# OFGEM

# GAS DISTRIBUTION PRICE CONTROL REVIEW

# FIVE YEAR CONTROL

## (OPEX)

## REPORT 1

## WALES & WEST NETWORK

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# 1 EXECUTIVE SUMMARY

## 1.1 OPEX

PB Power has reviewed the submission by Wales & West Utilities (WWU) for the direct controllable operating cost allowances for the Wales & West (WW) network for the period 2008/09 to 2012/13, and sets out in this report its proposed cost projections, and the reason for any changes to WWU's submission.

Direct controllable operating costs are the total costs of operating the following:

- Direct activities (Work management, emergency service, repairs, maintenance, other direct)
- xoserve
- Shrinkage

For each activity, we have identified the benchmark activity costs by examining the unit costs in the base year (2005/06). Setting the level of the benchmark unit costs has also been informed by WWU's forecast costs for 2006/07. When the actual operating costs for 2006/07 are known, we will review our proposals and make adjustments if appropriate. The analysis also reviewed GDN's forecast costs for 2008/09 to 2012/13 to identify any trends and movement in costs.

This report makes proposals for WW's direct operating cost allowances for the next price control period (2008/09 to 2012/13). In this report we have made adjustments to bring WWU's forecast expenditure towards the benchmark. In most cases our proposed costs reach the benchmark before the end of the price control period

Our proposals and WWU's submission are summarized in the following chart and table

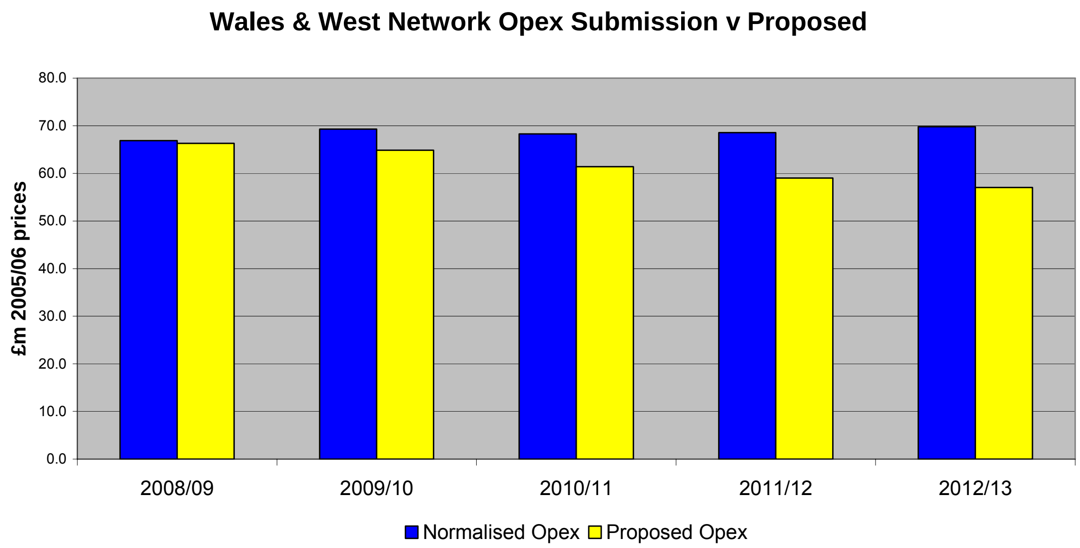


***Figure 1-1***

| Wales & West Network Net Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | | | | | | |
| Work Management | 38.7 | 40.6 | 38.8 | 38.5 | 38.1 | **194.7** |
| Emergency | 11.8 | 12.0 | 12.3 | 12.5 | 12.8 | **61.4** |
| Repairs | 9.6 | 9.8 | 10.0 | 10.2 | 10.4 | **50.2** |
| Maintenance | 13.4 | 13.7 | 13.8 | 12.8 | 13.0 | **66.8** |
| Other Direct Activities | 2.5 | 2.5 | 2.6 | 2.6 | 2.8 | **13.0** |
| Shrinkage | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| xoserve | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Total** | **76.0** | **78.7** | **77.5** | **76.7** | **77.1** | **386.0** |
| **Normalisation Adjustments** | | | | | | |
| Work Management | -21.5 | -21.4 | -21.3 | -20.8 | -20.1 | **-105.1** |
| Emergency | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **-0.2** |
| Repairs | -1.2 | -1.3 | -1.3 | -1.3 | -1.3 | **-6.5** |
| Maintenance | -0.8 | -1.2 | -1.0 | -0.4 | -0.3 | **-3.7** |
| Other Direct Activities | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.2** |
| Shrinkage | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | **56.5** |
| xoserve | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | **15.6** |
| **Total** | **-9.2** | **-9.4** | **-9.2** | **-8.1** | **-7.3** | **-43.2** |
| **Normalised Opex** | | | | | | |
| Work Management | 17.2 | 19.2 | 17.5 | 17.7 | 18.0 | **89.6** |
| Emergency | 11.8 | 12.0 | 12.2 | 12.5 | 12.7 | **61.2** |
| Repairs | 8.4 | 8.6 | 8.7 | 8.9 | 9.1 | **43.7** |
| Maintenance | 12.6 | 12.6 | 12.8 | 12.4 | 12.7 | **63.1** |
| Other Direct Activities | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | **13.2** |
| Shrinkage | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | **56.5** |
| xoserve | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | **15.6** |
| **Total** | **66.9** | **69.3** | **68.3** | **68.6** | **69.8** | **342.8** |
| **Adjustments** | | | | | | |
| Work Management | 0.0 | -2.4 | -1.2 | -1.8 | -2.8 | **-8.1** |
| Emergency | -0.9 | -1.7 | -2.5 | -3.3 | -4.1 | **-12.3** |
| Repairs | 0.2 | -0.2 | -0.5 | -0.8 | -1.2 | **-2.5** |
| Maintenance | 0.7 | 0.5 | -2.0 | -2.8 | -3.7 | **-7.2** |
| Other Direct Activities | -0.6 | -0.7 | -0.8 | -0.9 | -1.1 | **-4.1** |
| Shrinkage | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| xoserve | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Total** | **-0.6** | **-4.4** | **-6.9** | **-9.5** | **-12.7** | **-34.2** |
| **Proposed Opex** | | | | | | |
| Work Management | 17.2 | 16.8 | 16.3 | 15.9 | 15.2 | **81.5** |
| Emergency | 10.9 | 10.3 | 9.8 | 9.2 | 8.7 | **48.9** |
| Repairs | 8.6 | 8.4 | 8.2 | 8.1 | 7.9 | **41.2** |
| Maintenance | 13.2 | 13.1 | 10.8 | 9.6 | 9.1 | **55.8** |
| Other Direct Activities | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 | **9.2** |
| Shrinkage | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | **56.5** |
| xoserve | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | **15.6** |
| **Total** | **66.3** | **64.9** | **61.4** | **59.0** | **57.1** | **308.6** |

***Table 1-1***

# 2 INTRODUCTION

## 2.1 PRICE CONTROL REVIEW TIMETABLE

The final proposals for the one-year price control have been accepted by the GDNs. Ofgem is now carrying out a further review to set price control allowances for 1st April 2008 to 31st March 2013. The full process is shown in the following diagram.

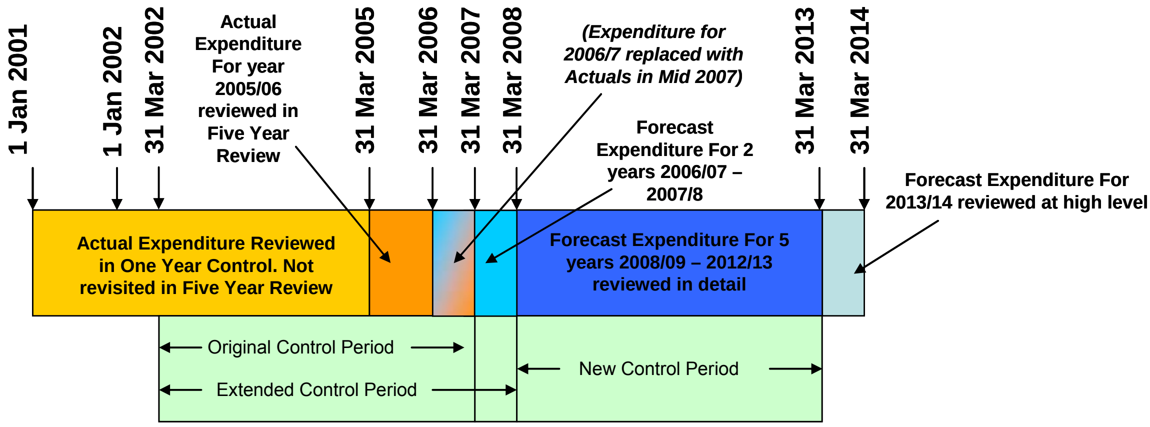


*Figure 2-1*

## 2.2 FIVE YEAR CONTROL

Ofgem appointed PB Power working in partnership with Rune Associates Limited to assist them in the preparation of the Capex and Repex elements of the Business Plan Questionnaires (BPQs). Subsequently Ofgem extended this work to include the analysis of the Capex, Repex and Direct Opex submissions by the GDNs.

Our findings on the direct Opex submissions are contained in this report, whilst the Capex and Repex findings are the subject of a separate report.

The questionnaires were issued on 30 June 2006. These were returned to Ofgem between 6 and 13 October 2006. Additionally a series of cost visits were held with the GDNs between 10 November and 1 December 2006. Our findings have been drawn from the BPQs, costs visits and responses to supplementary questions sent to the GDNs.

## 2.3 BUSINESS PLAN QUESTIONNAIRE

A combined BPQ was issued on 30 June. This covered the Financial Statements, Opex, Capex and Repex requests

GDNs were asked to respond to Ofgem by 6 October 2006 and to upload all the data onto PB Power's file management system, PBShare. All parties in the process were granted appropriate access to relevant folders and documents. Some documents had to be provided in paper copy and these were sent both to PB Power and to Ofgem.

As the analysis of the submissions progressed and where the return was either unclear or insufficient it became necessary to ask the GDNs for additional information. These supplementary questions requests and the additional information, which was presented in reply, were logged and stored on PBShare.

At the end of the process the worksheets were updated to include all amendments submitted and should be read in conjunction with this report.

## 2.4 PURPOSE

The purpose of the report is for PB Power to provide recommendations to Ofgem on the efficient levels of expenditure required by WWU to carry out their activities in Wales & West.

Ofgem will consider these recommendations together with other information in proposing appropriate expenditure allowances for 2008/09 to 2012/13.

## 2.5 ANALYSIS AND REPORTING PROCESS

The BPQ was designed to collect all the data required for analysis.

PB Power has structured this report into the following workstrands:

i) Work Management

ii) Emergency service

iii) Repairs

iv) Maintenance: covering LTS, Storage and Maintenance Other

v) Other Direct

vi) Shrinkage

vii) xoserve

The expenditure projections for the efficient level of expenditure required by the GDN have been reviewed in a number of different ways depending on the activity and quality of information available. Principally two main techniques have been used; a comparative benchmarking between GDNs where workload is sufficiently well defined to obtain reliable regression analysis, and a bespoke review by our consultants to form a judgement on the appropriate expenditure projections based on the information provided. With both methods full analysis of the information presented in the context of the requirements of a Gas Distribution business has been carried out to support the findings.

### 2.5.1 COST NORMALISATION

A key requirement for robust analysis is that GDN costs for particular Opex activities should be allocated on a consistent basis. Following detailed analysis of the BPQ returns, a number of adjustments have been made to achieve this objective.

These adjustments include applying the results of the work on accounting adjustments carried out by Ofgem, adjustments that have been identified by LECG in their work on indirect Opex, costs which have been removed for the comparative analysis to be carried out and also movement of costs between activities to ensure that costs for each activity are on a consistent basis across all GDNs. This latter set of adjustments includes items identified by WWU in response to our supplementary questions on the allocation of sub-activity costs.

The process restates the GDNs' BPQ submissions on this "normalised" basis. In each section any adjustments to achieve this are specified including the reasoning behind the adjustments.

The adjustments have been classified into the following areas

- **Transfer of costs** – transfers identified by PB Power or LECG which bring allocation of costs into a comparable position for all GDNs.
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to their BPQ submission to reflect our proposed allocation of sub-activities.
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – GDNs included different assumptions regarding the amounts required to cover the costs of the employer's normal level of contributions to their employees' pension schemes. At Ofgem's request and to bring the direct Opex on to a consistent basis across all GDNs, we have removed the GDN reported pension contributions and replaced them with an amount equal to 22% of direct employee salary/wage costs. The figure reported under this category is the net change between the reported pension costs and the standard assumption.
- **Removed costs** – these costs are one off or special costs which are removed prior to the comparative analysis.

### 2.5.2 COST ASSESSMENT PROCESS

The expenditure projections for the efficient level of expenditure required by the GDN have been carried out in a number of different ways depending on the activity and quality of information available for this review.

Principally two main techniques have been used:

- comparative benchmarking between GDNs where workload is sufficiently well defined to obtain reliable regression analysis, and
- a bespoke review by our consultants to form a judgement on the appropriate expenditure projections based on the information provided.

With both methods full analysis of the information presented in the context of the requirements of a Gas Distribution business has been carried out to support the findings.

The process of developing our expenditure proposals has the following steps:

- Cost normalisation,
- Establishing base year for cost analysis,
- Benchmarking costs derived from the base year costs,
- Workload projections for the period 2005/06 to 2012/13,
- Cost projections,
- Gap adjustment.

### 2.5.3 ESTABLISH BASE YEAR

A base year was chosen in order to carry out the comparative regression analysis. The preferred year was 2005/06, where the availability of actual outturn values removed any element of variation due to GDN forecast values. However, for some activities the year 2006/07 has been used due to variations in the 2005/06 data. Generally it has been found that the year 2004/05 contains too many inconsistencies in data reporting, mainly due to the network sales process, and is not suitable as a base year for comparative analysis.

### 2.5.4 BENCHMARK COST ANALYSIS PROCESS

We have determined benchmark costs in the manner most appropriate to the data and the activity.

Some costs were best assessed on an individual basis. For example, [redacted] pipeline costs are contract specific.

These costs were removed before determination of the benchmark costs of an activity, and were assessed separately. If appropriate an allowance for such costs were added back after the assessment of the costs for the activities which are common across GDNs.

Where possible we used comparative analysis to determine benchmark activity costs. In general we have used the following type of cost function which is common in the regulatory literature:

$$\text{Cost} = K\,w^{a} \qquad (1)$$

where K and a are constants.

Where there are economies of scale associated with an activity, a<1, so that the unit cost of an activity for a larger network will be less than for a smaller network. For each activity we have used our knowledge and experience to explore different cost drivers and select the most appropriate workload driver (w) for the activity concerned.

By taking the natural log of equation (1) we can derive the following equation:

$$\ln(\text{Cost}) = \ln(K) + a\ln(w) \qquad (2)$$

This equation is used to carry out the regression analysis and estimate each of the parameters of the cost function.

Some costs may be better modelled with a cost function of the form

$$\text{Cost} = C + A\,w \qquad (3)$$

where C and A are constants.

For each activity we have assessed which form of equation (1) or (2) better explains the variation in costs.

To obtain the frontier costs it is usual to reduce the constant K in equation (1) or the constant C in equation (2), so that the regression line passes through the observation with the lowest error term. This gives the Corrected OLS (COLS) line. We have applied an alternative approach which recognises that differences between the GDNs' regression line and their actual costs may reflect other factors than just efficiency. This involves adjusting the regression line so that it passes through the upper quartile error level. This gives us the upper quartile line.

However, the effect of reducing C in equation (3) by an amount $\Delta$ is to reduce unit costs at each workload w by $\Delta/w$. This means that the impact on unit costs is different at different workload levels and smaller networks will be required to reduce unit costs by more than larger networks both in absolute and proportional terms.

On the other hand, the effect of reducing K by an amount $\Delta$ in equation (1) is to reduce all costs at all workloads by the same proportion $(K-\Delta)/K$.

We have therefore used a different method for setting the benchmark performance when using the linear regression which aligns more closely with the method used with equation (1).

We have defined the benchmark performance in the linear model not by reducing C but by reducing the slope A in equation (3). Assuming that the intercept C is fixed, the error term reflects differences in unit (variable) costs. The benchmark is determined by the upper quartile unit cost.

The effect of this is to reduce the unit costs of all networks by the constant amount $\delta$ where $\delta$ is the difference between the regression slope and the benchmark slope.

Since the change in each GDN unit costs is independent of workload, smaller networks will be required to make smaller percentage changes in unit costs than larger networks. Effectively, we are assuming that the changes required to give benchmark performance have an economy of scale attached to them.

### Assessment of regression outcome

When we have carried out regression analysis we have assessed the fit of the regression line to the data points by calculating the $r^2$ value and by carrying out hypothesis testing where the $r^2$ values are not directly comparable.

The value of $r^2$ is one indicator of goodness of fit. It is the proportion of the variance in the cost data that is explained by the variance in the cost data derived from the OLS regression.

We have used appropriate tests to determine whether the linear or the logarithmic linear regression gives the better fit to the data and have used the regression with the better fit. Where there is no significant difference in fit the logarithmic linear regression has been used.

For all the regression relationships used in this report $r^2>0.7$. Unit cost and/or bottom-up analysis has been used in all other cases.

These values of $r^2$ have the following significance:

- It is possible that the data points could show a relationship between the reported costs and the explanatory variable by chance. Analysis of variance identifies the component of the cost variable which is explained by the regression and the component unexplained by the regression. This gives a value for the F statistic and taking into account the number of data points, this can be used to test whether the explanation provided by the regression is better than is likely to have arisen by chance. With 8 (GDN) data points the test value for the F statistic is 5.99 and the corresponding value for $r^2$ is 0.5. If $r^2>0.5$ we can reject the hypothesis that the relationship arose by chance at the 5% significance level. If $r^2>0.7$ we can further reject the hypothesis at the 1% significance level

In order to test for the robustness of the regression results and in particular of the slope of the regression line, we have tested each regression result for heteroscedasticity (that is for a relationship between the variance in the disturbance term and the magnitude of the explanatory variable). This is important since evidence of heteroscedasticity could indicate a mis-specification in the regression model. The regression results presented in this report do not show such evidence at a significant level

Although we have carried out detailed work to seek to ensure that the costs used in the regression analysis have been allocated to activities on a consistent basis across all GDNs, we recognise that that some different allocations may remain and that the use of regression to determine benchmark costs could potentially lead to an inadequate level of total Opex for a particular GDN. We have addressed this possibility by selecting the upper quartile value, rather than the lowest value as the benchmark cost, with any remaining effects mitigated by the gap closure process.

### Two or more workload drivers

In some cases activity costs are driven by a number of different workload types. In such cases we have constructed a composite scale variable (CSV) which includes the different drivers scaled by the proportion of costs attributable to each type of workload.

Linear regression has been used to determine the relationship between costs and the CSV.

### Unit cost analysis

Here we have ranked the unit costs and selected the upper quartile unit cost as the frontier unit cost. Where there is a wide variation in unit costs we have selected the average unit cost as the benchmark.

**Bottom-up analysis**

Using consultant's knowledge, judgement and analysis of similar activities, we have developed costs for a typical task representing the workload driver, or for a range of such tasks. The results have been used to confirm or adjust the benchmark costs obtained by regression or unit cost analysis and in some cases it has been the main method where regression gave poor fit or there were large variations in reported costs. The specific techniques used to determine the benchmark costs for each Opex activity are set out in the text for that activity.

**Regression Values**

Further details of the regression calculations and numbers are given in Appendix 7.

### 2.5.5 WORKLOAD PROJECTONS

The above approach has allowed the analysis to fully reflect the workload forecast by the GDNs, adjusted as deemed appropriate by our consultants. It has also minimised any inconsistent allocation of costs between activities, which is suspected in a number of areas.

The PB Power workload projections for the activity are determined for the period 2005/06 to 2012/13 from the activity analysis.

### 2.5.6 COST PROJECTIONS

This benchmark performance applied to our workload projections has then been used as the target which all under performing GDNs should move towards.

The following shows the performance measures used in assessing the Opex proposals.

| Performance Measures Used in Determining The Opex Proposals | |
|---|---|
| **Benchmark Performance** | The Upper Quartile performance as determined from the regression analysis tracked forward from the base year to 2012/13 taking account of PB Power's expected productivity improvements. When showing this trend in the charts, along side our proposals, it is also adjusted for PB Power's assumptions for real price effects. |
| **Baseline Performance** | The GDNs BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements. When showing this trend in the charts, along side our proposals, it is also adjusted for PB Power's assumptions for real price effects. |

***Table 2-1***

The benchmark costs against workload are shown in pink on the graphs. This is the target which all under performing GDNs should move towards

In the logarithmic linear regressions the pink line is parallel to the regression line.

In the linear regressions, the pink line has the same intercept as the regression line but with a slope equal to the upper quartile unit cost.

In our approach annual productivity improvements are applied to total costs. This gives the end (2012/13) target cost line, shown in yellow on the graphs. This represents the expected position of the benchmark 2012/13 costs after allowing for the productivity improvements we expect to apply to a frontier efficient company.

### 2.5.7 GAP ADJUSTMENT

In order to form a view of the speed at which the GDNs should be expected to move towards this target performance, extrapolation of the base year performance has also been carried out for the whole period using our standard assumptions for any price rises which are expected to be in excess of the Retail Prices Index (RPI). Section 2.7 provides more details on real price effects.

A gap adjustment has been included where appropriate to provide a smooth transition from the BPQ level of costs at the PB Power workload levels to the benchmark performance by 2012/13. The gap adjustment will allow the GDN a period to review and amend their work arrangements to achieve the proposed benchmark efficient cost levels.

### 2.5.8 SUMMARY CHART

The overall process for deriving our recommended expenditure projections is shown in the flow chart below.

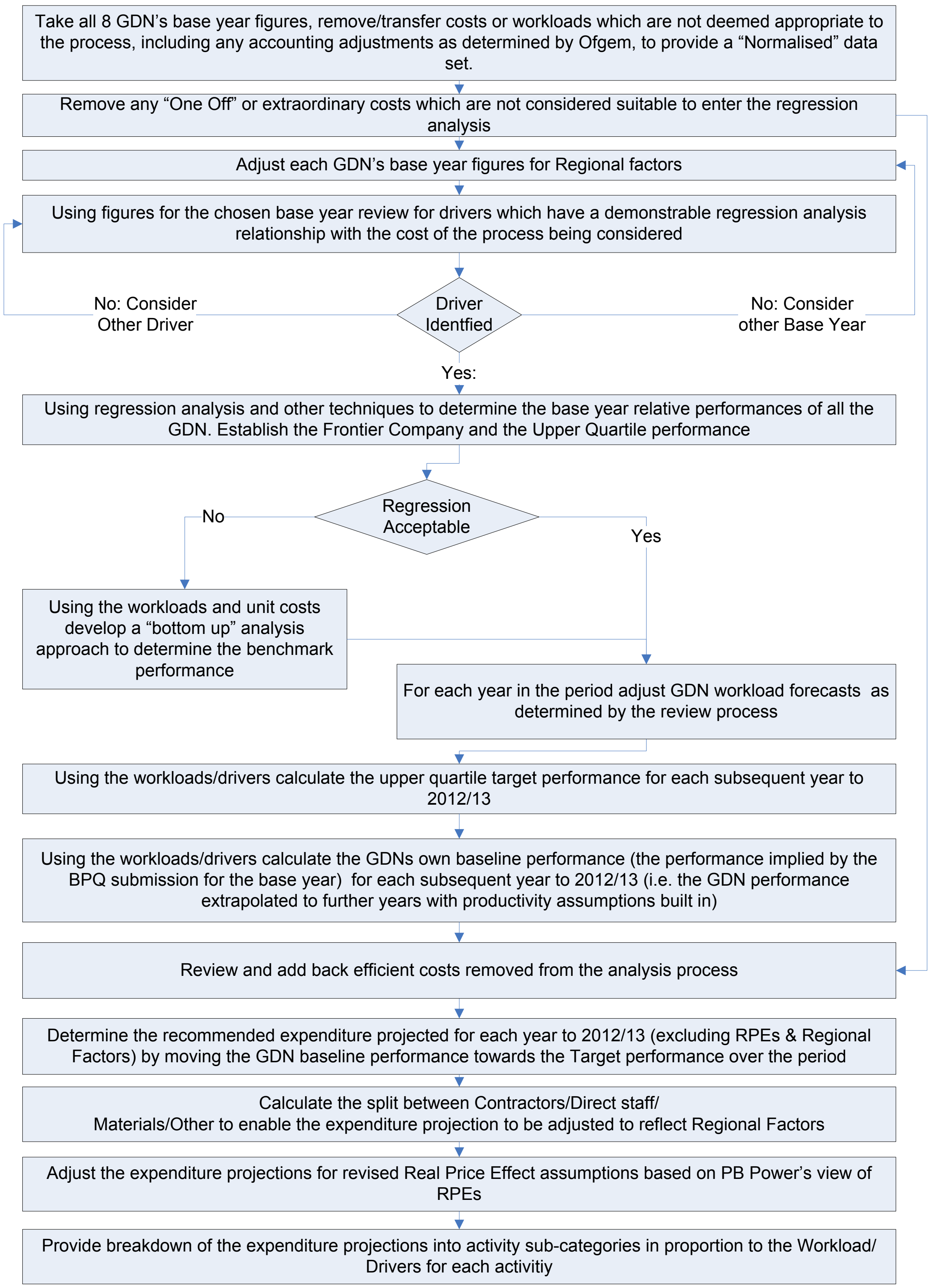
Take all 8 GDN's base year figures, remove/transfer costs or workloads which are not deemed appropriate to the process, including any accounting adjustments as determined by Ofgem, to provide a "Normalised" data set.
Remove any "One Off" or extraordinary costs which are not considered suitable to enter the regression analysis
Adjust each GDN's base year figures for Regional factors
Using figures for the chosen base year review for drivers which have a demonstrable regression analysis relationship with the cost of the process being considered
No: Consider Other Driver
Driver Identfied
No: Consider other Base Year
Yes:
Using regression analysis and other techniques to determine the base year relative performances of all the GDN. Establish the Frontier Company and the Upper Quartile performance
No
Regression Acceptable
Yes
Using the workloads and unit costs develop a "bottom up" analysis approach to determine the benchmark performance
For each year in the period adjust GDN workload forecasts as determined by the review process
Using the workloads/drivers calculate the upper quartile target performance for each subsequent year to 2012/13
Using the workloads/drivers calculate the GDNs own baseline performance (the performance implied by the BPQ submission for the base year) for each subsequent year to 2012/13 (i.e. the GDN performance extrapolated to further years with productivity assumptions built in)
Review and add back efficient costs removed from the analysis process
Determine the recommended expenditure projected for each year to 2012/13 (excluding RPEs & Regional Factors) by moving the GDN baseline performance towards the Target performance over the period
Calculate the split between Contractors/Direct staff/ Materials/Other to enable the expenditure projection to be adjusted to reflect Regional Factors
Adjust the expenditure projections for revised Real Price Effect assumptions based on PB Power's view of RPEs
Provide breakdown of the expenditure projections into activity sub-categories in proportion to the Workload/ Drivers for each activitiy

***Figure 2-2***

## 2.6 COSTS

All costs in the report are in 2005/06 prices unless otherwise stated.

The table below shows the factors which have been used to convert pre 2005/06 costs to 2005/06. These factors have been used throughout the analysis.

| Convert to \ Convert from | 2000 | 2001 | Q1 2002 | 2002/03 | 2003/04 | 2004/05 | 2005/06 |
|---|---|---|---|---|---|---|---|
| **Index** | 170.25 | 173.35 | 173.87 | 177.52 | 182.48 | 188.15 | 193.11 |
| **2000** | 1.00 | 0.98 | 0.98 | 0.96 | 0.93 | 0.90 | 0.88 |
| **2001** | 1.02 | 1.00 | 1.00 | 0.98 | 0.95 | 0.92 | 0.90 |
| **Q1 2002** | 1.02 | 1.00 | 1.00 | 0.98 | 0.95 | 0.92 | 0.90 |
| **2002/03** | 1.04 | 1.02 | 1.02 | 1.00 | 0.97 | 0.94 | 0.92 |
| **2003/04** | 1.07 | 1.05 | 1.05 | 1.03 | 1.00 | 0.97 | 0.94 |
| **2004/05** | 1.11 | 1.09 | 1.08 | 1.06 | 1.03 | 1.00 | 0.97 |
| **2005/06** | 1.13 | 1.11 | 1.11 | 1.09 | 1.06 | 1.03 | 1.00 |

***Table 2-2***

## 2.7 REAL PRICE EFFECTS

The submissions have been made on the basis of 2005/06 prices and RPEs have also been identified, Appendix 7 gives details of the rates we have assumed have been used by WWU in the compilation of their BPQ submission. In addition to the increases from the Retail Prices Index (RPI) assumed at an annual rate of 2.5%, other costs have been assessed as potentially rising faster than this rate. These additional increases used in this report have been summarised in Table 2-3 and are discussed further in the sections below.

We have made adjustments to the submissions for all areas of the BPQ excluding Non-Operational Capex as we consider most of this expenditure is project based which will have been made on the basis of the best available planned processes at the time of the submissions. We consider it more appropriate to consider adjustments to this type of expenditure on a case by case basis.

| Real Price Effects | | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|---|---|
| Contractor Rates Year on Year | 2.25% | 100.0 | 102.3 | 104.6 | 106.9 | 109.3 | 111.8 | 114.3 | 116.9 |
| Materials year on Year | 1.00% | 100.0 | 101.0 | 102.0 | 103.0 | 104.1 | 105.1 | 106.2 | 107.2 |
| Direct Labour | 1.00% | 100.0 | 101.0 | 102.0 | 103.0 | 104.1 | 105.1 | 106.2 | 107.2 |

***Table 2-3***

### 2.7.1 CONTRACTOR PRICES

Contractor prices have a major impact on the costs of the GDN operations particularly in the areas of connections, mains replacement works and LTS projects. All GDNs have forecast that contractor prices will increase at a greater rate than the RPI. They have quoted particularly the Price Adjustment Formulae for Construction Contracts Indices published by the DTI (commonly known as the Baxter Indices) as evidence of the historical rate of real price inflation for these contracts. These trends have been set out in Figure 2-3 below.

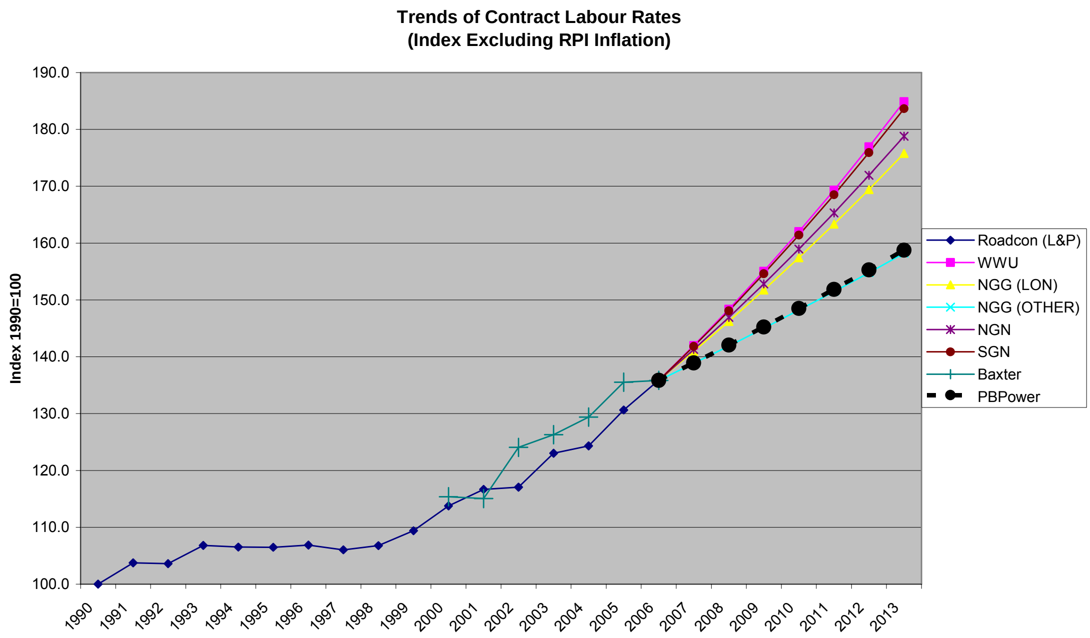


***Figure 2-3***

We have investigated these trends looking for comparisons for the gas distribution costs. These indices do not uniformly increase month by month as there tends to be step changes each year as contracts are re-negotiated. Examination of the most recent trends suggests that the high increases experienced a year ago have flattened out.

We have also compared the data with the Public Sector Construction Works Indices (Road Construction) published by the DTI. Whilst this sector is not directly reflective of gas distribution activities it is useful as a comparator to the Baxter Indices. As can be seen from Figure 2-3, whilst the two indices show small differences year on year the trends demonstrate very similar increase.

Having considered all of the previous trend information we have concluded that a projection of 2¼% is appropriate which is also shown in Figure 2-3.

Our analysis assumes a single rate of Contractor price increases across all GDNs with no differences between regions of the UK for the rate of increase.

## 2.7.2 DIRECT LABOUR COSTS

All GDNs have submitted the view that direct labour costs will continue to increase at a greater rate than the RPI.

Forecasting future wage and salary trends in relation to inflation is a matter of speculating on the outcome of future negotiations and many complex factors. Government's concern is with the control of inflation and as such encourages settlements at or below inflation.

The best evidence for future trends comes from recent experience. The DTI Employment Relations Research Series document No 56 dated March 2006 indicates that in the past decade, UK employees have enjoyed strong real (inflation adjusted) wages growth of 2¾ per cent a year in the private sector. Public sector employees saw a slightly lower annual growth rate of around 2¼ to 2½ per cent in real earnings. This period spanned the introduction of the minimum wage and it appears that more recent real growth has slowed. The most recent Annual Survey of Hours and Earnings (ASHE) in April 2006 indicated that median gross weekly earnings were 4.1% in 2005. During this period inflation averaged 3%. Continuing this trend, the Ernst & Young ITEM Club indicated recently that average earnings increased by 4.1% in the year to November, despite a tightening labour market.

Based on recent evidence, a real price effect forecast of 1% for direct staff costs has been used in our analysis.

### 2.7.3 MATERIAL COSTS

All GDNs have submitted the view that material costs will continue to increase at a greater rate than the RPI. Having reviewed these rates we believe a reasonable rate of increase above RPI will be 1%. We conclude that this figure should be taken together with the productivity savings assumed which balance the effect of these increases.

### 2.7.4 OTHER COSTS

No specific evidence has been provided on real price rises for other costs and therefore our analysis has assumed no increases above RPI.

## 2.8 REGIONAL FACTORS

### 2.8.1 CONTRACTOR PRICES

We have based our initial views on the Quarterly Review of Building Prices as published by the Building Construction Information Service (BCIS) of the Royal Institution of Chartered Surveyors (RICS). This document provides a complete regional index of construction costs for the UK. For the purposes of our analysis we have rebased the October 2006 indices with Northern Ireland, Jersey and the Scottish Highlands excluded. We have estimated the percentage for each county falling into each GDN, thus being able to derive an index of construction costs for each GDN. The table below sets out the values used for the analysis, the same factors have been used for each year. Details of the assumptions used to determine these factors are given in Appendix 5.

| Regional Factors | WW | No | Sc | So | EoE | Lon | NW | WM |
|---|---|---|---|---|---|---|---|---|
| Regional Factors (Contractor Prices) | 0.96 | 1.01 | 0.99 | 1.06 | 1.00 | 1.11 | 0.93 | 0.94 |

***Table 2-4***

### 2.8.2 DIRECT LABOUR COSTS

The Annual Survey of Hours and Earnings (ASHE) published by the DTI shows that there is a substantial London effect on average earnings. This shows that London wages are on average 30% higher than the national average.

Using this figure for London only, an assessment has been made as to how this impacts the GDNs. We concluded that only Southern and London GDNs are affected and that they are not fully exposed to the 30% uplift as the whole of the GDN is not within London and many activities are carried out away from the London location.

Our conclusions are set out in Table 2-5.

| Regional Factors | WW | No | Sc | So | EoE | Lon | NW | WM |
|---|---|---|---|---|---|---|---|---|
| Regional Factors (Direct Labour) | 0.98 | 0.98 | 0.98 | 1.03 | 0.98 | 1.10 | 0.98 | 0.98 |

***Table 2-5***

### 2.8.3 MATERIAL COSTS

No specific evidence has been provided of a regional impact on material prices and therefore our analysis has not used any regional factors for material costs.

### 2.8.4 OTHER COSTS

No specific evidence has been provided by WWU of a regional impact on other prices and therefore our analysis has not used any regional factors for other costs.

## 2.9 PRODUCTIVITY

Although we have not undertaken a full study of past productivity we have examined published information to determine an assumed base annual increase in productivity. We understand other consultants are undertaking broader economic studies of the operation of the GDN businesses.

Looking at the productivity information published by National Statistics on output per worker the average annual increase over the last 10-40 years is in the range 1.7% - 2.0%. In addition a report on the OFWAT web site compiled by Stone & Webster Consultants Limited in 2004 concluded "Broadly, the average rate of Opex productivity growth for [Water and Sewage Companies] has been in the range 1.7-1.9% per annum over the [period 1992-93 to 2002/03]". In the light of these figures we have made a conservative assumption of 1% base annual increase. We have then used our engineering experience and judgement when reviewing the business plans of the companies to determine where we believe there is scope for additional productivity above this base rate.

The table below lists the areas in which our analysis has used an assumption for productivity to automatically generate our proposals over the period. The table also shows where we believe there is scope for productivity improvements, higher scope being identified by more ticks.

In other areas of analysis we have used the GDN's own forecasts modified as appropriate for specific issues.

| Activities | Rate | Potential Opportunities (Above base Productivity) | | | | | |
|---|---|---|---|---|---|---|---|
| | | New Techniques | Labour Productivity | Clerical Support Costs | Process Improvements | Contractual Reductions | IS Improvements |
| Opex – Work Management | 1% | | | | | | √√√ |
| Opex – Remaining | 1% | | | | | | |
| Capex - Connections | 3% | √ | √√ | √√√ | √√√ | √√ | √√ |
| Capex – Mains Reinforcement | 2% | √√ | √ | √ | √ | √√√ | √ |
| Repex - All | 1.75% | √ | √ | √ | √ | √√ | √ |

***Table 2-6***

Our productivity assumptions are extrapolated to subsequent years based on the regression carried out on the information provided in the regression base year. We recommend that following the update of 2006/07 outturn figures, our assumptions are reviewed in the light of potential performance improvements already achieved during the 2006/07 financial year.

## 2.10 OUTER MET AREA

A geographical area on the boundary of the East of England Network and the London Network, the Outer Met Area, is for regulatory and income accounting purposes part of the East of England Network. However, the area is managed by NGG as part of the London Network. In the review of Direct Opex all comparative analysis has been carried out on the basis that the costs and work for the Outer Met Area have been included within the London figures. The BPQ has been completed by NGG on this basis with the exception of low pressure gas holders. We have therefore modified these returns for London and East of England Networks to ensure the analysis has been carried out on a consistent basis. The operating costs, assets and liabilities are deemed to be 9% of the transportation business operating costs, assets and liabilities of the London Network. We recommend that future returns and analysis is carried out on the basis that all aspects of the Outer Met Area is reported and analysed as being part of East of England Network.

## 2.11 PENSION ADJUSTMENTS

GDNs have included different assumptions regarding the amounts required to cover the costs of the employer's normal level of contributions to their employees' pension schemes. To bring the direct Opex on to a consistent basis across all GDNs, we have removed the GDN reported pension contributions and replaced them with an amount equal to 22% of direct employee salary/wage costs as advised by Ofgem

# 3 WORK MANAGEMENT

## 3.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 38.7 | 40.6 | 38.8 | 38.5 | 38.1 | **194.7** |
| **Normalisation Adjustments** | -21.5 | -21.4 | -21.3 | -20.8 | -20.1 | **-105.1** |
| **Normalised BPQ** | 17.2 | 19.2 | 17.5 | 17.7 | 18.0 | **89.6** |
| **Adjustments** | 0.0 | -2.4 | -1.2 | -1.8 | -2.8 | **-8.1** |
| **Proposed** | **17.2** | **16.8** | **16.3** | **15.9** | **15.2** | **81.5** |

***Table 3-1***

## 3.2 POLICIES & PROCEDURES

### 3.2.1 INTRODUCTION

Wales and West Network has a clear route of governance by which policies and procedures are formed, approved, and implemented. The Asset Compliance Manager (ACM) is the holder of engineering and asset management policies. The ACM formulates the programme of required policy changes, and tests on-going compliance with policies. The programme of policy changes is reviewed monthly by the Engineering Safety Executive Committee. Major policy changes are subject to the Wales and West Executive Team approval. Appendix 1 reviews the Financial and Technical framework under which Wales and West operates, the structure they utilise to manage their assets effectively and the key policies they adopt to ensure they meet their statutory and licence obligations and other regulatory requirements.

This section reviews the various statements made by Wales and West in support of their work management processes and expenditure forecasts.

### 3.2.2 SCOPE OF POLICES AND PROCEDURES

The Work Management activity has to carry out its functions in such a way that the pipe laying and relaying, emergency, repair and maintenance activities are able to comply with their key policies and procedures.

This includes meeting the standards of performance under the Gas Act in relation to handling of calls to the emergency call centre and the repairs of escapes in accordance with the timescales set out in the Gas Safety (Management) Regulations (GS(M)R).

Policies and procedures, which apply specifically to Work Management, include those that are established to govern the capture and retention of essential information about assets, when they are added to or removed from the network asset inventory, or when they are maintained. Key Policies for this are:

T/PL/RE/1: Policy for Capture, Update and Retention of Engineering Asset Records.

T/PL/DR/1: Policy for the Capture of Pipe Asset Records

### 3.2.3 REVIEW AND UPDATE PROCESS

Wales and West Network has a Policy Framework Review Panel which is formed to consider changes to the policies and procedures, prompted by changes in external Legislation, other external drivers such as Ofgem requirements, changes/updates in IGEM documents, or identified internal Network requirements.

The Panel may consist of Wales and West personnel, service provider personnel and external specialists and/or consultants. The Panel will manage the production of draft documents, to be reviewed by a peer group, before being submitted to the Gas Network Special Engineering Committee (GNSEC), for approval and/or implementation. Governance responsibility for all documents is held by Wales and West Network.

When new documents are approved, briefings and/or detailed training is given to those affected.

### 3.2.4 EFFICIENCY AND PRODUCTIVITY

We have not carried out detailed audits of the degree of compliance within the Network to the stated policies and procedures. However, within the category of Work and Asset Management, we can say that, from the evidence offered within the BPQ responses, responses during our visit, and replies to supplementary questions, there are no indications that they are not being followed. There is no evidence of systematic failures of equipment processes or systems, which could indicate inadequate policies or procedures, or lack of compliance. Similarly, within safety related statistics, such as lost time accidents, there is no evidence of unsafe practices being employed, which could be used as an indicator of the lack of compliance with documented policies and procedures.

For Work Management, new `front office` systems have been implemented with associated new Management Information systems, these enable detailed information to be fed back to personnel at all levels. In particular these systems are relieving supervisors of some elements of their past administrative roles, enabling greater attendance by them on site, and the input of their knowledge and experience in ensuring jobs are approached and undertaken in the most efficient and effective way possible.

We recommend that the current approach to policies and procedures is viewed as effective, and viewed as a satisfactory basis for compiling expenditure forecasts.

## 3.3 HISTORICAL PERFORMANCE

### 3.3.1 INTRODUCTION

We would expect the historical performance of Work Management to be represented by the combination of historical Management Information drawn from Job Statistics and costs for this category of work. This historical performance could be helpful in developing trends of workload, costs, and unit costs, which could be then used to make comparisons year on year, and also to make comparisons of Wales and Wests and other GDNs' performance.

Work Management encompasses a range of work activities from Call Centre operation to Supervision on site, from Safety and Environment management to Records Management. Historical management information for these and other Work Management activities, pre 2005/06 is of limited value in making comparisons, because in the preceding years National Grid undertook a number of organizational restructures, moving some support sections between Networks (LDZs), Network Clusters (lead networks), and Central Support functions. During these periods of considerable organisational change, changes also occurred in the way such support costs were allocated across Networks and activities. Inter year, and inter Network comparisons of costs cannot be substantiated for this period.

We have therefore used the cost data only for the years 2005/06 and 2006/07 for benchmarking and to understand the costs. We believe that it represents the best approach based on the available information. We anticipate replacing the forecast Wales and West 2006/07 figures with `actuals` before the end of this Review process.

The factors influencing historical costs will be the following:

**Staff costs**

Work management is a labour intensive activity, with approximately 85% of costs being staff related. Real increases in salaries and wages have a very significant impact on Work Management costs. Using staff efficiently, having staff with the correct competencies, adequate training, supportive IT systems, and only engaged in the processes that are essential, will minimise waste and minimise the costs of Work Management. Wales and West plan to have more focused Management information available from their replacement SAP information system.

**Technology**

Getting the most from staff also requires good tools to complete their tasks, we believe that WWU have rightly chosen to replace the FOMSA front office system at the earliest possible stage. Wales and West have stated that their replacement IT systems will improve the delivery of comparative data by which to manage the business and improve productivity, however, on the PCR visit, we were told that data validation issues had arisen, and manual checking of data returned from jobs had been imposed. It is hoped that this will be a short term measure, and that automatic data validation can be re-introduced.

### 3.3.2 DEFINITION OF ACTIVITY

Work management encompasses disparate work activities. The sub activities included in this assessment are:

Staff and other non-operational costs, including activities associated with:

a) Asset Management
   - network integrity
   - planning and design.

b) Supervisory costs
   - Field supervision

c) Project Support
   - NRSWA management
   - Work scheduling, dispatch and closure
     - Emergency
     - Repairs
     - Maintenance
     - Capex
     - Repex

d) Contract Management
   - managing the relationship with engineering contractors
   - managing the relationship with other bought in services

e) Customer Management
   - Call handling
   - managing the processes that interface with consumers
   - managing the processes that interface with shippers

f) Network Support, costs associated with engineering back office
   - records management
   - network analysis

- work and resource planning processes.

g) Health, Safety and Environment.

h) Network Policy

i) Safety & Engineering

Work management includes all costs incurred by Wales and West under the New Services Agreements (NSAs) with NGG. These agreements cover:

- Call Handling
- Dispatch
- Digitisation
- Systems Operation (SOMSA)
- Advantica (specialist services)
- Metering managed services
- Transmission services

The dispatch and digitisation NSAs were terminated by Wales and West in 2006/07, and replaced by in-house systems.

NGG currently carry out System Operation on behalf of all GDNs. System Operations for the IDNs will be transferred out of NGG into the IDNs as part of a collaborative project SOMSA Exit, during the next price control period. The impact on Opex is that as the project proceeds, staffing numbers will be reduced in NGG, and there will be a corresponding increase in staffing numbers in the iDNs. For Wales and West, current plans, and their BPQ forecast include the SOMSA Exit year to be 2009/10, after a period of parallel running to prove their Control to the satisfaction of the HSE.

### 3.3.3 ESTABLISH UNDERLYING COSTS

**Cost normalisation**

Section 2.5.1 gives details of the generic normalisation adjustments which have been carried out. For Work Management the principal normalisation adjustments are outlined below.

- **Cost transfer** – there have been three transfers from Work Management. These relate to the costs associated with shrinkage and xoserve, which have been moved to new categories for clarity of analysis. In addition, holder demolition costs allocated to Work management, have been transferred to storage.
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to the allocation of costs to reflect our proposed allocation of sub-activities1.
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – these adjustments are the net adjustments between WWU's reported pension costs and the standard pension costs used by PB Power
- **Removed costs** – these are costs considered unjustified for inclusion, or costs removed for separate evaluation, In this case, the costs relating to operational site environmental `clean-up`, and TUPE costs.

The detail of the adjustments to the BPQ costs submitted by Wales and West, is given in the following table.

[1] Full details of the GDN reallocation are given in Appendix 6

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | -14.5 | -14.8 | -15.8 | -15.7 | -15.7 | -15.7 | -15.7 | -15.7 | -123.6 |
| Shrinkage - transfer to new activity | -11.7 | -11.3 | -11.3 | -11.3 | -11.3 | -11.3 | -11.3 | -11.3 | |
| xoserve | -2.8 | -3.5 | -3.2 | -3.1 | -3.1 | -3.1 | -3.1 | -3.1 | |
| Holder demolition - transfer to Storage | 0.0 | 0.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | |
| **GDN reallocation** | 0.3 | -0.1 | -0.9 | -0.9 | -0.9 | -0.9 | -0.4 | 0.4 | -3.1 |
| **Ofgem Accounting Adjustments** | -1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -1.1 |
| **Pension Adjustments** | -0.9 | -0.7 | -2.6 | -2.6 | -2.5 | -2.4 | -2.5 | -2.5 | -16.751 |
| **Removed costs** | 0.0 | -1.5 | -2.3 | -2.3 | -2.3 | -2.3 | -2.3 | -2.3 | -15.3 |
| Environment/Demolition/Legislation | 0.0 | 0.0 | -2.3 | -2.3 | -2.3 | -2.3 | -2.3 | -2.3 | |
| TUPE | 0.0 | -1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| **Total** | **-16.2** | **-17.1** | **-21.5** | **-21.5** | **-21.4** | **-21.3** | **-20.8** | **-20.1** | **-159.9** |

***Table 3-2***

The cost trends for work management are only available for the years 2005/06 and 2006/07, and for Wales and West are shown below, in Table 3-3:

| Controllable Work Management Opex by category adjusted for regional factors (£m) | 2005/06 | 2006/07 |
|---|---|---|
| Contract | 0.3 | 0.1 |
| Direct | 5.4 | 6.4 |
| Materials | 2.0 | 2.3 |
| Other | 11.7 | 10.7 |
| **Total** | **19.4** | **19.6** |

***Table 3-3***

*£1.7m has been removed from `Other`, at Ofgem's request as Accounting adjustments for 2005/06.

The 2 main items, which comprise `other`, are given in the Table 3-4 below:

| Line item | 2005/06 £m | 2006/07 £m |
|---|---|---|
| NSAs | 9.9 | 6.7 |
| Non salary staff costs- | 1.6 | 1.5 |

***Table 3-4***

For the years 2005/06 and 2006/07 Wales and West Work Management cost is rising at 1%, parallel to, and at the average of all GDNs costs.

**Work Management Unit Costs**

Section 2 sets out the approach we use to set frontier costs. The following techniques are used:

- Bottom-up analysis.
- Regression analysis
- Unit cost analysis

To use these techniques we need to establish a cost driver or explanatory variable. For Work Management we have done this as part of the bottom-up analysis described below.

### Bottom-up cost analysis

We believe that Work Management costs are driven by a combination of drivers, all of which are related in some way to the size or scale of the network operation. Initially our work concentrated on the alternatives of the length of <7bar network, or the energy throughput. We felt that neither of these truly reflected the changes on Work Management workload from the changes in Repair and Emergency Services workloads for which Work Management provides support and supervisory resources.

We have reviewed the number of staff that a typical GDN would require to operate effectively and efficiently. We have estimated the minimum number of Work Management Staff for the average GDN, commensurate with safe working and sustaining the business. Based on the following table summarising Work Management Activity costs submitted by the GDNs we have assumed that on average staff related costs are 85% of Work management costs:

| Work Management Activity Cost Element 2005/06 | £m | £m | % |
|---|---|---|---|
| Staff costs including Agency Staff | 99 | | |
| Sub Contractors | 16 | | |
| Non-Salary Staff Costs | 20 | | |
| NSA (75% staff related) | 17 | | |
| | | 152 | 82 |
| **Total Work Management** | | **186** | **100** |

***Table 3-5***

Table 3-5 above shows that 82% of the activity cost elements identified are people related and given that other costs within Work Management such as technical services and consultancy are also people related, we believe a figure of 85% is appropriate.

Based on BPQ information an average GDN has a length of <7 bar pipe network of 33,000km with 20,000repairs per annum and 135,000 PREs per annum. These parameters are taken from rounded averages of all GDN statistics.

We have estimated the minimum number of FTEs required to support this workload. The results of this analysis are set out in Table 3-6.

In assessing these numbers we have assumed increases in efficiency in the area of support staff in the belief that impacts of improved IT systems will have a major effect on back office activities, job/task closure process and record management. We believe that we have established the minimum number of FTEs for a DN operating with a centralised support service, which we believe to be the most efficient operational structure. When compared with 2006/07 staffing levels, this represents a 19% cut in staff.

A cost per FTE has been used to estimate total costs. This has been obtained by dividing the total staff costs for all GDNs, including normal pensions, standby, and overtime, by the number of FTEs employed on Work Management by all GDNs. This results in a cost of £35,000 per FTE.

| Work Management sub-activity | FTEs | Cost @£35,000 per FTE £m |
|---|---|---|
| Operational Supervision | 147 | 5.1 |
| Network Support | 202 | 7.1 |
| Network Strategy | 59 | 2.1 |
| Commercial | 12 | 0.4 |
| **Total** | **420** | **14.7** |

***Table 3-6***

Table 3-6 addresses 85% of Work Management costs, and arrives at a cost of £14.7m. The remaining 15% of total Work Management costs is for non-staff related costs. Based on our calculations from Table 3-6 above this amount is £2.6m. Our bottom-up estimate of the efficient Work Management costs for an average GDN is therefore, £17.3m per annum.

To refine this analysis, we have reviewed the percentage of Work Management resources which are used to support the Repair activity, the Emergency Service, and all other Opex activities. Few parts of Work Management, exclusively support one activity, Emergency call handling however, being an exception. We have made a judgement on the proportion of work management costs associated with each of the activities as set out in Table 3-7 below

The table also shows the proposed driver of costs in each case.

The table also shows the proposed driver of costs in each case.

| Activity Serviced by Work Management | Driver | Work Management Resource Driver % |
|---|---|---|
| Emergency Response | Number of PREs | 30 |
| Emergency Repairs | Number of repairs | 30 |
| Other Operational Activities | Length of <7bar Pipe (Kms) | 40 |

***Table 3-7***

We have therefore developed a composite cost driver based on the proportion of costs driven by each activity shown in the above table.

The composite cost driver CSV = Average length of mains x

( 0.3 x No. of PREs / Average no. of PREs

+ 0.3 x No. of repairs / Average no. of repairs

+ 0.4 x length of < 7bar main / Average length of mains)

The component variables of the CSV are each scaled by their respective average GDN values so that the balance between the components of the CSV is independent of the choice of units used to quantify each component variable.

The unit cost for the average of all GDNs is £17.3m divided by 33000 (the CSV for the average network), or £524/CSV.

**<u>Regression analysis</u>**

This CSV driver is used in a regression analysis to establish a relationship between costs and volume of Work Management activities.

As discussed in Section 2, the starting point for setting the target benchmark is an Ordinary Least Squares (OLS) regression on the eight data points, one for each GDN, applicable in the base year (2005/06). The regression calculation determines a relationship between the costs and the workload driver. The regression line is shown in black on the graphs.

As discussed in Section 2 we have then adjusted the regression line to give the upper quartile regression line which is the target which all under performing GDNs should move towards. This is shown in pink on the charts.

High performing networks will be expected to continue to improve their performance over the period to 2012/13. The resulting target costs for 2012/13 are shown in yellow on the charts.

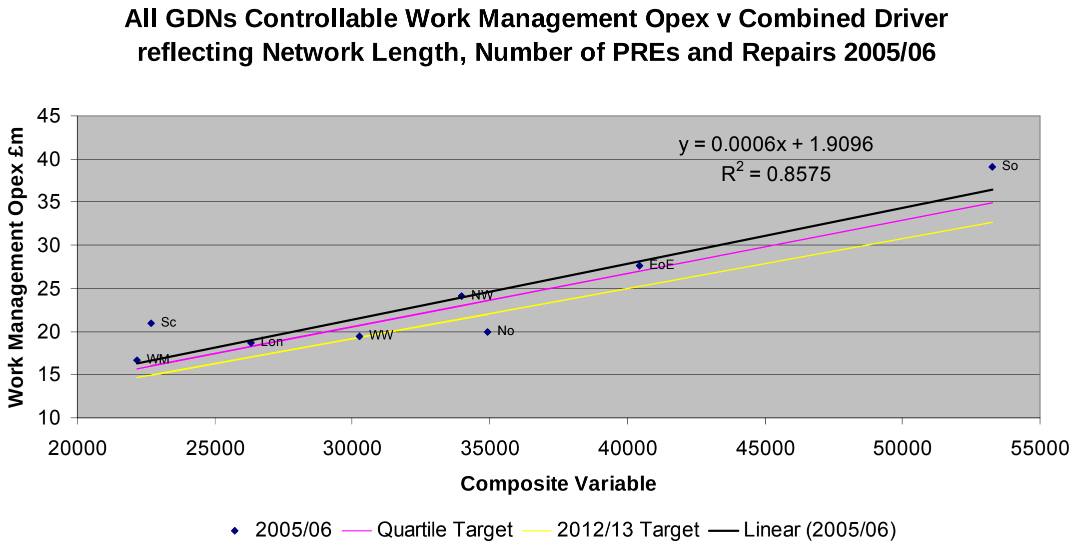


***Figure 3-1***

The regression line shows a good fit to the data points. Wales and West is positioned on the 2012/13 target line, at £19.4m showing that in Work Management it is the second most efficient GDN.

**<u>Unit cost analysis</u>**

The following table compares the unit costs from the bottom-up and regression analyses and with the costs provided by Wales and West.

The bottom-up analysis described above gave a cost of £17.3m per annum for an average network. Such a network would have a CSV of 33000, giving a unit cost for the average GDN of £524 per CSV. Applying this unit cost to Wales and West gives a total cost of £15.9m per annum.

The following table compares the total costs and unit costs obtained from the three cost assessments.

| | CSV | 2005/06 cost £m | Cost per £ per CSV |
|---|---|---|---|
| Wales & West submission | 30259 | 19.4 | 641 |
| Upper Quartile from regression analysis | 30259 | 20.7 | 684 |
| Bottom-up analysis | 30259 | 15.9 | 524 |

***Table 3-8***

This shows the bottom up cost below the yellow line target costs in Figure 3-1, but that is to be expected. There are already two GDNs performing on or near the target line, our bottom up cost we believe denotes the minimum that can be ultimately expected, without significant changes of policy, or technology. Wales and West are close to, and below the quartile line..

### 3.3.4 COMPANY PROPOSALS

The Work Management costs reported in the BPQ submission by Wales and West Network for the years 2006/07 to 2012/13 are shown below. This shows that neither Wales and West nor GDNs on average expect significant changes in Work Management costs over the period.

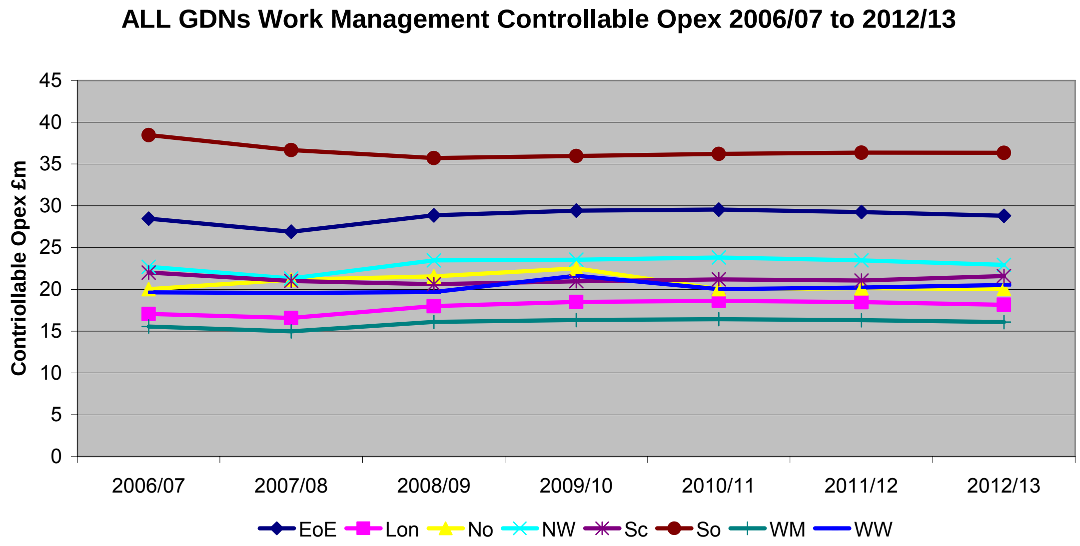


***Figure 3-2***

### 3.3.5 PROPOSED PROJECTIONS

We have shown that a combined driver of network length (<7bar), repair numbers and PRE numbers, is an appropriate explanatory variable to use when comparing network performance. To calculate the Work Management costs for the control period, we therefore need to take into account the planned growth in the network, and the variations in Repairs and PRE workloads.

The following table shows the PB Power forecasts of workload for Wales and West for repairs and emergency (from Sections 4 and 5), and the growth in Network length for Wales and West.

| Wales & West | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|---|
| No. of repairs | 19562 | 18845 | 18329 | 17829 | 17343 | 16871 | 16412 | 15967 |
| No. of PREs | 119836 | 119322 | 118818 | 118325 | 117843 | 117370 | 116908 | 116455 |
| Length of network (<7bar) km | 32222 | 32284 | 32343 | 32402 | 32480 | 32542 | 32604 | 32666 |

***Table 3-9***

The benchmark unit cost established in section 3.3.3 is applied to the composite variable (CSV) projections to establish the path of efficient Work Management costs for Wales and West. The results are shown in Table 3-11, below.

### Specific costs

In arriving at the recommendation we propose to disallow the items listed as `Removed costs` in Table 3-2, for the following reasons:

The costs relating to environmental cleaning and maintenance of sites would have been foreseen at the time of sale, and would have been reflected in the cost of purchase.

The TUPE costs are an internal business economic decision, presumably this option was taken because it was the most economic option for the future operational staffing costs. 2005/06 costs of £1.7m have been removed at Ofgems request as an accountancy adjustment. We have also removed costs of £1.5m in 2006/07.

The specific allowed costs (non-IT) are therefore zero for Wales and West.

### Specific IT costs

In reviewing the Capex expenditure plans for IT we have not been able to specifically identify the benefits planned to be delivered by each project. Having considered the total planned IS investment we are of the opinion that at least some of these projects would have been the subject of a cost benefit investment decision. We have assumed 20% of the total IT investment in Infrastructure and Systems would have been justified on a cost benefit basis, recognising that some investment will be to meet mandatory requirements. The total investments are listed in Table 3-10.

For 20% of the total investment, we have therefore calculated the minimum annual benefits which would be required for a standard cost benefit analysis. We have assumed the benefits will accrue over a 7 year period following the investment and have used a 6.25% per annum discount rate.

As this investment has been incurred after the start of the 2005/06 base year used in our regression analysis, it can be assumed that these saving are additional to those which could be expected from our conclusions from the regression analysis. These savings have been included in the allowed adjustments line in Table 3-11. We would expect most savings to result from the further automation of information flows to and from the field, particularly for Map and Engineering Drawing information. We would expect further optimisation of resource utilisation and supervision to be assisted by remote video transmission and automated data collection on job closure.

| Wales & West | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 5 year total |
|---|---|---|---|---|---|---|---|---|---|
| IS Infrastructure | 29.9 | 1.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 4.7 |
| IS Systems | 0.9 | 14.7 | 2.1 | 2.1 | 2.1 | 2.1 | 8.9 | 8.9 | 24.3 |
| Total IS Capex | 30.8 | 16.6 | 3.1 | 3.1 | 3.1 | 3.1 | 9.9 | 9.9 | 28.9 |
| Assumed Productivity 20% Total | 6.2 | 3.3 | 0.6 | 0.6 | 0.6 | 0.6 | 2.0 | 2.0 | 5.8 |
| **Expected opex savings** | | | | -1.8 | -1.9 | -2.0 | -2.2 | -2.5 | -10.5 |

***Table 3-10***

We believe that a general productivity improvement of 2% per annum in the benchmark costs is achievable, however, taking into account the IS improvements already outlined above this general productivity has been reduced to 1% per annum. This is in addition to the specific IT related items referred to above.

| | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **38.7** | **40.6** | **38.8** | **38.5** | **38.1** |
| **Normalised Adjustments** | **-21.5** | **-21.4** | **-21.3** | **-20.8** | **-20.1** |
| **Normalised Submission** | **17.2** | **19.2** | **17.5** | **17.7** | **18.0** |
| **Combined Driver** | **29418** | **29189** | **28961** | **28740** | **28526** |
| Benchmark (Ex RF RPE) | 19.6 | 19.2 | 18.9 | 18.6 | 18.3 |
| Baseline (Ex RF RPE) | 18.3 | 18.0 | 17.7 | 17.4 | 17.1 |
| Gap | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| Convergence | -0.7 | -0.8 | -0.9 | -1.0 | -1.2 |
| Recommended (Ex RF and RPE) | 18.9 | 18.5 | 18.0 | 17.6 | 17.1 |
| Recommended (Inc RF and RPE) | 19.1 | 18.7 | 18.4 | 18.1 | 17.8 |
| IS Productivity Adjustments | -1.8 | -1.9 | -2.0 | -2.2 | -2.5 |
| **Recommended (Inc RPE)** | **17.2** | **16.8** | **16.3** | **15.9** | **15.2** |

***Table 3-11***

This table shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the workload driver over the period 2008/09 to 2012/13 and the benchmark unit costs which are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The convergence adjustment provides a glide path of cost to the 2012/13 Baseline performance.
- The sum of the Benchmark performance and the convergence gives the Recommend (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommended cost (Inc RPE).

### 3.3.6 REAL PRICE INCREASES

Section 2.7 sets out the approach to real price effects proposed by PB Power.

In addition to any efficiency adjustments, the Network costs have been normalised by adjustments to remove the GDN real price effects and the PB Power real price effect assumptions have subsequently been added in deriving the proposed allowances.

### 3.3.7 RECOMMENDATIONS

The result of the analysis, showing the normalised GDN forecast, the target cost and the line representing the recommended allowance cost is shown on the following graph.

**Chart showing Wales and West Recommended Work Management Opex**

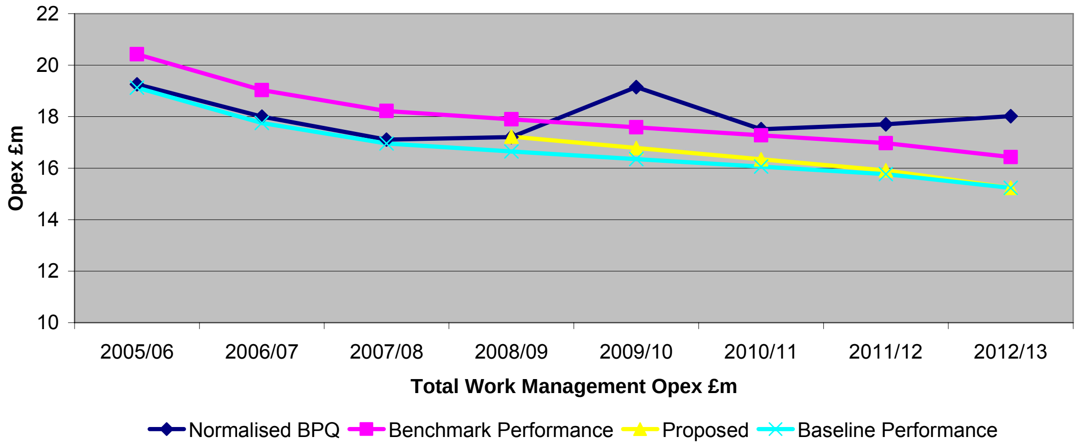


***Figure 3-3***

Note: the Benchmark and Baseline Performance lines include Adjustments

# 4 EMERGENCY

## 4.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 11.8 | 12.0 | 12.3 | 12.5 | 12.8 | **61.4** |
| **Normalisation Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **-0.2** |
| **Normalised BPQ** | 11.8 | 12.0 | 12.2 | 12.5 | 12.7 | **61.2** |
| **Adjustments** | -0.9 | -1.7 | -2.5 | -3.3 | -4.1 | **-12.3** |
| **Proposed** | **10.9** | **10.3** | **9.8** | **9.2** | **8.7** | **48.9** |

***Table 4-1***

## 4.2 POLICIES & PROCEDURES

### 4.2.1 INTRODUCTION

The primary roles of the emergency service are to:

- Receive emergency calls (usually electronically)
- Attend site within pre determined time scales
- Assess the situation on site and make safe as appropriate
- Call for support and assistance to deal with externally located gas escapes (if safe to do so the escape will be programmed and repaired within a defined period)
- Re-commission the supplies to consumers after mains/services renewal work
- Complete safety checks on re-programmed escape repairs (D2 rechecks)

Wales & West's policy T/PL/EM1 - Policy for Dealing with as Escapes and other Emergencies - covers the management of actual and suspected gas escapes and other emergencies. These include the emission of fumes from gas appliances, fires or explosions where gas is thought to be the cause, and loss of supply.

The emergency service also carries out network asset related work and meter work (under contract), where such activities improve resource utilisation and do not impair the primary emergency service role.

### 4.2.2 SCOPE OF POLICES AND PROCEDURES

The policy T/PL/EM1 is applicable in relation to Wales & West's obligations as a Gas Transporter, an Emergency Service Provider and the Network Emergency Co-ordinator. It also applies in instances where WWU has entered into commercial arrangements to operate as an Emergency Service Provider for a third party e.g. another Gas Transporter or other Gas Conveyer.

### 4.2.3 REVIEW AND UPDATE PROCESS

Appendix 1 reviews the financial and technical framework under which Wales & West operates, the structure they utilise to manage their assets effectively and the key policies they adopt and maintain to ensure they meet their statutory and licence obligations and other regulatory requirements.

### 4.2.4 EFFICIENCY AND PRODUCTIVITY

The cost of implementing the policy is influenced by obligations under the Network's Safety Case and the Gas Act regarding standards of performance for dealing with Public Reported Escapes (PREs). It is also influenced by the availability of fill-in work between PRE call-outs including work obtained through contracts with third party organisations (e.g. meterwork see section 4.3.4.) or other fill-in work available internally.

## 4.3 HISTORICAL PERFORMANCE

### 4.3.1 INTRODUCTION

In this section the historical performance of the Network between 2002/03 and 2006/07 is reviewed in an attempt to establish the proposed efficient level of costs associated with the Emergency Service (ES).

Where possible both workload and cost trends have been analysed although for the reasons outlined in 4.2.2 historical trends of PREs are not always helpful when attempting to forecast future work volumes since these are influenced by factors beyond the control of the Network.

### 4.3.2 DEFINITION OF ACTIVITY

The Emergency Service is the process set up to discharge the Networks obligations, under the Gas Safety (Management) Regulations(GS(M)R) 1996, to respond to Public Reported Gas Escapes (PREs). However ES staff and First Call Operatives (FCOs) also undertake other work activities including meterwork for external organisations and other internal activities such as leakage surveys.

There are two categories of PREs:

- uncontrolled, i.e. the source of the leak cannot be isolated by turning off a valve, or
- controlled if the source of the leak can be isolated.

The majority of PREs are uncontrolled.

All PREs are visited by emergency service FCOs. There is a requirement under the Network’s Safety Cases and Overall Standards of Performance to attend to uncontrolled PREs within 1 hour of receiving the report and to controlled PREs, within 2 hours. It is accepted that attending all PREs within these timescales may not be practical on all occasions and some tolerance is allowed. The current standard of performance target is to attend to 97% for uncontrolled PREs within 1 hour, and 97% of controlled PREs within 2 hours.

Once the FCO has carried out an investigation the PRE is defined as either an Internal PRE (i.e. emanating from a source inside a building down stream of the emergency control valve), an External PRE (i.e. emanating from a source outside a building upstream of the emergency control valve and including the valve) or a No-Trace which is a false alarm.

There are two main cost drivers for the Emergency activity; the first is the requirement to attend to uncontrolled gas escapes within 1 hour and the second is the volume of PREs.

The requirement to attend uncontrolled PREs within one hour, results in Networks having to deploy FCOs throughout their areas on a 24/7 basis. This may lead to high levels of unproductive time (i.e. waiting time) since the number of PREs fluctuates and is influenced by factors beyond the management's control such as weather and media focus on gas related incidents, including explosions and carbon monoxide poisonings.

Minimising waiting time is a key management objective when attempting to minimise the cost of the Emergency Service.

During the current price control period a significant source of fill-in work has been the Network's meterwork contracts with meter asset managers such as Onstream and National Grid Gas Metering.

The emergency teams generally need to be located geographically throughout a network in order to respond appropriately to all emergency calls.

### 4.3.3 ESTABLISH UNDERLYING COSTS.

**Cost normalisation**

Section 2.5.1 gives details of the generic normalisation adjustments which have been carried out. For Emergency, the principal normalisation adjustments are outlined below.

- **Cost transfer** – there are no cost transfers associated with Emergency.
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to the allocation of costs to reflect our proposed allocation of sub-activities2.
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – these adjustments are the net adjustments between WWU's reported pension costs and the standard pension costs used by PB Power
- **Removed costs** – there are no removed costs associated with Emergency..

The detail of the adjustments to the BPQ costs submitted by WWU for Wales & West network is given in the following table.

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **GDN reallocation** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Ofgem Accounting Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Pension Adjustments** | 0.1 | -0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.4 |
| **Removed costs** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **0.1** | **-0.3** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **-0.4** |

***Table 4-2***

In this Section all cost are on a normalised basis as described above.

[2] Full details of the GDN reallocation are given in Appendix 6

## Workload and costs

The following figure shows the path of PREs over the period 2002/03 to 2006/07. It shows that the numbers of external PREs have generally declined over the period, and that the number of internal PREs declined followed by a small increase in 2006/07.

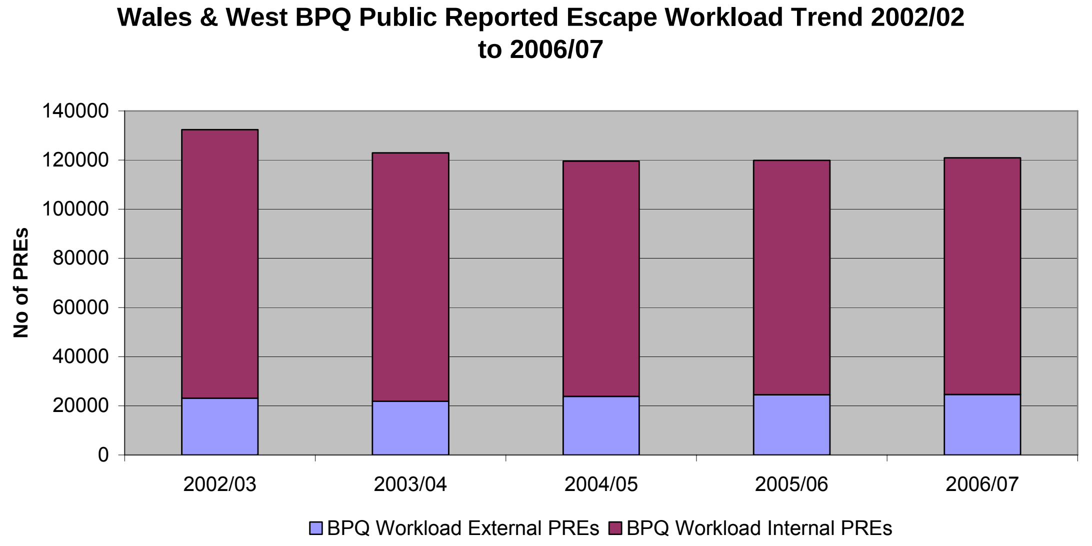


***Figure 4-1***

Figure 4-2 shows the Network's number of total PREs is below the average GDN and the historical trend of total PREs is consistent with the general trend over the period.

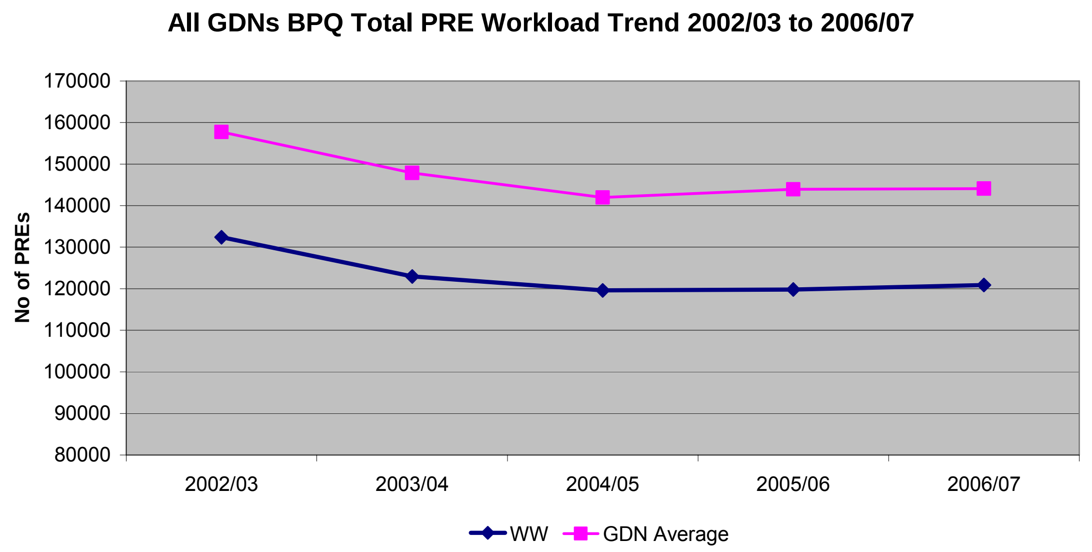


***Figure 4-2***

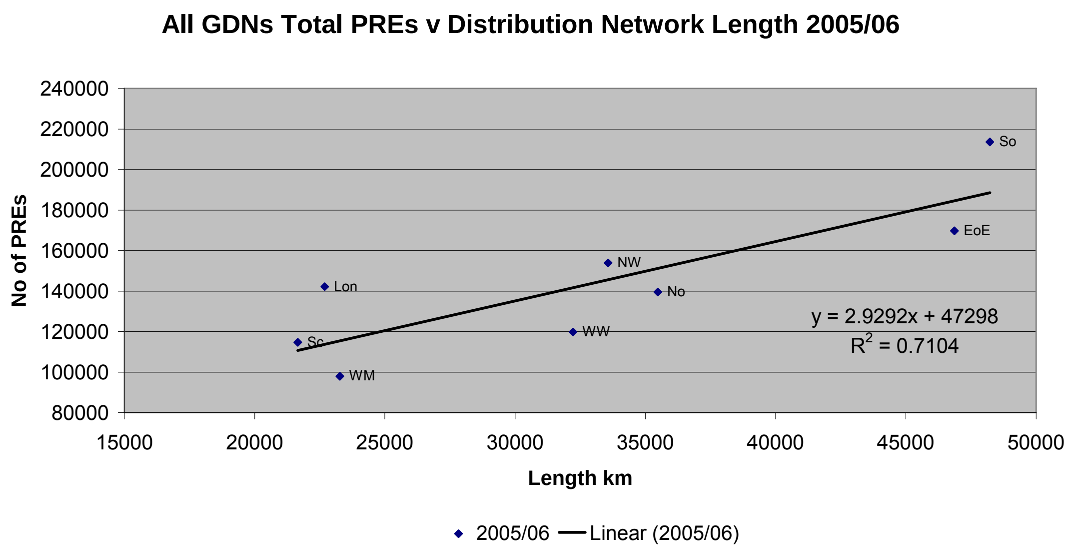


*Figure 4-3*

Figure 4-3 shows the PRE workload is generally commensurate with the network's size expressed in terms of network length.

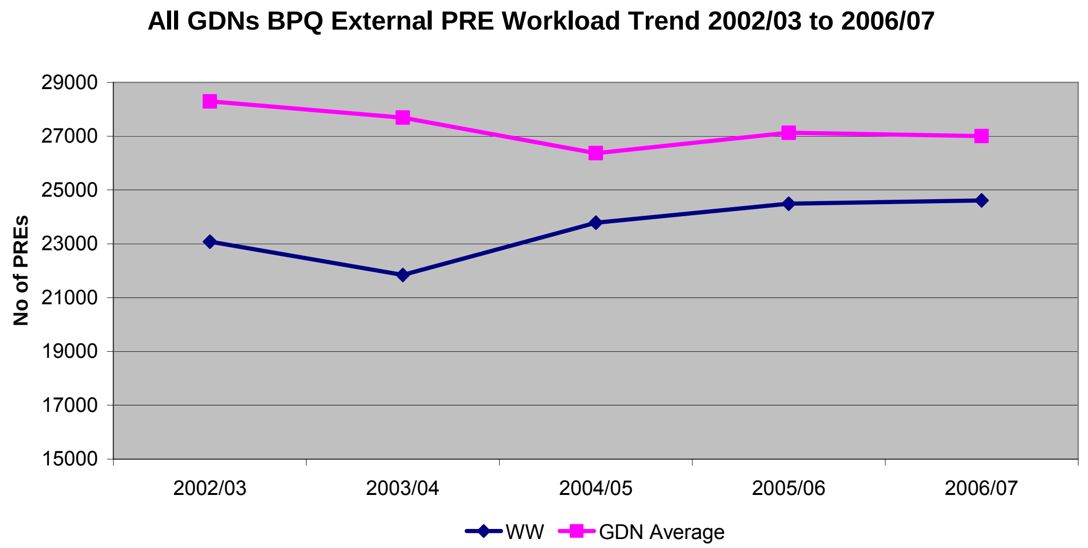


*Figure 4-4*

The number of External PREs is influenced by the mains replacement programme, operating pressures, management initiatives (such as gas conditioning and those designed to reduce interference damage) and the effects of asset ageing (see section 4.3.3). Figure 4-4 shows that, historically, the various factors influencing the number of external PREs have generally balanced out across all GDNs. It is not clear that this is the case for Wales & West's network.

One of the key drivers of emergency costs is the number of PREs. We have therefore calculated the unit costs for the emergency service in terms of £ per PRE.

In this analysis no distinction has been made between Internal, External and No-trace reports and hence the unit cost is the average cost of these three categories. The following chart shows the unit costs (£ per PRE) for the emergency service in 2005/06, based on normalised costs.

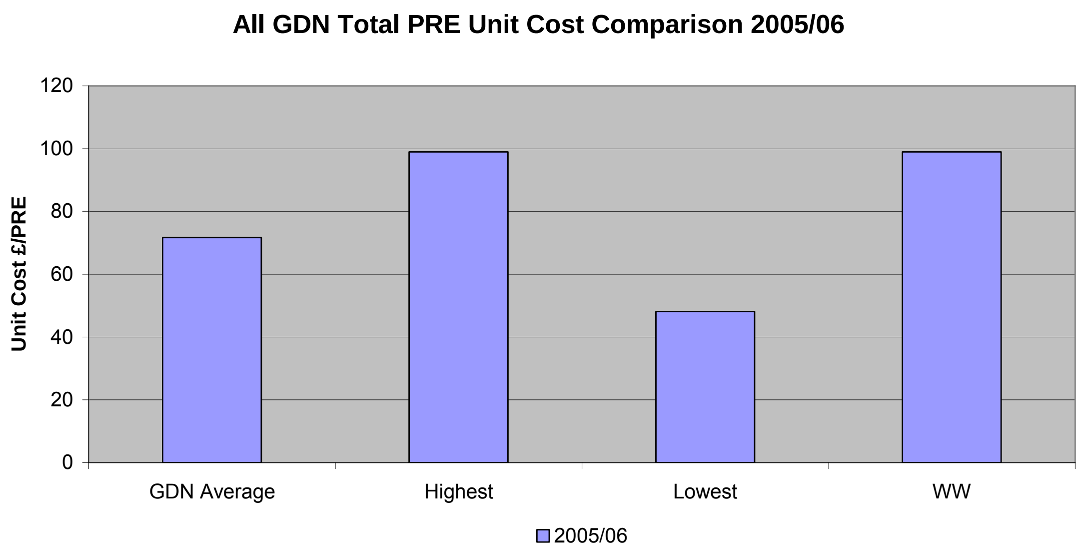


***Figure 4-5***

This shows that Wales & West has one of the highest unit costs of all the GDNs.

**Historical costs**

The table below shows the cost of the process over the two years 2005/06 – 2006/07. The Network has provided costs for the period 2002/03 - 2004/05 but due to different organisational structures in those years we cannot establish whether they are comparable with 2005/06 costs.

| Expenditure breakdown (2005/06 prices) | 2005/06 | 2006/07 |
|---|---|---|
| Contract | 1.0 | 1.1 |
| Direct | 9.9 | 8.3 |
| Materials | 0.3 | 0.3 |
| Other | 0.6 | 0.7 |
| Total | 11.9 | 10.3 |

***Table 4-3***

### 4.3.4 PROPOSE EFFICIENT LEVEL OF COSTS

Section 2 sets out the approach we use to set benchmark costs. The following techniques are used:

- Regression analysis
- Bottom-up analysis.
- Unit cost analysis

To use these techniques we will use total PREs as the explanatory variable, as discussed above.

**Regression analysis**

We have reviewed the most appropriate driver of costs. The number of PREs is clearly an important driver. The monitoring of emergency repairs which can safely be reprogrammed (D2 rechecks) also forms a component of the emergency First Call Operative (FCO) activities, and this workload is not counted in PRE numbers. The cost of carrying out D2 rechecks is included as part of the bottom-up analysis described below together with site monitoring following service relays.

We have concluded that a composite variable (CSV) as follows is most appropriate.

CSV = 0.8 x total no. of PREs/Average no. of GDN PREs

+ 0.2 x no. of repairs / Average no. of GDN repairs.

The component variables of the CSV are each scaled by their respective average GDN values so that the balance between the components of the CSV is independent of the choice of units used to quantify each component variable.

The weights reflect the assumed proportion of FCO time allocated to responding to PREs and to D2 rechecks together with site monitoring activities. These latter activities are driven by the number of repairs. (see Appendix 3)

The following graph shows the regression analysis using this CSV as an explanatory variable.

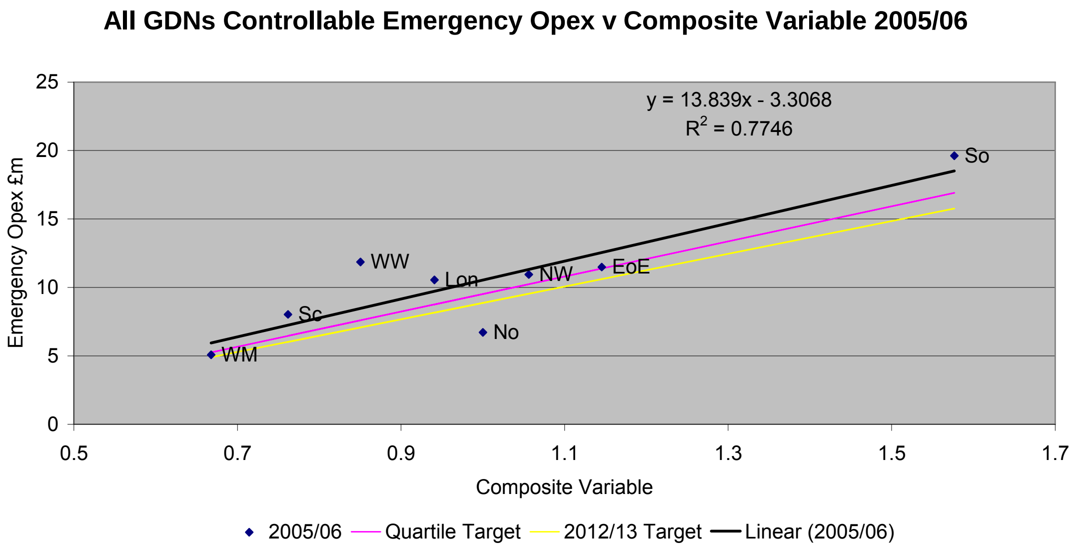


***Figure 4-6***

The regression analysis gives an upper quartile cost for Wales & West of £7.6m.

In rural, sparsely populated areas, minimising waiting time can be more difficult than in more densely populated urban areas since there are fewer FCOs and they are more widely dispersed. We have examined various factors which reflect sparcity and applied them to the data set, but have found no improvement to the regression fit.

In the chart above, the $r^2$ value, a measure of the fit of the data, is 0.77 and we have therefore reviewed additional analysis techniques. We have considered using a reduced data set by removing outliers, but the spread of the data points is such that there are no clear data points for exclusion. Instead, we have carried out a bottom-up analysis to test whether the upper quartile unit cost is reasonable.

**Bottom up analysis**

The bottom-up cost analysis is described in Appendix 3.

Assuming that meterwork is retained, a unit cost of £43.6/PRE was obtained from the bottom-up analysis.

The GDNs have explained that competitive pressures may mean that they will lose some or all of their metering contracts, and this will increase the unproductive time of FCOs and therefore increase the costs of the emergency service. The cost impacts of a loss of meter work are discussed in Appendix 3. The impact of the loss of meterwork on our cost projections is considered as a specific cost in section 4.4.4.

**Unit cost analysis**

The benchmark costs obtained in this section are for meterwork being carried out by GDNs at the level pertaining in 2005/06.

The following table compares the unit costs obtained from the different analyses. The upper quartile unit cost is the cost for Wales & West obtained from the regression analysis divided by the number of PREs in 2005/06.

| Unit Cost (£/PRE) | 2005/06 |
|---|---|
| Wales & West | 98.9 |
| Upper Quartile | 63.4 |
| Bottom up analysis | 43.6 |

***Table 4-4***

This analysis suggests that Wales & West's emergency costs are above the upper quartile level from the regression analysis and also above the bottom-up assessment of unit costs.

# 4.4 FORECAST

## 4.4.1 INTRODUCTION

In this Section the Network's forecast for workload and costs are reviewed and proposed changes (and the reasons for them) are described. The benchmark analysis and a gap closure approach are used to derive the recommended allowances for the Network.

The impact of real price increases and specific additional costs (e.g. additional waiting time as a result of losing meterwork) are subsequently considered and, where appropriate, added to the recommended allowances.

## 4.4.2 COMPANY PROPOSALS

The following graph shows Wales & West's forecasts of emergency service workload over the period 2006/07 to 2012/13.

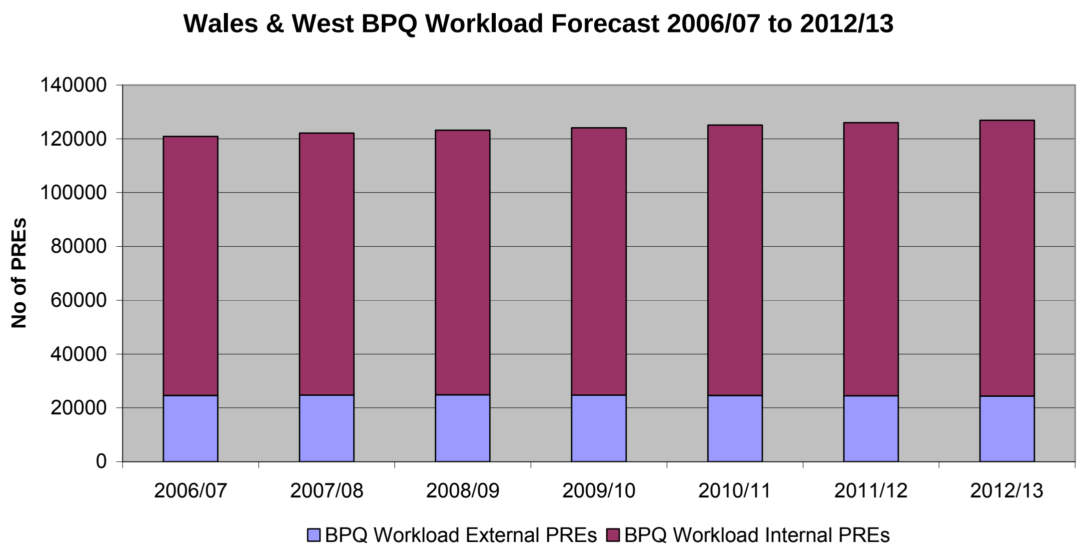

***Figure 4-7***

Wales & West is forecasting an increasing trend in internal PREs and a decreasing trend in external PREs with total PREs increasing across the period.

The details are shown in the following table together with the figures for the average across all GDNs for comparison.

| | Wales & West | % change on 2005/06 | Average GDN | % change on 2005/06 |
|---|---|---|---|---|
| Internal PREs | | | | |
| 2005/06 | 95346 | N/A | 116823 | N/A |
| 2008/09 | 98332 | 3.13% | 117732 | 0.78% |
| 2012/13 | 102528 | 7.53% | 118585 | 1.51% |
| External PREs | | | | |
| 2005/06 | 24490 | N/A | 27129 | N/A |
| 2008/09 | 24859 | 1.51% | 26741 | -1.43% |
| 2012/13 | 24366 | -0.51% | 26045 | -4.00% |
| All PREs | | | | |
| 2005/06 | 119836 | N/A | 143952 | N/A |
| 2008/09 | 123191 | 2.80% | 144474 | 0.36% |
| 2012/13 | 126894 | 5.89% | 144631 | 0.47% |

***Table 4-5***

Overall, Wales & West is forecasting changes in total PRE numbers higher than the average for all GDNs.

The following table shows Wales & West's forecast costs for the period 2006/07 to 2012/13. The forecasts show annual increases over the period.

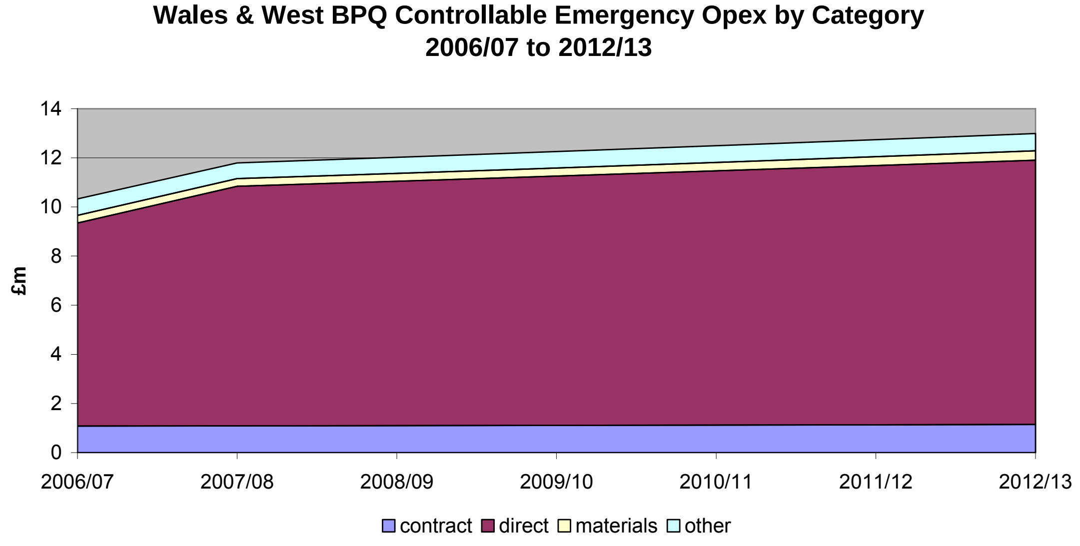


***Figure 4-8***

### 4.4.3 <u>PROPOSED PROJECTIONS</u>

This section contains our assumptions, proposed workload and cost trends and reasons for any adjustments to the Networks proposals.

### Internal PREs

Network projections for Internal PRE workload range from slightly increasing through level to slightly reducing trends.

Networks have expressed the view that increasing housing stocks and additional public concern about CO risks have the potential to generate additional Internal PREs. No evidence (other than anecdotal) has been found in the BPQ submissions to enable these factors to be quantified. However about 200,000 new houses are built each year nationally and with a national housing stock around 25 million houses this amounts to an increase of approximately 0.8%/yr. On this basis internal PREs might be expected to increase by the same amount. In addition there are two other factors which tend to drive up the volume of Internal PREs. These are the ageing of internal pipe work and of appliances in existing houses and increasing public concern about the risk of CO poisoning.  In practice it is very difficult to predict Internal PRE trends but historically numbers in the Network have been falling. Consequently a neutral stance has been adopted.  Our assumption is that the level of Internal PREs will remain constant throughout the plan.

### External PREs

Although no precise relationship between the level of External PREs and mains replacement activity has been found in the BPQ submissions, it is assumed that replacing old iron pipe systems with new PE systems will reduce External PREs.

The following graph shows that there is a reasonable relationship between the number of repairs and the km of non-PE main, and that the falling number of repairs as the volume of PE main increases will also be expressed through a falling number of external PREs.

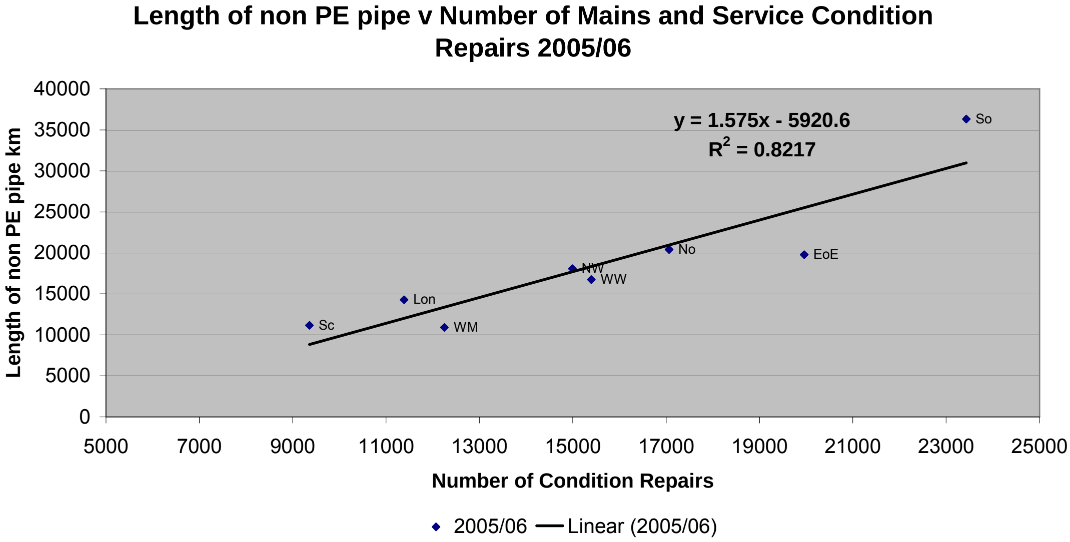


*Figure 4-9*

External PREs can arise because of the condition of the main or service, interference damage, and in a significant proportion of cases no gas escape is found.

Based on the historical experience of GDNs, the following assumptions have been made regarding the proportion of external PREs by cause in 2005/06.

| External PREs | Percentage of PREs |
|---|---|
| Condition | 66% |
| Interference damage | 12% |
| No-trace | 22% |
| Total | 100% |

***Table 4-6***

We have assumed that the mains replacement programme will remove 4.0% per annum of the iron system and that this will remove 3.0% per annum of the condition based External PREs. We have also assumed that the proportion of External PREs that arise from Interference Damage will reduce by 1% per annum and that the proportion of External PREs that cannot be traced (No-Traces) remains constant.

The overall impact will be to reduce total External PREs by 2.1% per annum throughout the plan period.

Asset ageing may affect the level of external PREs. Where pipes are in corrosive environments, typically clay, then the corrosion process will continue to generate escapes. Pipes in environments that have changed considerably since they were installed can experience additional strain from increasing traffic volumes and axle weights leading to pipe movement and ultimately joint leakage or fracture. We have assumed that appropriate levels of gas conditioning will continue so as to mitigate joint leakage. We do not consider ageing to be a significant factor affecting changes in PREs, but recommend that the impact of these effects on the trend in external PRE numbers is re-examined as part of the 2006/07 update.

The following table summarises our workload assumptions and their impact on the total PRE workload.

| | PB Power proposed workloads | % change on 2005/06 |
|---|---|---|
| Internal PREs | | |
| 2005/06 | 95346 | N/A |
| 2008/09 | 95346 | 0.00% |
| 2012/13 | 95346 | 0.00% |
| External PREs | | |
| 2005/06 | 24490 | N/A |
| 2008/09 | 22979 | -6.17% |
| 2012/13 | 21109 | -13.81% |
| All PREs | | |
| 2005/06 | 119836 | N/A |
| 2008/09 | 118325 | -1.26% |
| 2012/13 | 116455 | -2.82% |

***Table 4-7***

The following graph shows our workload assumptions for each year.

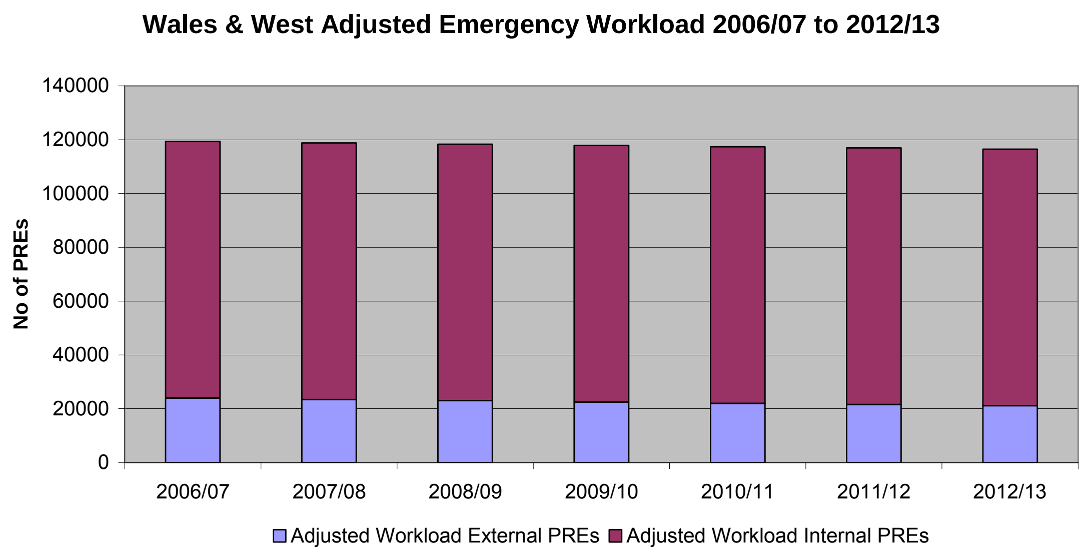


***Figure 4-10***

Figure 4-10 shows the gradually reducing trend in total PREs, largely as a result of the impact of the Networks mains replacement programme on External PREs.

### 4.4.3.1 PB Power Costs Projections

Applying the upper quartile unit costs (Table 4-4) to the workload projections shown in Figure 4-10 gives the recommended operating expenditure allowance shown in Figure 4.11. This assumes no loss of meterwork throughout the plan period.

In making these projections we have assumed that management initiatives (e.g. better incentive schemes and smarter ways of working) should produce productivity gains above those assumed by the Network. These will result in reduced working hours for direct labour and in a reduction in the number of contract labour operatives employed.

Overall this is included in our projections as an assumed productivity improvement of 1% per annum.

The implications of the potential loss of meterwork are considered in section 4.4.4.

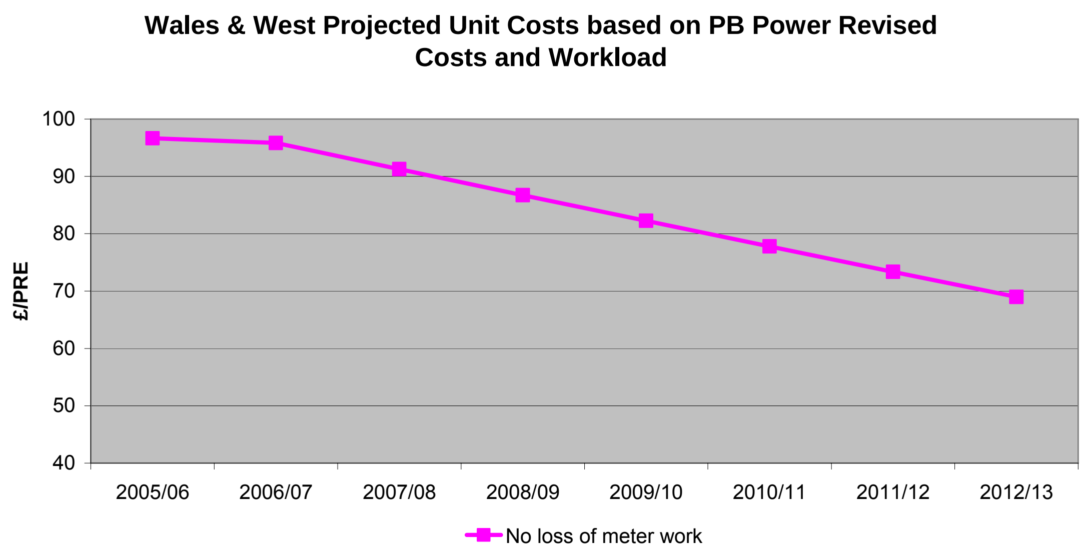


***Figure 4-11***

### 4.4.4 SPECIFIC COST AREAS

**Loss of meterwork**

To meet its PRE standards of service the Network has to deploy sufficient FCOs to deal with peak workload levels. Emergency workload tends to peak in the morning and evening, leaving potentially unproductive time (i.e. waiting time) in the middle of the day. During this time FCOs are utilised for meterwork and other maintenance work. Meterwork is available via contracts with third party meter asset owners such as Onstream and NGG Metering.

Some GDNs have explained that their cost structures, which are driven by the requirement to meet the emergency service standards of performance, will mean that they will be unable compete with new dedicated meter replacement companies and so will lose their meterwork contracts.

Wales & West's BPQ submission has made an allowance for the loss of some meterwork from 2008/09 onwards. Information was also provided on cost variances through supplementary questions. It is not clear from the BPQ the extent to which any changes in meter workload affect the cost of the emergency service. We believe that generally a proportion of meter contracts will be lost, leading to an increase in the cost of the emergency service as discussed in Appendix 3.

In Appendix 3 we propose that the networks will retain, as a minimum, 33% of the 2005/06 meter workload and our assumption for cost projection purposes is that 45% of the 2005/06 meterwork will be retained across the period 2008/09 to 2012/13. We recognise that different market conditions will apply in different GDN areas, but we are not in a position to assess these conditions and have therefore applied this percentage of retained meter workload on a common basis across all GDNs.

Based on our calculations in Appendix 3, the loss of metering could increase the benchmark unit cost by £5.4/PRE. We have applied this as an allowed adjustment after calculating the recommended costs which assume that the 2005/06 volumes of meterwork are retained.

The following table shows the allowed cost for Wales & West for the loss of meterwork.

| | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| PRE workload | 118325 | 117843 | 117370 | 116908 | 116455 |
| Cost of Meterwork loss £m | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |

***Table 4-8***

### 4.4.5 REAL PRICE INCREASES

Section 2.7 of this report sets out the real price effects assumed by WWU in their BPQ proposals and also the real price effects proposed by PB Power.

The Network costs have been normalised by adjustments to remove the Network real price effects and the PB Power real price effect assumptions have subsequently been added in as part of the process used to derive the recommended allowances.

### 4.4.6 RECOMMENDATIONS

**Proposed allowances**

The proposed workloads and allowances are shown in the following table.

| | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **11.8** | **12.0** | **12.3** | **12.5** | **12.8** |
| **Normalised Adjustments** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| **Normalised Submission** | **11.8** | **12.0** | **12.2** | **12.5** | **12.7** |
| **Composite Regression Driver** | **0.826** | **0.818** | **0.811** | **0.804** | **0.798** |
| Benchmark (Ex RF RPE) | 7.1 | 6.9 | 6.7 | 6.6 | 6.5 |
| Baseline (Ex RF RPE) | 11.1 | 10.8 | 10.6 | 10.4 | 10.2 |
| Gap | 4.0 | 3.9 | 3.9 | 3.8 | 3.7 |
| Convergence | 3.1 | 2.6 | 2.1 | 1.6 | 1.1 |
| Recommended (Ex RF and RPE) | 10.1 | 9.5 | 8.8 | 8.2 | 7.6 |
| Recommended (Inc RF and RPE) | 10.3 | 9.7 | 9.1 | 8.6 | 8.0 |
| Allowed Adjustments | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| **Recommended (Inc RPE)** | **10.9** | **10.3** | **9.8** | **9.2** | **8.7** |

***Table 4-9***

This table and Figure 4-12 shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- For each year in the period 2008/09 to 2012/13, the values of the workload driver and the benchmark unit cost are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The GDNs are not expected to close any gap immediately. The convergence adjustment provides a glide path of cost to the Benchmark performance. The gap is reduced to 30% in 2012/13.
- The sum of the Benchmark performance and the convergence gives the Recommended (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommended cost (Inc RPE).

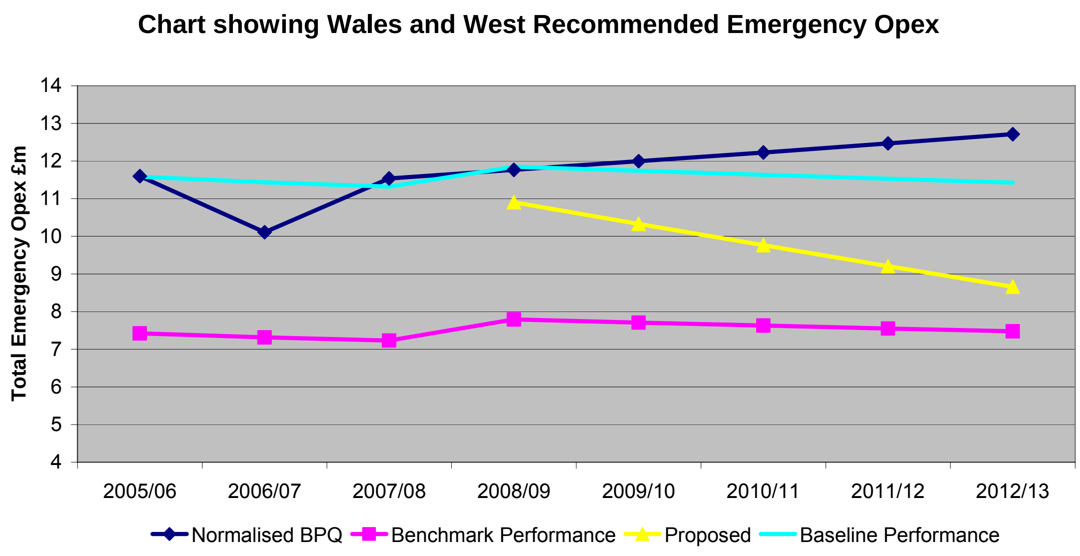


***Figure 4-12***

Note: the Benchmark and Baseline Performance lines include Adjustments

# 5 REPAIR

## 5.1 SUMMARY

| Net Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | | | | | | |
| Repairs | 9.6 | 9.8 | 10.0 | 10.2 | 10.4 | **50.2** |
| **Total** | **9.6** | **9.8** | **10.0** | **10.2** | **10.4** | **50.2** |
| **Normalisation Adjustments** | | | | | | |
| Adjustments | -1.2 | -1.3 | -1.3 | -1.3 | -1.3 | **-6.5** |
| Removed Costs | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Total** | **-1.2** | **-1.3** | **-1.3** | **-1.3** | **-1.3** | **-6.5** |
| **Normalised BPQ** | | | | | | |
| Repairs | 8.4 | 8.6 | 8.7 | 8.9 | 9.1 | **43.7** |
| **Total** | **8.4** | **8.6** | **8.7** | **8.9** | **9.1** | **43.7** |
| **Adjustments** | | | | | | |
| Allowed Costs | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| Workload Adjustment | -0.5 | -0.7 | -0.9 | -1.1 | -1.3 | **-4.4** |
| Efficiency Adjustments | 0.7 | 0.5 | 0.4 | 0.2 | 0.1 | **1.9** |
| **Total** | **0.2** | **-0.2** | **-0.5** | **-0.8** | **-1.2** | **-2.5** |
| **Proposed** | | | | | | |
| Repairs | 8.6 | 8.4 | 8.2 | 8.1 | 7.9 | 41.2 |
| **Total Net** | **8.6** | **8.4** | **8.2** | **8.1** | **7.9** | **41.2** |

***Table 5-1***

## 5.2 POLICIES & PROCEDURES

Wales & West policy T/PL/EM1, Policy for Dealing with Escapes and other Emergencies, covers the management of actual and suspected gas escapes and other emergencies. These include the emission of fumes from gas appliances, fires or explosions where gas is thought to be the cause, and loss of supply. Procedure T/PR/EM/74 covers work procedures for locating and repairing gas escapes on the network and T/PR/LC/22 describes the approved methods of repair for mains, services and risers.

Appendix 1 reviews the financial and technical framework under which the Network operates, the structure it utilises to manage its assets effectively and the key policies it adopts to ensure it meets its statutory and licence obligations and other regulatory requirements.

The T/PL/EM1 policy is applicable to the Network's obligations as a Gas Transporter, an Emergency Service Provider and the Network Emergency Co-ordinator. It also applies in instances where the Network has entered into commercial arrangements to operate as an Emergency Service Provider for a third party e.g. another Gas Transporter.

The cost of implementing this policy is influenced by obligations under the Gas Safety (Management) Regulations which state "...where any gas escapes from a network the person conveying gas in the part of the network from which the gas has escaped shall, as soon as is reasonably practicable after being so informed of the escape, attend the place where the gas is escaping, and within 12 hours of being so informed of the escape, he shall prevent the gas escaping". In practice the Network undertakes risk assessments and when appropriate re-programmes to prioritise the work, minimise nuisance and improve efficiency. If the Network is tasked with increasing the proportion of repairs currently being completed within 12 hours this would have adverse cost implications.

# 5.3 HISTORICAL PERFORMANCE

## 5.3.1 INTRODUCTION

The requirement to undertake repairs in response to Public Reported Escapes (PREs) is fundamental to the safe operation of the Network. The repair process, in common with Emergency, operates 24 hours a day & 365 days a year although most of the work is within normal working hours. Whilst safety is the always the primary concern, the managers of the process must also concern themselves with the prioritisation of the repairs, ensuring that they have adequate resources and that these are efficiently employed. Matching the available resource with the workload is a key factor in the efficiency of the process. Over-resourcing will achieve prompt repairs, but at the risk of the teams being under-employed should the workload decline. Under-resourcing will delay repairs and generate additional site monitoring costs where permanent repair is pending. In addition to this key relationship, managers will be monitoring a range of other issues; team availability for the next urgent repair, the type and quality of the repairs made, highway occupation and maintenance of road-signs, barriers and lamps around excavations, over-long working hours and customer issues such as access, and disconnection where a service pipe is found to be leaking.

## 5.3.2 DEFINITION OF ACTIVITY

The Repair activity is the process set up to repair gas escapes from gas distribution assets[3] upstream of (and including) the emergency control valve. The activity is distinct from Emergency, which provides the first response to a PRE and which is focused primarily on safety, with investigation and monitoring as important, but secondary activities. In some cases, usually service escapes, replacement, rather than repair is the preferred option and the Repair activity stops at the point when the gas escape is stopped and the site made safe.

The total number of repairs is split into four categories:

- Mains – condition
- Mains - interference repairs
- Services – condition
- Services - interference repairs

Condition repairs typically arise as a result of pipe corrosion or leaking joints and interference repairs arise as a result of damage to the Network's assets caused by third party activities usually in the course of street-works by other utilities.

Workload details are reported in section C18 of the Network BPQ workbook and repair costs reported in section B1 of the Financial and Opex tables.

[3] Mains, services and associated equipment operating at pressures up to 7bar

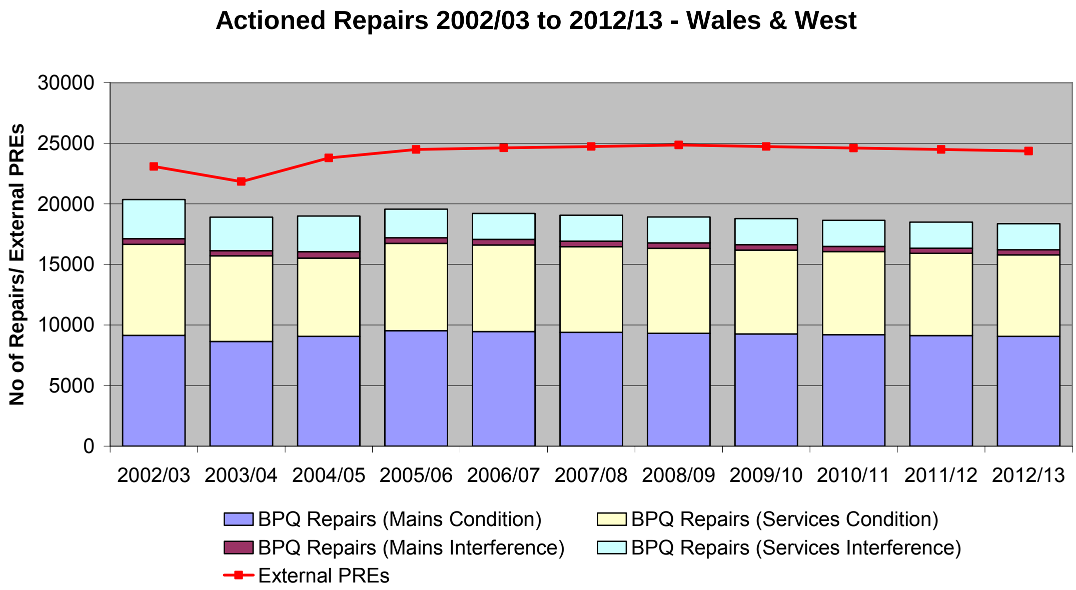


***Figure 5-1***

### External PRE - workload

External PREs are a sub-set of the uncontrolled PREs described in section 4.3.2 above. Almost all confirmed external PREs are escapes upstream of the emergency control valve, and not able to be isolated by closing a valve.

A decline in volume to 2003/04 is followed by an increase and subsequent forecast levelling-off. Volumes will vary in response to external factors as these PREs are weather sensitive and a cold winter will generate higher levels of reports through raised pressures. Ground movement from drying, or frost heave, will also increase the number of PREs as will public awareness following an incident. Not all PREs result in a repair and approximately one quarter are classified as “no escape found”

### Repairs - workload

Generally, the number of repairs can be expected to follow the number of confirmed external PREs (total external PREs less those where no escape is found) although this is partially offset by sites where it is necessary to repair more than one escape. For example, in some instances more than one mains joint repair may be required to clear the site of gas.

### Condition Repairs

Condition repairs to mains and services form the major workload. Typically repairs are to the metallic (cast iron, spun iron, ductile iron mains and steel mains and services) parts of the system with mains joints and fractures, and corroded steel services being the most common types of failure.

**Condition Repairs (Mains & Services) 2002/03 to 2012/13**

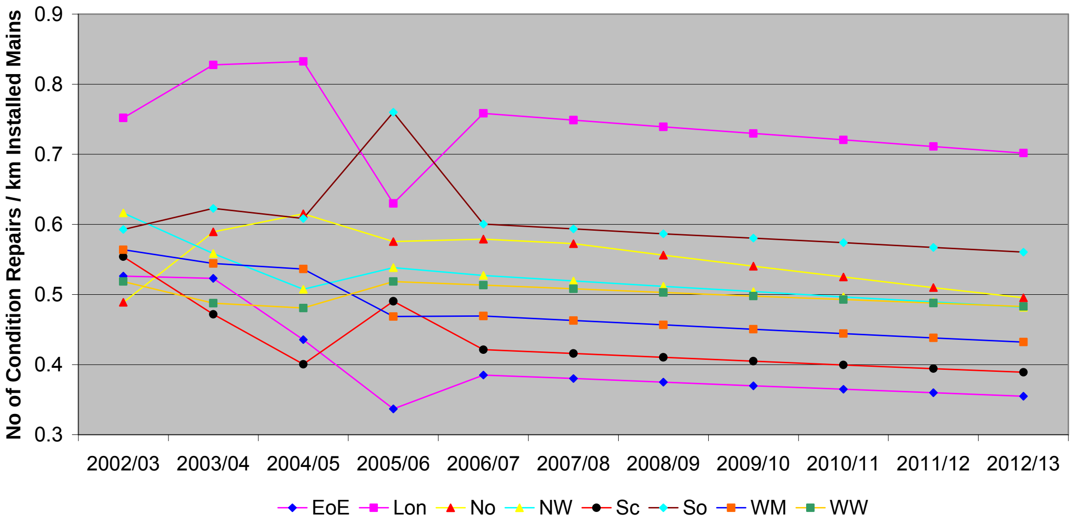


***Figure 5-2***

The chart shows that repairs/km of main in service is trending downwards in all Networks. The effect of the replacement programme[4] is significant and the chart below shows how the proportion of iron and steel (non-PE) mains is falling as de-commissioning reaches (in 2007/08 for most Networks) the level to be maintained over the next 25 years.

**% of Network Mains Non-PE 2002/03 to 2012/13**

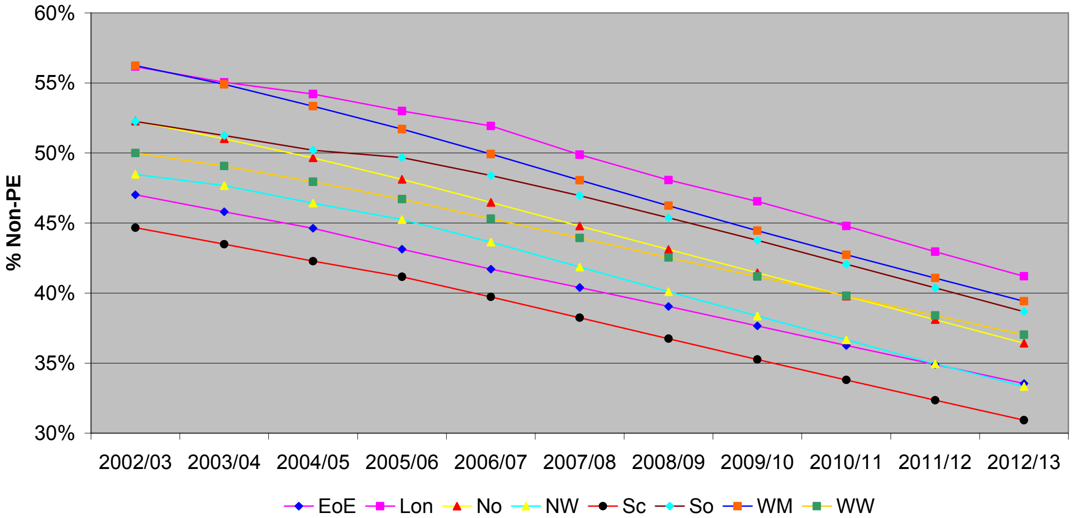


***Figure 5-3***

Had average system pressure been lower, we would have expected to see a decline in condition repairs over the period to 2006/07. The Network plans to reduce average system pressure over the period to 2012/13 and there is a more detailed account of this in Section 5 of our Capex report.

[4] See Section 8 of our report on Capex and Repex

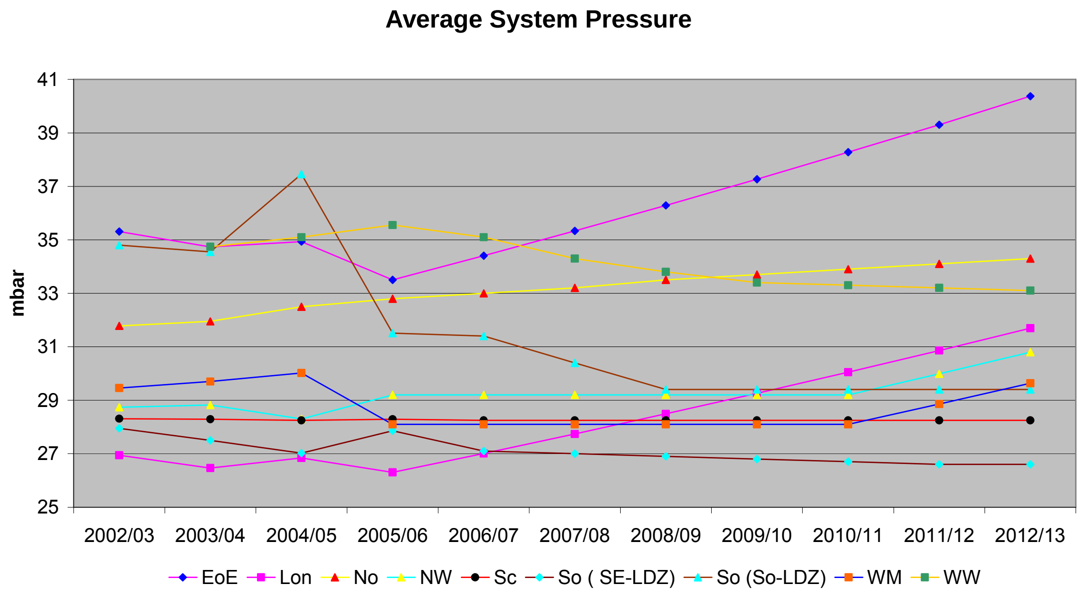


***Figure 5-4***

## Interference Repairs

Interference repairs form about 15% of the repair workload, the majority of repairs being to services which are shallower and have less mechanical strength than mains.

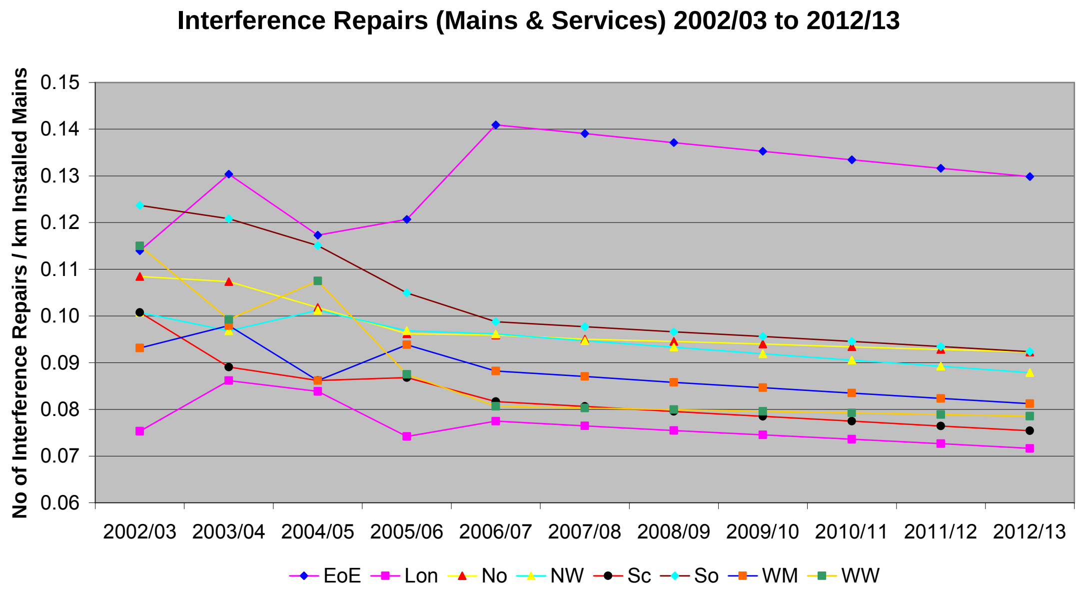


***Figure 5-5***

The Network reports a falling level of interference damage. A further downward trend can be achieved by communicating with those most likely to cause damage: other utilities and their contractors, highway authorities, builders and developers etc. all of which are required to employ safe systems of work and to identify damage to underground plant as a potential hazard. The accuracy of records supplied and attendance on site will help to maintain a downwards trend[5].

[5] Exceptions are discussed in the relevant report.

### 5.3.3 APPROACH TO THE ASSESSMENT OF EFFICIENCY

In assessing the efficiency of investment (2005/06 onwards) we have examined the Network's 2005/06 costs and compared these with the seven other Networks taking into account, as far as is possible, differences such as numbers of mains and services repairs, the proportions of direct and contract labour, and regional cost differences as derived from indices published by BCIS (The Building Cost Information Service a subsidiary of the Royal Institution of Chartered Surveyors) and DTI – Annual Survey of Hours and Earnings (ASHE).

We have chosen a regression approach as it avoids the direct comparison of unit costs for different disaggregated cost categories, which we regard as unreliable given differences in cost allocation at a disaggregated level. This enables us to compare the Networks' costs and efficiency on a consistent basis

As discussed in Section 2, the starting point for setting the target benchmark is an Ordinary Least Squares (OLS) regression on the eight data points, one for each GDN, applicable in the base year (2005/06). The regression calculation determines a relationship between the costs and the workload driver. The regression line is shown in black on the graphs. As discussed in Section 2 we have then adjusted the regression line to give the upper quartile regression line which is the target which all under performing GDNs should move towards. This is shown in pink on the charts.

High performing networks will be expected to continue to improve their performance over the period to 2012/13. The resulting target costs for 2012/13 are shown in yellow on the charts.

A number of regression options have been explored in analysing repair costs, including a number of different explanatory variables.

Repairs comprise four main work elements:

- mains condition repairs
- services condition repairs
- mains interference repairs
- services interference repairs.

The workloads for each of these elements have different forecast trends in each of the networks. We have therefore constructed an explanatory variable which is a composite single variable (CSV) based on the proportion of costs attributable to each of these elements in the base year, as the basis for our cost analysis.

$CSV = \sum U_n * V_n / 1000$

where U is the representational unit costs for the each repair types/pipe size and

V is the corresponding actual volumes.

The same representative unit costs have been used each Network and have been chosen by reference to contract rates for the four repair types; these are shown in the table below.

| CSV Calculation (Wales & West 2005/06) | Volume (Repairs) | Unit Cost (£/Repair) | Total (£000s) |
|---|---|---|---|
| Repairs to Mains (Condition </=3") | 148 | 554 | 82 |
| Repairs to Mains (Condition 4-5") | 4572 | 595 | 2718 |
| Repairs to Mains (Condition 6-7") | 2482 | 688 | 1707 |
| Repairs to Mains (Condition 8-9") | 1131 | 1130 | 1278 |
| Repairs to Mains (Condition 10-12") | 864 | 1130 | 977 |
| Repairs to Mains (Condition >12-18") | 252 | 1856 | 468 |
| Repairs to Mains (Condition >18-24") | 61 | 1889 | 116 |
| Repairs to Mains (Condition >24") | 7 | 3846 | 27 |
| Repairs to Mains (Interference) | 466 | 326 | 152 |
| Repairs to Services (Condition) | 7221 | 250 | 1805 |
| Repairs to Services (Interference) | 2358 | 202 | 475 |
| CSV | | | 9805 |

***Table 5-2***

### 5.3.4 ESTABLISH UNDERLYING COSTS

Cost normalisation

Section 2.5.1 gives details of the generic normalisation adjustments which have been carried out. For Repair, the principal normalisation adjustments are outlined below.

- **Cost transfer** – there are no cost transfers associated with Repair
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to the allocation of costs to reflect our proposed allocation of sub-activities[6].
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – these adjustments are the net adjustments between WWU's reported pension costs and the standard pension costs used by PB Power
- **Removed costs** – there are no removed costs associated with Repair.

The detail of the adjustments to the BPQ costs submitted by the Network is given in the following table.

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **GDN reallocation** | -0.2 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.8 |
| **Ofgem Accounting Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Pension Adjustments** | -1.1 | -1.1 | -1.1 | -1.2 | -1.2 | -1.2 | -1.2 | -1.3 | -9.348 |
| **Removed costs** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **-1.2** | **-1.2** | **-1.2** | **-1.2** | **-1.3** | **-1.3** | **-1.3** | **-1.3** | **-10.1** |

***Table 5-3***

[6] Full details of the GDN reallocation are given in Appendix 6

**Historical costs**

The table below shows a split of repair costs by expense type over the three years 2004/05 – 2006/07.

| Expenditure Breakdown £ m 2005/06 Prices | 2004/05 | 2005/06 | 2006/07 |
|---|---|---|---|
| Contract | 0.0 | 3.3 | 2.0 |
| Direct | 0.0 | 5.3 | 5.7 |
| Materials | 0.0 | 1.1 | 0.9 |
| Other | 0.0 | 1.4 | 1.3 |
| Gross Cost | 0.0 | 11.0 | 9.9 |
| Income | 0.0 | -0.6 | -0.5 |
| Net Cost | 0.0 | 10.4 | 9.4 |

***Table 5-4***

Workload in 2005/06 was similar to that expected in 2006/07 (Figure 5-1) but cost is forecast to fall in response to the reduced use of contractors. The cost/workload relationship is influenced by the work mix, in particular the diameter of mains repaired and their location in verge, footway or carriageway. The cost of the Repair activity can also be influenced by peaks in workload and subsequent deferral of repairs. This enables the Network to re-schedule the work required to complete repairs but means that they incur monitoring costs in the interim.

### 5.3.5 TABLE OF ADJUSTMENTS TO THE BASE YEAR (2005/06)

We have carefully examined the base year volumes and costs since it is this year that establishes the relative position of the Network and the potential efficiency savings available.

Base Year (2005/06) Assumptions and Adjustments

| Repairs Volumes (2005/06) | BPQ Submission |
|---|---|
| Repairs to mains (condition) | 9517 |
| Repairs to mains (interference) | 466 |
| Repairs to services (condition) | 7221 |
| Repairs to services (interference) | 2358 |
| Total | 19562 |

***Table 5-5***

The number of repairs recorded (Figure 5-1) was slightly more than in the two preceding years but we have made no adjustment to 2005/06 volumes.

Base Year (2005/06) Assumptions and Adjustments

| Expense Categories £m | BPQ | Normalised |
|---|---|---|
| Contract | 3.3 | 3.3 |
| Direct | 5.3 | 4.2 |
| Materials | 1.1 | 1.1 |
| Other | 1.4 | 1.2 |
| Gross Cost | 11.0 | 9.7 |
| Income | -0.6 | -0.6 |
| Net Cost | 10.4 | 9.2 |

***Table 5-6***

Normalisation adjustments are detailed in Table 5-3 above.

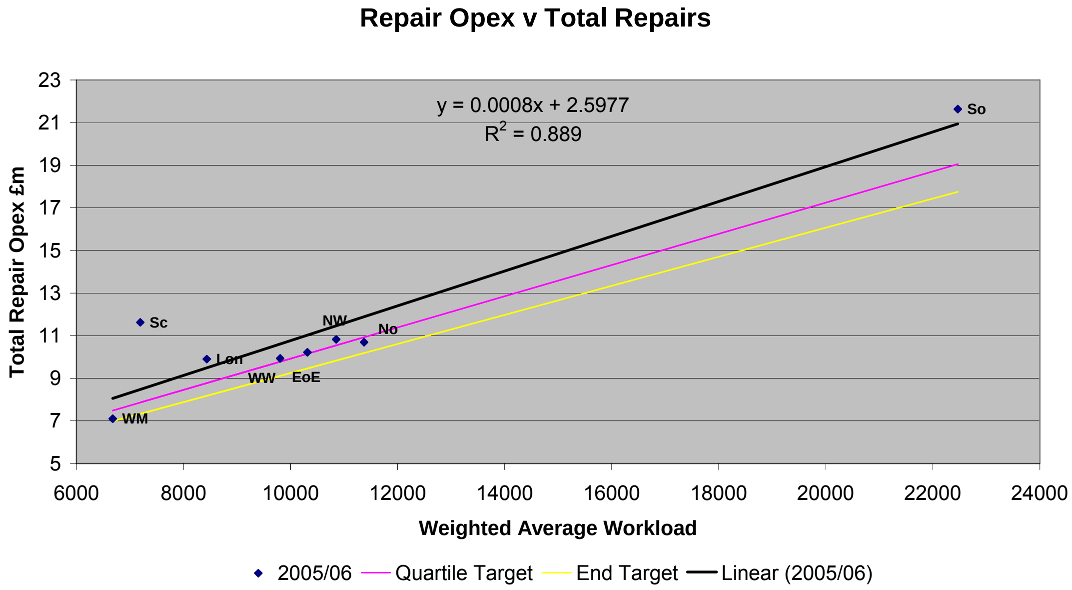


***Figure 5-6***

In the chart above (2005/06) Wales and West is just behind of the upper quartile and is the fourth most efficient Network.

# 5.4 FORECAST

## 5.4.1 INTRODUCTION

We have reviewed the process used by the Network to generate its forecast. We found that the Network takes into consideration relevant factors that influence the forecast; the change in population (and thus repairs) arising from its mains and services replacement programmes and ageing of the remaining population, the effect of gas conditioning, the effect of pressure management systems, average system pressure and the overall level of emissions from the network.

Overall we found the Network's forecasting process to be reasonable but we have made some adjustments after reviewing the Network's assumptions.

## 5.4.2 NETWORK PROPOSALS

The Network forecast is generated in four work categories – mains and services; condition and interference repairs.

**Workload Assumptions**

Condition Repairs

The Network is forecasting a decline of 1% per annum in condition repairs to mains and services.

Interference repairs to mains

The Network is forecasting a 2% per annum reduction in levels of interference repairs to mains.

Interference repairs to services

The Network is forecasting unchanged levels of interference repairs to services.

**Costs Assumptions**

Company workload and cost trend lines as proposed by GDN for 2006/07 to 2012/13

| GDN Proposed Volumes | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|
| Repairs to mains (condition) | 9454 | 9387 | 9321 | 9255 | 9191 | 9128 | 9065 |
| Repairs to mains (interference) | 459 | 452 | 445 | 439 | 432 | 426 | 419 |
| Repairs to services (condition) | 7148 | 7076 | 7004 | 6933 | 6863 | 6794 | 6725 |
| Repairs to services (interference) | 2150 | 2150 | 2150 | 2150 | 2150 | 2150 | 2150 |
| Total | 19211 | 19065 | 18920 | 18777 | 18636 | 18498 | 18359 |

***Table 5-7***

**GDN cost projections 2006/07 – 2012/13**

| GDN Proposals £ m 2005/06 Prices | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|
| Contract | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 |
| Direct | 5.7 | 5.8 | 5.9 | 6.0 | 6.1 | 6.3 | 6.4 |
| Materials | 0.9 | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 |
| Other | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.4 |
| Gross Cost | 9.9 | 10.0 | 10.2 | 10.4 | 10.6 | 10.7 | 10.9 |
| Income | -0.5 | -0.5 | -0.5 | -0.5 | -0.5 | -0.5 | -0.5 |
| Net Cost | 9.4 | 9.5 | 9.6 | 9.8 | 10.0 | 10.2 | 10.4 |

***Table 5-8***

### 5.4.3 PB POWER PROJECTIONS

**Proposed Workloads**

Condition Repairs

We have carefully considered the likely level of condition repairs and compared this with others, taking into account influencing factors such as mains population, forecast average system pressure and emissions.

The Network's forecast is that condition repairs will fall by approximately 1.0% per year despite the effect of the mains replacement programme that will be removing approximately 4% of the metallic network each year. In addition average system pressure is forecast to fall.

Taking into account that all components of the network are ageing and that some condition repairs are to the PE part of the network, we have assumed a 3% year on year reduction in condition repairs.

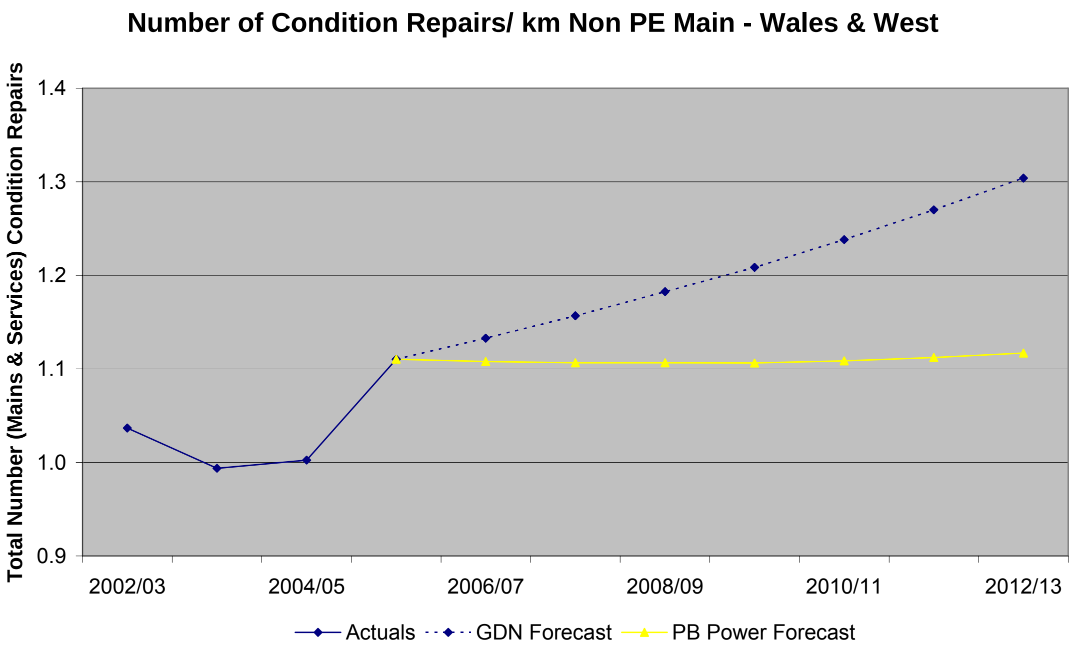


***Figure 5-7***

Interference Repairs

The Network has forecast a reduction in interference repairs to mains of about 2% per year but no change to the level of repairs to services.

Interference repairs are driven by the amount of construction activity within the Network, but this can be influenced through improved and focussed communication with those undertaking the work. We think a 2% per annum improvement to mains repairs is realistic and achievable and we accept the Network's forecast. We have adjusted forecast repairs to services to show a 1% per annum improvement.

**Adjusted GDN volumes 2006/07 – 2012/13**

| PB Power Forecast Repair Volumes | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|
| Repairs to mains (condition) | 9231 | 8955 | 8686 | 8425 | 8173 | 7927 | 7690 |
| Repairs to mains (interference) | 459 | 452 | 445 | 439 | 432 | 426 | 419 |
| Repairs to services (condition) | 7004 | 6794 | 6590 | 6393 | 6201 | 6015 | 5834 |
| Repairs to services (interference) | 2150 | 2129 | 2107 | 2086 | 2065 | 2045 | 2024 |
| Total | 18845 | 18329 | 17829 | 17343 | 16871 | 16412 | 15967 |

***Table 5-9***

**Proposed Costs**

In section 5.3.3 above we explained how we established the relative position of each Network, the upper quartile and the Network with the lowest unit costs overall.

We expect Networks behind the upper quartile to improve and close the gap and we have set the Network the target of closing 70% of the cost gap to the upper quartile over the five years to 2012/13.

Networks that are underperforming relative to the benchmark will be expected to catch up with benchmark costs over the period and achieve some ongoing improvement. Networks that are outperforming are assumed to get an initial reward for outperformance but will be expected to achieve ongoing improvement over time. We have assumed a 1% per annum ongoing efficiency improvement.

**On-going efficiency improvements**

As part of our review we have considered how these efficiencies may be achieved.

The Network is able to influence the workload through measures such as improved pressure management and gas conditioning. The repair process itself is complex and labour intensive and productivity improvements are likely to be achieved by a chain of small initiatives.

We are aware of Network initiatives for:

- New Information Systems that for field operatives coming on line in the final quarter of 2006/07.
- A Performance Management Framework to provide specific measures of performance for all operational employees.
- Use of VESAS to improve operational productivity
- Improved HS&E Performance

We believe that through a programme of continuous improvement our recommended expenditure is achievable.

## 5.4.4 SPECIFIC COST AREAS

**Gas Safety (Management) Regulations - Re-programming Repair Work.**

We have assumed that there is no change to the Network's practice (2005/06) on re-programming repair work.

**Impact of Waste Management Regulations - Landfill Directive & Landfill Tax**

The Network will be exposed to cost increases arising directly from the Landfill Regulations and Landfill Taxes. It will also incur other costs to optimise overall expenditure in this area and minimise waste to landfill.

Improved waste segregation will be required to prevent more of its waste being classified under the Landfill Regulations as “non-hazardous” rather than “inert” as at present. The shift from inert to non-hazardous status is primarily driven by the volume of bituminous materials to be disposed of, either directly, or where inert material has become contaminated with bituminous material making the whole of the contaminated waste non-hazardous and subject to higher disposal charges. In addition, the Environment Agency is becoming more active in enforcing the Landfill Regulations and Landfill Operators are becoming more cautious in accepting material as “inert”, causing it to be disposed of as “non-hazardous” at higher cost.

As well as disposal charges, the Landfill Tax charge is currently levied at £2/tonne for inert/inactive waste, with a standard rate of £21/tonne charged for all other waste. The Government has stated that the standard rate for non-hazardous waste will increase by at least £3[7] annually to a rate of £35 in 2010.

The Network has included these higher tax costs within its forecast together with associated costs related to the improved segregation of materials and increases in tipping charges.

There is considerable uncertainty around the likely change in disposal and tax charges going forward. Variables are:

- The volume of waste and the proportion of inert and non-hazardous (and small volumes of hazardous) material for disposal.
- The marginal costs of waste segregation and the level, and cost, of recycling achieved.
- The cost of testing to establish the status of waste for disposal.

[7] Revised to £8 each year to 2011 in the recent Budget statement.

- The rate of Landfill Tax due on the waste for disposal.

The Landfill Tax charge in our base year was £18/tonne (Standard Rate) and our analysis has made no specific allowance for the proposed increases in subsequent years. Nor has any allowance been made for possible changes in the enforcement of the Landfill Regulations.

We therefore recommend that this is treated as an uncertain cost and that an adjustment is made following further assessment.

### 5.4.5 REAL PRICE EFFECTS

We consider that real growth in wages and contractor rates will be lower than GDN assumptions. We have assumed RPI +2.25% (contractors) and RPI + 1% (direct labour and materials) each year. This has to be considered in conjunction with our overall productivity assumption for Repair of a 1% year on year gain, making our view more optimistic overall.

### 5.4.6 RECOMMENDATIONS

The proposed adjustments are shown in the following table.

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| GDN BPQ Submission (Gross) | 10.2 | 10.4 | 10.6 | 10.7 | 10.9 |
| Normalised Adjustments | -1.2 | -1.3 | -1.3 | -1.3 | -1.3 |
| Normalised Submission (Gross) | 8.9 | 9.1 | 9.3 | 9.4 | 9.6 |
| Regression Driver | 8946 | 8688 | 8438 | 8195 | 7960 |
| Benchmark Performance | 8.9 | 8.6 | 8.3 | 8.1 | 7.9 |
| Baseline Performance | 9.0 | 8.7 | 8.5 | 8.2 | 8.0 |
| Gap | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Convergence | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 |
| Recommended (Ex RF & RPE) | 9.0 | 8.7 | 8.4 | 8.1 | 7.9 |
| Recommended (Inc RF & RPE) | 9.1 | 9.0 | 8.8 | 8.7 | 8.5 |
| Allowed Adjustments | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proposed Gross | 9.1 | 9.0 | 8.8 | 8.7 | 8.5 |
| Proposed Income | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 |
| Proposed Net | 8.6 | 8.4 | 8.2 | 8.1 | 7.9 |

***Table 5-10***

**Recommended Efficient Expenditure**

| Proposed £m | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| Actioned Repairs to mains (condition) | 6.9 | 6.7 | 6.6 | 6.5 | 6.4 | 33.1 |
| Actioned Repairs to services (condition) | 1.7 | 1.7 | 1.6 | 1.6 | 1.6 | 8.1 |
| Actioned Repairs to mains (interference) | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.7 |
| Actioned Repairs to services (interference) | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 2.2 |
| Gross Total | 9.1 | 9.0 | 8.8 | 8.7 | 8.5 | 44.1 |
| Income | -0.6 | -0.6 | -0.6 | -0.6 | -0.6 | -2.9 |
| Net Total | 8.6 | 8.4 | 8.2 | 8.1 | 7.9 | 41.2 |

***Table 5-11***

This table shows the costs reported by the Network in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the workload driver over the period 2008/09 to 2012/13 and the benchmark unit costs which are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the Network's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The GDNs are not expected to close any gap immediately. The convergence adjustment provides a glide path of cost to the Benchmark performance. The gap is reduced to 30% in 2012/13.
- The sum of the Benchmark performance and the convergence gives the Recommended (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommend cost (Inc RPE).

The comparison between the normalised BPQ forecast, the target and recommended expenditure is shown in the following figure:

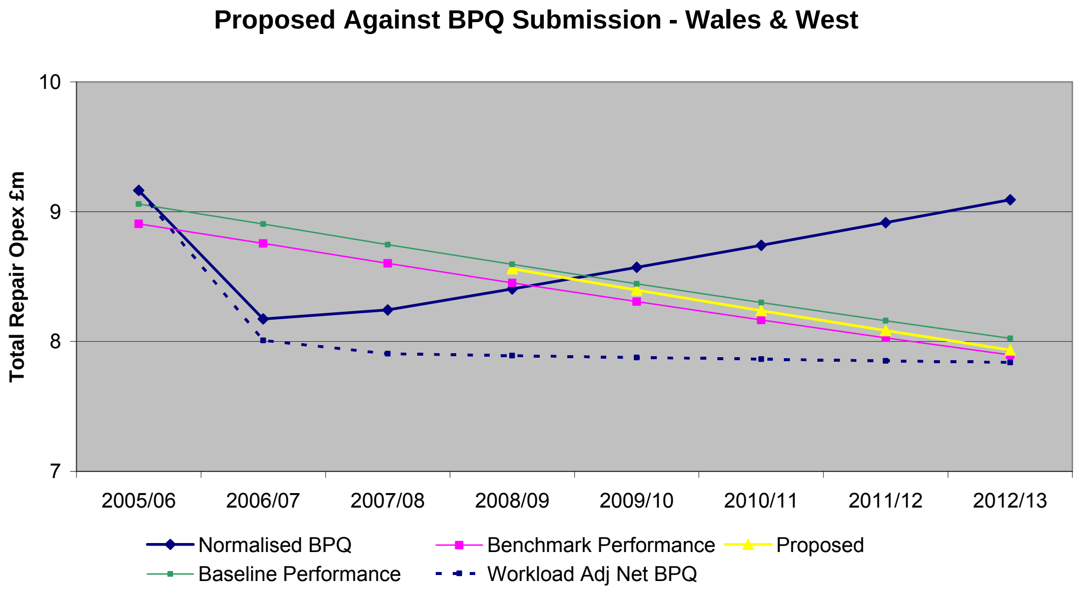


***Figure 5-8***

Note: the Benchmark and Baseline Performance lines include Adjustments

# 6 MAINTENANCE

## 6.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 13.4 | 13.7 | 13.8 | 12.8 | 13.0 | **66.8** |
| **Normalisation Adjustments** | -0.8 | -1.2 | -1.0 | -0.4 | -0.3 | **-3.7** |
| **Normalised BPQ** | 12.6 | 12.6 | 12.8 | 12.4 | 12.7 | **63.1** |
| **Adjustments** | 0.7 | 0.5 | -2.0 | -2.8 | -3.7 | **-7.2** |
| **Proposed** | 13.2 | 13.1 | 10.8 | 9.6 | 9.1 | **55.8** |

***Table 6-1***

## 6.2 POLICIES & PROCEDURES

### 6.2.1 INTRODUCTION

Wales & West Network has a clear route of governance by which engineering policies and procedures are formed, approved, and implemented.

The Director of Asset Management has overall responsibility for engineering policy and procedures. The Integrity and Policy Manager, who reports to the Director of Asset Management, leads the engineering policy unit and is responsible for developing, reviewing and approval of engineering policy and procedure, ensuring the company meets all governance obligations and regulatory requirements. The Engineering Safety Executive Committee (ESEC) meets monthly, and reviews and authorises the programme of policy changes.

The Asset Compliance Manager within the Asset Management Directorate is responsible for ensuring arrangements are in place to achieve effective implementation of engineering policies and procedures. This includes testing compliance with engineering policies and procedures.

The Head of Health Safety and the Environment is a Board member, and his department is responsible for development of and the implementation of a control framework to ensure that the company satisfies its gas safety obligations. This includes the Safety Case, Gas Requirements Manual (Ref. 6.5) and associated processes.

Appendix 1 reviews the financial and technical framework under which Wales & West operates, the structure they utilise to manage their assets effectively and the key policies they adopt to ensure they meet their statutory and licence obligations and other regulatory requirements.

This section reviews the various statements made by Wales & West in support of their planning and decision-making processes, which drive their maintenance expenditure.

Maintenance covers:

- LTS maintenance
- Storage
- Maintenance Other

Governance of policies and procedures for these activities ensures the safe and efficient operation of plant, and safe and efficient maintenance tasks undertaken upon them, by Wales & West network staff, and service providers.

### 6.2.2 SCOPE OF POLICES AND PROCEDURES

The current suite of policies and procedures used by Wales & West are based on those developed in Transco/NGG and supplied at the time of sale. They have evolved and been developed over the last 8 years, with some having older origins under the previous Gas Business structures. Their content and scope reflect growing knowledge and experience gained in operating a gas distribution system in the current environment.

### 6.2.3 REVIEW AND UPDATE PROCESS

The ESEC receives, reviews and approves all new or amended Engineering Policies and Procedures. The Engineering Policy group manages the production of draft documents, to be reviewed by a peer group, before being submitted for approval. Input to the drafting process may be provided by Wales & West staff, service providers and specialist consultants. When new documents are approved, briefings and/or detailed training is given to those affected.

The review and update procedure is discussed further in Appendix 1.

Wales & West have advised us that none of the substantive content in the above policies and procedures have been updated since DN sales.

Engineering policies and procedures in place at the time of the sale of the Network have been reviewed and updated where they referred to inappropriate processes or governance arrangements.

Wales & West has received guidance from staff that a number of the policies and procedures relevant to maintenance need to be developed and/or reviewed. These are being treated with priority for development by the Integrity and Policy Manager.

Wales & West documents contain records of their update status, and the minute reference of their approving authority. This provides confirmation of the validity of the current policies and procedures in accordance with the Wales & West governance process for such documents.

### 6.2.4 EFFICIENCY AND PRODUCTIVITY

We have not carried out detailed audits of the degree of compliance within the Network, to the stated policies and procedures. However, within the Maintenance category, we can say from the evidence offered within the BPQ responses, that there are no indications that the policies and procedures are not being followed. There is no evidence of systematic failures of equipment, which could indicate lack of compliance. Similarly, within safety related statistics, such as lost time accidents, there is no evidence of unsafe practices being employed, which could be used as an indicator of the lack of compliance with documented policies and procedures.

## 6.3 HISTORICAL PERFORMANCE

### 6.3.1 INTRODUCTION

We would expect to test historical cost performance against workload data drawn from the company's management information system. This historical performance data could be helpful in developing trends of workload, costs, and unit costs, which could be then used as comparisons year to year, and also to make comparisons with other GDNs performance.

We understand that for this activity, historical management and cost information, pre 2005/06 is not readily available and may be inconsistent with port network sales data, and therefore of little value in deriving historical trends.

The historical initiatives and factors influencing forecast costs are the following:

- The use of contract or direct labour to effect maintenance activities can influence the costs. Wales & West is planning to recruit and directly employ a number (initially 65) of new industrial employees where currently agency labour is used.

- Asset Management has been reduced in size with the role of assessing and specifying the minimum cost network consistent with meeting statutory and licence requirements. It is charged with ensuring asset integrity and reliability. This includes comparative maintenance cost assessments.
- Wales & West describes its "evergreen" approach of periodically upgrading applications to more modern versions. This can be driven either by technical reasons (obsolescence), improved functional capability or, more usually, to maintain support.

### 6.3.2 DEFINITION OF ACTIVITY

Maintenance covers 3 areas:

**LTS maintenance comprising the following main activities**

- Cathodic Protection
- Pipeline monitoring
- Repairs – investigations and repairs arising from the pipeline monitoring
- Aerial surveys - Each pipeline is over flown by helicopter every two weeks
- TD1 surveys. Each pipeline is surveyed every four years.
- AGI maintenance
- AGI painting

**Storage comprising the following main activities**

- LP holder routine inspections and maintenance
- LP holder Non Routine Maintenance (NRM) which includes holder painting and repairs and work to meet legislative and regulatory changes
- HP bullet routine maintenance, inspections and painting.

**Maintenance Other comprising the following main activities:**

- Other Leakage Control e.g. mains surveys, gas conditioning, pressure profiling
- Distribution Mains and Services – mains and service repair and maintenance
- Instrumentation – repair and maintenance
- District Governors

### 6.3.3 ESTABLISH UNDERLYING COSTS

**Cost normalisation**

Section 2.5.1 gives details of the generic normalisation adjustments which have been carried out. For each type of Maintenance activity, the principal normalisation adjustments are outlined below.

- **Cost transfer** – the only transfer involves Storage where costs for holder handrail work have been transferred from Capex
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to the allocation of costs to reflect our proposed allocation of sub-activities[8].
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – these adjustments are the net adjustments between WWU's reported pension costs and the standard pension costs used by PB Power
- **Removed costs** – in Storage Maintenance, a number of special costs have been removed prior to the comparative analysis, details of these are provided later in the Section.

[8] Full details of the GDN reallocation are given in Appendix 6

The detail of the adjustments to the BPQ costs submitted by WWU for Wales & West network is given in the following tables.

### LTS maintenance

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **GDN reallocation** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 |
| **Ofgem Accounting Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Pension Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.226 |
| **Removed costs** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.2** |

***Table 6-2***

### Storage maintenance

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 7.8 |
| Holder demolition transfer from WorkM | 0.0 | 0.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | |
| **GDN reallocation** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| **Ofgem Accounting Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Pension Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.025 |
| **Removed costs** | -0.4 | -0.3 | -1.7 | -2.0 | -2.3 | -2.2 | -1.5 | -1.5 | -12.0 |
| Holder handrails | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Holder painting | -0.4 | -0.2 | -0.4 | -0.4 | -0.5 | -0.6 | -0.2 | -0.2 | |
| Holder decommissioning/demolition | 0.0 | 0.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | |
| HP Bullets inspection/painting | 0.0 | 0.0 | 0.0 | -0.3 | -0.6 | -0.2 | 0.0 | 0.0 | |
| **Total** | **-0.4** | **-0.2** | **-0.4** | **-0.7** | **-1.0** | **-0.8** | **-0.2** | **-0.2** | **-4.0** |

***Table 6-3***

### Maintenance Other

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **GDN reallocation** | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.8 |
| **Ofgem Accounting Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Pension Adjustments** | -0.3 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | -0.3 | -0.3 | -1.964 |
| **Removed costs** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **0.0** | **-0.1** | **-0.2** | **-0.2** | **-0.2** | **-0.2** | **-0.2** | **-0.1** | **-1.2** |

***Table 6-4***

In this section, all the costs analysed are on a normalised basis as described above, however where we are presenting GDN reported costs, the removed cost adjustment, which is made for analysis purposes, has not been included.

**2005/06 and 2006/07 costs**

Consideration of the Network expenditures for 2005/06 and 2006/07 shows little change across the three categories of maintenance.

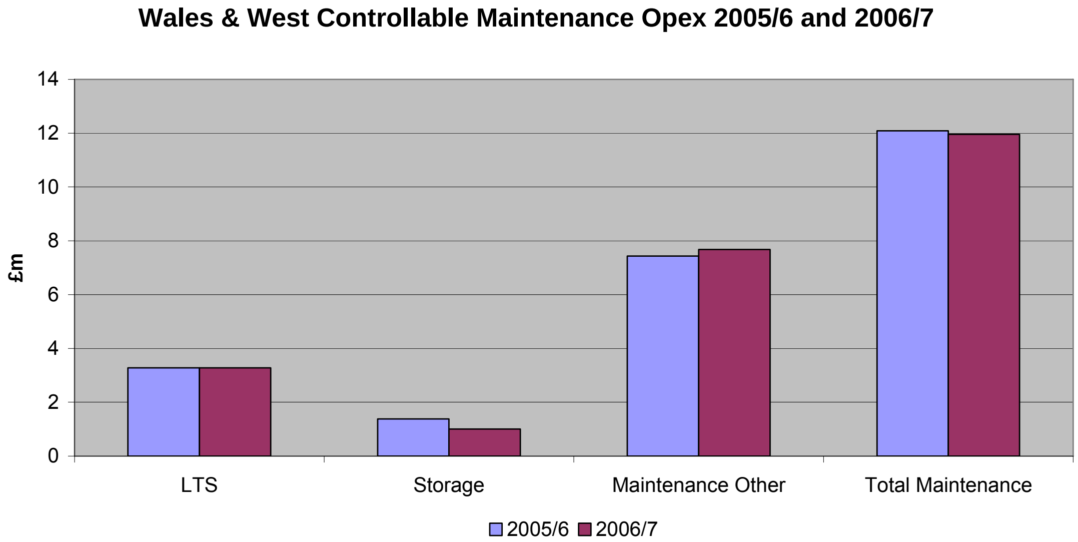


***Figure 6-1***

We have compared Wales & West's unit costs for the three maintenance activities against the average unit costs across all GDNs (see chart below). We believe that costs of the different maintenance activities are driven by different workload drivers:

- LTS: Number of PRSs
- Storage: number of holders – volume of holders is also used in the analysis.
- Maintenance Other: different drivers apply to each of the main sub-activities. For the purposes of a high level comparison of unit costs here, the length of < 7bar main is used.

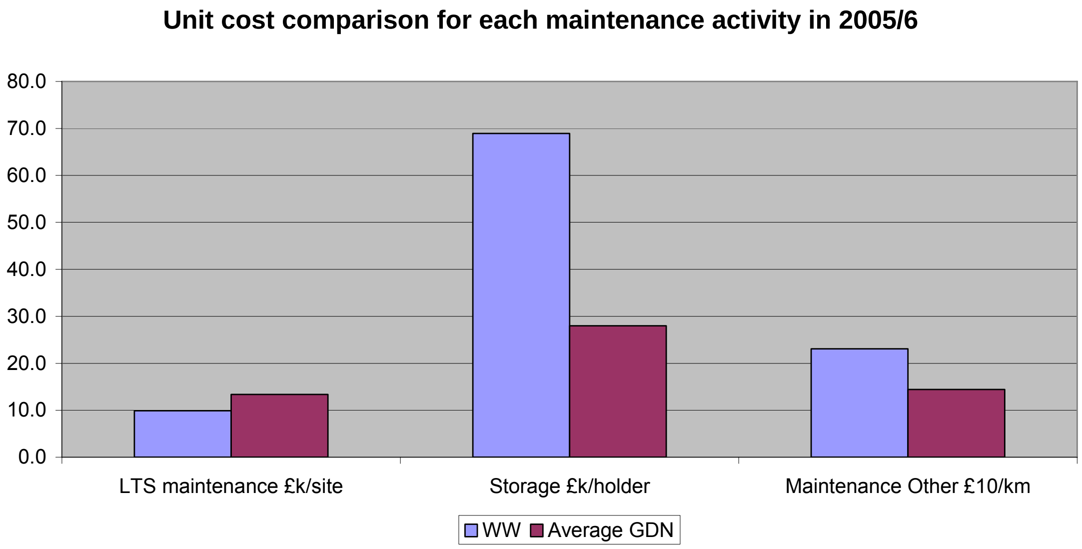


***Figure 6-2***

The chart shows that for all three activities Wales & West has lower unit costs than the average of the GDNs for LTS maintenance and higher unit cost for Storage and Maintenance Other.

The selection of these drivers is discussed in more detail below. For the main analysis set out below, the driver of Maintenance Other costs is modified to include specific drivers of cost for each of the three main categories of maintenance included under that heading.

The proposed efficient levels of unit costs are developed below.

### 6.3.4 PROPOSE EFFICIENT LEVEL OF COSTS

The volume of assets covered by Wales & West maintenance activities had remained broadly flat through the period 2002/03 to 2005/06, as shown in the table below.

| Maintenance activity | Main workload driver | Volume of assets 2002/03 | Volume of assets 2005/06 | % change |
|---|---|---|---|---|
| LTS maintenance | No of Sites | 330 | 331 | 0.30% |
| Storage | No. of holders | 22 | 20 | -9.09% |
| Maintenance Other | km of < 7 bar main | 32122 | 32222 | 0.31% |

***Table 6-5***

It is assumed that reductions in the required maintenance of newly installed capital and replacement assets will be offset by the ageing population of remaining assets, and their associated levels of maintenance.

We have not been provided with a breakdown of direct activity costs to maintenance activities for the years prior to 2005/06. The 2005/06 costs therefore provide a baseline for developing our cost projections.

## 6.4 FORECAST

### 6.4.1 INTRODUCTION

Analysing maintenance costs projections provided by all GDNs shows rising unit costs for LTS and storage maintenance from 2005/06 to 2012/13 (over 70% increases in unit costs for LTS and over 100% for storage), and smaller increases in unit costs for Maintenance Other (around 10% over the period).

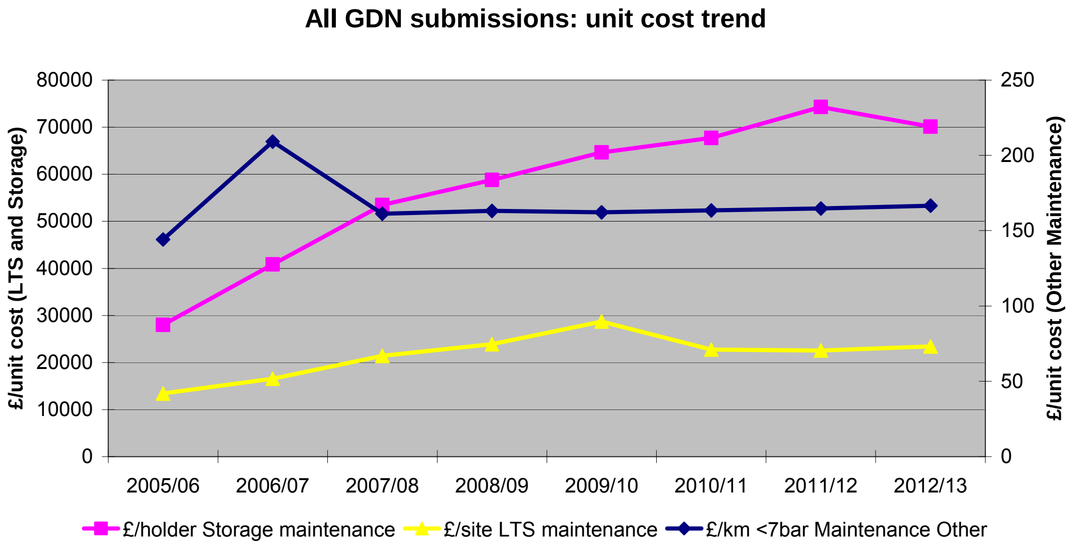


***Figure 6-3***

The rising costs for storage maintenance through to 2011/12 reflect holder painting programmes and the cost associated with the working at heights regulations with a fall in 2012/13 as these costs reduce.

### 6.4.2 COMPANY PROPOSALS

Wales & West shows unit costs which are flat over the period to 2012/13, in contrast to increasing unit costs across GDNs as a whole.

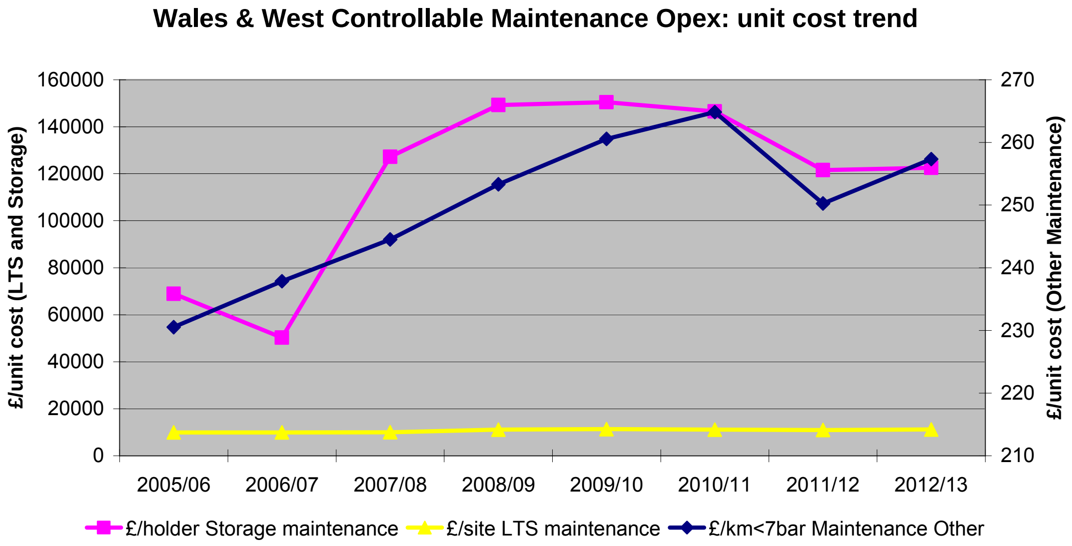


***Figure 6-4***

### 6.4.3 PROPOSED PROJECTIONS

Section 2 sets out the approach we use to set benchmark costs. The following techniques are used:

- Bottom-up analysis.
- Regression analysis
- Unit cost analysis

To use these techniques we need to establish a cost driver or explanatory variable.

The proposed maintenance costs are developed for LTS, Storage and Maintenance Other in turn[9].

#### 6.4.3.1 LTS maintenance

**Definition of activity**

The maintenance activities covered by this activity include:

- Cathodic Protection
- Pipeline monitoring
- Aerial and vantage point surveys
- TD1 surveys

[9] Additional information, which became available during March 2007, led to a review of the supporting analysis. At the time of this report, insufficient detail was available to fully evaluate any potential impact from this new information.

- Marker post maintenance
- AGI routine maintenance and repairs
- AGI painting

**Underlying costs**

The volume of maintenance activities are related to the length of network and the number of AGIs. The chart below shows that in 2005/06 Wales & West has a higher proportion of 300 mm diameter (and smaller diameter) pipelines than the average GDN but a smaller proportion of large diameter pipelines, and against this criteria should have unit costs below average. In 2005/06 Wales & West had 331 PRSs (including NTS offtakes).

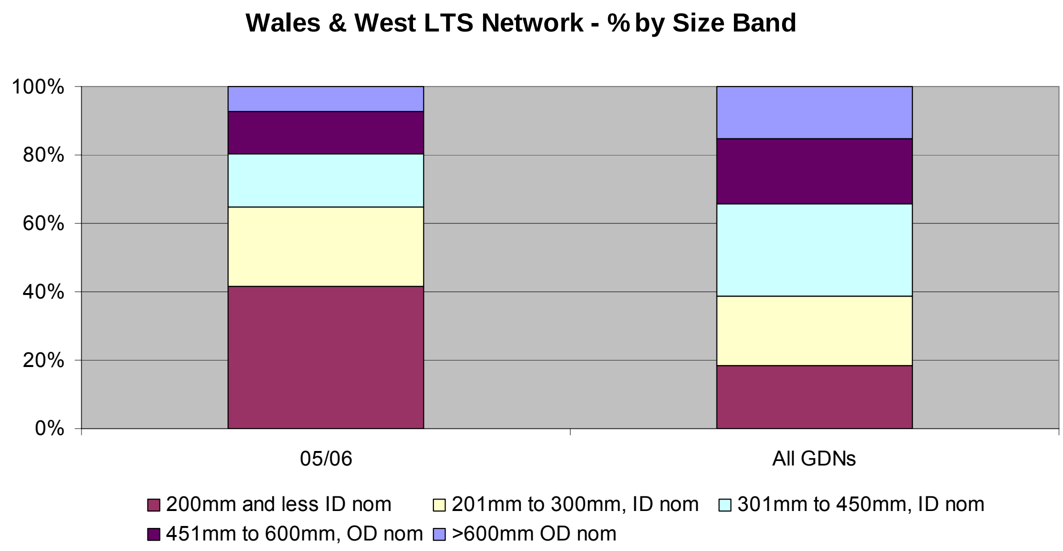


*Figure 6-5*

The following figure shows that Wales & West's forecast costs show little change over the period to 2012/13.

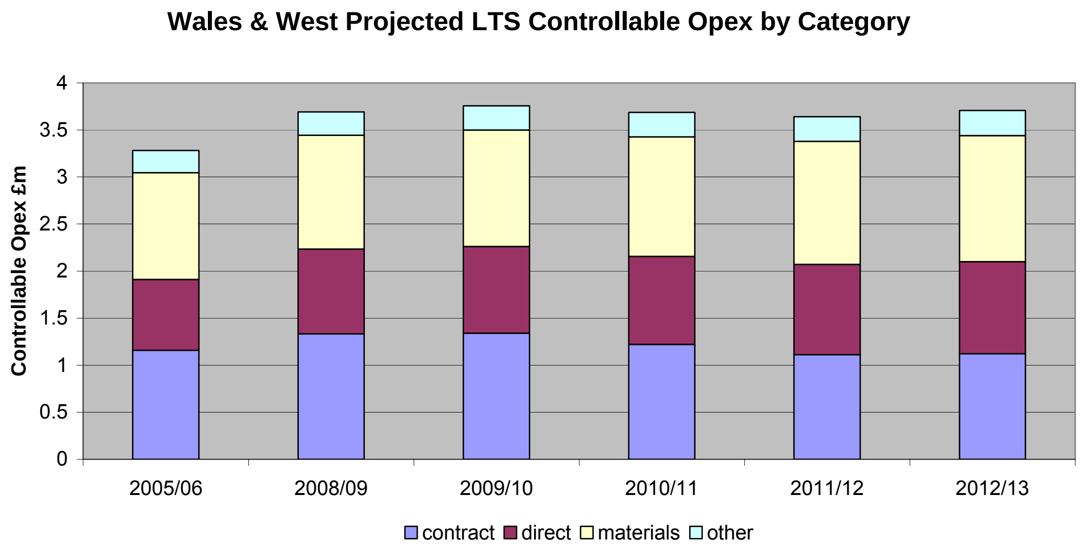


*Figure 6-6*

**Bottom-up analysis**

Some 1005km (42% of the Network's LTS pipelines) are of diameters 200mm and below (see chart below). In the main, these pipelines are non-piggable (ie not capable of internal On-Line Inspection (OLI)) due to their diameter. Other reasons why internal OLI cannot be used is because of design, spurs into AGIs and gas operating constraints.

In total 835km (35%) of Wales & West pipelines are non-piggable.

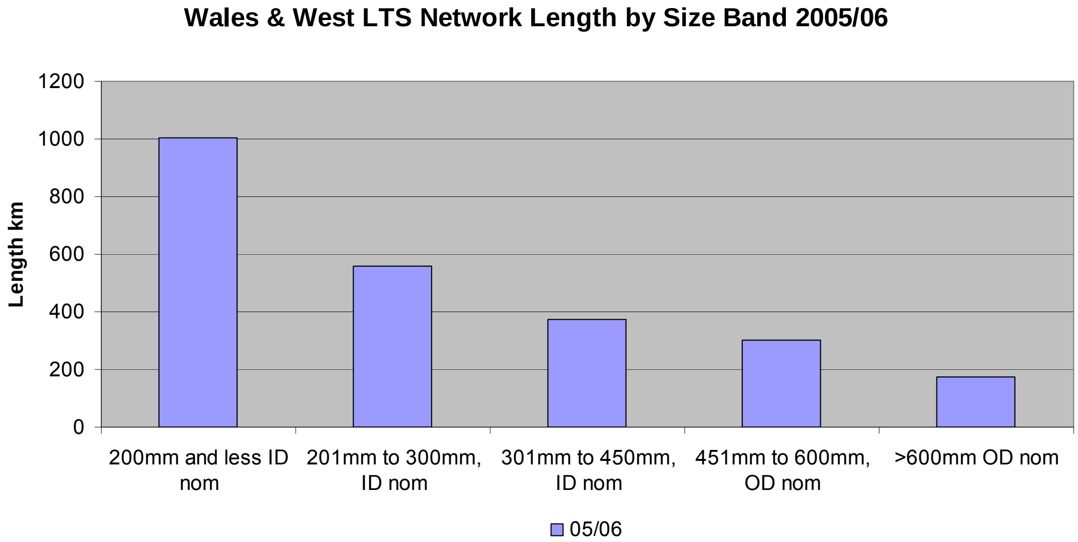


***Figure 6-7***

In 2005/6, the average GDN carried out five OLI runs.

Whilst some pipeline maintenance costs (eg OLI runs, repair costs) are diameter related, other costs (eg TD1 surveys, marker post maintenance) are largely independent of pipeline diameter, and therefore our proposals are developed assuming the average pipeline diameter mix across all GDNs. Also, as discussed below, the majority of LTS maintenance costs relate to PRS assets.

The benchmark maintenance costs were initially assessed by consideration of the replacement asset value of the LTS pipeline network to derive an indicative maintenance cost.

The total replacement cost of all 8 GDN LTS networks was estimated based on notional average unit costs (£0.6m/km for pipelines and £2m per PRS). These costs have been derived using the LTS pipeline unit costs reported in our Capex reports Appendix 6. The PRS cost is an average cost across LTS PRSs and NTS offtakes, with LTS PRSs estimated to comprise two thirds of the relevant total asset value and therefore of the associated annual maintenance cost and NTS offtakes one third.

Applying our estimated maintenance cost percentages for pipelines and PRSs, gives an annual total maintenance cost across all GDN of £20m per annum, equating approximately to the total LTS maintenance cost across all GDNs.

| 2005/06 | All GDNs | All GDNs (Notional replacement values) | Assumed annual maintenance cost as % of asset value (All GDNs) | Estimated LTS maintenance cost per year (All GDNs) |
|---|---|---|---|---|
| Pipeline assets | 11712km | £7000m | 0.05% | £3.5m |
| PRS assets | 1656 PRSs | £3300m | 0.50% | £16.5m |
| Total | | £10300m | | £20.0m |
| No. of PRSs | | | | 1656 |
| Cost per PRS | | | | £12000/PRS |

***Table 6-6***

Allocating this to GDNs by number of PRSs gives a cost for Wales & West with 331 PRSs of £4.0m pa.

The above approach is only indicative since it uses no information on maintenance activities at the local level or individual years but does provide a general guide to further analysis, particularly in comparative analysis between GDNs.

Wales & West's BPQ submission (normalised) for LTS maintenance amounts to £3.3m in 2005/06 compared to the figure derived above of £4.0m.

We have analysed the relationship between LTS maintenance costs and length of network and between LTS maintenance costs and number of PRSs. Our view is that the dominant cost driver is the number of PRSs.

<u>Comparison with NTS costs</u>

The NTS transports gas over greater distances than the LTS and therefore for the NTS length is a more appropriate cost driver than the number of AGIs.

The TPA report[10] prepared for the transmission price control review concluded that the efficient level of maintenance costs for the NTS was £552/km (2004/05 prices - £566/km at 2005/06 prices).

The NTS has 6877km of pipeline and 278 AGIs/PRSs (or 1 AGI per 25km). The total length of the LTS across all GDNs 11712km and includes 1656 PRSs (or 1 PRS per 7km), and the BPQ submissions amount to £20m across all GDNs which gives a unit cost of £1708/km. This is approximately three times the unit costs for the NTS shown above.

However, we do not believe that the unit cost per km measure is an appropriate measure for comparing the maintenance cost of the NTS and LTS networks. This is because AGIs/PRSs are 3.6 times more frequent per km on the LTS than are AGIs on the NTS, and AGIs/PRSs consume the majority of maintenance expenditure. Also, some higher costs are incurred with the smaller lengths of pipeline generally in the LTS networks. These smaller lengths increase total setup costs for some activities such as pigging.

We have therefore used the information in Table 6-6 to determine costs which can be compared to NTS costs.

The assumption from Table 6-6 is that the maintenance costs associated with the pipelines themselves account for 18% of LTS maintenance costs and that 82% of LTS maintenance costs are associated with AGIs/PRSs. Evidence from GDNs suggests that the proportion of cost associated with pipelines is around 20% of costs.

We have applied the costs shown in Table 6-6 pro-rata to length and number of AGIs respectively to the NTS as shown in the following table.

10 Transmission Price Control Review 2007-2011, Efficiency Study and Forecast Opex, 29th September 2006, TPA Solutions, published by Ofgem

| Maintenance cost pa | LTS | NTS |
|---|---|---|
| Pipelines | 11712 | 6877 |
| AGIs/PRSs | 1656 | 278 |
| LTS pipeline cost | £3.5m | |
| Pro rata NTS pipeline cost | | £2.1m |
| LTS AGIs/PRSs cost | £16.5m | |
| Pro rata NTS cost | | £2.8m |
| Total | £20.0m | £4.9m |

***Table 6-7***

This gives an annual maintenance cost for the NTS of £4.9m or £712 per km.

This unit cost is somewhat higher than the £566/km obtained elsewhere for the NTS but the difference could be due to the PRSs attached to the LTS being more complex in maintenance terms than the AGIs associated with the NTS, which often do not have pressure reduction equipment. We also believe that the £566/km figure does not include cathodic protection maintenance and remediation costs (about £100/km). We therefore consider that the unit cost obtained above for LTS maintenance (£12,000 per PRS) is reasonable and generally consistent with the maintenance costs for the NTS.

**Unit cost analysis**

We have examined the possible relationships between LTS maintenance costs as reported by the GDNs against a number of cost drivers and concluded that regression analysis does not give robust results.

We have therefore examined unit costs between the network expressed in terms of £ per PRS. As part of this process significant repair costs incurred were removed. There were no atypical repair costs for Wales & West in 2005/06.

The following figure shows the unit costs for 2005/06 for all GDNs.

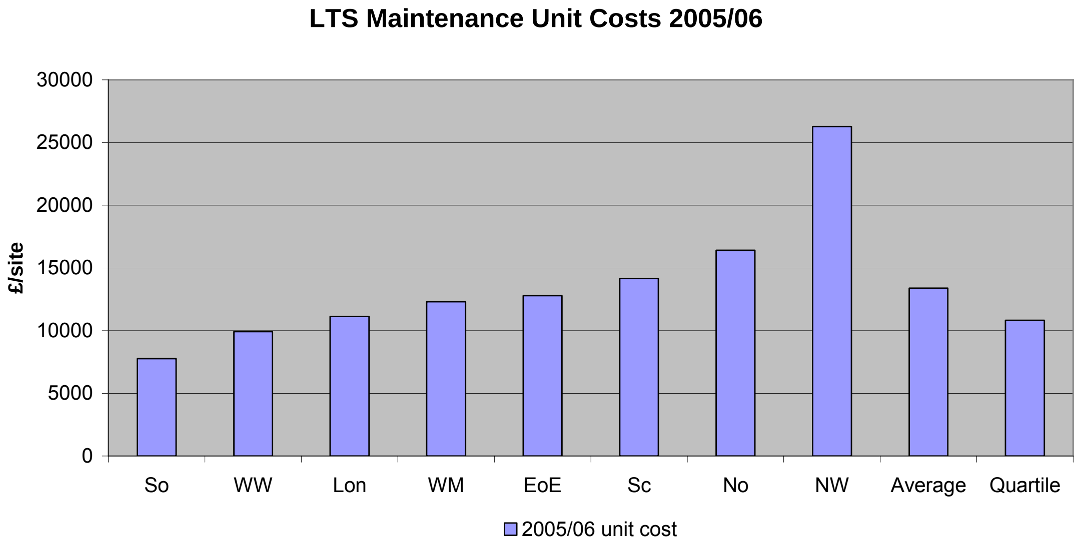


***Figure 6-8***

This chart shows that the average unit cost across all GDNs in 2005/06 was £13,400 per PRS and that Wales & West had below average unit costs. The median unit cost was £12,500 per PRS

## Benchmark costs

We have determined a benchmark unit cost of £12,000 per PRS based on the bottom-up and comparative analysis.

This benchmark value represents the average annual cost across the period, recognising that because of the pattern of lumpy items such as OLI runs the actual expenditure in some years will be higher and in some years lower than the allowances proposed.

The benchmark cost applied above does not take into account the balance of pipeline, LTS PRS and NTS offtakes assets within the asset mix of Wales & West. Using unit maintenance costs for each of these asset types from Table 6-6 (£300/km for pipelines, £7000/LTS PRS, £48000/NTS offtake), we have calculated a maintenance cost for Wales & West of £3.7m pa, compared to the benchmark cost of £4.0m pa. The benchmark cost therefore allows for the network asset mix in Wales & West.

However, across all networks the network specific costs amount to £480 per PRS, which gives an adjusted benchmark cost across all GDNs of £12480 per PRS, very close to the median unit cost from Figure 6-8.

## Specific costs

The amounts allowed for specific network costs are shown against the allowed adjustments line in the summary table.

Repair costs

Whilst there are cyclic costs in LTS maintenance activities such as OLI runs which follow a prescribed frequency, we consider that the above benchmark cost allows for such variations over a 5 year period.

However we do not considered the benchmark cost allows for the costs of atypical repairs resulting from the OLI analysis or which may otherwise be necessary. Recognising that not all OLI runs will lead to the need for excavation and/or repair, we believe that an average cost for repairs of £20,000 per OLI run is reasonable across the control period. We also recognized that the timing of repairs may be programmed for a convenient time after the OLI run is carried out. The proposed allowances have therefore been calculated on an average year basis, and individual year allowances should be considered over the 5 year period recognizing that in some years the expenditure will be higher and in some years lower than the allowances proposed. The number of OLI runs used to drive the repair cost is the average number over runs per annum over the period 2006 to 2012 derived from information provided by the GDN and shown in the table below.

| OLI runs | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Average per annum |
|---|---|---|---|---|---|---|---|---|
| No. of OLI runs | [redacted] | | | | | | | |

***Table 6-8***

### Proposed allowances

The proposed workloads and allowances are shown in the following table. A 1% per annum reduction in the benchmark costs is included to reflect an assumed level of on-going productivity improvements.

| Controllable Opex (£m) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **3.6** | **3.7** | **3.6** | **3.6** | **3.6** |
| **Normalised Adjustments** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| **Normalised Submission** | **3.6** | **3.7** | **3.6** | **3.6** | **3.6** |
| **Unit Cost Driver** | **332** | **332** | **332** | **332** | **332** |
| **Benchmark Unit Cost** | **11644** | **11527** | **11412** | **11298** | **11185** |
| Benchmark (Ex RF RPE) | 3.9 | 3.8 | 3.8 | 3.8 | 3.7 |
| Baseline (Ex RF RPE) | 3.2 | 3.2 | 3.1 | 3.1 | 3.1 |
| Gap | -0.7 | -0.7 | -0.7 | -0.7 | -0.7 |
| Convergence | -0.4 | -0.4 | -0.5 | -0.6 | -0.7 |
| Recommended (Ex RF and RPE) | 3.5 | 3.4 | 3.3 | 3.2 | 3.1 |
| Recommended (Inc RF and RPE) | 3.6 | 3.5 | 3.4 | 3.4 | 3.3 |
| Allowed Adjustments | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| **Recommended (Inc RPE)** | **3.6** | **3.6** | **3.5** | **3.4** | **3.4** |

***Table 6-9***

This table shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the workload driver over the period 2008/09 to 2012/13 and the benchmark unit costs which are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence:  The convergence adjustment provides a glide path of cost to the 2012/13 Baseline performance.
- The sum of the Benchmark performance and the convergence gives the Recommended (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommended cost (Inc RPE).

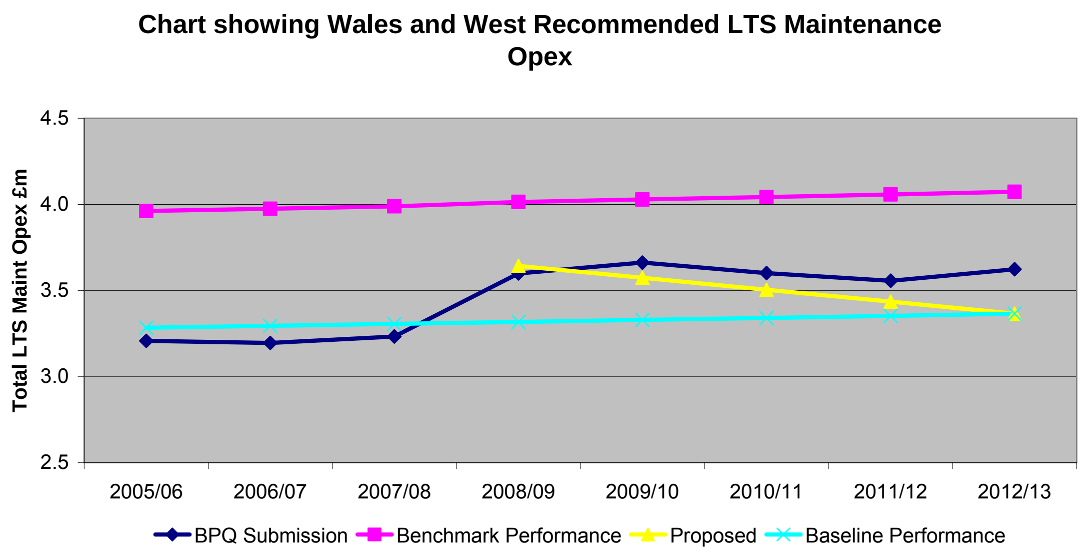


***Figure 6-9***

Note: the Benchmark and Baseline Performance lines include Adjustments

### 6.4.3.2 Storage maintenance

Wales & West operates 20 Low Pressure (LP) holders and 15 High Pressure bullet storage vessels. The following chart shows Wales & West has far less LP holders than the average GDN and that, on average, each of Wales & West's holders is larger in volume than holders across all GDNs

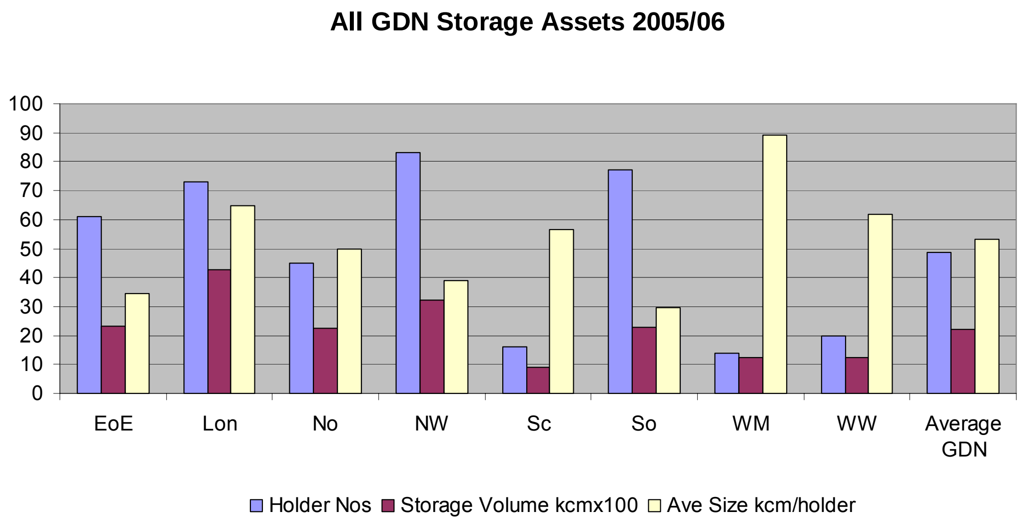


***Figure 6-10***

Major maintenance associated with High Pressure storage occurs infrequently. Work is planned to take place within the control period and expenditure is identified towards the end of this section. It has not been included in our assessment.

High Pressure Routine Maintenance costs are included as part of maintenance and repair costs. They are believed to be very small making little or no difference to the outcome of our analysis. Not all GDNs have been able to separate these costs.

Storage maintenance costs are considered under the following headings:

- Maintenance and repair
- Specific costs (removed and considered separately)
    - Painting
    - Demolition
    - Working at heights regulation

**Maintenance & Repair.**

Wales & West have proposed the maintenance and repair costs shown in the following table:

| 2005/06 prices | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| Forecast number of Holders | 20 | 20 | 20 | 20 | 20 |
| Projected costs £m | 1.0 | 0.7 | 0.8 | 0.9 | 0.9 |

***Table 6-10***

Our work has shown that regression analysis is not a suitable tool for assessing storage maintenance repair costs. We have therefore used unit cost and bottom-up analysis methods.

Based on our analysis of holder maintenance and repair costs across all the GDNs we believe that holder numbers is the most appropriate single driver of storage maintenance and repair costs.

Very little information has been provided about Routine Maintenance associated with High Pressure Storage and whilst we believe this to be relatively small we recommend that this area is reconsidered as part of the 2006 update.

**<u>Unit cost analysis</u>**

Maintenance & Repair covers:

- Routine Maintenance
- Inspections
- Gasholder Repairs e.g. holder valve repairs, guide roller repairs, booster overhaul etc.

An assessment of costs for Maintenance & Repairs across all GDNs has provided the basis for identification of an efficient cost level for these activities. We have considered how best to set a unit cost and have found that costs are not significantly affected by holder size, and have therefore chosen to use cost per holder as opposed to cost per thousand cubic meters (Thcm).

The following table shows the Maintenance and Repair costs per holder in 2005/06.

| EoE | Lon | No | NW | Sc | So | WM | WW | Average across all GDNs |
|---|---|---|---|---|---|---|---|---|
| 14262 | 11986 | 30089 | 15687 | 51688 | 22519 | 22500 | 49800 | 21267 |

***Table 6-11***

**<u>Bottom-up analysis</u>**

The GDN's reported costs differ widely and our analysis has failed to uncover any issues with cost allocations. Given the spread of data we have chosen to use bottom up analysis to identify a suitable benchmark.

We have referred to T/PM/MAINT/3 (Management Procedure for the maintenance of Low Pressure Storage Installations) and considered the various routine maintenance tasks detailed within the procedure. We have looked at the work required to undertake the necessary maintenance and developed manpower estimates for each of the tasks. In addition we have developed an estimate of the manpower required for repairs, which we believe to be relatively small. Manpower costs identified from storage FTE labour costs supplied by the GDNs have been applied to these estimates and this together with the average 2005/06 material costs per holder provide a maintenance and repair cost per holder as follows.

| | |
|---|---|
| Weekly inspection and maintenance tasks | 26m/d/yr |
| Quarterly inspection and maintenance tasks | 2m/d/yr |
| Annual inspection and maintenance tasks | 3m/d/yr |
| Bi-annual inspection and maintenance task (external consultancy fees allocated to MO) | 1m/d/yr |
| 5 Yearly inspection and maintenance tasks (little extra to annual) | |
| 10 Yearly inspection and maintenance tasks | 3m/d/yr |
| Repairs | 1m/d/yr |
| Total | 36m/d/yr @ £210/day = £7500 |
| Materials | £11,000 |
| Total | £18,500 |
| * (assumption; FTE cost - £210/day gross) | |

***Table 6-12***

** Based on average GDNs' storage costs of £49000/FTE and an estimate of 230 working days.*

We note that there could be other costs but consider that these will be small and have little effect on the results of our analysis and benchmark costs of £19000/holder.

We believe that staff utilisation can be improved particularly as monitoring systems become more prevalent and this will lead to a 1% per annum productivity improvement.

**Benchmark costs**

The total benchmark costs for Wales & West have been calculated by applying the benchmark maintenance and repair cost per holder to the number of holders for each year of the control period. The benchmark costs for Wales & West are shown in the following table.

| 2005/06 prices (excluding RPEs) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| Forecast number of Holders | 20 | 20 | 20 | 20 | 20 |
| Benchmark costs | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |

***Table 6-13***

**Specific costs**

The amounts allowed for specific costs are shown against the allowed adjustments line in the summary table.

**Gasholder Painting**

Wales & West has proposed the painting costs shown in the following table:

| 2005/06 prices | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| Storage volume (Thcm) | 955 | 955 | 955 | 955 | 955 |
| Projected costs £m | 0.4 | 0.5 | 0.6 | 0.2 | 0.2 |

***Table 6-14***

Storage volumes are based on the declared 2005/06 LP holder volume. This has been adjusted to mirror the reported available storage profile and holders demolished over the period.

Gasholder painting, which can account for more than 25% of the total maintenance costs, was considered on a national basis prior to GDN sales and some GDNs have reported that the process for prioritising work was in need of review. We believe that this may have resulted in differing volumes of work being carried out across the GDNs prior to sale and in 2005/06. All GDNs now have the basis of a painting programme in place together with a process for prioritising work for their networks. Generally they consider that gasholders will require repainting every 10 – 15 years.

Clearly the volume of work can and will vary from year to year. We have therefore, looked at the total cost of gasholder painting from 2005/06 to 2012/13 for all GDNs and the following analysis of the average annual cost against the number of holders installed gives a unit cost of £15,400 per annum per installed holder.

We believe that regression analysis provides a good analysis tool for the assessment of holder painting costs and since linear regression provides a significantly better fit to the data sets, this technique has been used in preference to logarithmic linear regression.

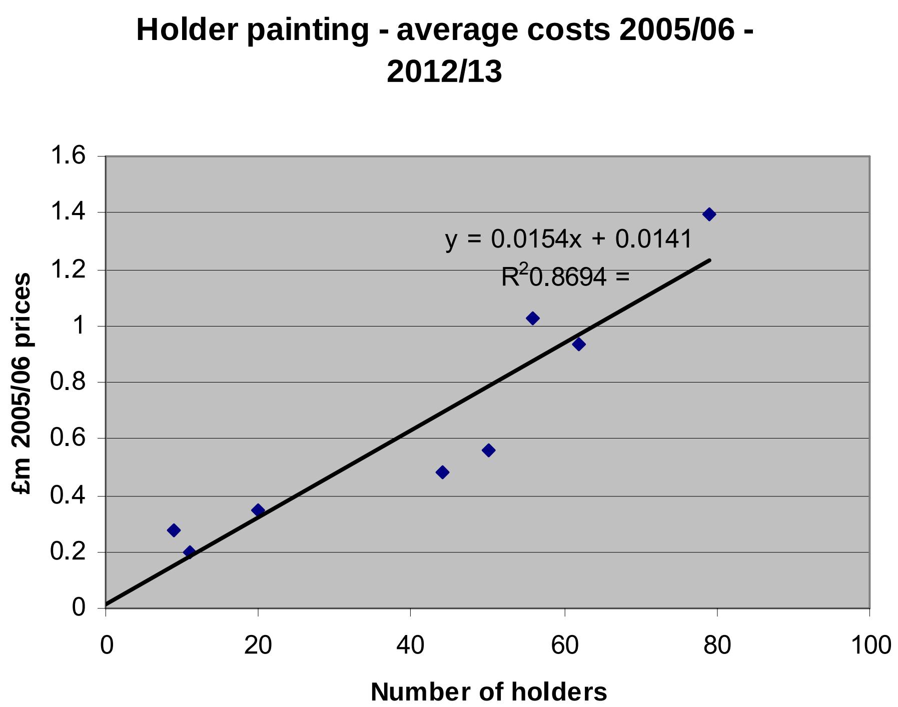


***Figure 6-11***

We consider that generally a 15 year painting cycle is adequate, but recognise that there will be occasions where adverse conditions require some holders to be painted more frequently.

Therefore, for the purpose of assessment we have used a repainting cycle of 13 years. This equates to an average unit cost of £200,000 (£15,400x13) per holder painted, equivalent to £3360 per Thcm of storage.

The following chart indicates the repainting cycle that GDNs appear to be adopting based on their projected 5 year costs and the average unit costs identified above. This suggests that Wales & West are forecasting expenditure at a rate that will repaint all their holders approximately every 9 years.

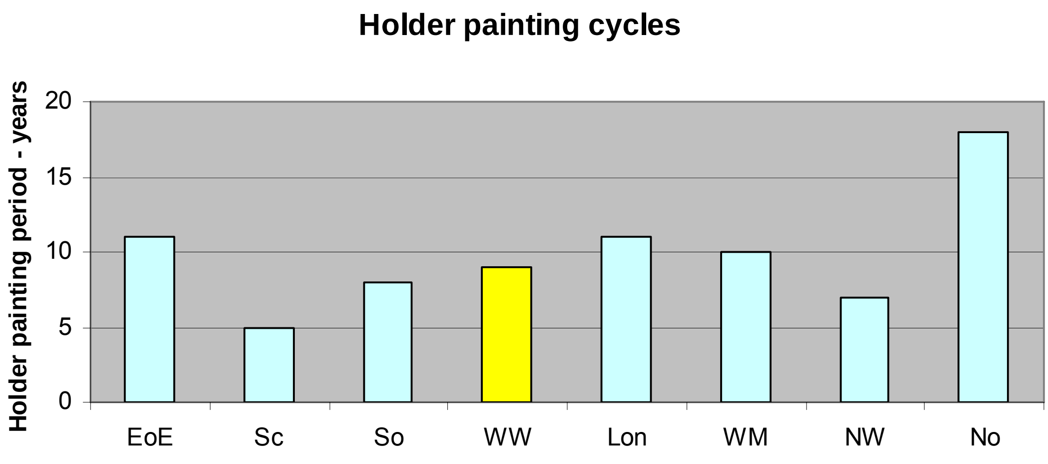


***Figure 6-12***

Whilst we have not carried out bottom-up or separate unit cost analysis, we have carried out additional regression analysis and consideration has been given to type and size of holder. It has been assumed that there will be an average mix of holders with above/below ground tanks but this has not been explicitly considered in developing our costs. We have taken account of spiral and column guided holders, which have a greater surface area to be painted. From detailed information supplied by the GDNs, we have analysed tendered and estimated costs for the painting of specific holders.

We have carried out regression analysis of these detailed painting costs for the two main types of holders. This analysis, gives a unit cost of [redacted] for spiral built holders and [redacted] for column built holders (see charts below). It can be seen from the charts that any element of fixed costs is small. Given the many differences between holders and an estimated 60/40 (spiral/column) split in holders across all GDNs we have adjusted the unit cost to [redacted] (spiral) and [redacted] (column) to give an average combined unit cost of [redacted]. This is in line with the average cost analysis above (£3360/Thcm) and we have used these adjusted unit costs for spiral and column guided holders as our benchmark unit costs.

[Chart redacted]

***Figure 6-13***

[Chart redacted]

***Figure 6-14***

From the detailed information provided by Wales & West (BPQ) we have identified a 75 / 25 (spiral / column) split in the type of holders in Wales & West's network and this gives a combined unit cost of [redacted]. These costs, together with a 13 year repainting cycle and the appropriate storage volume provide the benchmark gasholder painting costs shown in the following table. The benchmark costs are not intended to give an actual spend profile but should be viewed as a total sum of money available to be spent over the control period. Given careful condition monitoring, "patch painting" may well produce some savings against our proposed costs.

| 2005/06 prices | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| Storage volume (Thcm) | 955 | 955 | 955 | 955 | 955 |
| 13yr cycle Benchmark costs £m | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |

***Table 6-15***

**Working at Heights Regulations**

Modification to holder handrails and fall arrest systems etc. are necessary to comply with the Working at Heights Regulations. Different assumptions have been made by the GDNs regarding the classification of this expenditure as Capex or Opex. Wales & West classifies this expenditure as Opex.

| £m | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| | 0.1 | 0.1 | 0 | 0 | 0 |

***Table 6-16***

The following chart indicates that Wales & West's costs are below the average of costs across all GDNs for these works.

**Cost of handrails etc. per holder (Working at Heights Regulations)**

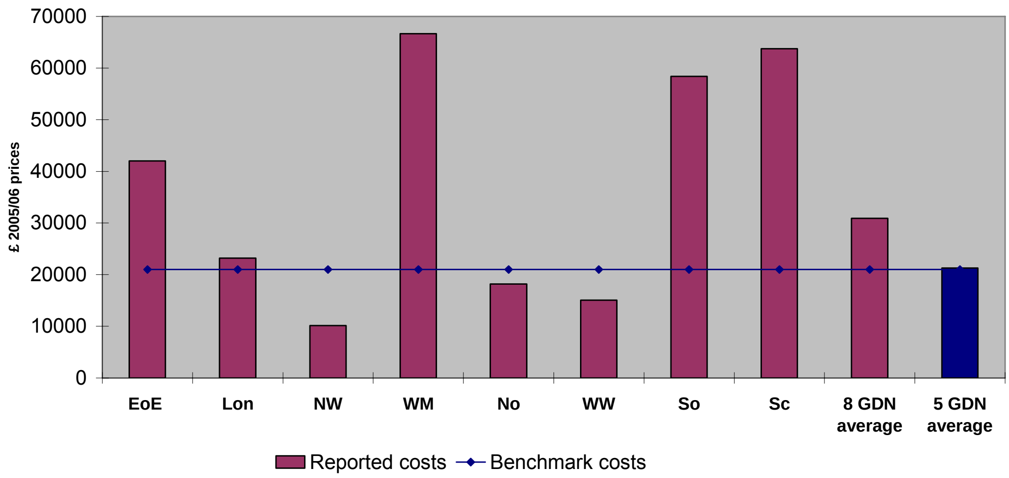


***Figure 6-15***

GDN costs for these modifications vary widely and analysis has failed to clearly identify a benchmark. Comparing GDN costs per holder or costs per Thcm of storage makes little or no difference. It is our view that costs should be directly related to holder numbers.

We believe that the outlying GDNs indicated above have significantly over estimated the costs for these works and note that they have yet to undertake any of this work. We have looked more closely at GDNs where work has been started and we believe that the overall GDN average cost is high. We have therefore applied the average cost/holder of the remaining 5 GDNs (£21000/holder) as the benchmark unit cost.

For Wales & West, the total costs for modifications to handrail and fall arrest system etc. are estimated as follows:

| 2005/06 prices (£m) | |
|---|---|
| Average No. of holders (control period) | 20 |
| Benchmark costs (No. of holders x £21,000) | 0.4 |

***Table 6-17***

Taking into account proposed expenditure by the GDN prior to 2008/09, the proposed allowance for these modifications in the control period is as follows:

| 2005/06 prices excluding RPEs | Prior to 2008/09 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|
| | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 |

***Table 6-18***

**Demolition**

Given the ever increasing value of land we agree with the assumption made by some GDNs that any holder demolition will be funded by land sales.

Wales & West have allocated expenditure associated with holder demolition to Work Management, but to ensure comparability for the purpose of this assessment, we have reallocated these costs to Storage.

Wales & West have included the following amounts for holder demolition and maintenance of decommissioned holders/sites.

| BPQ costs | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|
| | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |

***Table 6-19***

Any expenditure associated with holder demolition and included within forecasts would require exceptional justification. Wales & West have included £0.5m/yr for repairs associated with decommissioned holders and holder sites together with a further £0.8m/yr for the demolition of 2 holders per year. Whilst exceptional circumstances may exist which make it difficult to sell certain sites, we believe that every effort should be made to sell sites at the earliest opportunity. We appreciate that certain remedial maintenance/repair activities may be required prior to sale, although, wherever possible consideration should be given to selling sites with their maintenance/repair requirements. We propose the following expenditure to prepare and allow for land sales.

| BPQ costs | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|
| | 1.3 | 1.3 | 0 | 0 | 0 | 0 |

***Table 6-20***

**High Pressure Storage**

Major maintenance associated with high pressure storage bullet vessels occurs infrequently (10 – 20 year cycle). Wales & West plan to carry out painting and revalidation works at two sites and propose the following expenditure. Due to the infrequent nature of these works it has not been feasible to make comparisons with other GDNs or to carry out meaningful analysis. The expenditure has been treated as "one off costs".

| 2005/06 prices (excluding RPEs | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| £m | 0.3 | 0.6 | 0.2 | 0.0 | 0.0 |

***Table 6-21***

**Summary**

The following table summarises our proposed costs for storage maintenance.

We have assumed productivity improvements of 1% per annum.

| Controllable Opex (£m) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **1.6** | **1.6** | **1.6** | **1.1** | **1.1** |
| **Normalised Adjustments** | **-0.7** | **-1.0** | **-0.8** | **-0.2** | **-0.2** |
| **Normalised Submission** | **0.9** | **0.6** | **0.7** | **0.9** | **0.9** |
| **Unit Cost Driver** | **20** | **20** | **20** | **20** | **20** |
| **Benchmark Unit Cost** | **18436** | **18251** | **18069** | **17888** | **17709** |
| Benchmark (Ex RF RPE) | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Baseline (Ex RF RPE) | 1.0 | 1.0 | 0.9 | 0.9 | 0.9 |
| Gap | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Convergence | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 |
| Recommended (Ex RF and RPE) | 0.8 | 0.7 | 0.7 | 0.6 | 0.5 |
| Recommended (Inc RF and RPE) | 0.8 | 0.8 | 0.7 | 0.6 | 0.6 |
| Allowed Adjustments | 1.9 | 2.1 | 0.5 | 0.3 | 0.3 |
| **Recommended (Inc RPE)** | **2.8** | **2.9** | **1.2** | **0.9** | **0.9** |

***Table 6-22***

This table shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the workload driver over the period 2008/09 to 2012/13 and the benchmark unit costs which are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The GDNs are not expected to close any gap immediately. The convergence adjustment provides a glide path of cost to the Benchmark performance. The gap is reduced to 30% in 2012/13.
- The sum of the Benchmark performance and the convergence gives the Recommended (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommended cost (Inc RPE).

**Chart showing Wales and West Recommended Storage Maintenance Opex**

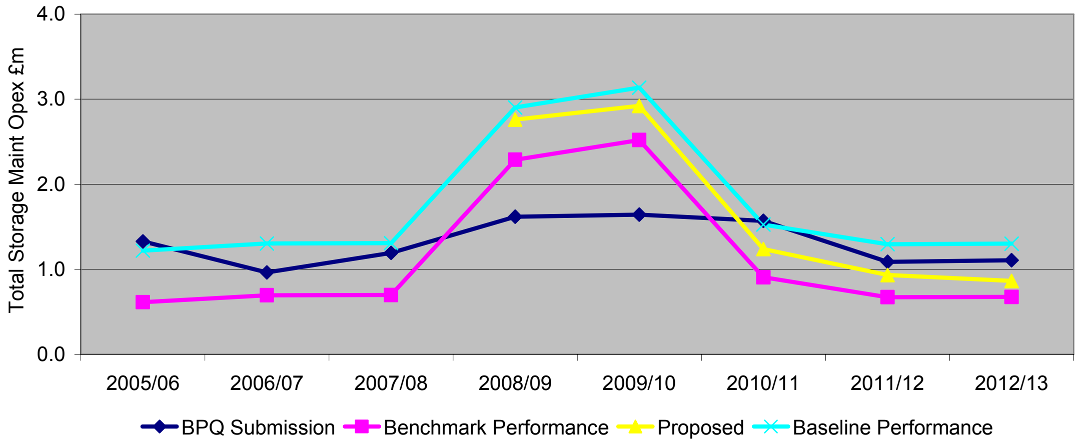


***Figure 6-16***

Note: the Benchmark and Baseline Performance lines include Adjustments

### 6.4.3.3 Maintenance other

**Company projections**

WWU Wales and West Network's projections of expenditure for the period to 2012/13 are shown in the figure below.

**Wales & West Other Maintenance Controllable Opex 2005/06 to 2012/13**

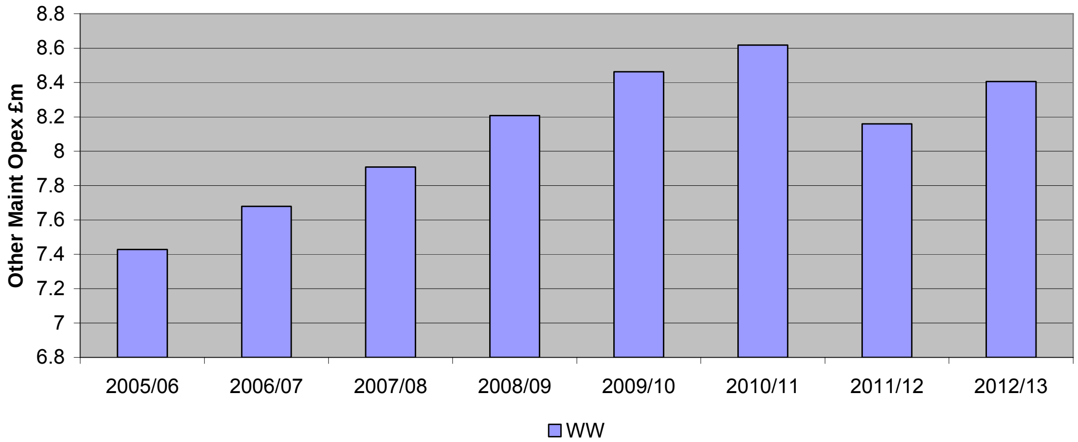


***Figure 6-17***

## Benchmark costs

As discussed earlier in this Section, we have carried out work to bring costs onto a consistent basis. Nevertheless there is no clear relationship between these costs and network length, throughput or other drivers.

In order to understand the wide differences in their reported costs, GDNs were requested to allocate their projected costs into the following four principal activities as defined in the BPQ Guidance Notes, these are:

- Other Leakage Control
- Distribution Mains and Services R & M
- Instrumentation R & M
- District Governors

Only two GDNs, Wales and West being one, were able to respond as requested, the remainder included other costs, which they were unable to apportion to the four categories, These additional costs included, Staff Costs, Non Staff Costs, Transport, and `Other`. However, by allocating these additional costs in proportion to the costs returned for the four principal activities by the 6 GDNs, assumed costs have been derived to enable cost analyses and comparisons to be made.

We have calculated an average split across each of these activities and also provided the range across GDNs in the table below.

| Activity | Percent of Maintenance Other Average % | Range % |
|---|---|---|
| Leakage Control | 15 | 6 - 31 |
| M & S Repairs and Maintenance | 43 | 32 - 58 |
| Instrumentation | 15 | 5 - 29 |
| District Governors | 27 | 19 - 38 |

***Table 6-23***

We therefore propose to establish benchmark costs by bottom-up analysis.

The following chart shows the reported costs for all GDNs, expressed as costs/km and the average and quartile values.

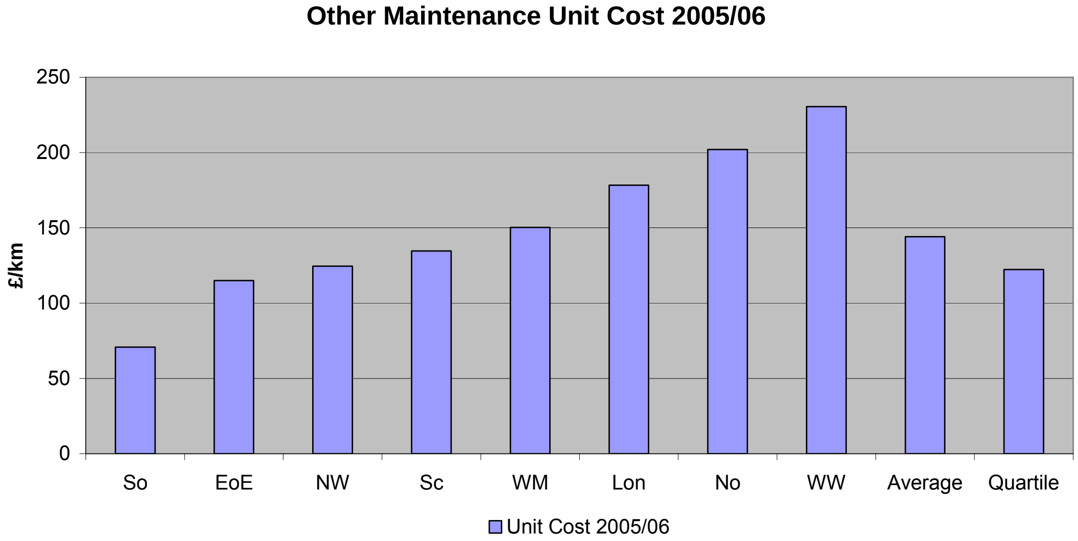


***Figure 6-18***

It would be reasonable to expect some minor economies of scale to be reflected in the costs, but for the most expensive to exceed the lowest unit cost more than threefold is not credible.

We can only surmise that there may be coding errors between these activities, and also with other activities such as Emergency and Repairs. We have explored relationships with a range of drivers which we believe could be relevant, and we can find no evidence which points to any specific factors which explains the differences.

Unit costs for Wales and West, at £231/km, are 60% above the average unit cost derived from the normalised submitted data.

#### 6.4.3.4 Bottom Up Analysis

Benchmark costs are developed for each of these activities in turn. Instrumentation and district governor costs are considered together,

**Mains and Services R & M**

What is clear from the table 6-23, is that that Distribution Mains and Service (M & S) repair and maintenance cost is the largest of the four cost elements of Maintenance Other, and in that respect, the primary driver of cost was assumed to be related to network size.

However, regression analysis has been unable to reveal a robust relationship from the GDN data points for 2005/06 or 2006/07.

In addition to network length we have reviewed other cost drivers including non-PE pipe length, which is assumed to require more maintenance than PE pipe, energy throughput, service population, and emergency repairs numbers. We did recognise a relationship with emergency repairs, which infers that these costs are driven by the general condition of the pipe network.

To assess base costs, we have assumed that mains R & M work is identified as a consequence of carrying out a repair arising from an external PRE, and are generated in about 10% of such cases. We also assume that the average number of service R & M jobs is similar to the number of mains jobs.

We assume that the cost of an average mains R & M job is similar to the cost of an average repair job. This because the type and scale of tasks involved in the repair of mains are similar whether the repair arises because of a PRE or because of a condition assessment. We have therefore assumed that the cost of an average mains R&M job is £470 and of an average service R & M job is £235 (see Table 5-2 adjusted for efficiencies arising from programmed works).

For Wales and West there were 19562 PRE related repairs in 2005/06. On the above assumptions this would give 1956 mains repairs and 1956 service repair jobs per year, and using the unit cost assumed above would give a total R&M cost of £1.38 m for 2005/06.

The above assumptions on unit costs per job are equivalent to a unit cost of £70.5 per PRE related repair.

**District Governor and Instrumentation Maintenance**

After exploring potential relationships for unit costs covering the Instrumentation and District Governor maintenance areas, it was found that combining the two types of maintenance, gave the best results, albeit still not ideal plots because of one outlier, which is WW network.

In carrying out the regression analysis, we have excluded the outlier (shown as a yellow point on the graph) because we consider that there could be costs inconsistent with our cost allocation assumptions included in that networks costs. We have been unable to identify the inconsistency.

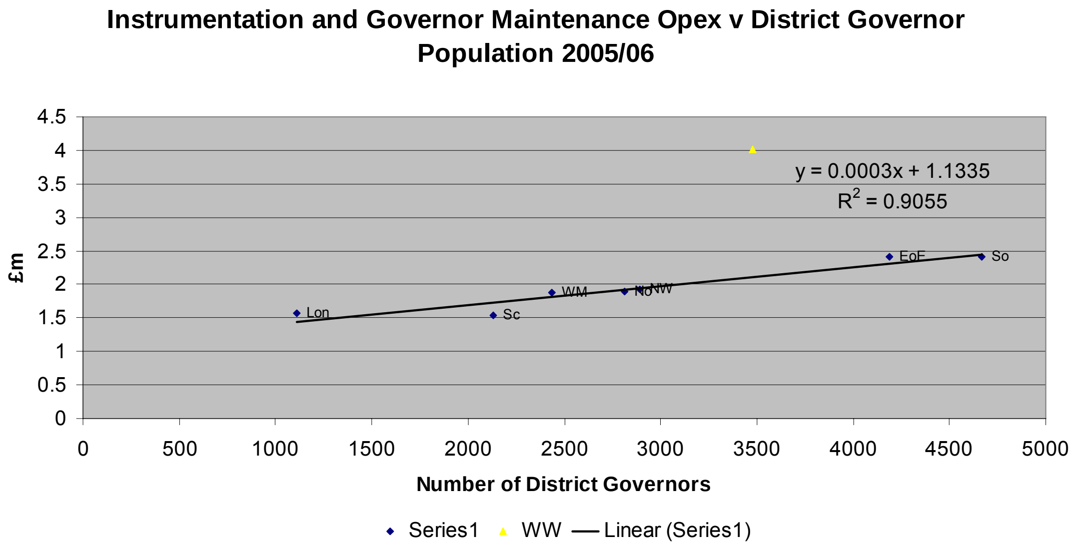


***Figure 6-19***

Using the district governor population as the driver for these costs provided the best data fit using linear regression. Because we have included only 7 points we believe it is appropriate to use the regression line as the benchmark cost line rather than upper quartile line.

This gives a unit cost of £281 per district governor for Instrumentation and Governor maintenance, plus a fixed cost of £1.1M per GDN.

### DSEAR costs

A forecast of DSEAR costs associated with Governor installations has been included as an `allowed` cost of £1.7m phased between 2007/08 and 2010/11. The costs within the review period total £1.3m, and are shown listed as `allowed adjustments` in Table 6-19.

### Other Leakage Control

This activity is in rather a different category from the remainder, in that it is almost wholly elective. A GDN can elect to spend little on this activity, in the belief that it will save money and the additional leakage related costs for shrinkage, PREs and repairs, will be more than offset by the savings in the leakage control programme.

Wales and West have stated that they do not intend to install new gas conditioning units, and most existing have been removed.

There was a wide range of costs returned for this sub-activity, reflecting different choices by the GDNs.

The other factors to consider are that the replacement programme will reduce the length of pipe susceptible to joint and corrosion leakage and the responsibility of, where possible, reducing the volume of methane released into the natural environment.

We are also aware that we have adjusted work volumes in both emergency and repair activities in the expectation that this will drive a higher spend on preventative measures in order to achieve the reductions in work volumes that we forecast.

The range of expenditure for this activity submitted by the GDNs is from £75per km of non PE main, down to £35 per km.

For this review period, we recommend that expenditure is set based upon the lower end of the range, and propose that the rate is set at £35 per km of non-PE mains (2005/06 prices).

Although our proposals are for £35/km of expenditure, we believe that there will be operational cost savings if Wales and West made expenditures up to £75/km of non-PE main, which could be self financing.

**Summary of costs**

The above analysis has established the efficient level of cost for Maintenance Other activities. The following table shows the build up of the frontier costs that would apply in 2005/06 to Wales and West network.

| Activity | Cost Driver | Unit Cost (£) | Cost (£m) |
|---|---|---|---|
| Leakage Control | Length of non-PE main km 15397 | 35 | 0.5 |
| Mains and Services Repairs & Maintenance | No of Repairs 19562 | 70.5 | 1.4 |
| District Governors and Instrumentation | Total governors 3478 | 281 | 1.0 |
| | Fixed cost | | 1.1 |
| Total | | | 4.0 |

***Table 6-24***

We recognise that in deriving this cost we have made a number of assumptions. As a check, the proposed total expenditure in 2005/06 of £4.0m is equivalent to £124/network km compared to the average cost reported by GDNs of £144/km and Wales and West reported cost of £231/km (see Fig 6-18).

Given the divergent data which has been supplied, and upon which this report is based, we believe that our approach to setting expenditure for Maintenance Other is reasonable, and the results, in the absence of more concrete alternatives, should be used as a basis for forecasting.

We have developed our recommended costs by taking the benchmark costs for 2005/06 and projecting this cost forward, which gives the following forecast:

| Controllable Opex (£m) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **8.2** | **8.4** | **8.6** | **8.2** | **8.3** |
| **Normalised Adjustments** | **-0.2** | **-0.2** | **-0.2** | **-0.2** | **-0.1** |
| **Normalised Submission** | **8.0** | **8.3** | **8.4** | **8.0** | **8.2** |
| Benchmark (Ex RF RPE) | 3.8 | 3.7 | 3.6 | 3.6 | 3.5 |
| Baseline (Ex RF RPE) | 7.2 | 7.1 | 7.1 | 7.0 | 6.9 |
| Gap | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| Convergence | 2.6 | 2.2 | 1.8 | 1.4 | 1.0 |
| Recommended (Ex RF and RPE) | 6.4 | 5.9 | 5.5 | 5.0 | 4.5 |
| Recommended (Inc RF and RPE) | 6.4 | 6.1 | 5.7 | 5.3 | 4.9 |
| Allowed Adjustments | 0.4 | 0.5 | 0.4 | 0.0 | 0.0 |
| **Recommended (Inc RPE)** | **6.8** | **6.6** | **6.1** | **5.3** | **4.9** |

***Table 6-25***

This table shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the workload driver over the period 2008/09 to 2012/13 and the benchmark unit costs which are multiplied to give the Benchmark performance. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The GDNs are not expected to close any gap immediately. The convergence adjustment provides a glide path of cost to the Benchmark performance. The gap is reduced to 30% in 2012/13.
- The sum of the Benchmark performance and the convergence gives the Recommended (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommended cost (Inc RPE).

The comparison between the normalised BPQ forecast, the target and recommended expenditure is shown in the following figure:

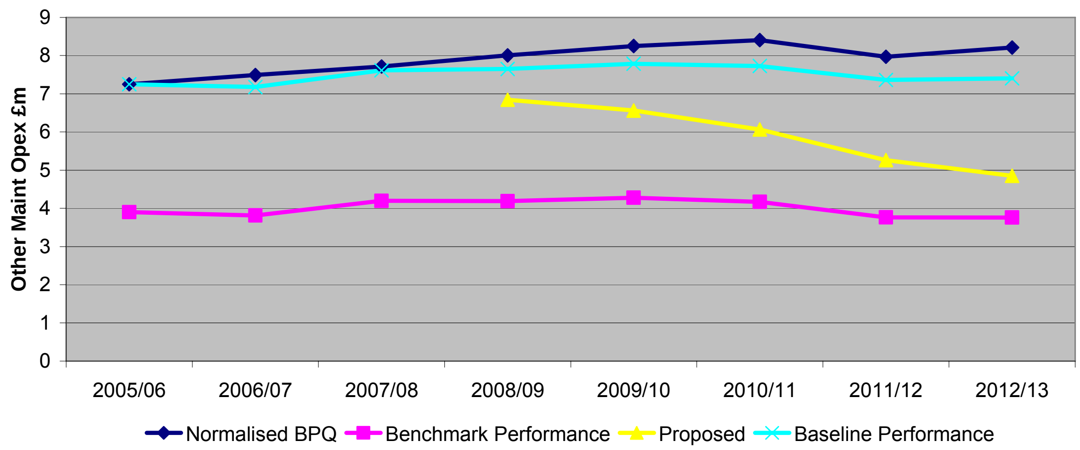


***Figure 6-20***

Note: the Benchmark and Baseline Performance lines include Adjustments

## 6.4.4 REAL PRICE INCREASES

Section 2.7 sets out the approach to real price effects proposed by PB Power.

In addition to any efficiency adjustments, the Network costs have been normalised by adjustments to remove the GDN real price effects and the PB Power real price effect assumptions have subsequently been added in deriving the proposed allowances.

## 6.4.5 RECOMMENDATIONS

Table 6-1 shows the build-up of the recommended costs for the price control period (2008/09 to 2012/13) for Maintenance.

# 7 OTHER DIRECT ACTIVITIES

## 7.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 2.5 | 2.5 | 2.6 | 2.6 | 2.8 | **13.0** |
| **Normalisation Adjustments** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | **0.3** |
| **Normalised BPQ** | 2.5 | 2.6 | 2.6 | 2.7 | 2.8 | **13.2** |
| **Adjustments** | -0.6 | -0.7 | -0.8 | -0.9 | -1.1 | **-4.1** |
| **Proposed** | **1.9** | **1.9** | **1.8** | **1.8** | **1.7** | **9.2** |

***Table 7-1***

## 7.2 POLICIES & PROCEDURES

### 7.2.1 INTRODUCTION

WWU Network has a clear route of Governance by which policies and procedures are formed, approved, and implemented. The Asset Compliance Manager (ACM) is the holder of engineering and asset management policies. The ACM formulates the programme of required policy changes, and tests on-going compliance with policies. The programme of policy changes is reviewed monthly by the Engineering Safety Executive Committee. Major policy changes are subject to the WWU Executive Team approval. Appendix 1 reviews the Financial and Technical framework under which WWU operates, the structure they utilise to manage their assets effectively and the key policies they adopt to ensure they meet their statutory and licence obligations and other regulatory requirements. .

The main areas covered by Other Direct Activities are:

- Tools and Consumables
- Odorant
- Leakage control surveys

Governance of policies and procedures for these activities must support the safe and efficient operation of plant and safe and efficient operational practice by Network staff, and service providers.

### 7.2.2 SCOPE OF POLICES AND PROCEDURES

At the point of sale, WWU inherited a satisfactory and complete suite of policies and procedures from NGG. Most of these policies and procedures remain in use, with minor editing to acknowledge the ownership change. We have found no evidence that policies and procedures have either been abandoned or relaxed in a significant way, leading to our conclusion that, from the evidence provided in BPQ responses, the scope of policies and procedures in use, including those relevant to Other Direct Activities, continue to be both satisfactory, and complete.

Appendix 1 reviews the financial and technical framework under which WWU operates, the structure they utilise to manage their assets effectively and the key policies they adopt to ensure they meet their statutory and licence obligations and other regulatory requirements.

### 7.2.3 REVIEW AND UPDATE PROCESS

WWU has a Policy Framework Review Panel which is formed to consider changes to the Policies and Procedures, prompted by changes in external Legislation, other external drivers such as Ofgem requirements, changes/updates in IGEM documents, or identified internal Network requirements.

The Panel may consist of WWU personnel, Service Provider personnel and External Specialists and/or Consultants. The Panel will manage the production of draft documents, to be reviewed by a peer group, before being submitted to the Gas Network Special Engineering Committee (GNSEC), for approval and/or implementation. Governance responsibility for all documents is held by WWU.

When new documents are approved, briefings and/or detailed training are given to those affected.

### 7.2.4 EFFICIENCY AND PRODUCTIVITY

We have not carried out detailed audits of the degree of compliance within the Network, to the stated Policies and Procedures. However, within the Other Direct Activities category, we can say, that from the evidence offered within the BPQ responses, there are no indications that they are not being followed. There is no evidence of systemic failures of equipment or practice, which could indicate lack of compliance. Similarly, within safety related statistics, such as incidents or lost time accidents, there is not evidence of unsafe practices being employed, which could be used as an indicator of the lack of compliance with documented Policies and Procedures..

We recommend that the current approach to policies and procedures is viewed as efficient and provides a satisfactory basis for forecast projections.

## 7.3 HISTORICAL PERFORMANCE

### 7.3.1 INTRODUCTION

We would expect the historical performance of Other Direct Activities to be represented by a combination of historical management, cost and performance information for these activities. This historical performance data would be helpful in developing trends of workload, costs, and unit costs, which could be then used as comparisons year to year, and also to make comparisons with other GDNs' performance.

However, in the years preceding 2005/06, Transco and latterly National Grid undertook a number of organisational restructures. During these periods, changes occurred in the way that costs were allocated across Networks and activities. Robust inter-year, and inter-Network comparisons on costs prior to 2005/06 are therefore not possible.

We have used cost data only for the years 2005/06 and 2006/07 to form historical trends.

### 7.3.2 DEFINITION OF ACTIVITY

The main areas covered by Other Direct Activities are:

- Tools and Consumables – including repair, maintenance and purchase of small tools and equipment plus consumables not specific to individual jobs
- Odorant – the provision of odorised gas from NTS offtakes
- Leakage control surveys

### 7.3.3 ESTABLISH UNDERLYING COSTS

The following costs have been included within Other Direct Activities:

- Materials
- Miscellaneous Expenditure
- Net Staff Costs (including Agency Costs)
- New Service Agreements
- Professional and Consultancy Fees
- Subcontractors

## Cost normalisation

Section 2.5.1 gives details of the generic normalisation adjustments which have been carried out. For Other Direct Activities, the principal normalisation adjustments are outlined below.

- **Cost transfer** – there are no cost transfers in the Other Direct Activities category.
- **GDN reallocation** – the outcome of reallocation process in which WWU identified the changes to the allocation of costs to reflect our proposed allocation of sub-activities11.
- **Accounting adjustments** – which have been provided by Ofgem
- **Pensions adjustments** – these adjustments are the net adjustments between WWU's reported pension costs and the standard pension costs used by PB Power
- **Removed costs** – there are no removed costs in the Other Direct Activities category.

The detail of the adjustments to the BPQ costs submitted by WWU for Wales & West network, is given in the following table.

| Normalisation Adjustments | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Cost transfer** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **GDN reallocation** | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.5 |
| **Ofgem Accounting Adjustments** | -0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -0.5 |
| **Pension Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Removed costs** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **-0.4** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** | **-0.1** |

***Table 7-2***

In their initial BPQ responses, only 6 networks reported costs in the range of categories identified for Other Direct Activities. In the case of the other 2 networks, the equivalent costs had been allocated to the other Opex activity areas. Responses to Supplementary Questions, which resulted in reallocation of costs across all Opex activities, have enabled comparable data for all 8 networks to be compiled.

The cost reallocation involves the transfer of leakage control survey costs from Other Maintenance for consistency purposes.

The 2005/06 and 2006/07 normalised BPQ data, adjusted for regional factors for all GDNs is shown in Table 7-3 below:

| Controllable Other Direct Activities Opex adjusted for regional factors (£m) | 2005/06 | 2006/07 |
|---|---|---|
| East of England | 3.4 | 2.6 |
| London | 1.3 | 1.4 |
| Northern | 4.4 | 1.5 |
| North West | 0.0 | 1.4 |
| Scotland | 1.1 | 1.1 |
| Southern | 3.1 | 3.1 |
| West Midlands | 1.2 | 1.2 |
| Wales and West | 4.2 | 2.0 |

***Table 7-3***

The significant reduction between the two years for Wales & West reflects a fall in forecast contractor and material charges and specific wayleave charges of £0.7m in 2005/06.

[11] Full details of the GDN reallocation are given in Appendix 6

### 7.3.4 PROPOSE EFFICIENT LEVEL OF COSTS

Section 2 sets out the approach we use to set frontier costs. The following techniques are used:

- Bottom-up analysis.
- Regression analysis
- Unit cost analysis

To use these techniques we need to establish a cost driver or explanatory variable.

There are a number of potential drivers for the components of Other Direct activities, all of which are related in some way to the size or scale of the network operation. The two key factors which have been examined are total network length (distribution above and below 7 bar plus LTS) and network throughput.

Bottom-up analysis is not used for the assessment of Other Direct activities due to the diverse nature of the activities involved.

As discussed in Section 2, the starting point for setting the target benchmark is an Ordinary Least Squares (OLS) regression on the eight data points, one for each GDN, applicable in the base year (2005/06). The regression calculation determines a relationship between the costs and the workload driver. The regression line is shown in black on the graphs.

A number of regression options have been explored for Other Direct Opex, and we consider that logarithmic linear regression provides the best fit to the data set.

As discussed in Section 2 we have then adjusted the regression line to give the upper quartile regression line which is the target which all under performing GDNs should move towards. This is shown in pink on the charts.

High performing networks will be expected to continue to improve their performance over the period to 2012/13. The resulting target costs for 2012/13 are shown in yellow on the charts.

Most networks have reported substantial changes between 2005/06 Other Direct Activity costs and their forecast for 2006/07, in many cases related to transitional effects following the network sale process. We have therefore examined the costs for both years to establish the most suitable data set to use for our base year analysis.

The regressions for 2005/06 Other Direct Activity expenditure and for the 2006/07 forecast expenditure have been investigated using total network length and separately throughput as explanatory variables. This analysis has shown that total network length provides a better basis for comparison between networks. In addition, the 2006/07 GDN expenditure forecasts when compared against total network length on a logarithmic linear basis provide a robust distribution with a good fit, on which to identify frontier and upper quartile performance, as demonstrated in Figure 7-1. Wales & West's performance is 6$^{th}$ best after allowing for regional factors.

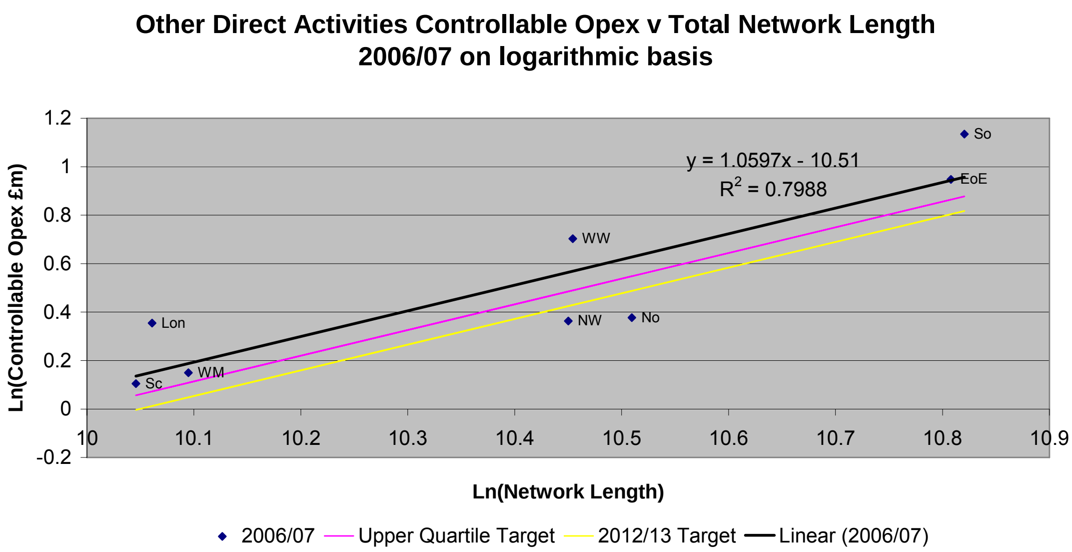


***Figure 7-1.***

This relationship between network length and cost shown on the graph is used to determine our cost projections for future years with network length as the cost driver.

We consider that the regression fit is sufficiently good not to carry out a separate unit cost analysis.

# 7.4 FORECAST

## 7.4.1 INTRODUCTION

The conclusions of the policy review are that WWU has adopted and continued to implement the inherited policies and procedures, and has in place a robust governance regime to review these, and to propose new policies and procedures, to meet external and internal drivers. The Network's approach is viewed as efficient and providing a satisfactory basis for forecast projections.

The examination of historic data suggests that even with the reduction in 2006/07, Wales & West network is some way from achieving efficient performance in the area of Other Direct Activities, when adjusted for regional factors.

The general factors affecting forecast costs are the inflationary pressures on Contractor, Staff and Material costs. WWU has used their own assumptions on these to prepare their company proposals.

## 7.4.2 COMPANY PROPOSALS

The key company assumptions are set out in section 2.7 of this report. The company cost trend lines for 2006/07 to 2012/13 as proposed by WWU for Wales & West, together with the other networks, are shown in Figure 7.2:

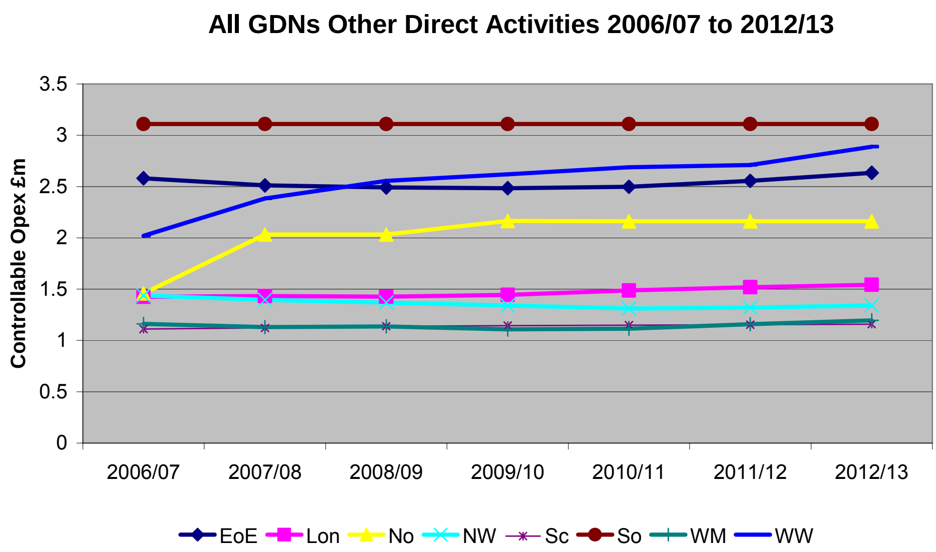


***Figure 7-2***

### 7.4.3 PROPOSED PROJECTIONS

The regression analysis based on 2006/07 forecast costs and network length, the results of which are represented in Figure 7-1, identifies the upper quartile performance level, which has been used as the benchmark to which GDNs should move toward during the period.

In order to form a view of the speed at which the GDN should be expected to move towards this benchmark performance, extrapolation of the base year performance has also been carried out for the whole period using our assumptions for productivity improvement.

WWU has not quantified a level of efficiency improvement for Other Direct Activities. However, we are of the opinion that there is scope for improvement driven by optimised management of operations and contractual arrangements across the range of activities. We have therefore assumed and applied a 1% year on year improvement in productivity for the Other Direct Activities area.

Figure 7-3 shows Wales & West's expenditure projections for Other Direct Activities over the period 2005/06 to 2012/13. Wales & West's baseline performance, based on 2006/07, exceeds the benchmark target over the period of the forecast. Our expenditure projection moves toward the benchmark over the period as described in section 7.4.5.

### 7.4.4 SPECIFIC COST AREAS

There are no specific high cost `spikes` in expenditure in this area of activity during the period 2006/07 to 2012/13.

### 7.4.5 REAL PRICE INCREASES

Section 2.7 sets out the approach to real price effects proposed by PB Power.

In addition to any efficiency adjustments, the Network costs have been normalised by adjustments to remove the GDN real price effects and the PB Power real price effects have subsequently been added in deriving the proposed allowances.

The following table sets out the principal results of the analysis:

| Controllable Opex (£m) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|
| **GDN BPQ Submission** | **2.5** | **2.5** | **2.6** | **2.6** | **2.8** |
| **Normalised Adjustments** | **0.1** | **0.1** | **0.1** | **0.1** | **0.1** |
| **Normalised Submission** | **2.5** | **2.6** | **2.6** | **2.7** | **2.8** |
| **Regression Driver km** | **34814** | **34900** | **34981** | **35047** | **35118** |
| Benchmark (Ex RF RPE) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| Baseline (Ex RF RPE) | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 |
| Gap | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Convergence | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 |
| Recommended (Ex RF and RPE) | 1.9 | 1.8 | 1.8 | 1.7 | 1.7 |
| Recommended (Inc RF and RPE) | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 |
| Allowed Adjustments | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Recommended (Inc RPE)** | **1.9** | **1.9** | **1.8** | **1.8** | **1.7** |

***Table 7-4***

This table shows the costs reported by the GDN in their BPQ submission and these costs adjusted by our normalisation process.

It then shows the build-up of our recommended costs as follows:

- The values of the regression driver over the period 2008/09 to 2012/13 and the benchmark performance from the analysis. The Benchmark unit costs include PB Power's expected productivity improvements.
- Baseline performance: This is the GDN's BPQ reported performance in the base year tracked forward to 2012/13 taking account of PB Power's expected productivity improvements.
- The Gap, which is the difference between the Baseline performance and the Benchmark performance.
- Convergence: The GDNs are not expected to close any gap immediately. The convergence adjustment provides a glide path of cost to the Benchmark performance. The gap is reduced to 30% in 2012/13.
- The sum of the Benchmark performance and the convergence gives the Recommend (Ex RF and RPE) cost.
- These costs are then adjusted for our Regional Factors (RF) and our Real Price Effects (RPE)
- The allowed adjustments for specific cost areas are then added to give the Recommend cost (Inc RPE).

The comparison between the normalised BPQ forecast, the target and recommended expenditure is shown in the following figure:

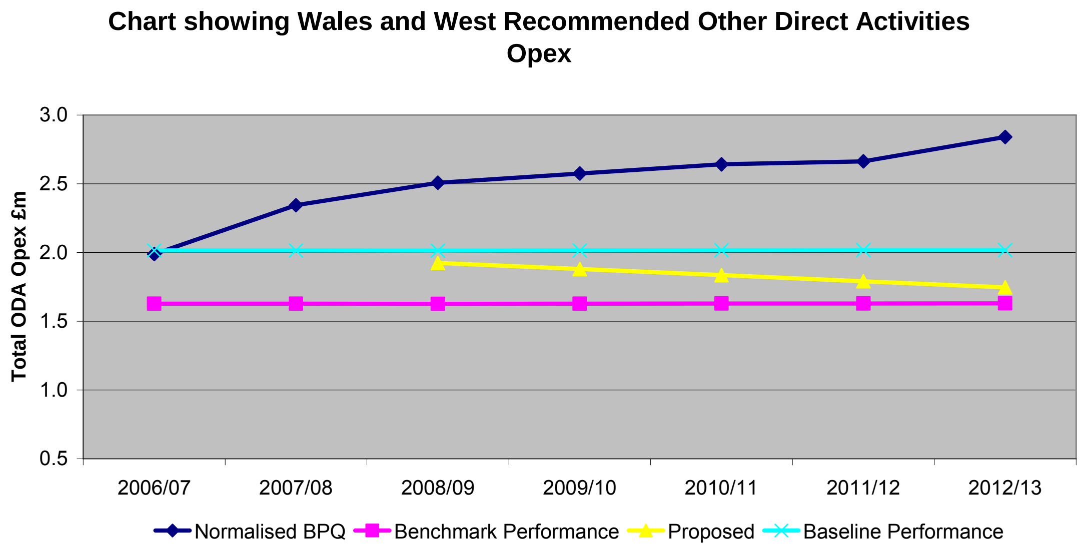


***Figure 7-3***

### 7.4.6 <u>RECOMMENDATIONS</u>

The recommended final allowances for the review period are summarised in Table 7-1 at the start of this Section.

# 8 SHRINKAGE

## 8.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Normalisation Adjustments** | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | **56.5** |
| **Normalised BPQ** | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | **56.5** |
| **Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Proposed** | **11.3** | **11.3** | **11.3** | **11.3** | **11.3** | **56.5** |

***Table 8-1***

The normalisation adjustments refer to the transfer of Shrinkage data from work management to a separate category.

## 8.2 POLICIES & PROCEDURES

Analysis work has been undertaken to understand and comment upon the shrinkage factor and associated components for the Wales & West network.

Shrinkage comprises gas lost due to leakage, own use gas and that lost due to theft. The combined total is divided by gas throughput to obtain the shrinkage factor, which is calculated annually for each gas year commencing October 1st. Table 8.2 shows the forecast values for the period 2005/06 to 2012/13..

| Factor | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|---|
| Leakage factor (%) | 0.689 | 0.690 | 0.668 | 0.658 | 0.649 | 0.639 | 0.630 | 0.620 |
| Own Use factor (%) | 0.034 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 |
| Theft (%) | 0.021 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 | 0.020 |
| Shrinkage factor (%) | 0.744 | 0.745 | 0.723 | 0.713 | 0.704 | 0.694 | 0.685 | 0.675 |

***Table 8-2***

Own use gas is almost exclusively for preheating and is under management control; theft is a minor component, agreed annually with shippers. The data indicates that distribution network leakage is the major component in the range of 88-95% of shrinkage, dependant upon the LDZ, over the review period and is the focus of our review.

There are a number of interactive factors that influence network shrinkage performance, specifically:

- The Network's policy on average system pressures. Increasing or decreasing pressures impacts leakage performance.
- Gas conditioning by injection of mono ethylene glycol (MEG) into gas supply systems to maintain the condition of CI mains lead yarn joints and minimise leakage.
- The impact of the mains replacement programme, including the methodologies adopted and their effects, on system capacity. Insertion methods may reduce transportation capacity and necessitate reinforcement or pressure increase to ensure the required minimum pressure is maintained throughout the network.
- System reinforcement activity which may lead to reductions in average pressures.
- The drive to reduce methane emissions for environmental reasons.

Network leakage is the calculated loss from the network and is modelled using the National Leakage Reduction Management Model (NLRMM). The model is based on the mains and services leakage rates determined by the 2002 National Leakage Survey.

## 8.3 HISTORICAL PERFORMANCE

Leakage rates for LP systems, MP systems and above ground installations are calculated based on variables such as:

- Pipe materials
- MEG saturation levels
- Average system pressures
- Customer numbers
- An allowance for gas lost due to interference damage.

Within the model there is no recognition of any relationship between leakage and public reported escapes as modelling has failed to establish any such linkage.

Average system pressure (ASP) is calculated using standard Network analysis tools and the process is similar for all GDNs. Fig 8.1 shows the ASPs for all networks.

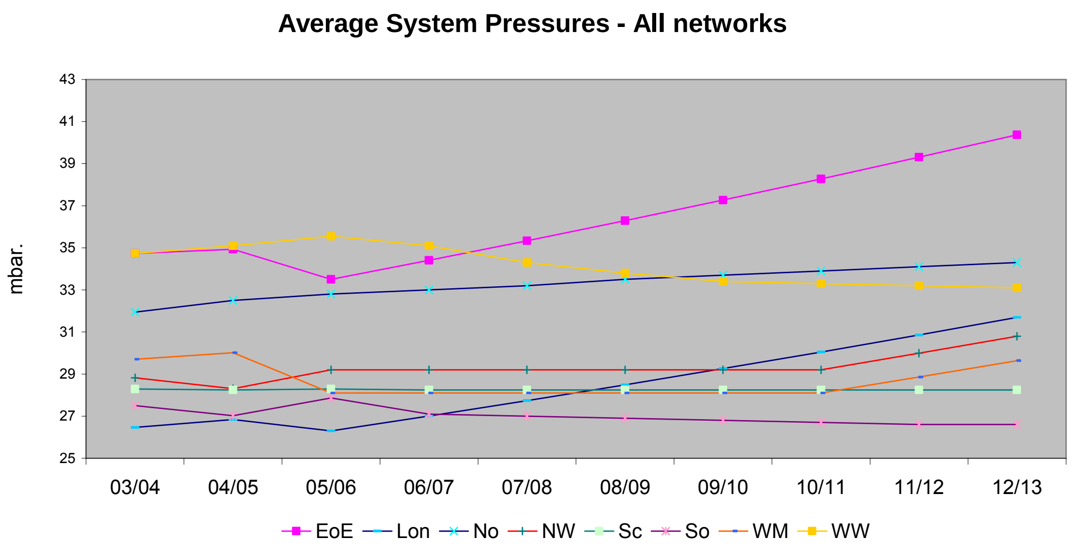


***Figure 8-1***

## 8.4 FORECAST

### 8.4.1 INTRODUCTION

It is to be expected that annual reductions in leakage should come as a direct result of the replacement of older, mainly ferrous mains with PE in distribution networks. Generally, the PE mains leakage rate is much lower rate than other materials, particularly cast Iron. For Wales & West, using supplied data, system leakage over the review period is forecast to reduce for both MP and LP systems combined. There is an increasing proportion of PE mains over the period, due to mains replacement, and a decrease of 0.7mbar in the average system pressure. The improved system integrity due to increasing levels of PE and the reduction in ASP contribute to a downward trend in gas lost as leakage.

Fig 8.2 shows Wales & West's trends in gas lost due to leakage (GWh), average system pressures and the proportion of PE mains in the distribution system.

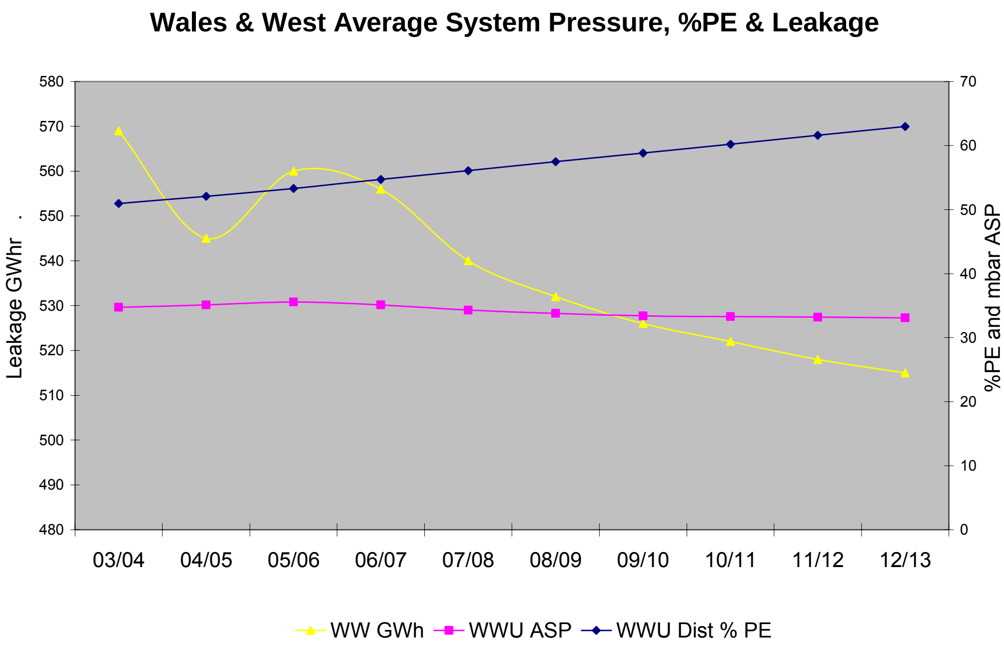


***Figure 8-2***

Historically, the maximum operating pressures (MOP) of the large LP networks in the Wales LDZ have been elevated to 65 - 70 mbar which is significantly in excess of the 50 mbar level generally adopted by GDNs as the MOP for mixed materials mains networks. The pressure management systems currently in operation were installed twenty years ago and were originally designed to operate in over a range of 21 to 50 mbar. They are now both inefficient in terms of capability to minimise pressures and are obsolete. Wales and West has included £14m expenditure in their 2008/09 to 2012/13 forecasts for Other Operational Capex to replace and upgrade these systems to current design standards. This investment will result in reduced average system pressures and, therefore, leakage.

The factor used by WWU to determine OUG on the LTS has been agreed with shippers and is based on LDZ throughput. In response to a supplementary question WWU indicated that they have a review process for water bath heaters (the main demand for OUG) and a condition based replacement programme. The costs associated with this work are included in LTS Capex - PRS work less than £0.5m.

### 8.4.2 COMPANY PROPOSALS

'Wales & West's shrinkage factor forecasts for the review period range from 0.713% of throughput in 2008/09 to 0.675% in 2012/13 , as confirmed by the BPQ submission and summarised in Table 8.2.

### 8.4.3 PROPOSED PROJECTIONS

We have reviewed WWU's processes for assessing leakage performance and the leakage forecasts for the Wales & West network based on the BPQ narrative response, answers to supplementary questions and numerical analysis.

We have not identified any significant issues and are satisfied that Wales & West's forecast shrinkage levels are realistic.

## 8.5 RECOMMENDATION

We recommend that WWU's forecast for shrinkage levels for the Wales & West network are accepted.

# 9 XOSERVE

## 9.1 SUMMARY

| Controllable Opex £m (2005/06 prices) | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|
| **BPQ Submission** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Normalisation Adjustments** | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | **15.6** |
| **Normalised BPQ** | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | **15.6** |
| **Adjustments** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | **0.0** |
| **Proposed** | **3.1** | **3.1** | **3.1** | **3.1** | **3.1** | **15.6** |

***Table 9-1***

## 9.2 BACKGROUND

xoserve is a separate business which started trading on 1st May 2005 as a wholly owned subsidiary of National Grid Group. On 1st June it became multi-owned by the GDN's and National Grid UK Transmission. The shareholding is split amongst National Grid NTS (11%) and all the GDNs in proportion to the number of supply points in March 2005.

xoserve provides transactional services primarily through UK LINK, as well as IS Support and Change Management to the GDNs under an Agency Services Agreement (ASA).

The staffing of xoserve has been drawn mainly from staff transferred from the National Grid Gas business at the time of the creation of xoserve. The company has a board of six directors drawn from five owners.

xoserve claims to draw benefit from its close association with National Grid, using the main National Grid contracts where this is deemed to provide benefit to the business. A major part of this relationship is the provision of IS services via the Computer Sciences Corporation (CSC) contract which runs National Grid’s mainframe, application server, desktop, help desk and telecommunications services.

## 9.3 KEY CHALLENGES

xoserve is planning a series of significant capital development projects in the next period, including a rewrite of UK-LINK. These projects are fundamental to the successful delivery of the xoserve services which in turn are supporting the competitive gas market. Xoserve have had comprehensive studies on the feasibility and analysis of these projects. We do not challenge the need or approach to these projects.

Project based work during the next formula period will be a major influence on the activities of xoserve and its management team. They estimate 60 of their staff will be deployed on these projects. It is clear that while the systems are operating satisfactorily at present, the xoserve are concerned that this project is delivered within these timescales to eliminate potential risks associated with the performance of the current systems.

The first of these major projects will be the replacement of the technology on which the UK-Link application runs, and is planned during 2007-2008. The second and larger project is the rewrite of the UK-Link systems planned for activity 2009-2013.

## 9.4 NORMAL OPERATIONS

In addition to supporting the IS application systems such as UK-Link xoserve also provide day-to-day clerical support activities on behalf of the GDNs, primarily to Shipper companies. Whilst some of these activities are provided in-house by xoserve, others such as the M-Number bureau are sub-contracted back to National Grid.

From the information presented in the BPQ and subsequently in the visit, we believe that the current management team are actively managing the contracts with all there suppliers (including National Grid) in order to maximise delivery and minimise cost.

Whilst this situation is currently commendable we would expect to see more formal targets to reduce costs and increase performance directly introduced from the xoserve board over the longer period of the price control. We are not suggesting such targets should be more onerous than those currently being applied, rather that the targets such be set on a more formal basis.

Further, more mechanisms must be considered which encourage the xoserve team to put forward innovative options to reduce costs. An example of this evidenced in the study was minimising the number of M-number calls the operation must deal with by making information available to the appropriate audience (for example by the internet) and thus reducing the number of calls for this service. These initiatives and opportunities are more likely to be spotted from within xoserve than from the GDNs and there must be rewards to xoserve for identifying and promoting such savings.

## 9.5 ONGOING COSTS

Table 9.1 summarises the situation with WW xoserve Opex costs, which were submitted as part of the Other Direct Activities submission and have been moved into a separate category to enable consideration of other direct Opex on a comparable basis.

xoserve has until now charged depreciation on its Capex costs to the GDNs.

PB Power understands that xoserve is now proposing to recover the cost of capital expenditure from the GDNs in the year in which it is incurred. To date the GDNs have treated xoserve charges as Opex – although some (NG and WWU) have submitted elements of Capex in their forecast costs. PB Power are therefore reviewing and, where necessary, adjusting the Opex/Capex split for each DN.

NGG has submitted a significant level of xoserve Capex for its networks, with minimal Opex.

They are piloting a six sigma quality programme for the next level of improvement this programme is aimed specifically at improving the quality of the service rather than cost reduction.

xoserve has restructured itself since its establishment into Service Development, Service Operations and Planning. They do expect some efficiency to be gained as a result. They have forecast a reduction in there total headcount of from 267 in 2005/06 to 216 in 2012/13 a 19.1% reduction (18.8% if agency staff are taken into account).

There is a step change in the cost forecasts for 2006/07 compared with 2005/06 actual expenditure as xoserve state the 2005/06 figure where atypical due to the nature of the formation of the business. We believe the opportunity to review the 2006/07 actual expenditure will provide more robust basis for assessing the ongoing costs. We note that the forecast used by xoserve assumes staff costs rising by 2% compared to the 1% we have used in our review. However we note that such an adjustment would be less 0.1% of the total expenditure and therefore we have not at this stage (prior to the 2006/07 actual expenditure being available) made any adjustment.

# APPENDIX 1 FINANCIAL & ENGINEERING POLICIES

## A1.1 INTRODUCTION

This section reviews the Financial and Technical framework under which Wales and West Utilities Gas Network operates, the structure it utilises to effectively manage their assets and the key policies it adopts to ensure it meets its Statutory Licence obligations and other legislative requirements.

## A1.2 APPROACH

The key policies used by the Network have been reviewed and where appropriate comments are made on our findings.

Our analysis has been to consider key polices under the following headings:

- **Purpose** -- context of the Policy, how it fits with legal requirements and its financial impact
- **Appropriateness** -- does it deliver the required outcomes, are financial and/or technical risks adequately managed and does it fit with the Statutory and legal requirements of the Network owner/operator
- **Safety and Environment** – are the safety and environmental risks appropriately managed, and are they clearly understood and documented
- **Omissions and Improvements** – have any improvements or omissions been identified preventing achievement of the declared objectives
- **Implementation** – have any issues relating to clarity of understanding and consistency of implementation been identified

This review of Policies and Procedures does not comprise a full and comprehensive approval process designed to ensure compliance with all policy requirements and statutes which could only be achieved with a properly conducted and structured audit programme. The objective is to consider whether the high level objectives of the policy are met and that the content is appropriate for the purpose intended.

## A1.3 FINANCIAL AND TECHNICAL FRAMEWORK

Wales and West Utilities (WWU) began operations on 1 June 2005, taking over the Wales and West Network from National Grid (NG). The Network is managed using a small central Asset Management structure based in a single new office in Newport, South Wales. WWU state the role of Asset Management as assessing and specifying the minimum cost network consistent with meeting the Network statutory and licence requirements.

Other key aspects of the structure include Business Support which brings together all customer facing support activities and is also responsible for the planning, scheduling and dispatch of work.

Operations who work to the overall plan produced by Asset Management and the detailed schedules provided by Business Support. Operations are also responsible for customer service, safety and managing work effectively including the Repex programme of mains replacement via the use of EPC contract arrangements.

Finally Corporate is responsible for providing the support function activities required to operate as a stand alone network company e.g. Safety, Finance, Regulation, HR.

The Licence held by WWU under the Gas Act requires them to;

- have a network code which sets out the transportation arrangements between WWU, the NTS, other DN's and gas shippers for connection to and use of its pipeline system; and
- maintain security standards for system development. This standard stipulates that the pipeline system must be capable of meeting peak aggregate daily demand that is only likely to be exceeded (whether on one or more days) in 1 year out of 20 years

The Gas Safety (Management) Regulations 1996 require WWU to prepare a Safety Case for acceptance by the Health and Safety Executive. Compliance with their current safety case is mandatory and the WWU Gas Requirements Manual (GRM) is a reference depository of the policies and procedures they use to ensure that the Network fulfils its safety obligations, complies with their Transporter Licence and delivers the arrangements necessary to comply with their current Safety Case.

An overview of the technical and financial framework within the Network is shown in the diagram below.

### A1.3.1 TECHNICAL AND FINANCIAL FRAMEWORK

| Board Level | |
|---|---|
| Statutory, legal and regulatory requirements | |
| Financial | Technical |
| Investment Guidelines | |
| Budgeting process | Safety Case |
| Project definition, alternatives etc. | Gas Requirements Manual |
| Levels of authority | STCs |
| Monitoring & control | Policies and Procedures |
| Re-authorisation of over/underspends | Change Process & authorisation |
| Project completion | Compliance Audit |
| Post Investment Appraisals | |
| | |

**Table A1 - 1**

The key requirement of this framework is for the Board of WWU to structure and operate the business such that they comply with the statutory, legal and regulatory obligations placed upon them.

### A1.3.2 TECHNICAL POLICY FRAMEWORK

he Gas Requirements Manual (GRM) defines the policies used for the engineering of the Network assets, the protection of the public, the well being of their workforce and contractors and the protection of the environment. Many sections of the GRM are aligned with corresponding sections of the Safety Case. The GRM is the central policy reference document that governs all other SHE and Engineering documents. It summarises the high-level arrangements for key gas activities and provides links to other documents for full details in specific subject areas.

It is put forward as the key document referenced by managers and staff involved in gas engineering activities. The GRM along with the Safety Case describes what they do and how they operate to achieve a safe and reliable gas transportation network.

The GRM covers the following areas:

| | |
|---|---|
| 1. Legislative Compliance | 12. Gas Quality |
| 2. Risk Management | 13. Metering |
| 3. Control of Documents | 14. Incident Reporting and Investigation |
| 4. Change Management | 15. Network Planning Analysis |
| 5. Technical Authority Levels: Competence and Behaviour | 16. Records Data Management |
| 6. Safe Working Practices and Safe Control of Operations | 17. Network Asset Integrity |
| 7. Environment | 18. Distribution Pipe Replacement |
| 8. Occupational Health | 19. LNG |
| 9. Use of Contractors | 20. Audit |
| 10. Gas Escapes | 21. Security |
| 11. Gas Supply Emergencies | 22. Telemetry |

WWU have confirmed that they are still working to the National Grid version of the GRM. They state their aim as the development of a Asset Management System to PAS55 with the GRM combined into a single Asset and HS&E management procedure. No timescale is provided for the development and certification of the PAS55 Asset management structure.

## A1.4 POLICY DEVELOPMENT & CONTROL

Within WWU, engineering and SHE documents are developed and approved within a governance framework which is headed by the Distribution Network Safety and Engineering Committee (DNSEC)

The Distribution Network Safety and Engineering Committee (DNSEC) reports to the WWU Executive and has close links with the WWU Board Health, Safety and Environment Committee.

Arrangements for the control of engineering and SHE documents are detailed in WWU/PM/GR/2: Management Procedure for the Control of SHE and Engineering Documents

As could be expected at this early stage post sale WWU have not commenced an overall review of their engineering Policies and Procedures. Some Transco legacy policies have been simplified and some make reference to WWU but the majority of P&P in place still remain as Transco legacy documents.

WWU have signaled their intention to develop an Asset Management System to the PAS55 standard but no timescale is provided for this change. As the Asset Management system is developed to meet the PAS55 standard WWU would need to review the P&P documents they intend to utilize for the sound engineering management of their Network.

## A1.5 FINANCIAL POLICY FRAMEWORK

The WWU Investment Procedure describes the processes used by the Network to instigate and approve investment expenditure. Reference is made in this document to the WWU Delegated Authority Schedule within

The Investment Process is controlled by the WWU Investment Committee (WWUIC), whose Terms of Reference are given in Appendix 6.83A. This paper states the policy for the presentation and approval of major Capital, Replacement, and Revenue schemes. The WWUIC approves schemes within its delegated authority, or recommends for approval those schemes beyond its delegated authority for further review by the board as determined by the level of expenditure requested.

The WWUIC meets monthly and consists of the following members;

- Chief Executive Officer (chair)
- Chief Finance Officer
- Head of Network
- Head of Finance
- Head of Operations
- Investment Manager (Committee Secretary)

The annual expenditure plan is reviewed by the WWUIC.

Delegated authority levels are in place within the Network Investment Control procedure with the WWUIC authority set at £1,000,000. Investments above this level require approval by the WW Board.

Standard escalation procedures apply to the project approval process.

A PIA is mandatory for all projects greater than £30m.

# A1.6 FINDINGS

## A1.6.1 ENGINEERING AND SAFETY POLICY DOCUMENTS

The various levels of engineering and safety documents together with the associated governance arrangements have been reviewed and no issues found.

## A1.6.2 TECHNICAL FRAMEWORK

As indicated above WWU currently utilise the suite of policies and procedures previously used within National Grid Transco, although it is understood a number of documents have been reviewed.

The Technical governance process within WWU is clear but does not as yet have the full stamp of the Network's approval. This should however become more so as the Policies and Procedures are reviewed and fully incorporated into the Network SHE and engineering management framework.. Mandatory change control processes are in place to ensure proper document control and policy governance. Directors and Senior Managers are involved in the major governance groups reviewing and authorising safety, health, environmental and engineering policies.

As stated above WWU are currently utilising the NGG version of the GRM with the intent of combining the GRM and HSE policy documents into a singular Asset Management system compliant with PAS55 principles as a step to certification under this process. As the GRM is described as the governing depository engineering and SHE policies and procedures we believe WWU should set out a clear timetable for the attainment of PAS55 or undertake to review and revise as appropriate they GRM as an interim measure.

## A1.6.3 FINANCIAL FRAMEWORK

WWU have generally adopted the NG governance process and amended it to reflect their status as a stand alone company. Delegated authority levels are in place and integrated into Investment procedures. Investment is controlled by the WWUIC.

The documents reviewed show a clear process for budget formulation and approval, financial control and monitoring of investment expenditure. The WWU Investment Procedure was clearly written and described the mandatory processes to be followed for investment authorisation.

# APPENDIX 2 PROCUREMENT & LOGISTICS

Following on from the one year review a further review and assessment of the procurement and logistics operation within Wales and West Utilities has been completed to ascertain whether or not the strategic approach and process is robust and effective in managing costs whilst maintaining security of supply.

Since the sell off of the Networks by National Grid, the new networks including WWU have a different market place in which to procure goods, services and works to support their business. There is no longer the advantage of large volume and single buyer status, so it is therefore crucial for the Network Companies to look for ways through procurement and logistics to obtain the best market solution possible for their particular needs and minimize costs.

## A2.1 SOURCING STRATEGY

Wales and West Utilities (WWU) have demonstrated that they have a positive and proactive sourcing strategy. They have a procurement department responsible for providing the entire business with the expertise to source products and services that the business requires and for contract management of those purchases.

They have implemented procurement initiatives such as e-Catalogues and e-Sourcing which will improve the efficiency of Procurement.

## A2.2 STRATEGIC PURCHASES

### A2.2.1 MAINS AND SERVICE LAYING

WWU are in the middle of a re-tendering exercise to select partners for their new engineering period contracts. Their strategy is to move towards a collaborative arrangement, where their contracting partners and WWU as the client work together as an alliance. The contract will be operated on a target cost basis with incentive mechanisms on both the client and contractor to manage and reduce costs. It is also intended to separate the element of risk out of the schedule of rates (which is currently included and paid for whether or not the risk materialises).

This process is positive and the strategy should produce competitive costs for this activity. This presents a good opportunity for procurement to reduce these costs going forward.

### A2.2.2 PE PIPE AND FITTINGS

WWU have recently tendered their requirements for PE Pipe and Fittings. This contract is due to be awarded on 01/02/07.

The tender document used in this process is very comprehensive and the strategy for the supply of these products emphasises the need for the Supplier and WWU to work together to continuously improve and minimise the impacts of cost pressures.

The evidence provided demonstrates a robust comprehensive process and should have resulted in a competitive set of tender submissions being received. It was also stated that WWU have located a potential additional supplier. In this market place with limited suppliers it is vital that new competition is brought in. If this proves to be successful it will not only reduce the risks associated with security of supply by adding another source to the market place but it may also reduce prices by increasing competition in a market place with very few suppliers.

If the final contract reflects the requirements of the tender document then it should, if managed effectively be an ideal opportunity to minimise costs in this area going forward.

### A2.2.3 CONNECTIONS

WWU now has its connections activities as an in-house operation. Most of the work is undertaken by direct labour although they use contractors to undertake some of the work that they cannot resource in-house. They have developed a new network management system for connections activities and this was implemented in July 2006. They are also planning to introduce a comprehensive management information system early in 2007.

They have taken steps to address many of the customer charging inefficiencies identified under the one year PCR. Cost benefits are expected from the significant changes that are in process but these have not been quantified by WWU. The end of year results for 06/07 should give an indication of any benefits being realised as a result of the changes being made.

Efficient procurement processes will be able to contribute to the cost effectiveness of WWUs' connections activities.

### A2.2.4 BULK PURCHASES

Specific information was requested with regard to the purchase of Vehicles, Telecoms, Office Security, Furniture and Tools & Equipment.

WWU are currently starting a phased 3 year programme to replace the company's fleet of commercial vehicles. They have placed an OJEU notice in the Official Journal. Their preferred strategy for this purchase is to buy directly from the manufacturer for the vehicles and have a separate contract for the internal racking systems.

All of their bulk purchases are subject to their general purchasing strategy for commodity based purchases. This process is robust and WWU should be able to obtain competitive prices to suit their particular business requirements and associated volumes.

### A2.2.5 SECURITY OF SUPPLY

WWU have contracts in place or are tendering for the majority of their requirements. They also have a warehousing and logistics operation based in Avonmouth Bristol.

## A2.3 LABOUR SHORTAGES

WWU recognise that there is a shortage of labour in the market and that this will lead to increasing cost pressures. In order to minimise the impacts of this WWU state that they will attempt to offer good visibility of work and are investigating an initiative to increase the productivity of their own workforce, so that they have the capacity to flex work activities in the future.

Any initiatives that can increase the availability of skilled labour are an opportunity to reduce and minimise cost increases.

## A2.4 SUMMARY

WWU have demonstrated through the evidence provided that they have a robust procurement process and a dedicated Procurement function to both put contracts in place as well as contract manage those arrangements to ensure that they fulfil their contractual commitments.

Their procurement strategies encourage continuous improvement from their suppliers and incentivise both parties to reduce and minimise costs. This has been evident from the information provided for their Mains and Service Laying tender exercise and their PE Pipe and Fittings process.

By managing their contracts effectively they have the opportunity to minimise the impact of cost increases going forward.

# APPENDIX 3 EMERGENCY SERVICE COSTS AND THE IMPACT OF THE LOSS OF METERWORK

[Appendix redacted]

# APPENDIX 4 GTMS/SOMSA EXIT PLANS

## A4.1 INTRODUCTION

In February 2003, NG announced a 2-year program of Gas Distribution Control centralisation from 4 centres into a single UK control centre at Hinckley. The activity was to be carried out as part of the Control Centre Development Project (CCDP) an encompassing program that moved the gas national control centre to a new purpose built facility in Warwick.

The Distribution National Control Centre (DNCC) was opened in summer 2005 with full UK gas distribution control undertaken from Hinckley.

The Gas Transportation Management System (GTMS) is the Supervisory Control & Data Acquisition (SCADA) System that Controls the combined UK Distribution Networks. Originally, the System was to be replaced as a part of the roll out of the Transmission Control System; the iGMS project. However, a new iGMS for Distribution Control was removed from the program. The logic of the curtailment was entirely due to a change in focus of the NG business. Originally seen as a fully integrated system involving UK gas control, the company faced business separation issues as a result of Network sales, which rendered iGMS, for distribution, as an unfeasible option.

Given the backdrop of the issues of business separation the decision was then taken to alter the business ownership of DNCC moving management responsibility to Distribution, Network Strategy. The function of Distribution control is performed from Hinckley, which is wholly owned and operated by National Grid, with an agreement to operationally service all independent networks under a contract. That contract, known as SOMSA – System Operation Managed Service Agreement – is for all Operating services required for any given network.

## A4.2 GMTS REPLACEMENT

GTMS is old technology based upon a Logica system dating from the mid 1980's. The System has been enhanced in house by NG over the years since its inception and has been used in its current form since 1996. However, one of the drivers for iGMS was the age of the GTMS product. GTMS spares availability is limited and there are issues of unsupported software by the manufacturer. NG undertook and completed work to establish the viability of continued running & support; the outcome was that it was considered unsustainable beyond 2009 and that a new System must be sought as a matter of some urgency. Investigation was undertaken into the possibly of moving the system to new computer hardware. Unfortunately, GTMS programmes are also embedded into the Operating System; a system that is not supported by the manufacturer.

A project was therefore established to keep GTMS functioning until 2009, the Prolonged Active Life (PAL) and a second project to replace GTMS was given approval in autumn 2005. Work was undertaken to provide a replacement specification on a modern platform, put the specification to market and engage a suitable contractor. After some 10 months of work SERCK controls was chosen from a shortlist of 4 companies.

The Distribution National Control System (DNCS) Project aims to replace GTMS with a like for like System but on a modern and sustainable platform and at the least possible cost to the industry as a whole.

## A4.3 NETWORK SALES

The sale of distribution networks had a profound effect on gas distribution control for all parties, Distribution Networks and Control staff.

It was clear at the outset that given the safety elements associated with gas control and the difficulties to unpick control operations that handling distribution control for the newly formed businesses would be extremely difficult. An agreement (contract) was developed, referred to earlier as SOMSA. A team was established at Hinckley who constructed, trained staff on and issued industry standard procedures for use by Network and control staff alike. The agreements were established between NGG and all other network owners. However, the SOMSA has always had a finite lifespan and a clear condition of the sale was that control should pass to the new owners. The costs associated with this transfer being factored into the sales process. To allow for the planning of the transfer post sales, Ofgem allowed a relinquishment of operational control for an initial period until March 2008, with the possibility of an extension beyond this stage subject to clear exit planning.

The agreement includes the provision of data and access to Systems to facilitate the transfer of control; however, it specifically excludes the provision of a SCADA System.

## A4.4 AGREEMENT TO WORK TOGETHER

Following sales all owners reviewed the options for the provision of a new SCADA system to enable control to be passed back to the new owners. The owners all came to the conclusion that a collaborative approach to replacing the GTMS was the best way forward. Having considered the options available we would support this approach, although risk management is essential to ensure such a collaborative approach does not have difficulties in management and decision-making. It can be stated that we feel some of the risk factors are mitigated by a like for like arrangement in that the specification will be clear.

The approach was to replace the system, initially at Hinckley, and once proved robust further phases would establish the same system at the new owner locations and transfer from Hinckley would then be made.

A governance process has been adopted with an overarching program board to cover all activities associated with SOMSA exit of which GTMS replacement was one of several activities and has it’s own project board and governance.

It is clear from the governance structure that SOMSA Exit is the goal with GTMS replacement as an enabler.

Network Owners need to provide their own project management delivery organisation to dovetail into the collaborative project.

Each owner has expressed a wish to exit. Early indications are a timetable as follows:

- Summer 2008 SGN
- Spring 2009 NGN
- Autumn 2009 WWU

However, there are no detailed transfer plans in place with NG for the transfer of operation. The owners continue to jointly work together to identify and understand the exact extent of the activities that would have to be completed by all participants.

# APPENDIX 5 REGIONAL FACTORS

## A5.1 BCIS REGIONAL & COUNTY FACTORS

The Regional and County Factors is published by BCIS, a trading Division of the Royal Institute of Chartered Surveyors (RICS). The figures published in October 2006 have been adapted in order to generate a suitable regional factor index for each GDN for comparison purposes for the review.

The county indices have been modified to remove Orkney Islands Area, Shetland Islands, Northern Ireland and the Channel Islands from the figures. Counties have been allocated to GDNs and where they fall between two GDNs and estimate of the spilt between the GDNs has been made.

The table below lists the Counties which have been split between GDNs and the allocation which has been assumed for each GDN.

| COUNTY | WW | No | So | EoE | Lon | NW | WM |
|---|---|---|---|---|---|---|---|
| Cumbria | | 70% | | | | 30% | |
| South Yorkshire | | 50% | | 50% | | | |
| Essex | | | | 70% | 30% | | |
| Hertfordshire | | | | 90% | 10% | | |
| Berkshire | | | 75% | | 25% | | |
| Buckinghamshire | | | 75% | | 25% | | |
| London Postal Districts | | | 50% | | 50% | | |
| Outer London | | | 35% | 30% | 35% | | |
| Hereford and Worcester | 20% | | | | | | 80% |
| Cheshire | | | | | | 80% | 20% |

***Table A5 - 1***

The regional factor for the GDN is calculated as a weighted average of the total county factors based on the sample sizes. The BCIS data includes a sample size for each county together with the factor for that county. Where the Counties are considered to fall into one or more GDN footprint we have estimated the proportion of the County sample which should be allocated to each GDN. (For example the sample size for London Postal Districts in the BCIS data is 528, we have estimate that this County should be split 50% to each of London and Southern GDNs, therefore sample sizes of 264 have been allocated to each GDN)

For each GDN a weighted average factor is then calculated. The resulting tables used to produce the GDN indices are given below.

| Wales & West | Network/ County Factor | Sample Size |
|---|---|---|
| Avon | 1.02 | 92.0 |
| Cornwall | 0.99 | 103.0 |
| Devon | 0.99 | 163.0 |
| Gloucestershire | 1.02 | 73.0 |
| Somerset | 0.99 | 74.0 |
| Hereford and Worcester | 0.94 | 23.8 |
| Clwyd | 0.87 | 50.0 |
| Dyfed | 0.94 | 36.0 |
| Gwent | 0.92 | 52.0 |
| Gwynedd | 0.89 | 23.0 |
| Mid Glamorgan | 0.91 | 54.0 |
| POWYS | 0.90 | 23.0 |
| South Glamorgan | 0.93 | 46.0 |
| West Glamorgan | 0.89 | 31.0 |
| **Network Value** | **0.96** | **843.8** |

***Table A5 - 2***

| Northern | Network/ County Factor | Sample Size |
|---|---|---|
| Cleveland | 1.02 | 62.0 |
| Cumbria | 1.05 | 44.1 |
| Durham | 1.01 | 113.0 |
| Northumberland | 1.04 | 46.0 |
| Tyne Wear | 1.01 | 172.0 |
| Humberside | 1.00 | 104.0 |
| North Yorkshire | 1.03 | 92.0 |
| South Yorkshire | 1.01 | 63.5 |
| West Yorkshire | 1.00 | 212.0 |
| **Network Value** | **1.01** | **908.6** |

***Table A5 - 3***

| Scotland | Network/ County Factor | Sample Size |
|---|---|---|
| Borders Scotland | 0.99 | 18.0 |
| Central Scotland | 0.98 | 32.0 |
| Dumfries & Galloway | 0.93 | 23.0 |
| Fife | 0.96 | 62.0 |
| Grampian | 0.90 | 134.0 |
| Highland | 0.93 | 42.0 |
| Lothian | 1.02 | 131.0 |
| Strathclyde | 1.03 | 363.0 |
| Tayside | 0.98 | 85.0 |
| **Network Value** | **0.99** | **890.0** |

***Table A5 - 4***

| Southern | Network/ County Factor | Sample Size |
|---|---|---|
| Kent | 1.05 | 215.0 |
| Surrey | 1.10 | 151.0 |
| East Sussex | 1.05 | 119.0 |
| West Sussex | 1.04 | 118.0 |
| Berkshire | 1.04 | 100.5 |
| Buckinghamshire | 1.03 | 135.8 |
| Hampshire | 1.01 | 293.0 |
| Isle of Wight | 1.00 | 18.0 |
| Oxfordshire | 0.99 | 104.0 |
| London Postal Districts | 1.18 | 264.0 |
| Outer London | 1.10 | 112.0 |
| Dorset | 1.02 | 96.0 |
| Wiltshire | 1.01 | 94.0 |
| **Network Value** | **1.06** | **1820.3** |

***Table A5 - 5***

| East of England | Network/ County Factor | Sample Size |
|---|---|---|
| South Yorkshire | 1.01 | 63.5 |
| Derbyshlre | 0.94 | 120.0 |
| Leicestershire | 0.94 | 92.0 |
| Lincolnshire | 0.94 | 81.0 |
| Northamptonshire | 1.00 | 123.0 |
| Nottinghamshire | 0.93 | 135.0 |
| Cambridgeshire | 1.04 | 185.0 |
| Norfolk | 0.98 | 102.0 |
| Suffolk | 1.01 | 109.0 |
| Bedfordshire | 1.02 | 71.0 |
| Essex | 1.02 | 152.6 |
| Hertfordshire | 1.06 | 117.0 |
| Outer London | 1.10 | 96.0 |
| **Network Value** | **1.00** | **1447.1** |

***Table A5 - 6***

| London | Network/ County Factor | Sample Size |
|---|---|---|
| Essex | 1.02 | 65.4 |
| Hertfordshire | 1.06 | 13.0 |
| Berkshire | 1.04 | 33.5 |
| Buckinghamshire | 1.03 | 45.3 |
| London Postal Districts | 1.18 | 264.0 |
| Outer London | 1.10 | 112.0 |
| **Network Value** | **1.11** | **533.2** |

***Table A5 - 7***

| North West | Network/ County Factor | Sample Size |
|---|---|---|
| Cumbria | 1.05 | 18.9 |
| Cheshire | 0.92 | 127.2 |
| Greater Manchester | 0.93 | 297.0 |
| Lancashire | 0.93 | 167.0 |
| Merseyside | 0.94 | 175.0 |
| **Network Value** | **0.93** | **785.1** |

***Table A5 - 8***

| West Midlands | Network/ County Factor | Sample Size |
|---|---|---|
| Hereford and Worcester | 0.94 | 95.2 |
| Shropshire | 0.93 | 79.0 |
| Staffordshire | 0.91 | 133.0 |
| Warwickshire | 0.96 | 96.0 |
| West Midlands | 0.94 | 318.0 |
| Cheshire | 0.92 | 31.8 |
| **Network Value** | **0.94** | **753.0** |

***Table A5 - 9***

# APPENDIX 6 RE-ALLOCATIONS

## A6.1 INTRODUCTION

In late January 2007, following our initial work to normalise and then analyse GDNs' cost data it became apparent from the analysis that there was still a considerable amount of inconsistent cost allocation issues for direct Opex activities which needed to be resolved. We requested further detail from the networks to enable us to ensure consistency between the submissions and to assist Ofgem in refining the guidance for the update BPQ that is due to be issued to capture 2006-07 actual expenditure and revised forecasts.

This was completed as a two stage process which helped minimise the volume of data required to be submitted. The first stage involved the completion of a workbook which broke down the key direct Opex activities within the 7 areas of expenditure. For each of the 7 areas the network was asked to select where each expense item/sub-activity had been allocated.

Following these initial replies further details were requested in the areas where inconsistent allocation had been identified. The results of this re-allocation, details of which are set out in Table 6-A-1 were used for our analysis at the time. Additional information became available in March 2007, which has been incorporated into the most recent analysis presented in this report.

## A6.2 RE-ALLOCATION RESULTS

The table below documents the information passed back from WWU as a result of the reallocation process.

| Wales & West Network Re-allocation details £m 2005/06 prices | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Work Management** | **-0.01** | **-0.38** | **-1.15** | **-1.15** | **-1.15** | **-1.15** | **-0.65** | **0.16** | **-5.46** |
| NRSWA penalties | 0.15 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 1.03 |
| Loan of cooking/heating costs | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.25 |
| Bad debt | -0.20 | -0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.23 |
| IT Lease costs | 0.00 | -0.50 | -1.30 | -1.30 | -1.30 | -1.30 | -0.80 | 0.00 | -6.50 |
| **Repair** | **-0.17** | **-0.09** | **-0.09** | **-0.09** | **-0.09** | **-0.09** | **-0.09** | **-0.09** | **-0.77** |
| Sub-contractorsLogistics support (Repairs) | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.31 |
| Repair NRSWA Costs | -0.15 | -0.13 | -0.13 | -0.13 | -0.13 | -0.13 | -0.13 | -0.13 | -1.03 |
| Waste disposal costs (non-spoil waste) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.40 |
| Leakage control surveys | -0.10 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.45 |
| **Emergency** | **-0.01** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **-0.01** |
| Sub-contractorsLogistics support (emergency) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.16 |
| Waste disposal costs (non-spoil waste) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 |
| Loan of cooking/heating costs | -0.04 | -0.03 | -0.03 | -0.03 | -0.03 | -0.03 | -0.03 | -0.03 | -0.25 |
| **Maintenance LTS** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.40** |
| Sub-contractorsLogistics support (LTS) | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.32 |
| Specific other Waste disposal costs (non-spoil waste) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 |
| **Maintenance Storage** | **0.03** | **0.03** | **0.03** | **0.03** | **0.03** | **0.03** | **0.03** | **0.03** | **0.24** |
| Sub-contractorsLogistics support (storage) | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.16 |
| Specific other Waste disposal costs (non-spoil waste) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 |
| **Maintenance Other** | **0.26** | **0.09** | **0.06** | **0.06** | **0.06** | **0.06** | **0.06** | **0.15** | **0.80** |
| Sub-contractorsLogistics support (Maintenance other) | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.40 |
| Specific other Waste disposal costs (non-spoil waste) | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.10 | 0.17 |
| Bad debt | 0.20 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 |
| **Other Direct** | **0.10** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.05** | **0.45** |
| Leakage control surveys | 0.10 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.45 |
| **Transfer from Indirect** | **-0.25** | **-0.26** | **-0.26** | **-0.26** | **-0.26** | **-0.26** | **-0.26** | **-0.35** | **-2.16** |
| **Transfer to Indirect** | **0.00** | **0.50** | **1.30** | **1.30** | **1.30** | **1.30** | **0.80** | **0.00** | **6.50** |
| **Total** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

**Table 6A - 1**

# APPENDIX 7 DATA TABLES & REGRESSION

## A7.1 INTRODUCTION

Much of the data entered into the BPQs submitted in October 2006 has been transferred to a database format within Microsoft Excel.

The format allows the data to be manipulated in a number of ways to enable PB Power to determine the appropriate analysis mechanism for each activity.

The sections below give explanations and worked examples of the data calculations use on our analysis.

### A7.1.1 ANALYSIS USED

There are three principal forms of analysis which have been carried out to make the projections for our proposals.

The first uses regression analysis to carry out comparisons between the costs and workloads of each GDN. The projection is based on a base year of either 2005/06 or 2006/07 using drivers to project our proposals for the full control period. The GDN's own proposals are used as a test against our own projections.

The second makes use of the GDN's own proposals across the whole period. In order to use the GDN's proposals we first remove the GDN's own assumptions for RPEs. PB Power's assumptions for RPE are then applied to create the final proposal.

Finally PB Power has also made use of bottom-up analysis where regression was not appropriate or to support the use of regressions.

### A7.1.2 REGIONAL FACTORS

Regional factors have been considered to impact the costs of activities carried out in the network, unless specifically stated otherwise. Costs are disaggregated into the four categories of Contractors, Direct Staff/Overheads, Materials and Other. Regional factors have been applied to Contractor and Direct Staff costs. No regional factors have been applied to materials or other expenditure.

### A7.1.3 RPE ADJUSTMENTS

WWU's assumptions for RPEs used in the analysis are shown in the table below

| Contractors | Direct Staff | Materials | Other |
|---|---|---|---|
| 4.50% | 2.00% | 2.50% | 0.00% |

***Table 7A - 1***

PB Power assumptions for RPEs used in the analysis are shown in the table below

| Contractors | Direct Staff | Materials | Other |
|---|---|---|---|
| 2.25% | 1.00% | 1.00% | 0.00% |

***Table 7A - 2***

### A7.1.4 EXPENDITURE CATEGORIES

A number of different expenditure categories are listed in the BPQ. Each category has been aligned to one of the four categories used within our analysis. The table below lists these allocations.

| BPQ Category | Expenditure category |
|---|---|
| Accounting Control | other |
| Atypicals | other |
| Bad debt | other |
| Depreciation | other |
| Excluded Services | other |
| Formula rates | other |
| income | income |
| Materials | materials |
| misc expenditure | other |
| Net Staff Costs (including Agency Costs) | direct |
| Non salary staff costs (including T&S) | other |
| NSA's | other |
| Ofgem Licence | other |
| Other | other |
| Other | other |
| Pension deficit / surplus | other |
| PPF Levy | other |
| Professional and consultancy fees | contract |
| Profit/ loss on sale of fixed assets | other |
| Release of Customer Contributions | other |
| Rents and buildings | other |
| Road occupation cost | other |
| Shared services cost from table B2 | other |
| Shared services cost from table B2 | other |
| Shrinkage | other |
| Subcontractors | contract |
| Transport & plant | other |
| Wayleaves | other |
| Xoserve | other |

***Table 7A - 3***

## A7.2 WORKED EXAMPLE

A worked example is given below for the Repair work activity in Wales & West. Many of the principles of the data calculations are similar for other work activities, where different techniques are used these are detailed under the appropriate activity heading.

### A7.2.1 EXPLANATION OF THE COSTS AND VOLUME INPUTS TO THE REGRESSION ANALYSIS.

For Repair the regression analysis has been carried out on the 2005/06 data although for some other activities 2006/07 has been used as the base year. Full details of the reasoning behind the choice of base year are given in the main report under each activity.

All regression calculations for repair are carried out using Gross costs.

Steps for tracking the data

From the BPQ the Repair costs submitted have been taken as below

| Category | Gross £m 2005/06 |
|---|---|
| contract | 3.253 |
| direct | 5.279 |
| materials | 1.056 |
| other | 1.362 |
| **Gross** | **10.95** |

***Table 7A - 4***

The BPQ costs have been normalized in 2 stages. The initial stage makes the Cost transfers, GDN reallocations accounting adjustments and pension adjustments. These adjustments are shown within the pivot tables as ***Adjusted BPQ.***

The final stage of the normalization is the adjustments for Removed Costs. These final costs adjustments are made within the analysis sheets directly.

The table below listed the Adjusted BPQ figures.

| Category | Gross £m 2005/06 |
|---|---|
| contract | 3.28 |
| direct | 4.21 |
| materials | 1.06 |
| other | 1.16 |
| **Gross** | **9.71** |

***Table 7A - 5***

There are no removed costs which feed into any of the regression calculations.

In order to calculate the National figures both contract costs and direct costs are divided by the appropriate regional factor to calculate the ***RF Adjusted*** figures.

| GDN Regional Factor | Contractor | Direct |
|---|---|---|
| Wales & West | 0.96 | 0.98 |

***Table 7A - 6***

Contract **3.28 / 0.96 = 3.41**

Direct **4.21 / 0.98 = 4.31**

Materials and other costs are not adjusted for regional factors.

| Category | Gross £m 2005/06 |
|---|---|
| contract | 3.41 |
| direct | 4.31 |
| materials | 1.06 |
| other | 1.16 |
| **Gross** | **9.93** |

***Table 7A - 7***

Total regionally adjusted costs into regression is 9.93

This cost figure is used in the regression analysis along with the equivalent values for other GDNs.

### A7.2.2 COST DRIVER

The workload is weighted by a standard monetary unit value for each activity. The workload id taken from the C18 Sheet supplied in the Capex/Repex PBQ submission.

| Type of Repair | Number |
|---|---|
| Actioned Repairs to mains (condition) | 9517 |
| Actioned Repairs to mains (damage) | 466 |
| Actioned Repairs to services (condition) | 7221 |
| Actioned Repairs to services (damage) | 2358 |
| **Total** | **19562** |

***Table 7A - 8***

The number of repairs to mains (condition) has been estimated against each pipe size according to the percentage population of pipes installed in the network.

| Pipe Size | % Installed |
|---|---|
| </=3" | 1.6% |
| 4-5" | 48.0% |
| 6-7" | 26.1% |
| 8-9" | 11.9% |
| 10-12" | 9.1% |
| >12-18" | 2.6% |
| >18-24" | 0.6% |
| >24" | 0.1% |

***Table 7A - 9***

The same representative unit costs have been used each Network and have been chosen by reference to contract rates for the four repair types; these are shown in the table below. The number of repairs of each type is multiplied by the appropriate unit cost and summed to calculate the total CSV for the repair activity.

| Repair Type | | Unit Cost £ |
|---|---|---|
| Mains (Condition) | </=3" | 554 |
| | 4-5" | 595 |
| | 6-7" | 688 |
| | 8-9" | 1130 |
| | 10-12" | 1130 |
| | >12-18" | 1856 |
| | >18-24" | 1889 |
| | >24" | 3846 |
| Service (Condition) | | 250 |
| Mains (Damage) | | 326 |
| Service (Damage) | | 202 |

***Table 7A - 10***

| Repair Type | | Unit Cost £ |
|---|---|---|
| Mains (Condition) | </=3" | 82 |
| | 4-5" | 2718 |
| | 6-7" | 1707 |
| | 8-9" | 1278 |
| | 10-12" | 977 |
| | >12-18" | 468 |
| | >18-24" | 116 |
| | >24" | 27 |
| Service (Condition) | | 1805 |
| Mains (Damage) | | 152 |
| Service (Damage) | | 475 |
| Total | | 9805 |

***Table 7A - 11***

For Repair activities the total CSV is 9,805. This figure has been used in the regression analysis.

### A7.2.3 REGRESSION TABLE

The complete Repair regression table is given below:

| GDN | 2005/06 | |
|---|---|---|
| | Volume | Cost |
| EoE | 10314 | 10.22 |
| Lon | 8435 | 9.90 |
| No | 11374 | 10.69 |
| NW | 10853 | 10.82 |
| Sc | 7194 | 11.62 |
| So | 22466 | 21.63 |
| WM | 6677 | 7.10 |
| WW | 9805 | 9.93 |

***Table 7A - 12***

On all regression charts the volume driver is plotted along the x-axis and cost against the y-axis.

From this regression table the regression line is obtained and an upper quartile benchmark calculated as the target.

The regression formula takes the form **Slope x (Volume) + Intercept = (Cost)**

**Regression Formula 0.000816 x (Volume) + 2.59766 = (Cost)**

**Benchmark Formula 0.000732 x (Volume) + 2.59766 = (Cost)**

### A7.2.4 COST PROJECTIONS

Having calculated the benchmark regression formula for the base year, the ***slope*** and ***intercept*** of this formula is reduced each year by the PB Power assumptions for productivity improvements.

| Year | Slope | Intercept |
|---|---|---|
| 2005/06 | 0.000732 | 2.59766 |
| 2006/07 | 0.000725 | 2.57168 |
| 2007/08 | 0.000717 | 2.54597 |
| 2008/09 | 0.000710 | 2.52051 |
| 2009/10 | 0.000703 | 2.49530 |
| 2010/11 | 0.000696 | 2.47035 |
| 2011/12 | 0.000689 | 2.44565 |
| 2012/13 | 0.000682 | 2.42119 |

***Table 7A - 13***

The formula is then used each year, with the work driver, to calculate the regionally adjusted cost for the total workload. This total is broken back into the individual activities in proportion to the weighted workload driver for each activity.

| | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|---|
| Weighted Workload | 9805 | 9485 | 9211 | 8946 | 8688 | 8438 | 8195 | 7960 |
| Benchmark | 9.77 | 9.45 | 9.15 | 8.87 | 8.60 | 8.34 | 8.09 | 7.85 |
| Baseline | 9.93 | 9.60 | 9.30 | 9.01 | 8.74 | 8.47 | 8.22 | 7.97 |
| Gap | 0.16 | 0.15 | 0.14 | 0.14 | 0.13 | 0.13 | 0.12 | 0.12 |
| Line A | 30% | 30% | 42% | 53% | 65% | 77% | 88% | 100% |
| Line B | 100% | 100% | 88% | 77% | 65% | 53% | 42% | 30% |
| Convergence | 0.16 | 0.15 | 0.13 | 0.11 | 0.09 | 0.07 | 0.05 | 0.04 |
| Proposed (Ex RPE & RF) | 9.93 | 9.60 | 9.28 | 8.98 | 8.69 | 8.41 | 8.15 | 7.89 |

***Table 7A - 14***

In the example of Repair the 2005/06 benchmark calculation is performed as follows:

**0.000732 x (9805) + 2.59766 = (9.77)**

A similar calculation is performed for each year and also for the baseline performance.

The gap between the baseline performance and the benchmark performance is calculated and a convergence is calculated using the percentages in either Line A or Line B in table 7A-14. If the gap figure is negative line A percentages are used if the gap figure is positive line B percentages are used. The convergence element is added to the benchmark figure to produce the proposed cost (prior to regional factors and RPE adjustments being applied).

In order to reapply regional factors and PB Power's assumptions for RPEs the average of 2$^{nd}$ and 3$^{rd}$ placed GDNs breakdown expenditure percentages for Contractors, Direct/Overheads, Materials and Other has been used.

# A7.3 WORK MANAGEMENT

## A7.3.1 ANALYSIS USED

Regression analysis has been used for Work Management. The regression has been carried out on a linear basis using a composite variable reflecting distribution system network length and the PB Power adjusted numbers of Public Reported Escapes (PREs) and Repairs. To calculate the composite variable, the numbers of PREs and repairs were normalised to the network length and were summed with the network length using the following weightings, 40% network length and 30% each for PREs and repairs. This composite variable was then compared in the regression analysis with the normalised work management Opex. The base year for Work Management is 2005/06.

## A7.3.2 DATA USED IN THE ANALYSIS

The data provided in the BPQ, split the Work Management expenditure into various components, these were then aligned to the four components of Contractors, Direct/Overheads, Materials and Other. The term 'Sum other' is used in the data release workbooks to reflect the addition of any Income into the Other category.

## A7.3.3 REGRESSION TABLE

Details are provided in the data release workbook.

# A7.4 EMERGENCY

## A7.4.1 ANALYSIS USED

Regression analysis has been used for Emergency. The regression as been carried out on a linear basis using a composite variable reflecting the PB Power adjusted numbers of PREs and Repairs. To calculate the composite variable, the numbers of PREs and repairs were adjusted into a weighted average using a weighting of 80% PREs and 20% repairs. This composite variable was then compared in the regression analysis with the normalised emergency Opex. The base year for Emergency is 2005/06.

## A7.4.2 DATA USED IN THE ANALYSIS

The data provided in the BPQ, split the Emergency expenditure into various components, these were then aligned to the four components of Contractors, Direct/Overheads, Materials and Other. The term 'Sum other' is used in the data release workbooks to reflect the addition of any Income into the Other category.

## A7.4.3 REGRESSION TABLE

Details are provided in the data release workbook.

# A7.5 OTHER DIRECT ACTIVITIES

## A7.5.1 ANALYSIS USED

Regression analysis has been used for Other Direct Activities. The regression as been carried out on a log linear basis using the driver of total network length (distribution above and below 2 bar and LTS) in km. The driver has been compared in the regression analysis with the normalised other direct activities Opex. The base year for Other Direct Activities is 2006/07.

## A7.5.2 DATA USED IN THE ANALYSIS

The data provided in the BPQ, split the Other Direct Activities expenditure into various components, these were then aligned to the four components of Contractors, Direct/Overheads, Materials and Other. The term 'Sum other' is used in the data release workbooks to reflect the addition of any Income into the Other category.

### A7.5.3 REGRESSION TABLE

Details are provided in the data release workbook.