								
1	DG2 Properties at risk of receiving low pressure	nr	242	S	242	242	242	242	242
2	DG3 Supply interruptions (overall performance score)	nr	0.03	S	0.08	0.08	0.08	0.08	0.08
3	DG6 % billing contacts dealt with within 5 days	%	100.0	S	100.0	100.0	100.0	100.0	100.0
4	DG7 % written complaints dealt with within 10 days	%	99.9	S	99.9	99.9	99.9	99.9	99.9
5	DG8 % metered customers receiving a bill based on a meter reading	%	99.96	S	99.96	99.96	99.96	99.96	99.96
6	DG9 % calls abandoned	%	1.3	S	1.3	1.3	1.3	1.3	1.3
7	DG9 % calls receiving the engaged tone	%	0.0	S	0.0	0.0	0.0	0.0	0.0
8	Water ESL - No additional outputs				0	0	0	0	0
9									
B	**Water sales & supply/demand balance**								
10	Billed water delivered	Ml/d	660.42	F	639.33	636.74	634.93	633.10	631.22
11	Sewage collected (if applicable)	Ml/d	556.29	F	552.45	550.83	550.00	549.13	548.25
12	Water available for use	Ml/d	1,036.72	R	1,039.20	1,040.49	1,047.69	1,048.01	1,048.14
13	Distribution input (dry year)	Ml/d	930.76	F	910.17	897.22	886.57	879.16	875.62
14	Security of supply index (reference levels of service)	nr	90	R	97	99	99	99	100
15	Security of supply index (planned levels of service)	nr	84	R	95	99	99	99	100
16	Total leakage	Ml/d	231.30	F	225.00	210.00	205.00	195.00	195.00
C	**Serviceability to customers**								
17	Water infrastructure	Text	Improving		Stable	Stable	Stable	Stable	Stable
18	Water non-infrastructure	Text	Improving		Stable	Stable	Stable	Stable	Stable

	D Defined outputs for maintaining base services		Description	Programme of work
19	Water infrastructure (1)	Text		NONE
20	Water infrastructure (2)	Text		NONE
21	Water infrastructure (3)	Text		NONE
22	Water non-infrastructure (1)	Text		NONE
23	Water non-infrastructure (2)	Text		NONE
24	Water non-infrastructure (3)	Text		NONE

Table 4, The monitoring plan for 2005-10 - prescribed tables

Water service - drinking water quality performance

	Description	Units	Current performance	AMP4 profile	Level of performance by/outputs in				
			2003-04		2005-06	2006-07	2007-08	2008-09	2009-10
A	**Quality and environmental compliance**								
1	% distribution input covered by s19s at WTWs	%	3.8	F	35.9	16.8	6.6	4.6	0.0
2	% distribution input not affected by s19s or temporary relaxations or ADs	%	96.2	R	64.1	83.2	93.4	95.4	100.0
3	% props in WSZs affected by s19s in distribution or ADs	%	77.5	F	41.3	32.0	22.7	17.0	11.2
4	% compliance with water quality regulations at the tap	%	99.7	S	99.8	99.8	99.8	99.8	99.8
5	% compliance with PCV for iron at the tap	%	99.1	R	98.9	99.0	99.1	99.3	99.3
B	**Drinking water quality outputs**								
6	Water treatment works improvements	nr	20	S	1	2	2	2	1
7	Distribution mains renovated	km	610	T*1	448	518	518	518	501
8	Distribution mains cleaned	km	0	T*1	337	902	902	902	901
C	**Environmental water outputs**								
9	Investigations into environmental impact	nr	0	P*3	0	8	23	0	0
10	Options appraisals related to environmental impact	nr	0		0	0	0	0	0
11	Other environmental improvements	nr	0		0	0	0	0	0

Table 5, The monitoring plan for 2005-10 - prescribed tables

Sewerage service - current performance and planned outputs

	Description	Units	Current performance	AMP4 profile	Level of performance by				
			2003-04		2005-06	2006-07	2007-08	2008-09	2009-10
A	**Service performance**								
1	DG5 Properties at risk of internal flooding (2 in 10 years)	nr	72	F	132	84	40	19	0
2	DG5 Properties at risk of internal flooding (1 in 10 years)	nr	182	F	396	348	268	158	36
3	Properties at risk of internal flooding (1 in 20)	nr	180	R	213	232	240	228	222
4	Properties internally flooded due to overloaded sewers	nr	82	F	136	122	106	85	67
5	Properties internally flooded due to other causes	nr	130	S	120	120	120	120	120
6	Properties/areas externally flooded due to overloaded sewers	nr	203	F	317	314	309	309	306
7	Properties/areas externally flooded due to other causes	nr	1,208	S	900	900	900	900	900
B	**Serviceability to customers**								
8	Sewerage infrastructure	Text	Stable		Stable	Stable	Stable	Stable	Stable
9	Sewerage non-infrastructure	Text	Stable		Stable	Stable	Stable	Stable	Stable

C	Defined outputs for maintaining base services		Description	Programme of work
10	Sewerage infrastructure (1)	Text		NONE
11	Sewerage infrastructure (2)	Text		NONE
12	Sewerage infrastructure (3)	Text		NONE
13	Sewerage non-infrastructure (1)	Text	Control of odour from sewage/sludge t'ment facil	33 projects
14	Sewerage non-infrastructure (2)	Text		NONE
15	Sewerage non-infrastructure (3)	Text		NONE

Table 6, The monitoring plan for 2005-10 - prescribed tables

Sewerage service - environmental programme 2005-10

	Description	Units	Current performanc	AMP4 profile	Level of performance by/activities and outputs in				
			2003-04		2005-06	2006-07	2007-08	2008-09	2009-10
A	**Quality and environmental compliance**								
1	% of STWs non-compliant (WRA numeric consents)	%	2.6	F	2.3	2.0	1.7	1.5	1.3
2	% of STWs non compliant (UWWTD consents)	%	0.0	S	0.0	0.0	0.0	0.0	0.0
3	% of total pe served by STWs in breach of WRA consent (LUT)	%	0.1	S	0.0	0.0	0.0	0.0	0.0
4	% of total pe served by STWs in breach of UWWTD consent (LUT)	%	0.0	S	0.0	0.0	0.0	0.0	0.0
5	% of intermittent discharges satisfactory	%	76.8	R	87.9	90.8	93.9	97.5	100.0
6	% of total sewage sludge produced managed in a satisfactory way	%	100.0	S	100.0	100.0	100.0	100.0	100.0
B	**Quality and environmental activities and outputs**								
7	Unsatisfactory intermittent discharges dealt with	nr		P*4	51	94	101	119	81
8	First time sewerage schemes	Props		P*2	5	177	111	77	149
9	Sewage treatment works improved	nr		P*1	80	13	21	16	5
10	Additional sewage sludge arising from new quality obligations since 2004-05	ttds		P*2	1.0	3.2	0.1	1.0	0.8
11	Total sewage sludge produced	ttds	79.7	R	81.0	84.2	84.3	85.3	86.1
12	Investigations completed	nr		P*2	9	66	66	66	77

Table 7, The monitoring plan for 2005-10 - prescribed tables

Water service - key activity projections

	Description	Units	Total activity planned in the period 2005-10		Profile of activity				
			Activity	As a % of current stock	2005-06	2006-07	2007-08	2008-09	2009-10
A	**Water resources**								
1	Length of aqueducts refurbished	km	9.0	1.3	0.0	1.0	7.0	0.0	1.0
2	Work on dams & impounding reservoirs.	nr	2	2.4	2	0	0	0	0
B	**Water treatment**								
3	Number of refurbished or new treatment works	nr	18	17.1	2	4	5	4	3
4	Ml/day of refurbished or new treatment works	Ml/d	389.30		22.90	71.50	186.00	41.70	67.20
C	**Water distribution**								
5	Length of mains renewed	km	2,268.0	8.4	421.0	470.0	463.0	463.0	451.0
6	Length of mains relined	km	735.0	2.7	127.0	148.0	155.0	155.0	150.0
7	Length of new mains	km	404.0	1.5	75.0	90.0	84.0	77.0	78.0
8	Communication pipes replaced	000s	35.000	3.3	7.000	7.000	7.000	7.000	7.000
9	Number of refurbished or new pumping stations	nr	14	1.9	2	3	3	3	3
10	Number of refurbished or new service reservoirs	nr	3	0.4	0	0	1	1	1
D	**Metering**								
11	Number of household meters renewed	nr	39,549	20.8	7,909	7,910	7,910	7,910	7,910
12	Optional meters: households	nr	115,600	12.1	24,670	23,870	23,090	22,350	21,620
13	Selective meters: households	nr	2,000	0.2	400	400	400	400	400
14	Percentage of households metered (at the year end)	%	16.6		22.0	24.6	27.2	29.6	31.9

Table 8, The monitoring plan for 2005-10 - prescribed tables

Sewerage service - key activity projections

	Description	Units	Total activity planned in the period 2005-10		Profile of activity				
			Activity	As a % of current stock	2005-06	2006-07	2007-08	2008-09	2009-10
A	**Sewers**								
1	Length of critical sewers replaced	km	36.5	0.8	8.7	8.7	7.5	5.5	6.2
2	Length of critical sewers renovated	km	35.1	0.7	8.7	8.3	7.0	5.2	5.9
3	New critical sewers	km	61.8	1.3	12.4	12.4	12.4	12.4	12.4
4	Length of non critical sewers replaced	km	38.0	0.3	9.1	9.1	7.8	5.7	6.4
5	Length of non critical sewers renovated	km	13.0	0.1	3.1	3.1	2.6	2.0	2.2
6	New non-critical sewers	km	144.2	1.1	28.8	28.8	28.8	28.8	28.8
7	Number of refurbished or new intermittent discharges	nr	447	13.6	51	95	101	119	81
B	**Sewer flooding**								
8	Internal property flooding to be solved by company action	nr	720		100	135	159	160	166
9	External only flooding problems to be solved by company action	nr	109		12	20	26	25	26
10	External linked problems to be solved by company action.	nr	317		15	79	62	32	129
11	Reduction in flooding due to other causes	nr	0		0	0	0	0	0
12	Internal property flooding benefiting from mitigation	nr	16		0	4	4	4	4
13	External property/area flooding benefiting from mitigation	nr	3		0	1	0	0	2
C	**Sewage treatment & disposal**								
14	Number of refurbished or new treatment works	nr	159	18.9	93	20	23	17	6
15	Population equivalent of refurbished or new treatment works	000	871.00		411.00	42.30	251.90	162.80	3.00
16	Number of refurbished or new sludge treatment works	nr	1	2.7	1	0	0	0	0
D	**Sewerage service**								
17	Number of refurbished or new pumping stations	nr	0	0.0	0	0	0	0	0
18	Number of refurbished or new sea outfalls	nr	1	3.8	0	0	1	0	0