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RIIO GD1

Consultation on strategy for the next gas distribution price control - Supplementary Annex - RIIO-GD1 Tools for cost assessment

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Target audience: Consumers and their representatives, gas distribution networks (GDNs), independent gas transporters (IGTs), other network companies, gas shippers and suppliers, environmental organisations, debt and equity investors, government policy makers and any other interested parties.

Overview:

The next gas distribution price control, RIIO-GD1, will be the first to reflect the new RIIO model. RIIO is designed to drive real benefits for consumers; providing network companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector at a lower cost than would have been the case under our previous approach. RIIO puts sustainability alongside consumers at the heart of what network companies do. It also provides a transparent and predictable framework, with appropriate rewards for delivery.

We are now consulting on the strategy for the price control review. This supplementary annex to the main consultation document sets out our proposed approach to setting efficient costs. This document is aimed at those who want an in-depth understanding of our proposals. Stakeholders wanting a more accessible overview should refer to the main consultation document framework.

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Associated Documents

Main consultation papers

- Consultation on strategy for the next gas distribution price control - RIIO-GD1 Overview paper (160/10)
  http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/RIIOGD1%20overview.pdf

Links to supplementary annexes

- Consultation on strategy for the next gas distribution price control - RIIO-GD1 Outputs and incentives
  http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20outputs%20and%20incent.pdf
- Consultation on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Business plans, innovation and efficiency incentives
  http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1%20and%20GD1%20BP%20prop.pdf
- Consultation on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Financial issues
  http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1%20and%20GD1%20finance.pdf
- Consultation on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Uncertainty mechanisms
  http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1%20and%20GD1%20uncert.pdf
- Consultation on strategy for the next transmission and gas distribution price controls - RIIO-T1 and GD1 Impact Assessment
  http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/T1%20and%20GD1%20IA.pdf

Links to other associated documents

- Consultation on strategy for the next transmission price control - RIIO-T1 Overview paper (159/10)
  http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/RIIOT1%20overview.pdf
- Gas Distribution Cost Reporting, report by RUNE Associates Ltd on behalf of Ofgem
  http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/RUNE%20cost%20reporting.pdf
- Handbook for implementing the RIIO model - Ofgem, October 2010
  http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/RIIO%20handbook.pdf
- RIIO: A new way to regulate energy networks: Final decision
  http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/Decision%20doc.pdf
- Regulating energy networks for the future: RPI-X@20 Recommendations, Impact Assessment
  http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/Impact.pdf

A glossary of terms for all the RIIO-T1 and GD1 documents is on our website:
http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/Glossary.pdf

Table of Contents

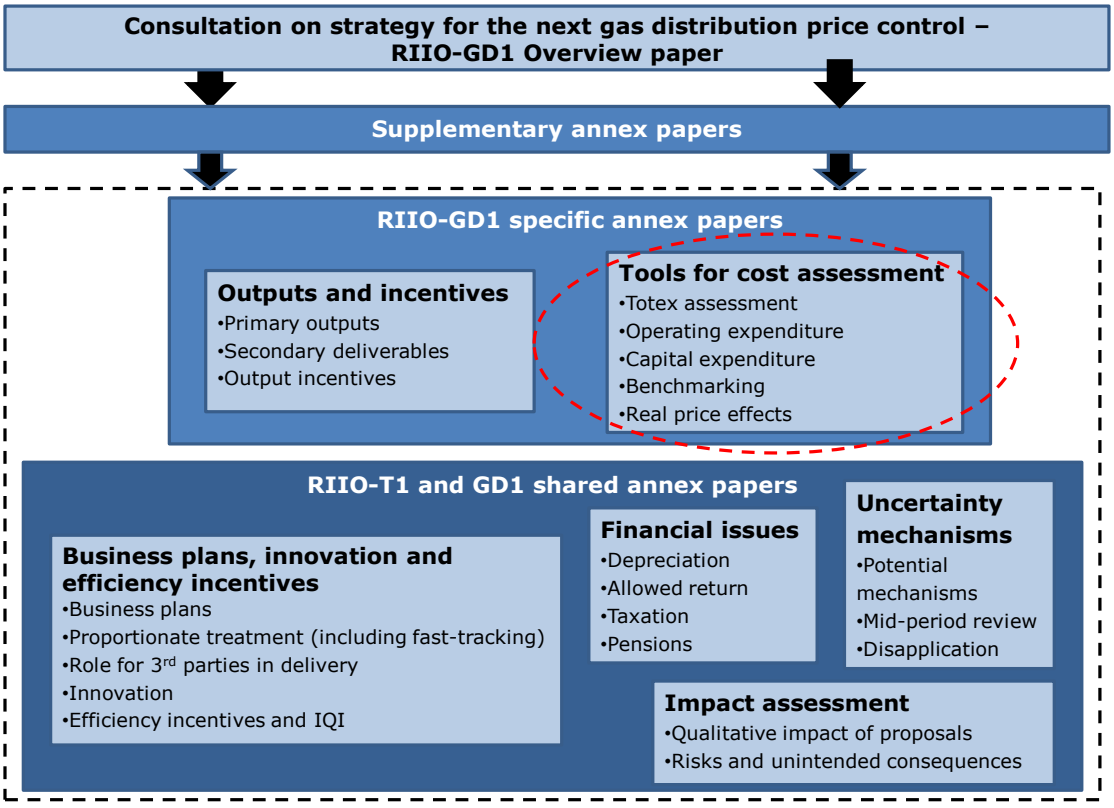
1. Introduction

Chapter Summary
This chapter sets out how the cost assessment analysis contributes to the overall RIIO price control work and introduces the later chapters in this document.

Context

1.1. The next gas distribution price control, RIIO-GD1, will be the first to reflect the new RIIO model. We are now consulting on the strategy for this review. This supplementary annex, to the main consultation document, sets out our proposals for undertaking the cost assessment work. This document is aimed at those who want an in-depth understanding of our proposals. Stakeholders wanting a more accessible overview should refer to the RIIO-GD1 Overview paper. Figure 1.1 below provides a map of the RIIO-GD1 documents published as part of this consultation.

Figure 1.1 - RIIO-GD1 Supplementary appendix document map*



***Document links can be found in the 'Associated documents' section of this paper.**

1.2. As in past reviews, the price control will be set using a building block approach incorporating incentives to encourage network companies to deliver outputs and value for money in the longer-term.

1.3. The key difference with now is how the building blocks would be set. In particular the fact that our approach will be outputs-led in the sense that outputs feed in and influence other elements of the framework.

1.4. Under Sustainable Network Regulation our assessment of the outputs that gas distribution networks (GDNs) are required to deliver and the associated revenue to be earned from consumers would be informed, to a large degree, by the plans put forward by the GDNs. In the business plans a network company would set out what it intends to deliver for consumers over time and what revenue it needs to earn from existing and future consumers to ensure delivery is financed. The onus is on network companies to justify their view of required expenditure.

1.5. We would expect the GDNs to consider a range of options for delivering primary outputs and explain why their proposals are the best way forward. When making the case for their preferred proposal we would expect the network company to demonstrate that it had considered the long-term costs and benefits of the most viable options.

1.6. The GDNs will also need to demonstrate that their proposals are lowest cost over the long-term.

1.7. This supplementary annex discusses the methods we will use to assess the costs proposed by the GDNs and the quality, robustness and objectivity of their supporting cost justifications. After presenting an overview of the cost allowances awarded as part of Gas Distribution Price Control Review 1 (GDPCR1), we set out in Chapter 2 an overview of our cost assessment approach. We propose to use a toolkit of methodologies such as:

- total expenditure (totex) benchmarking
- disaggregated benchmarking
- trend analysis
- expert review
- project by project review.

1.8. We discuss how techniques such as totex will be undertaken at an aggregate level and how other techniques will be applied to assess proposed direct and indirect operational expenditure, capital expenditure (capex) and replacement expenditure (repex).

1.9. The above techniques can be applied to both historical and forecast costs. We will also be looking to GDNs to justify their forward cost movements in their projections. In Chapter 3 we discuss our approach to assess these forward cost movements including our approach to real price effects (RPEs) and ongoing efficiency.

1.10. In the remainder of the document, we discuss in more detail our approach to cost assessment. In Chapter 4 we discuss our approach to totex benchmarking, which was used to a limited extent at GDPCR1, but we will place more focus on this as part of RIIO-GD1. In Chapters 5, 6, 7 and 8 we set out companies' comparative performance so far under GDPCR1, initial forecasts for the first five years of RIIO-GD1 and our approach for cost assessment for direct operating costs, business support, capex and repex.

Historical Costs

1.11. The cost baselines set at GDPCR1 and some high level statistics including allowed revenue, the Regulatory Asset Value (RAV), customer numbers and network length are set out below in Table 1.1. The table helps to illustrate the relative size of the various GDNs from a financial perspective and using other indicators of network scale.

1.12. The total cost baselines for the GDNs in GDPCR1 were £9.6 billion, with an average annual baseline per GDN of £239 million. Repex makes up around 42 per cent of the total cost baseline, with opex making up 39 per cent and capex 19 per cent.

Table 1.1 – GDPCR1 Allowances and GDN statistics (2009-10 prices and post-IQI where applicable)[1]

GDN Data	National Grid				NGN	Scotia		WWU	Total
	East of England	London	North West	West Midlands	Northern	Scotland	Southern	Wales & West	All GDNs
Avg. Annual Allowed Capex Expenditure (£m)	43	48	32	20	45	43	67	63	**361**
Avg. Annual Allowed Repex Expenditure (£m)	117	106	106	80	93	58	164	82	**807**
Avg. Annual Allowed Opex Expenditure (£m)	113	85	92	70	88	73	132	88	**742**
Max. Allowed Revenue 2009-10 (£m)	488	319	357	276	340	219	529	301	**2,830**
Provisional RAV 2009-10 (£m)	2,507	1,559	1,667	1,292	1,554	1,196	2,738	1,512	**14,026**
No of Customers	3,956,403	2,274,643	2,674,148	1,944,225	2,619,209	1,756,483	4,026,720	2,439,408	**21,691,236**
Network Length (km)	51,816	21,378	34,548	24,310	36,784	24,459	49,467	34,500	**277,262**

1.13. As part of the initial assessment work for RIIO-GD1 we have looked to undertake a review of the GDNs' performance for the first two years of GDPCR1. In undertaking this review we have used the existing analysis tools developed for GDPCR1 and applied them to actual expenditure for 2008-09 and 2009-10. In addition we engaged Rune Associates as consultants to provide support during the 2010 GDN cost visits, a technical assessment of the GDNs' performance and to propose recommendations to improve our current methodologies. The Rune Associates' report published alongside this analysis as an associated document.

Forecasts

1.14. To help us understand the key cost changes expected over the next price control period, the GDNs have provided us with indicative forecast capex, repex and opex forecasts for the first five years of RIIO-GD1. Although these forecasts are indicative, they suggest that there is likely to be a change in the key capex drivers from growth and capacity in GDPCR1, to more network integrity and risk related drivers in RIIO-GD1. Given the magnitude of the proposed expenditures, we will be looking to the business plans to provide robust objective evidence demonstrating that proposed costs are efficient, they are subject to stakeholder review and that they are justified by the outputs the GDNs are proposing to deliver.

[1] We have made adjustments to NGN final proposal allowance to remove LTS capex that was identified for specific reinforcement. We highlighted in Final Proposals that we would allow the capital expenditure (capex) subject to an Advanced Reservation of Capacity Agreement (ARCA) being signed for Eggborough power stations in advance of the price control coming into effect. We indicated if this was not the case we would remove these costs, £22.5m for NGN, from the price control allowance and, if an ARCA was subsequently signed at a later date, we would add back our ex-ante forecast. To date NGN do not have an ARCA.

2. Overall approach to cost assessment

Chapter Summary
This chapter sets out our emerging thinking on the approach to cost assessment within the RIIO framework. We describe how we will assess the companies' business plan submissions using a combination of tools and techniques ranging from a top down totex analysis approach to a more detailed review of the underlying activities.

Question 1: Do you agree with our approach for assessing the companies' business plans?
Question 2: Have we proposed an optimum range of techniques
(a) Are there better techniques that we have not included?
(b) Are we applying the appropriate techniques in the appropriate areas?

Overview

2.1. At GDPCR1 we set baselines for GDNs' individual activities and their overall costs based on an efficiency review of their historical performance and an assessment of their forecasts. We relied extensively on benchmarking across GDNs both at a disaggregated level and for total operating costs as part of this assessment.

2.2. We used regression analysis for mains and service replacement expenditure (repex), connections, mains reinforcement and governor capital expenditure (capex) and the key direct operating activities (opex). On indirect opex we engaged economic consultant, LECG, to benchmark the GDNs against each other and external companies. The activities they reviewed included Information Systems (IS), property, HR, legal, finance and regulation, insurance and corporate centre costs.

2.3. Where inter GDN benchmarking could not be undertaken due to unique costs or particular high value projects we engaged specialist consultants to carry out specific reviews of expenditure and the GDNs forecasts. In particular this covered Local Transmission (LTS) and non operational capex including IT spend.

2.4. We used this analysis to determine an appropriate benchmark level of costs in the base year and then rolled this forward taking account of ongoing efficiencies and real price effects to determine price control baselines. On opex we also made an adjustment to take into account trade-offs between different activities based on an assessment of total opex.

2.5. In line with our RIIO handbook[2], our assessment of the efficient costs required by a network company for RIIO-GD1 will be largely based on our assessment of the company's business plans. However, other information, for example information in other companies' business plans, benchmarking evidence and information on historical performance will also be used to inform this assessment.

2.6. We are applying more emphasis on total cost assessment as this potentially avoids the risk of biasing the GDNs towards particular solutions. Benchmarking aggregated costs avoids opex/capex trade-offs, and provides more assurance that the results are not skewed by inconsistencies in reporting across cost boundaries.

[2] http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/RIIO%20handbook.pdf

2.7. The development of annual cost reporting data over the past three years means there is now much more robust cost and driver information available both across activities and across companies. This gives us the scope to improve the robustness of our disaggregated analysis and means that we can use panel data. More disaggregated analysis allows us to consider the key factors driving individual activities. In addition, it provides us with more information on why different companies might be efficient or otherwise and an explanation of why the overall assessment has been reached. This helps enable a more informed discussion with the companies over their costs. For RIIO-GD1 we intend to carry out a combination of totex benchmarking and more disaggregated analysis. The additional information provided by this approach will improve our understanding and enable us to make a better judgement about the companies' levels of performance.

2.8. We are placing much more emphasis on the benchmarking of forecasts (as opposed to historical costs) as these are likely to be more relevant in the context of our sustainable development duties and the introduction of new output measures. This chapter looks further at the methods we expect to adopt for benchmarking total costs in RIIO-GD1.

2.9. The remainder of this chapter sets out an overview of our approach to the cost assessment for RIIO-GD1. We explain our key criteria for developing a robust approach and then set out our key analytical tools including totex analysis. We then explain the balance between forecast and historical cost assessment and the difference in how the analysis will be applied as part of the initial sweep, proportionate assessment and more detailed review.

Approach to cost assessment

Criteria for developing a robust approach to cost assessment

2.10. We have identified a number of criteria for choosing our analytical techniques based on the Frontier work and our own further review:[3]

- robustness – the benchmarking process and the resulting performance assessment should be perceived to be robust by network operators and other stakeholders
- transparency – the benchmarking methodology and the rationale for its use should be clear and easy to understand. The entire benchmarking process should be easy to replicate
- promotion of efficiency – the benchmarking methodology should promote not just efficient cost management, but also strike an appropriate balance between low costs and desired outputs, ie it should provide value for money for delivering outputs. The methodology should also minimise the extent to which they distort incentives to favour one cost type over another
- consistency with the wider regulatory framework – the benchmarking methodology should foster the high level objectives of the wider regulatory regime and strike an appropriate balance between different objectives. Benchmarking should also encourage operators to innovate while providing appropriate protection from unnecessary expenditure for customers
- reasonableness of data requirements – the benchmarking methodology should be developed in a way that enables data collection and compilation to be undertaken without both the regulator and regulated companies over-stretching their resources.

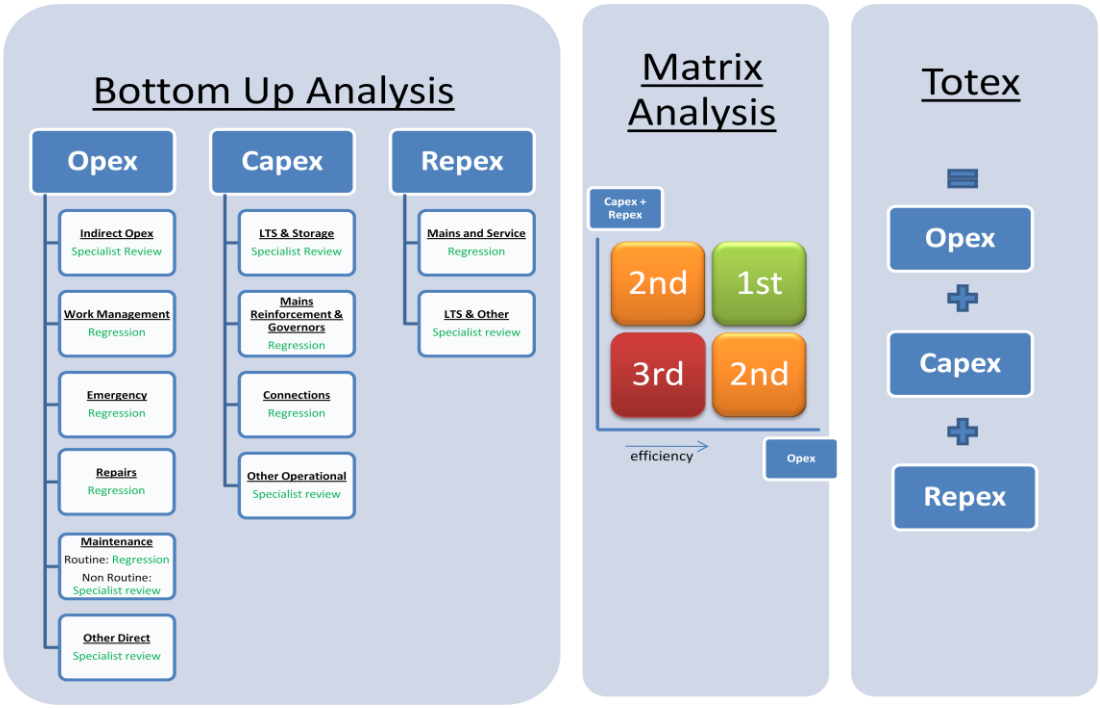
[3] http://www.ofgem.gov.uk/Networks/rpix20/ConsultReports/Documents1/rpt-benchmarking.pdf

- adaptability – given the likelihood of material changes in the availability and relevance of certain data over time as network roles evolve, there is merit in pursuing a benchmarking technique that can adapt and remain fit for purpose
- proportionate resource cost – the benchmarking methodology should be developed in a way that enables benchmarking analysis to be undertaken without both the regulator and regulated companies over-stretching their resources.

Toolkit approach

In RIIO-GD1 we are looking to develop a toolkit approach to cost assessment that can be used in assessing companies' forecasts both as part of the initial sweep assessment in the autumn of 2011 and more detailed analysis of companies whose submissions are not deemed suitable for fast-tracking. This includes the development of total expenditure analysis and placing more emphasis on this technique. Figure 2.1 highlights some of the analytical assessment tools we will be looking to develop to assess the RIIO-GD1 forecasts.

Figure 2.1 Analytical toolbox



2.11. Regression analysis was used to set allowances for 66 per cent of the companies' controllable expenditure in GDPCR1 including elements of capex, repex and opex. For RIIO-GD1 we are looking to build on the regression analysis developed at GPDCR1 and use them to inform our assessment of the companies' forecasts. This will enable us to identify where companies are higher or lower cost on each of the key activities and further review business plan submissions to understand the companies' views on such movements in expenditure. In addition we will be sense checking the forecast costs by the companies against historical performance.

2.12. In addition to the bottom-up regression analysis, we are looking to develop techniques such as the matrix analysis, set out in Figure 2.1, which considers the GDNs'

performance in multiple activity areas and provides an assessment of the capex/opex trade offs.

Totex benchmarking

2.13. From a top down perspective we will be looking to benchmark totex over a number of years' data using suitable cost drivers. We consider that totex rather than total cost analysis is the most appropriate methodology for international benchmarking as it best overcomes issues associated with different reporting arrangements and accounting treatments.[4] It is also most suitable for the GDNs given adjustments we made to the GDN RAVs as part of the separation of Local Distribution Zone (LDZ) price controls.[5] Other benchmarking methods that look to allocate a measure of capital consumption suffer significantly from consistency issues.

2.14. The set of cost drivers for our totex work is still under review. Key measures we are considering include high level metrics such as the number of customers, network length and units distributed. We are also considering metrics based on the key activities such as a repex measure based on the weighted volume of assets removed, the number of connections, emergencies and repairs, and other assets numbers. We will consider the most suitable approach(es) based on both engineering judgement on the appropriate drivers and the statistical results.

2.15. We are giving careful consideration to the appropriate level at which to carry out more disaggregated analysis. Our initial view is that it is most appropriate to carry out analysis at the following levels:

- by overall area of expenditure (total operating costs, total capital expenditure and replacement expenditure)
- by type of expenditure (total indirect and indirect costs)
- by activity or activity group (eg replacement, mains reinforcement connections and repairs).

2.16. Based on the experience of both GDPCR and DPCR5, we are of the view that the key cost activities should be the maximum level of disaggregation. The activity level analysis will be used to help review companies' forecast business plans. In deciding whether activities should be considered separately or grouped together we need to consider the following factors:

- whether the costs can be effectively separated? For example, is it possible to separate certain cost activities, and still have their data reported without inconsistencies resulting from boundary issues? Cost activities with such inconsistencies may make the analysis impractical and it may be necessary to group them
- whether there are strong trade-offs between the areas of costs – this may be captured by similar cost drivers in some instances, but may not in other instances. Again in such cases we should group the activities
- practicality, what the maximum number of models that should be estimated.

[4] Total expenditure refers to the total amount spent by a business each year, regardless of whether it is capital or operating expenditure. Total cost refers to operating expenditure plus a measure of capital consumption (analogous to depreciation).
[5] http://www.ofgem.gov.uk/Networks/Trans/Archive/Transco/Documents1/3624-38sep_tdp.pdf

2.17. There are some cost activities for which benchmarking is appropriate and where we either have little expertise or it is difficult to identify appropriate cost drivers. Such costs can be analysed by experts in the activity area. We intend to appoint consultants to assess both property management and information technology costs following the approach adopted at DPCR5.

2.18. Much of the analysis for business support costs will be the same for RIIO-T1 and GD1. We will compare costs in transmission, gas distribution and electricity distribution where possible. We intend to benchmark these costs by group rather than licensee as this avoids issues of cost allocation. For RIIO-GD1 we will also carry out specific analysis to benchmark costs across the GDNs. We consider that there are three main groups of such costs: IS, Property and other business support costs. We will be looking to engage expert consultants on both IS and Property as these are activities for which we consider it is important to bring in external expertise and they form a large proportion of business support costs.

Benchmarking of forecast and historical costs

2.19. We have emphasised the need to benchmark forecast business plans because of the potential for historical costs to bare less relevance to future investment plans, particularly capex, due to the possible impact of the need to decarbonise the economy and the need increasingly to replace aging assets.

2.20. Benchmarking forecast business plans has an advantage of incorporating additional activities and costs that the GDNs plan to undertake in the next price control period including proactively driven innovation and expenditure on asset integrity. They take into account the circumstances of the networks going forward which may be different from those that have applied historically. For example, we understand that the GDNs are planning less load related expenditure in the RIIO-GD1 period than in GDPCR1. But there is potential for forecast business plan benchmarking to create an incentive for GDNs to inflate their forecasts in their plans.

2.21. The advantage of benchmarking historical costs is that they are costs that have actually been spent and therefore, have limited scope for being inflated. We therefore propose to benchmark historical costs as one of the tools in assessing GDNs' forecasts together with comparing their plans.

Fast-tracking and more detailed approaches

2.22. We are looking to develop the majority of our cost analysis in advance of the July 2011 business plan submissions by the GDNs. We can test our approach using historical data and this will enable us to run the analysis quickly when the forecasts come in and enable us to have more interaction with the GDNs.

2.23. The way in which we apply the analysis will differ between the initial sweep for fast-track companies and the more detailed analysis of other remaining companies that follows, although it will essentially make use of the same tools.

2.24. The fast-tracking assessment will be a higher level review relying on the companies' forecasts and our analytical tools described earlier. Where companies' forecasts and historical costs are shown to be high we will expect this to be adequately

justified by their plans. If there is insufficient evidence in a number of areas they are unlikely to be suitable for fast-tracking.

2.25. The businesses that are not eligible for the fast track assessment will then be subject to a more detailed review of costs and outputs. We will look to take a proportionate approach and it may be the case that for some companies we can take a relatively light touch approach to the assessment of some or most cost categories. The detailed review will involve us scrutinising the data submissions to a greater extent and requiring the GDNs to provide more support to their plan. In essence our benchmarking and analysis will highlight areas for further detailed scrutiny and will be the start of the conversation with these companies rather than a mechanistic means of setting allowances. In these cases, our cost baselines will be more dependent on our assessment.

3. Input price inflation and ongoing efficiency

Chapter Summary
This chapter sets out the type of analysis that we expect to carry out to assess the forecasts submitted by the GDNs for input price inflation and ongoing efficiency improvements. It also outlines some of the issues that we expect the GDNs to take account of in their business plans when justifying their proposals.

Question 1: Are there any additional analytical techniques that we should consider beyond those we have used at past price control reviews to assess these factors?
Question 2: Are there any additional data sources that we should be aware of to assist with our analysis in these areas? In particular, are there specialist labour indices that would be relevant for the gas distribution sector?
Question 3: Of the data sources presented in this chapter, are there some that you think we should rely more on than others?

Overview

3.1. Our cost assessment analysis will help form our view of the efficient level of costs for each network operator. This analysis will be on both historical and forecast costs submitted by the companies as part of their business. The analysis of historical costs can be used to determine an efficient cost level in a particular year. We will need to make a number of adjustments to this level of efficient costs in order to assess the reasonableness of the costs forecasted by the companies as part of their business plans – the network companies will also need to incorporate these factors into their forecasts. These adjustments will need to account for the following factors:

- changes in the volume of activity
- changes in the scope of work (eg a new safety requirement) that might affect the unit cost of the activity
- expected productivity improvements to be made by an efficient company which we refer to as ongoing efficiency improvements
- expected changes in input prices (eg wages) relative to the RPI which we refer to as real price effects (RPEs).

3.2. This chapter addresses the last two of these issues. It sets out the type of analysis we expect to carry out to assess the forecasts submitted by the companies and also the issues that we expect the companies to take into account when submitting a well justified business plan.

Input price inflation

Summary of approach

3.3. Allowed revenues are indexed by the retail prices index (RPI) as part of the price control. However, it is expected that the price of several inputs – most notably labour – will not rise in line with RPI inflation. To account for this differential between RPI inflation and expected input price inflation we consider it appropriate to include an additional adjustment to allowed revenues. We propose this adjustment is made ex ante based on forecasted differences between RPI and input price inflation, ie there will be no

indexation of allowed revenues with respect to input prices. Some of the network companies have suggested implementing indexation of input prices and this issue is discussed in Chapter 2 of 'Supplementary Annex – Uncertainty mechanisms'.

3.4. Our approach to setting assumptions at the last two reviews (DPCR5 and GDPCR1) has been to examine historical trends of relevant price indices relative to the RPI to inform our assumptions for RPEs. We expect this approach to continue and we welcome feedback from stakeholders on the most appropriate price indices we should examine as part of our analysis – in particular if we should look at different indices from those which were covered at DPCR5 and GDPCR1 which covered both the gas and electricity sectors. Indices to be considered are outlined in Table 3.1 below.

Table 3.1: Data sources considered at recent price controls

Source	Description
ONS Average Earnings Index (AEI)	General labour costs index
ONS Annual Survey of Hours and Earnings (ASHE)	Sector specific data on earnings and hours paid
ONS Producer Price Indices (PPI)	Input and output indices by sector
Building Cost Information Services (BCIS)	Various cost indices for the construction industry eg Price Adjustment Formulae Indices (PAFI) (Previously known as Baxter Indices), ROADCON Tender Price Index
Bloomberg	Commodity prices
Royal Institute of Chartered Surveyors (RICS)	Commercial rent cost forecast

3.5. There are two issues which were raised at DPCR5 and we set out our views on these in the sub-sections below.

Contractor labour and specialised labour

3.6. At DPCR5 we did not include any wage growth differential between contractor labour and internal labour. This was because we thought that the method of service delivery should not affect the efficient costs to be allowed under a price control. We would expect the network operators to respond to any movements in the relative prices of insourced and outsourced labour costs. We consider this approach to be appropriate for the upcoming price controls.

3.7. We did include a wage growth premium for specialised labour at DPCR5 based on the evidence considered at the time. The network companies will need to justify any such assumption included as part of the business plan submissions.

Notional structure

3.8. We propose to assess the forecasts submitted by the companies against a notional business structure (the proportion of inputs that are labour, materials, etc) rather than the weights of different inputs proposed by the companies. We consider this appropriate because if we set RPE allowances based on particular organisation structures, we may reward inefficient structures or give greater opportunities for less efficient companies to outperform the settlement simply by shifting their structure to those that other companies have in place.

3.9. We recognise that companies will be undertaking activities, each of which may have their own rates of input price inflation, in different proportions. We propose to examine input price growth of each significant area of expenditure separately, and combine these different rates of growth according to the breakdown of work to be undertaken by each company.

Ongoing efficiency

3.10. Our comparative efficiency analysis carried out as part of the cost assessment helps us to identify scope for catch-up by the less efficient companies. However, this analysis does not identify the productivity improvements that can be made by the frontier companies, for example by employing new technologies. These improvements are captured by our ongoing efficiency assumption. This assumption represents the reduction in input volumes that can be achieved whilst delivering the same outputs. The very nature of the assumption means that it cannot solely be based on what efficiency improvements are visible at the price control review as this would overlook the improvements that have not yet been identified and happen on a regular basis throughout the economy.

3.11. As in past price control reviews, we propose to analyse data from productivity datasets such as EU KLEMS (capital (K), labour (L), energy (E), material (M) and service inputs (S)) which contain input and output data for the different sectors in the economy. It is necessary to look at other sectors as the data in the energy network sector has been heavily influenced by the privatisation effect, ie the large increases in productivity that were realised after privatisation. The sectors focussed on to inform this assumption have been those with similarities to the network operators, eg the sectors with significant asset management roles.

3.12. There are other sources of evidence that we also propose to examine. For example, the ONS measures of productivity for the electrical, gas and water industries referenced in the recent Bristol Water investigation by the Competition Commission. We will also examine output/tender price data for capital projects such as the construction output price index (COPI) which is used by Ofwat as part of its price control process. Trends in these price indices will contain the combined effect of input price inflation and efficiency improvements. Analysis of these price indices can be a useful crosscheck on the results emerging from our separate analyses of RPEs and ongoing efficiencies for capital expenditure activities undertaken by the network operators.

3.13. As part of GDPCR1 we included a comparative competition effect on top of the productivity evidence from other sectors. The effect was included to capture the increased productivity improvements that were expected to be realised after the sale of four gas distribution networks by National Grid Gas plc (NGG) through the introduction of comparative competition. These additional productivity improvements formed part of the justification of these network sales and were included in the impact assessment. We expect that there are still benefits from comparative competition to be gained beyond the GDPCR1 price control and we expect these benefits to be reflected in the business plans of the GDNs as we still think there is scope for improvements to be made quicker than elsewhere in the economy.

4. Totex

Chapter Summary
This chapter sets out the historical performance of the GDNs for the first two years of GDPCR1. It then sets out our proposed approach for undertaking totex assessment within the RIIO framework and an alternative approach that brings together different elements of the disaggregated analysis to understand total costs.

Question 1: Do you agree with our approach for assessing the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs expenditure plans?

Historical total controllable expenditure levels and movements

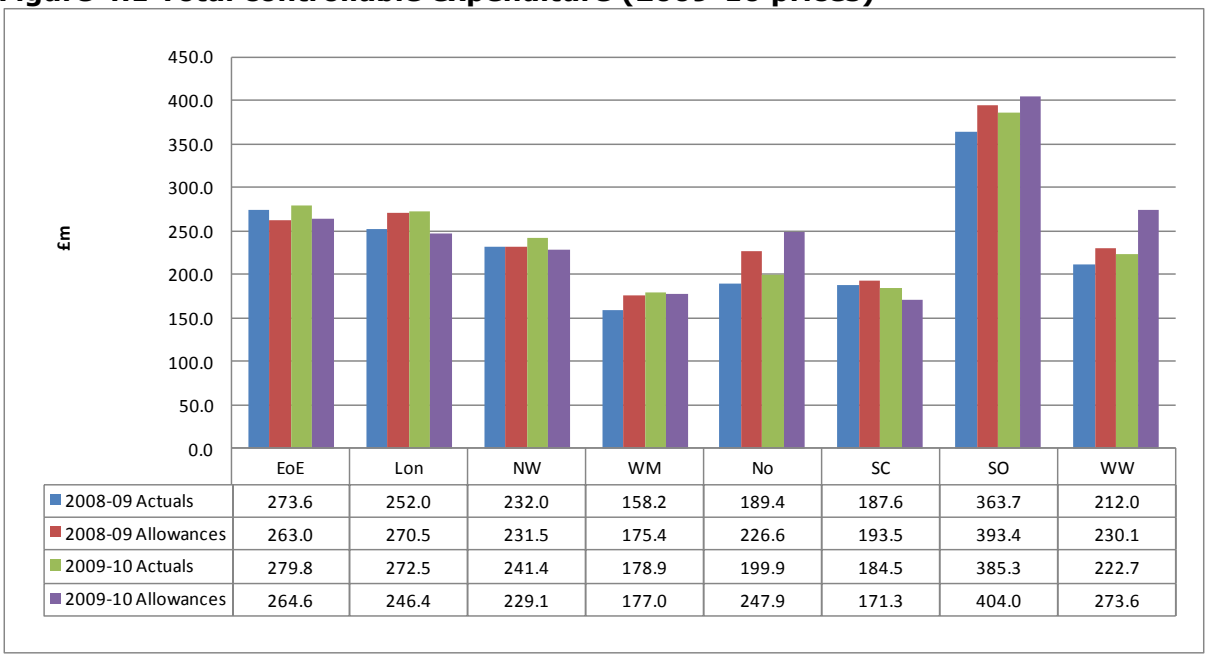
4.1. The GDNs' core business is to own, operate, develop and maintain the network assets required to distribute gas from the National Transmission System (NTS) to end consumers. This principally involves maintaining and replacing pipework and associated network assets, and dealing with gas supply emergencies and requests for connections.

4.2. Figure 4.1 presents total controllable expenditure for each of the GDNs relative to our price control baselines. The industry's 2009-10 totex level was almost £2.0bn, an increase of £97m (5 per cent) from the 2008-09 level, largely driven by repex (£81m) and capex (£41m) and offset slightly by a decline in opex (-£25m). The NGG group accounted for £57m (59 per cent) of the total increase.

4.3. The most significant year on year individual GDN increases were £21m (13 per cent) for West Midlands, £21m (8 per cent) for London, and £22m (6 per cent) for Southern. All GDNs' expenditure rose, except Scotland's which dropped by £3m (1.7 per cent).

4.4. Total spend for 2009-10 was an underspend of £49m (2 per cent) compared to the 2009-10 baselines, driven by opex (-£86m) offset slightly by capex (£22m) and repex (£15m). The NGG group overspent by £56m, while Wales & West and NGN respectively underspent by £51m and £48m.

Figure 4.1 Total controllable expenditure (2009-10 prices)



	EoE	Lon	NW	WM	No	SC	SO	WW
2008-09 Actuals	273.6	252.0	232.0	158.2	189.4	187.6	363.7	212.0
2008-09 Allowances	263.0	270.5	231.5	175.4	226.6	193.5	393.4	230.1
2009-10 Actuals	279.8	272.5	241.4	178.9	199.9	184.5	385.3	222.7
2009-10 Allowances	264.6	246.4	229.1	177.0	247.9	171.3	404.0	273.6

Use of panel data

4.5. We propose to benchmark the total forecast and historical costs of each of the 8 GDNs using panel data techniques. These panel data models use data for two or more years. They can provide better estimates of the impact of cost drivers on costs than is possible with only a single year's data. Better estimates of the impacts of cost drivers can be expected to provide better insights into the companies' relative efficiency.

4.6. In order to assess efficiency using panel data we need to consider both factors that are constant over time and time specific effects, that will make average costs different between years. These reflect a number of factors including:

- input prices: an increase in input prices will increase the average cost of an activity
- industry-wide efficiency: over time the industry will make efficiency improvements that all else being equal will reduce the cost of conducting the various activities
- changes in workload drivers – particularly for large capex costs such as investment in the Local Transmission System (LTS)
- industry-wide shocks: there may be events in a year that change activity levels across the industry. For example, if there was particularly bad weather in a year, one would expect costs in that year to be higher as a result.

4.7. There are three potential models for estimating panel data, the time fixed-effects model, the company fixed-effects model and the random effects model. The fixed-effects models assumes fixed intercepts which vary by company (company fixed effects) or by year (time-fixed effects), while the random effects model assumes that the intercepts are drawn independently from some probability distribution.

4.8. Our preferred model is the time-fixed effects model. This model, which was adopted for DPCR5, captures the business conditions better:

- it enables interpretation of the residuals, and consequently the inefficiencies

- it accounts for factors that change over time, which are controlled by using year dummies. It accommodates these time specific effects by allowing each year to have its own parameter which helps determine the average cost of the activity in that year
- it captures factors that are constant over time, enabling interpretation of the change in costs that would result from a given change in the cost driver.

4.9. The time-fixed effects model relies on the assumption that the cost drivers have a constant effect over time, eg for all years in the sample: a one per cent increase in the cost driver coincides with an x per cent increase in costs.

4.10. Both the random effects model and the company-fixed effects models do not enable the interpretation of residuals, and are therefore not appropriate for efficiency analysis.

Total costs

4.11. There are two approaches for measuring total costs. We propose to use total expenditure which includes actual or proposed controllable opex plus capex and replacement expenditure. This approach is simple and easy to understand and the costs relate to the current state of technology, government regulation and environmental concerns, and the operators' levels of efficiency.

4.12. The alternative approach includes opex plus a measure of capital consumption attributable to a given period. Total costs are defined as: opex + depreciation + opportunity cost of capital (proxied by the Weighted Average Cost of Capital (WACC)). This approach is sensitive to the approach to calculating depreciation and the cost of capital. We made a number of adjustments to GDNs' RAVs as part of the work on the separation of LDZ price controls to ensure more consistent gas distribution charges for a transitional period

4.13. We are aware that some of the GDNs' cost activity expenditure is lumpy. Consequently, it can distort the efficiency analysis by skewing the regression results. We are considering two approaches for dealing with this: smoothing the costs using a moving average or removing the lumpy or atypical costs.

Cost drivers

4.14. Benchmarking models need to take account of the key cost drivers of the business. They should ideally reflect external conditions rather than variables over which the company has influence. They should indicate how a firm responds to external conditions and so are captured by measures of efficiency/performance.

4.15. We are considering two options for selecting totex drivers:

- the first is a high level approach which will utilise one or two key cost drivers which capture the overall circumstances in which the company operates
- the second is a bottom-up approach which will utilise cost drivers from the disaggregated cost activities.

4.16. Some potential totex drivers are highly correlated with each other, and certain potential totex drivers are negatively correlated with each other. We are considering the following approaches to mitigate these problems:

- not including highly correlated cost drivers in the same regressions, because they typically function as substitutes
- creating alternative totex driver groupings, which separate drivers that are negatively correlated with each other. This approach could also provide a sensitivity check for the analysis based on different drivers and/or cost bases.

Alternative approach of combining bottom up regressions

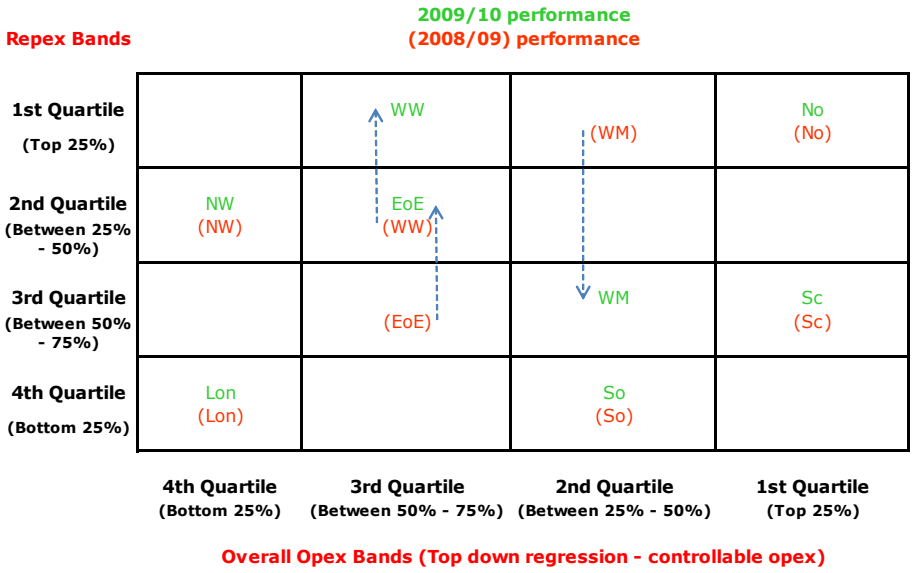
4.17. In addition to developing totex analysis for RIIO-GD1 we are also considering the relative combined performance of the GDNs across all of their activities and comparing this to the direct analysis.

4.18. We currently use individual bottom up regression analysis for repex, some components of capex and a number of the opex activities. Regression analysis is currently used to compare GDNs' costs for approximately 66 per cent of their total cost base. We are therefore looking at processes to combine the different bottom up regression analysis to compare overall GDN historical and future performance.

4.19. To date we have reviewed the GDNs' relative performance on repex and top down total controllable opex. Figure 4.2 benchmarks the relative GDN's performance on repex and total controllable opex for 2008-09 and 2009-10.

Figure 4.2 Relative GDN performance on repex and total controllable opex – 2008-09 and 2009-10

Key to chart: EoE = NGG East of England GDN, Lon = NGG London GDN, NW = NGG North West GDN, WM =NGG West Midlands GDN, No = NGN Northern GDN, SC = SGN Scotland GDN, SO = SGN Southern GDN, WW = WWU Wales and West GDN



4.20. Figure 4.2 clearly identifies the overall good performing GDNs with NGN (indicated as 'No' in the chart) operating in the upper quartile for both repex and total controllable opex in 2008-09 and 2009-10. The chart also shows the movements between 2008-09 and 2009-10 with GDNs continuing to perform consistently relative to their peers on opex but moving significantly on repex. The early totex analysis that we have been carrying out presents a broadly consistent picture with these results. We will publish further details as part of the March decision document.

4.21. We will develop the use of this cross-activity assessment when assessing the GDNs' forecasts for RIIO-GD1. The drivers and techniques used in this assessment will be lifted from the bottom up assessment.

5. Direct opex

Chapter Summary
This chapter explains the nature of direct opex, the historical performance of the GDNs for the first two years of GDPCR1 and the high level industry forecast for the first five years of RIIO-GD1. We set out our proposed approach for assessing the direct opex element of the companies' RIIO-GD1 business plan submissions in line with the RIIO framework.

Question 1: Do you agree with our approach for assessing opex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs opex expenditure plans?

Overview

5.1. Direct operational expenditure (direct opex) are the costs associated with direct operating activities carried out by the GDNs. These activities accounted for 26 per cent of the cost baselines for GDPCR1. These have been reported as three separate groups of activities as follows:

- Work management (8.7 per cent)
  - Asset management
  - Operations management
  - Customer management
- System control
- Work execution
  - Emergency (4.2 per cent)
  - Repairs (4.7 per cent)
  - Maintenance (5.3 per cent)
- Other direct activities (ODA) (includes costs associated with xoserve and Scottish Independent Undertakings (Scotland only) (2.7 per cent).

5.2. Direct operational expenditure is split between controllable and non-controllable operating costs.

- Controllable operating costs are specific costs that are deemed to be within the control of the GDN.
- Non-controllable costs are costs that are beyond management control in the short term and are therefore subject to a pass through mechanism which removes the risk of variations in costs from the businesses by allowing actual costs to be recovered through revenues within the price control period. Costs included in this area are network rates, Ofgem licence fees and contributions to the NTS pension deficit scheme.

5.3. This chapter focuses solely on controllable costs and our proposals for assessing the GDNs' forecasts and setting efficient cost baselines.

The first part of this chapter focuses on the overall trends in the GDNs' historical cost and their cost forecasts. We then consider the trends in costs and GDNs' comparative

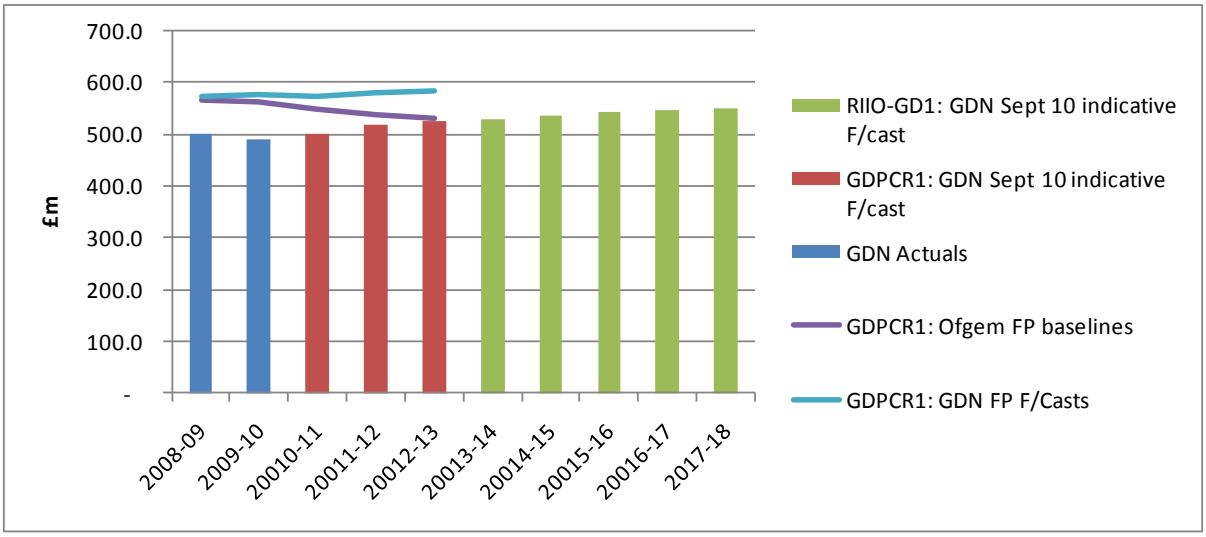
performance for each of the key direct operating cost activities. We finally discuss the key issues for the development of our cost analysis.

Overall trends in direct operating costs

5.4. At GDPCR we set a baseline for controllable direct operating costs. Given that we didn't apply sharing factors to these costs, the GDNs carry the full risk of overspend against the baselines but also keep the full benefit of any outperformance.

5.5. Figure 5.1 below shows the industry's historical performance against the baselines for the first two years of GDPCR1. It also shows the GDNs' initial forecast against the baselines for the remainder of GDPCR1 and their high level forecast for the first five years of RIIO-GD1.

Figure 5.1 GDN controllable direct opex (2009-10 prices)

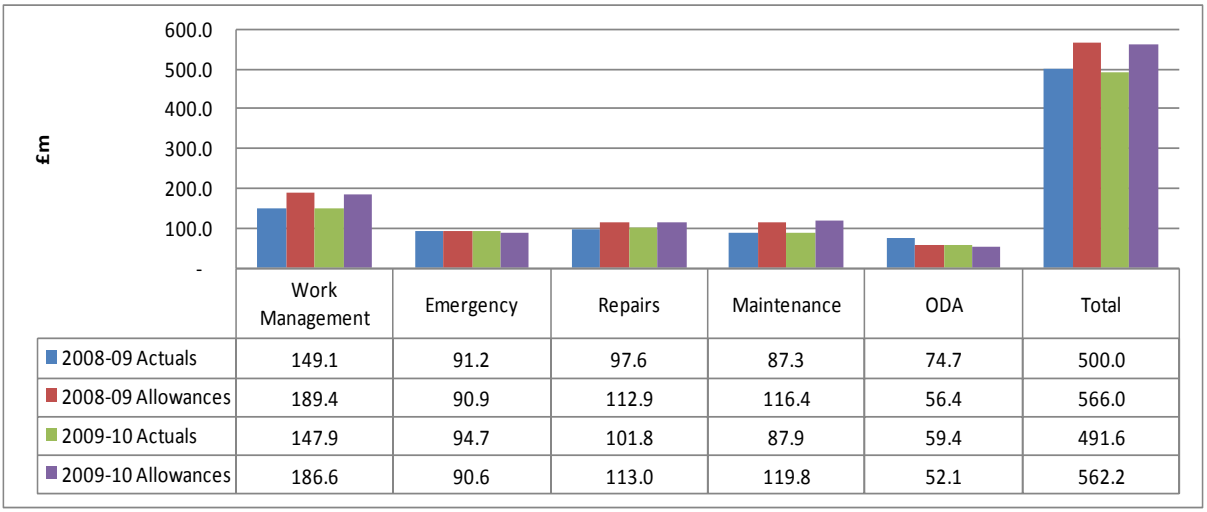


5.6. For the first two years of GDPCR1 the industry has outperformed the original price control baselines for direct opex by 13.7 per cent. The latest indicative forecast for the industry for the remainder of the GDPCR1 suggests the GDNs will outperform the allowance by 4.4 per cent. However it is noted the costs are anticipated to increase from 2009-10. This increase in direct opex is also forecast to continue for the first five years of RIIO-GD1. The total GDN increase is 10.2 per cent above 2009-10 costs.

5.7. It should be noted that the opex baselines have not been adjusted for the loss of meter work driver. GDNs are managing within the overall opex baselines despite the loss of some meter work contracts which impacts on the cost of the emergency service provision that has to be covered from allowed revenues for the distribution business.

5.8. Figure 5.2 shows the actual GDN expenditure by activity against our baselines for the period 2008-09 to 2009-10.

Figure 5.2 GDN controllable direct opex by activity (2009-10 prices)



	Work Management	Emergency	Repairs	Maintenance	ODA	Total
2008-09 Actuals	149.1	91.2	97.6	87.3	74.7	500.0
2008-09 Allowances	189.4	90.9	112.9	116.4	56.4	566.0
2009-10 Actuals	147.9	94.7	101.8	87.9	59.4	491.6
2009-10 Allowances	186.6	90.6	113.0	119.8	52.1	562.2

5.9. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A3.

5.10. The GDNs underspent against allowances for both work management, repairs and maintenance, but overspent on the emergency services and other direct activities (ODA). Much of the overspend on emergency is due to the loss of metering work.

5.11. We have updated the regression analysis used in GDPCR1 for the majority of the direct opex activities for 2008-09 and 2009-10 actual expenditure. The four areas that have been analysed account for 22 per cent of the total baseline for GDPCR1. These are: work management (8.7 per cent), emergency (4.2 per cent), repairs (4.7 per cent) and routine maintenance (4.0 per cent)

5.12. The regressions have been adjusted for the regional factors set as part of GDPCR1 and using the cost drivers identified at that time. We have used the latest Regulatory Reporting Pack (RRP) information submitted. As part of the analysis of the RRPs, and during the cost visits, it was recognised that there were some inconsistencies in reporting between the GDNs. These inconsistencies are currently under review, and will likely require the GDNs to re-submit their RRPs. If needed, the revised regressions will be published as part of the March decision document. This might have an impact on some of the efficiency rankings.

Work management

5.13. Work management is the biggest component of direct opex, making up approximately one third of the costs. Work management is a labour intensive activity with approximately 85 per cent of costs being staff related. Work management includes the following activities:

- asset management
  - planning and design of the networks
  - network integrity to ensure ongoing compliance with policies and procedures
  - network policy
- operations management

  - including work scheduling, dispatch and job closure
  - field staff supervision
  - health, safety and environment
- contract management
  - managing the relationship with engineering contractors and other bought in services
- customer management
  - call centres
  - customer account management
  - quality of service
  - network support
- System control centre costs
  - ensuring the safe, secure and efficient supply of gas from the NTS offtakes to the end user

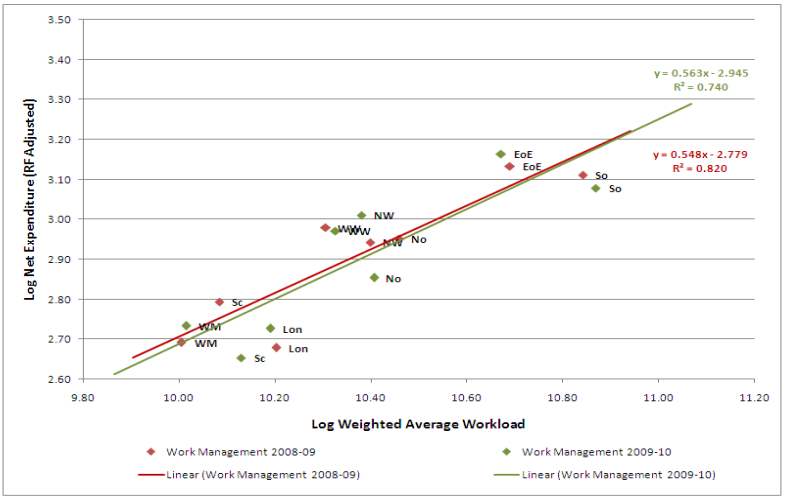
5.14. Following the GDCPR1 price control settlement in December 2007 a number of the GDNs reorganised processes and systems to deliver reductions in staff numbers. In particular they set up their own system control centres and dispatch teams, removing reliance on NGG who provided these services to the independent GDNs immediately following GDN sales. Ongoing assessment of these activities by the new owners and NGG following reorganisations has principally led the outperformance against baselines in this area.

5.15. The regression in Figure 5.3 shows no major shift in average industry costs between 2008-09 and 2009-10 for work management. There is a relatively strong relationship between costs and the driver. Significantly the regression shows that costs have increased for all of the NGG GDNs but reduced for all others with Scotia Gas Networks (SGN)'s Scotland and Southern GDNs the top two efficient GDNs in this area.

5.16. Scotland GDN has seen the biggest decrease in work management costs with a £1.9m reduction from 2008-09 to 2009-10. SGN has identified, Northern Gas Networks (NGN) saw a £1.8m reduction in costs. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A3.

Figure 5.3 Work management regression 2008-09 – 2009-10 (2009-10 prices)

	Rankings	
GDN	2008/2009	2009/2010
EoE	7	6
Lon	1	3
NW	5	8
WM	3	5
No	4	4
Sc	6	1
So	2	2
WW	8	7



Emergency

5.17. Emergency costs are the direct costs of providing an emergency service to respond to all reported gas escapes and make any escapes safe. 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). Following calls to the national gas emergency number (0800 111 999) an engineer or First Call Operative (FCO) is dispatched to follow up reports of gas escapes or no gas supply at individual's premises.

5.18. The work of the emergency engineers in responding to PREs is very sporadic both throughout the day and seasonally. Significant volumes of PREs are received first thing in the morning or later in the afternoon/evening when people are returning home, and in winter the higher volume of gas escapes exacerbate this swing further compared to the lower volume of escapes reported in the summer. Throughout the day and during certain months of the year the FCOs can undertake non-emergency work such as supporting the mains replacement programme or undertaking gas meter exchanges on behalf of gas suppliers. This additional income therefore subsidises the costs of running the emergency service.

5.19. In GDPCR1 a number of GDNs highlighted they were likely to lose a significant amount of meter work, which would ultimately reduce their income and hence increase the net cost of running the emergency service. As such in GDPCR1 we set a loss of meter work revenue driver that incentivised GDNs to find other fill in work for their engineers where appropriate. Where the loss of meter work was deemed to be more than the defined tipping point the GDN would be allowed additional revenue for each additional unit that was lost.

5.20. The loss of meter work revenue driver was introduced in GDPCR1 as a transitional measure given the uncertainty over the volumes of meter work that could be lost and the potential uncertainty on the GDNs' cost base. In both 2008-09 and 2009-10 the costs of the emergency activity overall increased and exceeded the price control allowance. However as shown in Figures 5.4 and 5.5 below the scale of this cost increase is significantly less than the incremental costs estimated under the loss of meter work revenue driver.

Figure 5.4 Comparison of GDN year on year movement of emergency costs against loss of metering work revenue adjustment – 2008-09 (2009-10 prices)

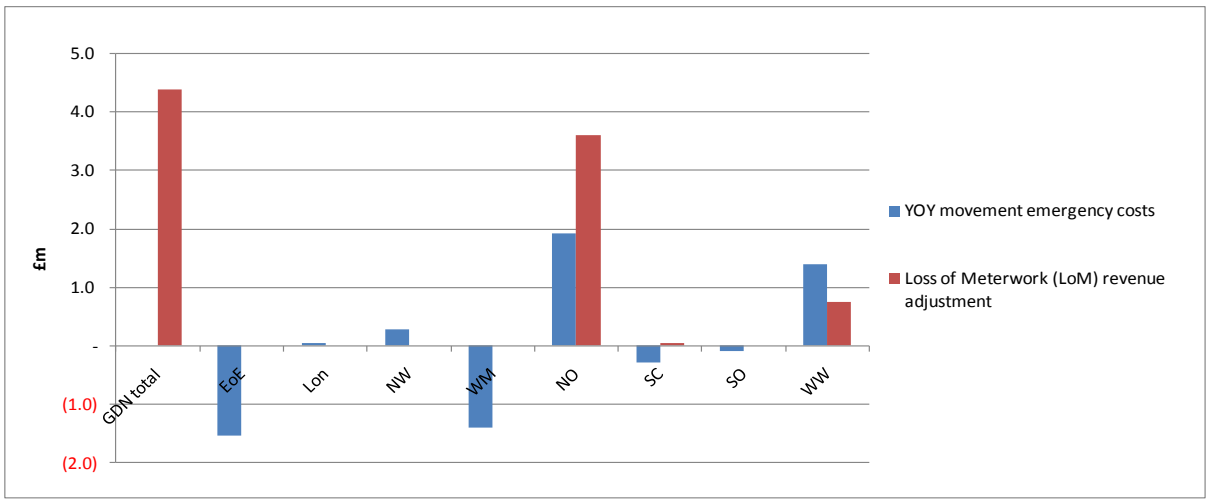
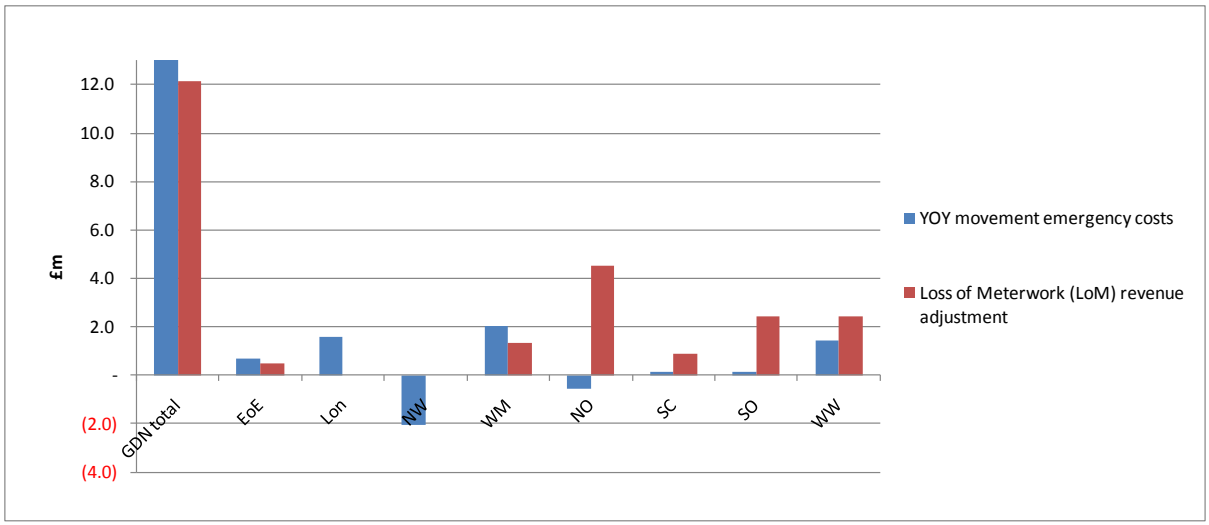


Figure 5.5 Comparison of GDN year on year movement of emergency costs against loss of metering work revenue adjustment – 2009-10 (2009-10 prices)



5.21. Some of the GDNs have demonstrated that they can find alternative fill-in activities, although this will offset some but not all of the incremental costs associated with the loss of metering. For example, NGN highlighted during the cost visits that some of their stranded labour were used for repex purge and relights as opposed to using contract labour.

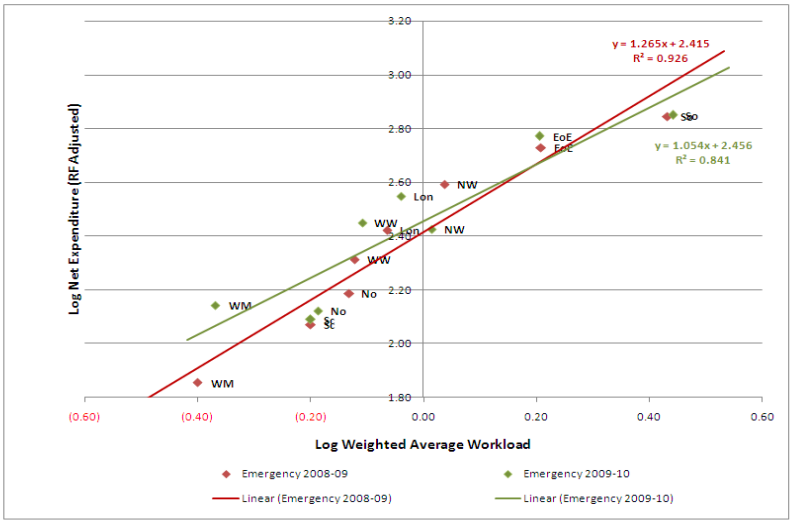
5.22. We propose to remove the loss of meterwork revenue driver as part of RIIO-GD1. The assumptions for setting allowed revenue should be based on the efficient costs of the GDNs' activities including an efficient emergency service. We will expect the GDNs to produce evidence that all avenues have been explored for alternative use of the labour time freed up from loss of metering work, although we recognise this may not be able to fully offset the loss of meterwork. The evidence the GDNs provide will have to take into account the impact that smart metering roll out could have on emergency workload and service alterations.

5.23. The emergency regression (Figure 5.6) shows the costs for emergency have increased for the industry. This is largely as a result of the loss of meter work with increased costs for West Midlands, East of England and Wales and West. It also demonstrates how well Northern has adapted to the loss of meter work with reduced costs between 2008-09 and 2009-10. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A3.

5.24. The two SGN GDNs appear to be the most efficient over the two years, both being in the top three with Scotland the most efficient for 2009-10. Wales & West Utilities (WWU) (£1.4m) and West Midlands (£1.9m) have had the largest increases of costs, which is as a result of the impact of loss of meterwork, and only NW (2.1m) and No (£0.5m) have shown any reduction.

Figure 5.6 Emergency regression 2008-09 – 2009-10 (2009-10 prices)

	Rankings	
GDN	2008/2009	2009/2010
EoE	5	6
Lon	7	8
NW	8	4
WM	4	5
No	3	2
Sc	2	1
So	1	3
WW	6	7



Repairs

5.25. The GDNs operate the repair process, in common with the emergency service, 24 hours a day and 365 days a year. Approximately 85 per cent of publicly reported gas escapes (PREs) are internal reports ie downstream of the meter, and hence the FCO will either carry out a repair if possible, or make safe the gas escape by isolating at the meter. The remaining 15 per cent of PREs are external escapes, ie outside of the property. Since gas escapes emanating from a gas main in the road or service pipe in the footpath cannot be easily isolated, the FCO will normally request a repair team to attend site and carry out a repair.

5.26. The repair activity is the process set up to repair gas escapes from gas distribution assets. Repair costs are the costs of the team attending site locating, excavating and repairing a leaking main and reinstating the highway or road. In the case of leaks from metallic services, where repair is normally difficult, and hence a replacement service is required to be laid, the repair activity stops at the point at which the gas escape is stopped and the site made safe. At a total GDN level the GDNs have underspent the allowance costs for repair in 2008-09 and 2009-10. The GDNs have all highlighted on-going efficiency drives such as managing the repair process based on a risk process that enables some repairs to be deferred, and others to be re-prioritised. This enables the GDNs to manage work patterns better and reduce higher cost activities such as overtime payments.

5.27. In addition, the GDNs have reviewed policies and procedures to maximise the efficiency of the teams allowing different working practices such as home start, more efficient use of direct and contract labour staff, and using management information to highlight areas of underperformance.

5.28. As the GDNs continue to develop their own policies and procedures we are seeing companies operate the repair activity in differing ways. There are a number of potential overlaps in this area of costs between repair, work management, emergency and repex (services) where costs could be allocated to different areas if we do not provide clear definition. Having recently completed the cost visits we are looking to tighten a number of the RIGs definitions to ensure consistent and comparable cost and activity reporting is maintained.

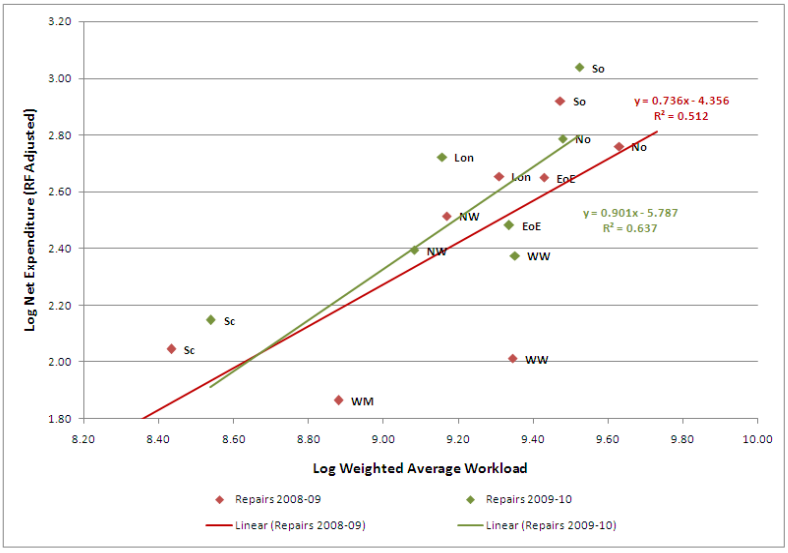
5.29. A large proportion of the repairs are undertaken on older network assets such as iron mains. As the GDNs continue with the mains replacement programme to replace higher risk mains, we will continue to monitor the link between the volume of repair activity and mains replacement.

5.30. As part of RIIO-GD1 we are also looking to develop primary outputs and secondary deliverables that monitor performance of the GDNs. For the repair activity we are proposing a change from a simple cost driver based on the number of repairs to one which considers how the network manages the overall risk associated with gas escapes.

5.31. The regression in Figure 5.7 shows that costs for the NGG GDNs have decreased apart from London, which has increased with the other GDNs. West Midlands and WWU appear to be the leading companies for 2008-09 and 2009-10 although WWU's costs have increased by £3.2m over the two years with a similar workload, West Midlands costs have reduced by £0.4m. The relationship between the driver and the costs has improved between 2008-09 and 2009-10. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A3.

Figure 5.7 Repairs regression 2008-09 to 2009-10 (2009-10 prices)

	Rankings	
GDN	2008/2009	2009/2010
EoE	4	3
Lon	6	8
NW	5	4
WM	2	1
No	3	5
Sc	7	6
So	8	7
WW	1	2



Maintenance

5.32. The maintenance activity is the preventative and corrective actions of the GDNs on their assets required to ensure ongoing reliable operation of their assets. This covers three main areas:

- Local Transmission System (LTS) maintenance
  - Cathodic protection
  - Pipeline monitoring
  - Repairs
  - Aerial inspections
  - AGI maintenance and painting
- Storage maintenance
  - Low pressure (LP) holder inspections, maintenance and painting
  - High pressure (HP) bullet inspections, maintenance and painting
- Maintenance Other
  - Leakage control eg mains surveys, pressure control, gas conditioning
  - Instrumentation repair and maintenance
- District governor maintenance

5.33. Maintenance is normally classed as routine - planned maintenance which happens on a regular cycle, eg 6 monthly or yearly, or non-routine maintenance that is required following an inspection failure or major overhaul.

5.34. In GDPCR1 we used regression analysis to consider the GDN's routine maintenance costs since the GDNs all follow consistent maintenance policies that set out the required cycles for maintenance. For non-routine maintenance we had to consider the GDNs own specific programmes of work taking into account condition of the assets and any planned investment programmes to replace ageing assets.

5.35. In 2008-09 and 2009-10 we have seen significant reductions in maintenance costs in the GDNs. We queried these reductions during the cost visits given the fairly consistent size of the asset bases of the GDNs. It can be seen from the regression analysis in Figure 5.8 that the costs associated with routine maintenance have been fairly consistent across the two years with NGN being the only GDN that has significantly reduced its routine maintenance expenditure. NGN highlighted examples of changes to processes such single-man working rather than two man teams that has driven down expenditure.

5.36. The biggest reduction in costs has been in non-routine maintenance and in particular gas holder painting costs. A number of the GDNs have highlighted different operating techniques compared to what was originally planned at the start of GDPCR1. A key element of this is related to the reduction in network demand following the recession and the opportunities the networks have taken for reducing gas storage costs.

5.37. Gas holder storage is one way of meeting network demand, other alternatives include LTS investment and storage from the NTS. Given the downturn in the economy the GDNs have looked at all opportunities for meeting 1 in 20 peak demand requirements in the most efficient way possible. Gas holders are ageing assets, most of which were built in the early 1900s. Maintaining these assets is expensive and hence

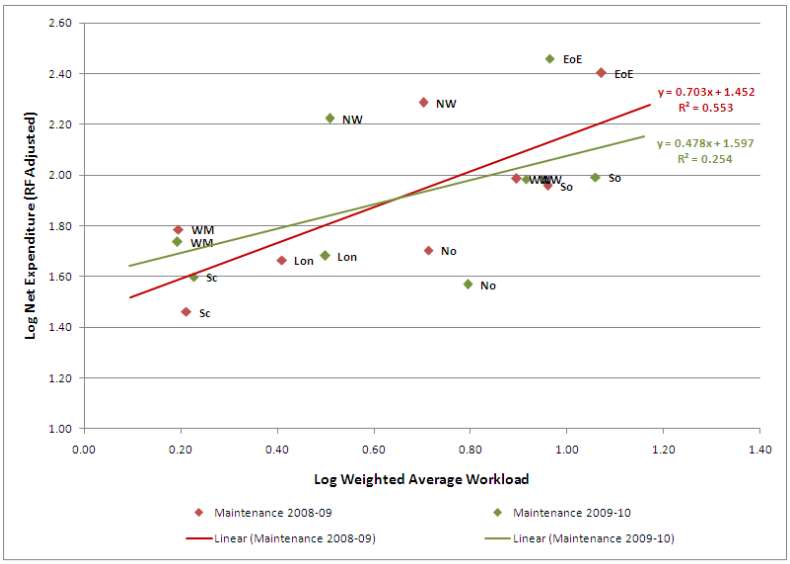
where the GDNs can source cheaper alternatives to source the gas they are looking to maximise the opportunities to reduce their costs.

5.38. We are considering ways to improved the robustness of the analysis shown in Figure 5.8. This issue is further discussed in paragraph 5.43.

5.39. The regression in Figure 5.8 shows Northern as the most efficient GDN across both years, achieving cost reductions of £0.9m. This has been achieved by adopting alternative ways of working, such as one-man teams. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A3.

Figure 5.8 – Routine maintenance regression 2008-09 – 2009-10 (2009-10 prices)

	Rankings	
GDN	2008/2009	2009/2010
EoE	7	8
Lon	5	2
NW	8	7
WM	6	6
No	1	1
Sc	3	4
So	2	3
WW	4	5



Issues for the development of our cost analysis

Consistency of reporting

5.40. As previously stated, we have identified inconsistencies in reporting through our analysis of the RRPs and cost visits to the GDNs. This is largely due to differences in interpretation of the RIGs. These inconsistencies have the potential to distort the regressions. We are currently identifying the extent of the inconsistencies and will work with the GDNs to give further RRP guidance to improve consistency in reporting. We will then ask for updated RRPs to be submitted. The inconsistencies include:

- reporting of major incidents – the four groups are reporting these under three different categories, emergency, repairs and non-routine maintenance
- repairs – these are potentially being reported inconsistently as the definition of what constitutes a single repair against multiple repairs following a reported escape differs
- non-routine maintenance – there are inconsistencies in defining what is routine and non-routine maintenance
- D2 rechecks, when a repair is deferred and subsequent checks are required to confirm the status of the escape – costs being reported against both emergency and repairs
- operational property management – costs being reported against both work management and indirect costs.

Costs

5.41. The GDNs have highlighted rising costs and uncertainties in relation to local authorities adopting permitting schemes under the Traffic Management Act (TMA). We are proposing to continue with an uncertainty mechanism in this area as part of RIIO-GD1. GDNs will have to demonstrate the real cost increases associated with TMA against the 'business as usual' costs of working in the road associated with the New Roads and Street Works Act (NRSWA). Further details are set out in Chapter 3 in our background paper on uncertainty mechanisms.

5.42. The underspend against the allowance set for maintenance has caused us some concerns. The GDNs will have to demonstrate as part of RIIO-GD1 that any efficiencies gained during GDPCR1 are not having an impact on the integrity of their assets. Additionally, we intend to engage with technical consultants to look at this area.

5.43. The GDNs must highlight opex savings that have been achieved or will be delivered through significant capex projects, either as part of the current price control or RIIO-GD1 eg NGG Gas Distribution Front Office (GDFO) project. This is a fundamental part of the well justified business plan where GDNs consider the trade offs between investing in new assets and the subsequent benefits or business savings.

Regressions

5.44. We have set up workshops with the GDNs to identify issues with the current regression techniques and to develop them further as part of RIIO-GD1. We asked the GDNs to comment on the current regressions and cost drivers and to identify potential refinements. They presented their work to us in August 2010 and during the cost visits. We have carried out our own analysis of these and tested them. This analysis was presented to the GDNs in November 2010. A summary of this is as follows:

- **Work management** – the regression currently uses a composite scale variable (CSV) of network length, the number of Public Reported Escapes (PREs) and number of repairs. We found that there have been instabilities in this regression and that there is a relatively poor relationship between the CSV and expenditure. We are exploring two further options:
  - splitting out work management into the four categories and identifying a more appropriate driver for each. However, initial analysis of this has produced poor results, which may be caused by inconsistency of reporting by the GDNs across the four areas
  - stop using work management as an activity and allocate the costs to the appropriate activities they support
- **Emergency** – this uses a composite scale variable of the number of PREs and number of repairs. It is generally accepted that this is a reasonable approach.
- **Repairs** – this uses a CSV of the number of reports that lead to service damage repairs, service condition repairs, mains damage repairs and mains condition repair. The GDNs highlighted that the results are distorted with the introduction of TMA, which has a greater impact on different GDNs (specifically those operating in London), and additionally we tested the regression using the number of repairs as the driver. By removing TMA costs and using repairs as a driver the relationship has significantly improved. However, we need to resolve the inconsistency in the definition of a repairs and reporting of major incidents. This should provide a further improvement in the regressions.
- **Combining the emergency and repair activities.** It was also suggested that emergency and repairs are strongly related and should be combined for regression

purposes. There are questions over the consistency of reporting of costs by the GDNs and questions about when an activity stops being classed as an emergency and effectively becomes a repair activity. An example of this is carrying out rechecks of gas escapes. We will continue to look at these issues as we develop our analysis further for the March decision documents.

- **Routine maintenance** – the current CSV is the number of offtakes and pressure reduction stations, governors and operational holders. The GDNs have raised concerns over this regression and the limited relationship with the existing cost driver. NGG considers we should use a composite driver based on asset numbers weighted by the number of annual maintenance hours per asset group. We consider that there is significant merit in this approach and it is similar to the analysis we carried out for inspections and maintenance at DPCR5. We have requested further information from the GDNs to develop this.

5.45. In November we explained to the GDNs how we expect to use panel data in the regressions. This enables us to use data from more than one period and give us a larger sample size which should improve the robustness of the results and give greater insight into the relative efficiency of the GDNs. As discussed in Chapter 4, we will use this approach as part of the March strategy document in setting out our view of historical efficiency and in assessing the efficiency of RIIO-GD1 submissions.

6. Indirect opex/business support costs

Chapter Summary
This chapter summarises our initial thoughts on the methodology we may use in assessing indirect costs, particularly business support costs.

Question 1: Are there any comments on the proposed assessment for business support costs?
Question 2: Are the costs drivers proposed the most appropriate ones?

Overview

6.1. Indirect operating costs for Transmission and Gas Distribution companies can be split into two categories: those costs that are required to support the overall business (Business Support) and those costs that support the operational activities (closely associated indirect costs).

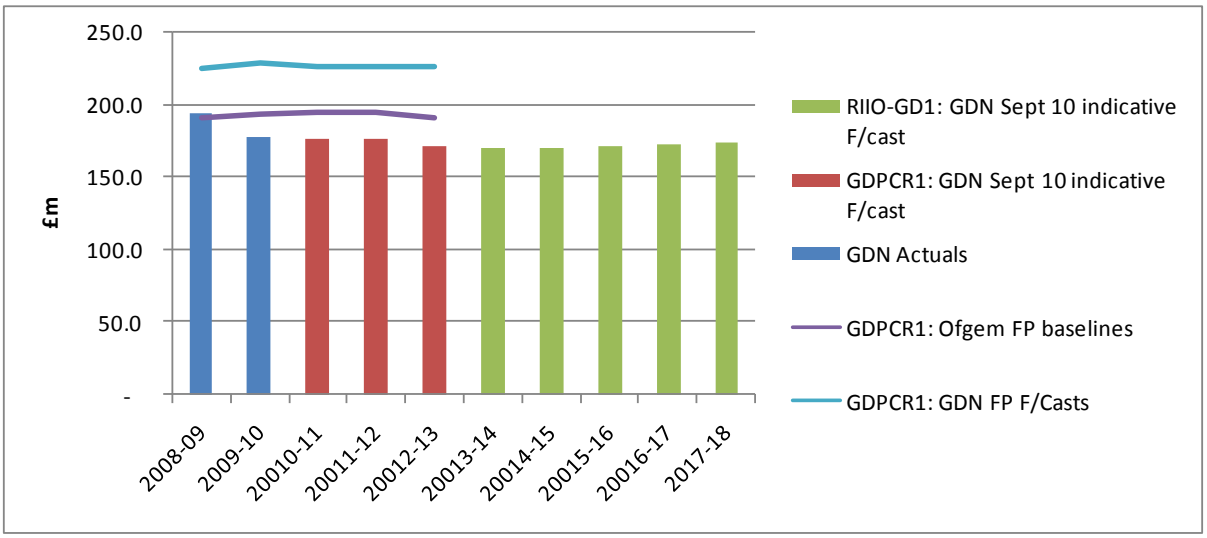
6.2. Those costs falling into the business support category are:

- Information Systems and Telecommunications
- Property
- Human Resources and Training
- Finance and Regulation
- Insurance
- Procurement
- CEO and other corporate functions.

6.3. In Gas Distribution closely associated indirect costs, such as network design, engineering management and clerical, control centre etc, have been treated as direct costs - work management costs. The proposal is that these costs will remain in work management. This is covered in Chapter 5.

6.4. Figure 6.1 shows the historical and future trends for total business support costs by GDN, based on actuals and the indicative forecast provided by the GDNs. Overall actual costs are lower than the allowances set for GDPCR1. Major efficiencies appear to have been made in the first two years with all 8 GDNs showing savings within property costs and all but one within information systems. The total forecast for all GDNs shows very little change and efficiencies going forward, but some GDNs are forecasting a reduction in business support costs whilst others are expecting them to rise from GDPCR1 levels.

Figure 6.1 GDN business support costs (2009-10 prices)



6.5. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix A4.

6.6. The RIIO-T1 and GD1 price controls provides an opportunity for assessment and benchmarking business support costs more widely across all networks. The chapter focuses on the our proposals for assessment of these costs both within RIIO-T1 and GD1.

Assessment methodology

6.7. As RIIO-T1 and GD1 are being run simultaneously we consider that the same approach should be applied to the assessment of business support costs. We will run this as a single workstream covering both price reviews.

6.8. We intend, where possible to compare business support cost across the GDNs and Transmission companies. It may also be possible to compare costs with Electricity Distribution companies (DNOs) in some cases. We will also look to identify appropriate external comparators.

6.9. Some costs within the areas of business support are small in relation to other areas. We will therefore ensure that the assessment is proportionate to the magnitude of costs involved and the potential for savings. The overall assessment of business support costs should also be proportionate to the assessment of capex and direct opex.

6.10. The assessment of business support costs will use a range of techniques including: historical and forecast trend analysis, regression analysis, comparison of costs between networks, expert review, and, the use of external benchmark information. A mixture of these techniques will be used in the initial sweep of companies' business plans in 2011 and in the more detailed analysis that will follow in 2012.

6.11. When reviewing the business support costs in the initial sweep we will consider the costs in the following four groups:

- Total Indirect (Business Support) costs
- Information Systems and Telecoms
- Property
- Other Business Support costs.

In the more detailed review we will go down to a greater level of detail where necessary.

Trend analysis

6.12. The historical trend analysis will look at GDNs' performance against price control baselines. We will look at the reasons and justification for changes in costs in the forecast period and how these are related to the outputs. We may also conduct a spot audit of a small sample of costs to inform our view on the robustness of the analysis.

6.13. In reviewing the costs in more detail we will also ask companies further questions. We will consider whether differences between companies are due to differences in the business models being used, and insourcing/outsourcing decisions.

6.14. Business support costs would be expected to follow similar trends across industries. For this reason we will examine trends in these costs for electricity DNOs to inform our view on transmission and GDN trends.

Regression

6.15. Regression analysis will be used and encompass data for both Transmission and GDNs. We will use a panel data approach, where appropriate, using three years of historical data and forecasts. The regression data for GDNs will also be run using GDN ownership groups as well as data for all eight individual companies.

6.16. We have started to look at regression analysis in this area using historic GDN data. The following is a list of costs drivers we have trialled:

- customer numbers and length of network
- total direct costs
- total assets from the regulated accounts (fixed and current)
- employee numbers

More analysis is needed to say which of the above is the most appropriate driver, or drivers, to use.

Expert review

6.17. We propose to use specialist consultants to assist in our assessment at this stage. It is likely this will be in two areas, IT and property as these are two of the largest cost areas within indirect costs. We intend that indirect costs more closely associated with operational activities will be reviewed by the engineering consultants when assessing direct capex and opex.

6.18. We anticipate that the IT consultants will conduct a review that includes:

- comparing projected costs against historical costs and looking for explanation of changes in the business plans
- examining their information technology requirements
- analysing their proposed IT investment plans
- examining proposed IT operations costs
- benchmarking costs against other companies with similar information technology needs
- comparing expenditure with other TOs, DNOs and GDNs.

6.19. The same IT consultants will also examine the NGET and NGG System Operator IT using a similar approach. We expect that IT costs specifically related to engineering asset management systems will be reviewed by the engineering consultants.

6.20. We would expect the property consultants to conduct the following analysis:

- comparing projected costs against historical costs and looking for explanation of changes in the business plans
- analysing their proposed property plan
- examining their proposed property costs
- benchmarking against other firms with similar property needs
- comparing expenditure with other TOs, DNOs and GDNs
- advising on appropriateness of property related costs required for network infrastructure.

External Benchmark Information

6.21. Various companies and consultancies produce benchmarking data for areas included within indirect costs. We will examine what data is available and may use such data to enhance our assessment of network companies. We are likely to use external benchmarking to assist us in forming a view for both the fast track and non fast track assessment processes.

7. Capital expenditure

Chapter Summary
This chapter sets out the nature of the capital expenditure activities, the historical performance of the GDNs for the first two years of GDPCR1 and the high level industry forecast for the first five years of RIIO-GD1. We set out our proposed approach for assessing the capex element of the companies' RIIO-GD1 business plan submissions in line with the RIIO framework.

Question 1: Do you agree with our approach for assessing capex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs' capex expenditure plans?

Overview

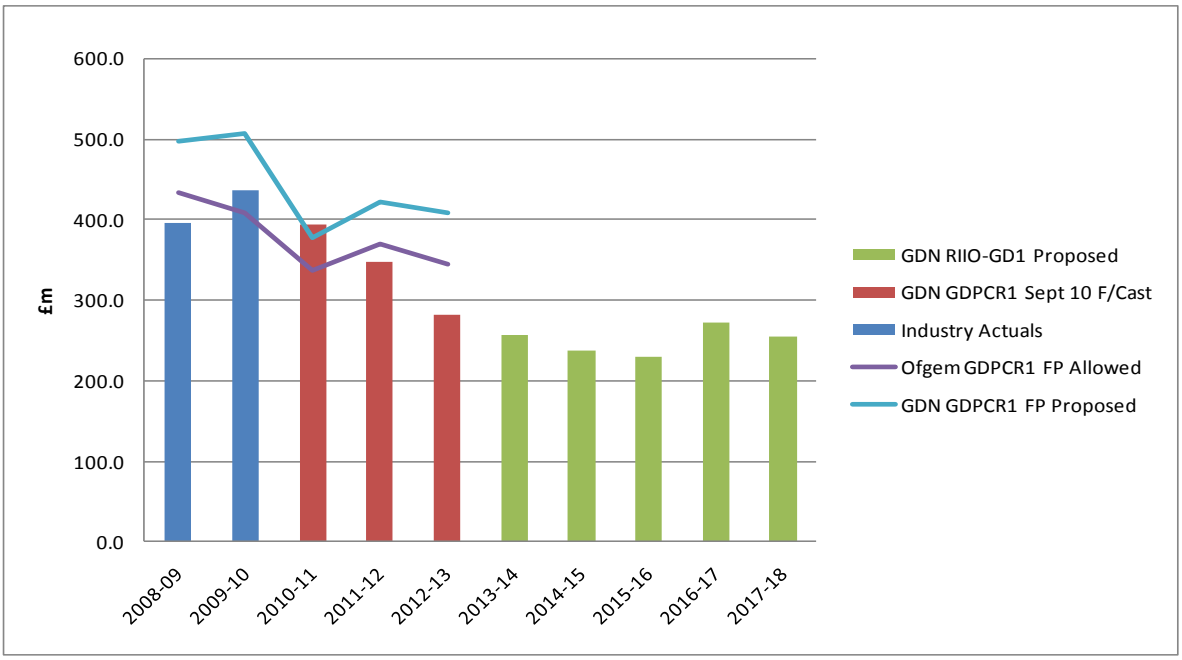
7.1. The GDNs are required to invest in their networks for a number of reasons. The principal drivers are safety and integrity of the network, reliability and to add capacity due to load growth on their networks.

7.2. Each year the GDNs invest around £350m in their networks. This includes direct expenditure on the pipes and pressure reduction equipment required to transport gas to end users, along with investment in the associated IT, management and control systems required to monitor and operate the networks and services 24 hours a day, 365 days a year.

7.3. Figure 7.1 presents the total net capex allowed for the GDNs in GDPCR1 along with the GDN forecasts proposed for the same period. We also set out the GDNs' actual expenditure for 2008-09 and 2009-10. In September 2010 we requested high level capex forecasts from the GDNs for the remaining three years of GDPCR1 and the first five years of RIIO-GD1. We highlighted to the GDNs that we would be looking to use these forecasts to enable us to identify the significant issues for the forthcoming price control work.

7.4. The latest GDN capex forecast to the end of GDPCR1 shows a reduction in levels of capex from the start of the current price control period. This is primarily due to the decrease in forecast demand which has enabled some GDNs to defer planned reinforcement projects into later price control periods.

Figure 7.1 GDN Total net capex 2008-09 to 2017-18 (2009-10 prices)



7.5. The following table presents the actual expenditure and forecasts split between the major capex areas of work.

Table 7.2 GDN Total net capex by category 2008-09 to 2017-18 (2009-10 prices)

Total GDN	GDPCR1 Actuals		GDN GDPCR1 Sept 10 F/Cast			GDN RIIO-GD1 Sept 10 F/Cast				
Net Capex	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
LTS & Storage	105.5	116.0	88.0	79.4	54.6	49.5	71.0	64.3	67.2	73.4
Mains & Govs	61.3	75.1	79.9	74.6	66.5	76.3	74.2	72.9	71.6	71.6
Connections	57.6	45.6	46.8	53.5	55.7	57.5	59.6	60.7	61.9	62.7
Other	171.5	200.4	179.0	140.1	104.8	166.4	143.0	141.0	183.0	141.6
Total Net Cap	**396.0**	**437.1**	**393.7**	**347.7**	**281.6**	**349.7**	**347.8**	**338.9**	**383.7**	**349.3**

7.6. The major areas of expenditure are Local Transmission System (LTS) and Storage and Other capex which comprise approximately 60 per cent of the total GDN capex.

7.7. The following sections provide more detail on the specific capex activity areas along with issues identified during GDPCR1 and how we intend to develop our thinking for RIIO-GD1.

LTS and storage

7.8. The LTS operates at a pressure below seven bar (>7barg) and transports gas from the National Transmission System (NTS) offtakes to the distribution systems and directly to some large users. The LTS is the primary source of additional diurnal storage related to demand growth and is also required to transfer diurnal storage where this is bought from the NTS. Expenditure to reinforce the LTS is driven either by increases in network demand or due to issues of network integrity where assets are deemed to be at the end

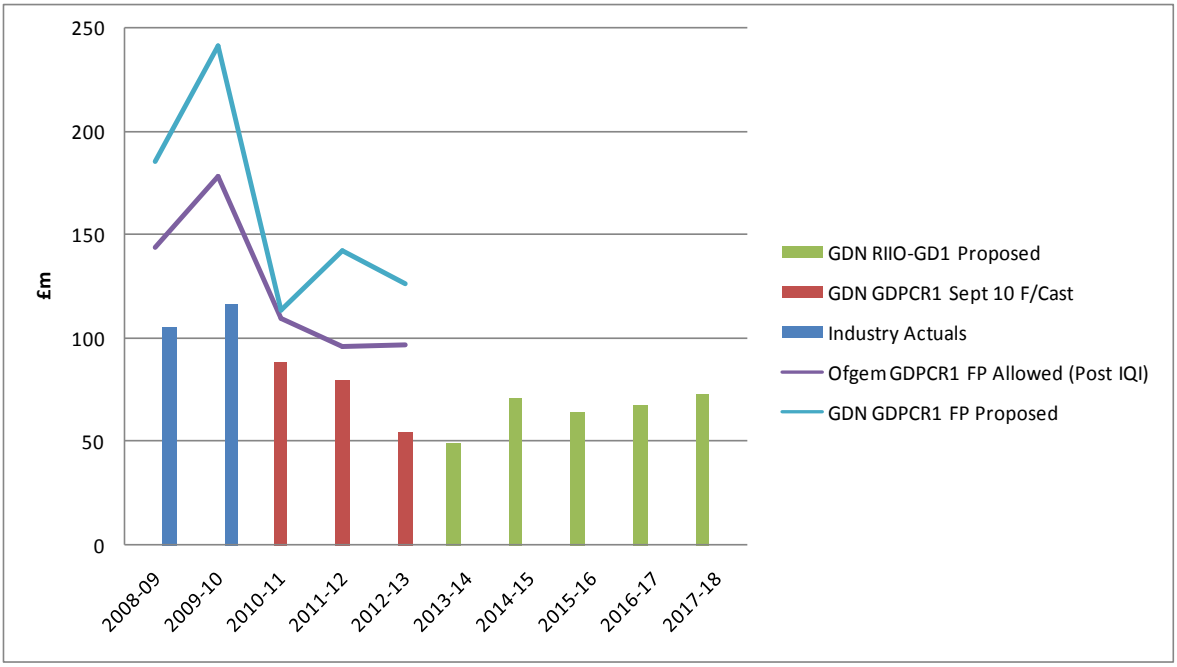
of their working life. Demand driven growth results in lumpy expenditure on the LTS when existing capacity reaches its limits and new capacity is constructed to meet longer term capacity needs – normally using a ten year horizon.

7.9. LTS and storage capex comprises predominantly large scale project work. Historically we have looked to carry out a technical assessment of the GDNs' business plan forecasts considering both the needs case for any proposed project as well as an efficiency assessment of the costs.

7.10. Figure 7.3 presents the total GDN forecasts and baselines for GDPCR1 as well as actual costs to date. We also present the latest indicative forecasts for the remainder of GDPCR1 and the first five years of RIIO-GD1.

7.11. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix 5.

Figure 7.3 GDN LTS and storage net capex 2008-09 to 2017-18 (2009-10 prices)



7.12. In the first two years of GDPCR1 the GDNs have under spent the LTS capex allowance of £322.5m by £101.1m (31 per cent). This large underspend is predominantly driven by the deferral of capacity related expenditure following the reduction in network demand during the price control period. Each year the GDNs revise their demand forecasts to reflect the previous winter's data and the latest forecasts for demand growth. Given the downturn in the economy and the impact of higher gas prices GDNs have been able to defer a number of previously proposed projects. All GDNs are now forecasting to underspend the allowances for the five year period of GDPCR1.

7.13. Looking forward the GDNs have articulated a change in the principal driver for LTS capex for the RIIO-GD1 period. The GDNs have highlighted two principal reasons for the ongoing investment in LTS and storage: network integrity issues and localised capacity requirements to support the mains replacement programme

7.14. The network integrity issues are fundamentally the result of ageing equipment and assets in poor condition requiring higher levels of maintenance as well as examples of obsolescent equipment. In addition, to support the mains replacement programme, some GDNs have identified LTS capex projects that assist with overall network strategy approaches aligned to delivering the mains replacement programme. Ultimately this means reinforcing upstream pressures to facilitate higher levels of mains insertion further down the network.

7.15. Under the principles of RIIO we are looking to develop safety and reliability outputs which consider the impact of capacity changes on the GDNs' forecast plans. The onus will be on the GDNs to provide adequate output information to justify that investment is required for either asset health or load reasons. If sufficient information is not provided or the GDN is not prepared to commit to the relevant output, we will carry out a more detailed review and will be less likely to incorporate the associated spend into our baselines.

7.16. The GDN will also need to provide evidence to demonstrate that they have considered alternative options and that both the choice of project and the associated cost are efficient. For example, they should provide evidence of market testing and their own benchmarking. For the initial sweep we will focus on the quality of evidence that is provided and may carry out a more detailed review of a small number of projects. For the more detailed cost assessment work for companies that are not being fast tracked, it is likely that we will continue to look to carry out specific project reviews for LTS to review both the needs case for projects and the efficiency.

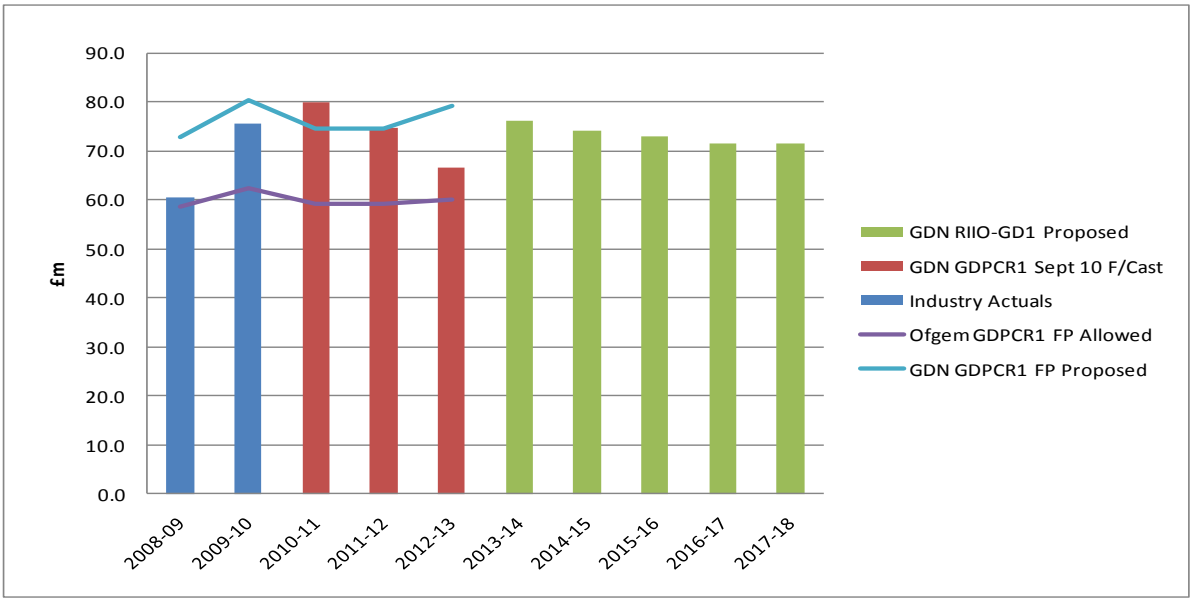
Mains reinforcement and governors

7.17. The GDNs are also required to design and manage their network to meet the 1 in 20 peak demand requirement, which is the level of demand that would be exceeded in 1 out of 20 winters. This requirement often results in the GDNs carrying out localised reinforcement on the <7barg network. Usually this involves new gas mains being laid to provide increased network flows and pressures in specific areas along with the replacement and upgrading of pressure reduction equipment to control the network pressures. In GDPCR1 the GDNs identified particular assets requiring replacement due to inadequate capacity and obsolescence of components to enable the assets to be maintained.

7.18. Figure 7.4 shows the historical levels spend on mains reinforcement and governors for the first two years of GDPCR1 along with the allowances made. In addition we have included the GDNs' August 2010 high level forecast of expenditure to the end of GDPCR1 and for the first five years of RIIO-GD1. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix 5.

7.19. It can be seen the overall expenditure level for mains reinforcement and governors is forecast to be fairly flat over the forecast price control period.

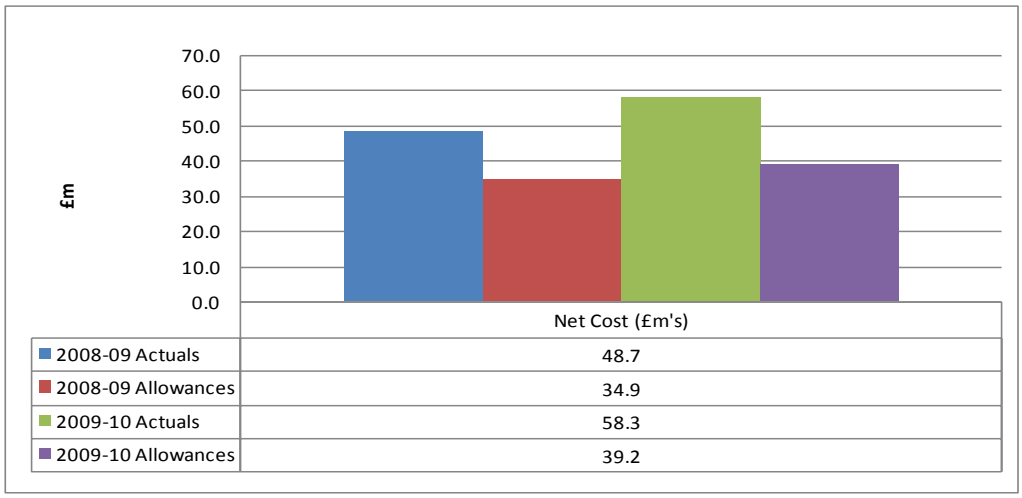
Figure 7.4 – GDN mains reinforcement and governor net capex 2008-09 to 2017-18 (2009/10 prices)



7.20. In terms of reinforcing the networks the GDNs normally have the option of physically laying new pipes to reinforce the network or increasing system pressures where appropriate by adjusting the governors controlling the inlet pressures to the networks. Although we consider mains reinforcement and governors as a single category we set the allowances under the current price control separately using regression as the principle assessment for mains reinforcement and specialist technical assessment to assess the GDNs' proposed expenditure for governors.

7.21. Figure 7.5 shows the level of GDN mains reinforcement spend against the baselines made for GDPCR1.

Figure 7.5 GDN mains reinforcement net capex 2008-09 to 2009-10 (2009-10 prices)

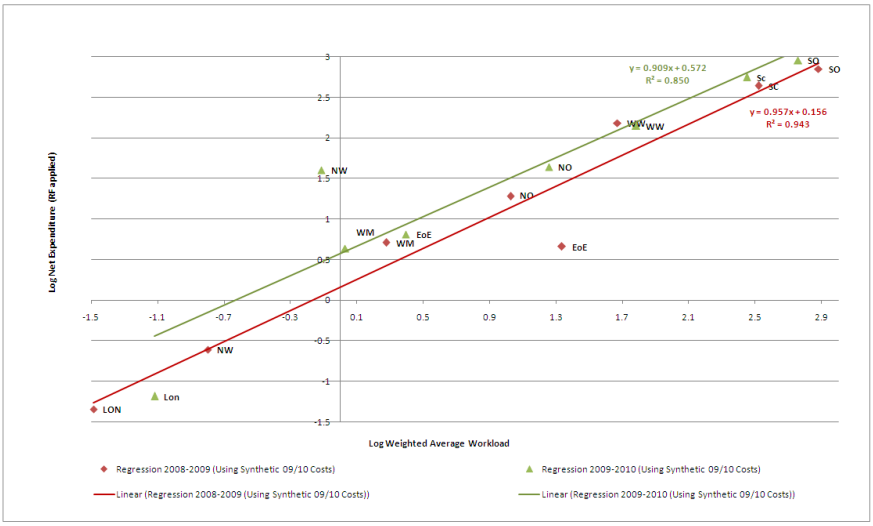


7.22. Mains reinforcement spend is highly sensitive to localised network growth and the GDNs have highlighted in a number of areas where specific load growth has triggered investment despite the overall downturn in annual demand.

As discussed in Chapter 2, we have carried out regression analysis to consider the historical efficiency of the GDNs undertaking mains reinforcement. The following graph presents the relative rankings of the GDNs for mains reinforcement for 2008-09 to 2009-10.

Figure 7.6 GDN mains reinforcement regression 2008-09 and 2009-10

Ranking		
GDN	2008/2009	2009/2010
EoE	1	3
Lon	2	1
No	6	4
NW	4	8
Sc	5	5
So	3	2
WM	7	7
WW	8	6



7.23. As highlighted earlier the relatively small workloads and investment around mains reinforcement are sensitive to large one off projects. In particular reinforcing the intermediate and medium pressure tiers of the <7barg networks can distort the regression due to the high unit costs associated with this work.

7.24. Over the past year, reduced levels of reinforcement mains were installed owing to the reduced increase in gas demand. The industry has also experienced cost pressures in relation to materials and contract labour. The length of reinforcement main laid was 202.2km; 5.3 per cent below the level reported for 2008-9 of 213.5km. The unit cost increased by 26.4 per cent, from £228.10 in 2008-09 to £288.40 in 2009-10.

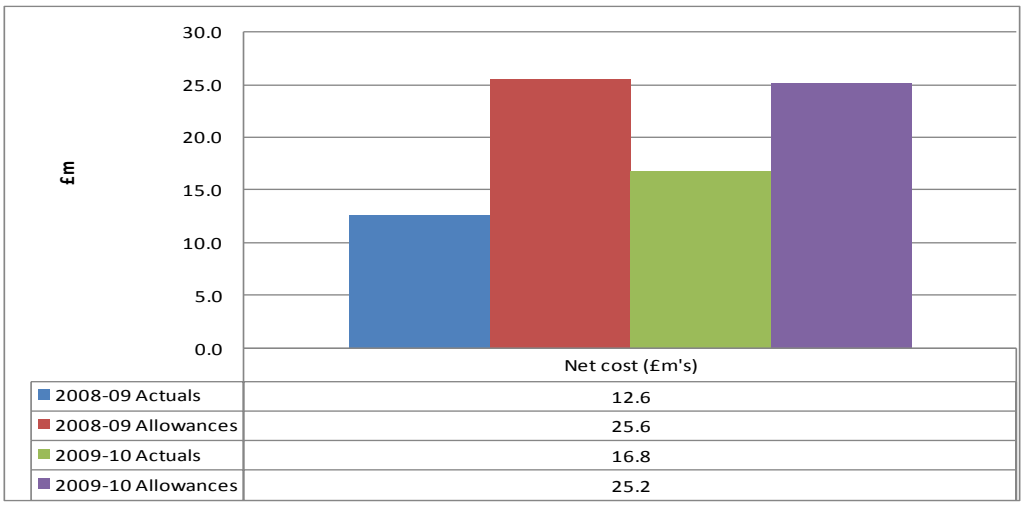
7.25. Despite relative low levels of work, London GDN was the highest performer, followed by Southern and East of England GDNs.

7.26. In developing the assessment for RIIO-GD1 we are currently looking at options to improve our analysis including separate analysis for one-off high cost projects that could distort the regression. We are therefore considering separately reviewing projects more than £0.5m, or those that span multiple years and hence costs and workloads may not be aligned.

7.27. Looking separately at governors (Figure 7.7), industry expenditure has steadily increased from the one year GDPCR in 2007-08, however yearly expenditure still appears to be below the respective baselines set for GDPCR1.

7.28. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix five.

Figure 7.7 GDN governor net capex 2008-09 to 2009-10 (2009-10 prices)



7.29. The GDNs are forecasting continued investment in this area into RIIO-GD1 period. However, there was little documentary evidence to substantiate the levels of expenditure forecast by the GDNs given past historical spend. These forecasts were at a very high level and assurances from the industry were that a more informed process will materialise in support of funding as part of the business plan submissions in 2011.

7.30. Major governor replacement programmes tend to span two years due to the detailed planning and design phases required before implementation. For this reason annual unit cost information is unlikely to be useful when considering the GDN forecasts.

7.31. We are currently considering looking at average costs and workloads over a longer period of time to test the companies' governor forecasts. The GDNs have indicated that they expect to step up their governor replacement work to address network integrity issues in the next price control period. Once again we will be looking for the GDNs to develop asset health indices and to commit to outputs commensurate with forecast expenditure in this area.

Connections

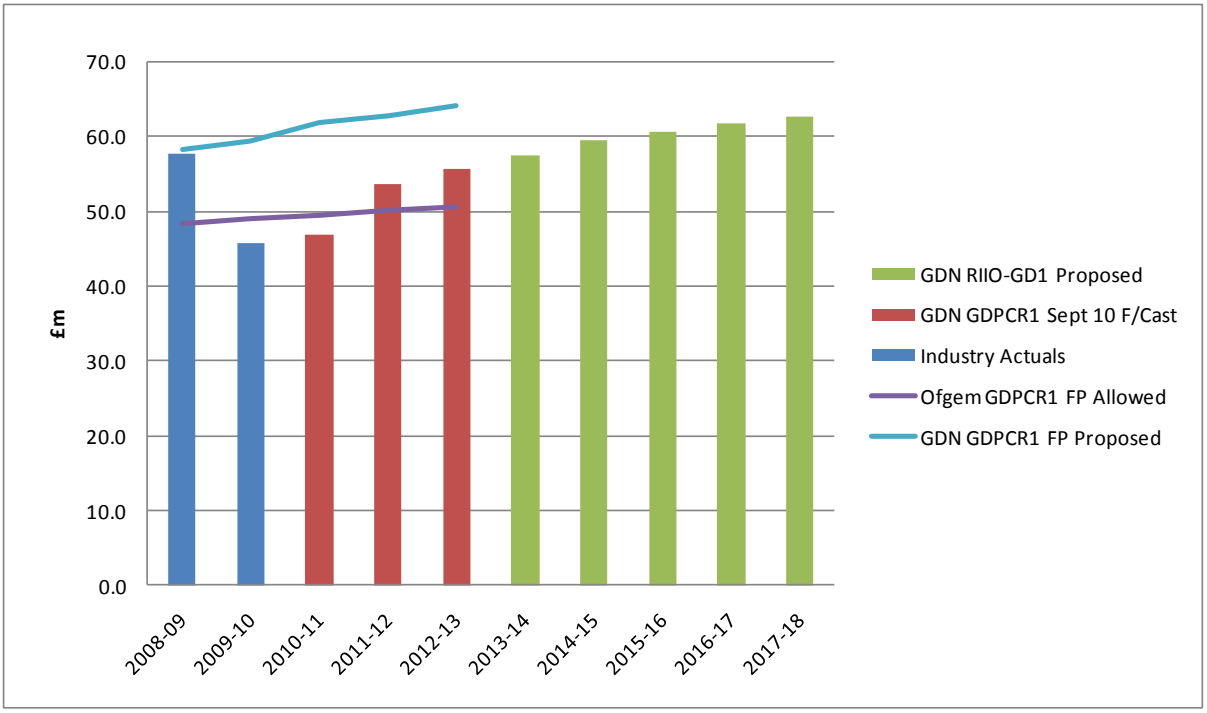
7.32. Connections activity involves the quotation, design and physical construction of mains and services to connect new housing, developed premises and non-domestic or industrial premises to the gas network.

7.33. Connections fall into three categories which are new housing, existing housing and non-domestic properties. The expenditure categories cover the total costs of connecting a premise following a move in GDPCR1 to set the allowed expenditure on the basis of a cost per connection and an assumed work load. The rationale for this move was to remove any inconsistency of cost reporting by the GDNs where a major element of the costs are supervisory costs, and hence these could be recorded against a cost of the mains, or cost of the service.

7.34. The cost also include all elements of the back-office costs associated with providing quotations to customers and the design and planning of connections works, whether the customer ultimately accepts a quotation and continues with the physical connection, or not.

7.35. Figure 7.8 presents the GDN forecast and our allowances for connections in GDPCR1 along with the first two years worth of actual for GDPCR1. In September 2010 the GDNs submitted indicative forecasts to the end of GDPCR1 and for the first five years of RIIO-GD1.

Figure 7.8 GDN Connections net capex 2008-09 to 2017-18 (2009-10 prices)



7.36. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix 5.

7.37. Figure 7.8 shows the declining investment by the GDNs in connections over the last two years. The recent downturn in economic activity and increased competition has meant the number of connections is significantly lower than assumed at the time of the control period. This is partially off-set by the Fuel Poor Scheme. Under the current control the expectation is that GDNs will make 10,000 domestic gas supply connections to fuel poor homes.

7.38. Some GDNs are predicting that connections demand will recover to levels prior to economic downturn in 2008-09 and 2009-10. Growth is also predicted by government Fuel Poor Scheme across the industry.

7.39. We are continuing to review the GDNs' forecasts for connections activities but consider the latest forecasts to be optimistic given the volumes of house building currently being forecast and the low rate of mortgages that are currently being issued.

We will be looking for the GDNs to provide further evidence where they are predicting increased capex and workload volumes for RIIO-GD1.

7.40. We use regression analysis to consider the relative efficiency of the GDNs in this area. We compare gross connections expenditure against a composite scale variable which takes into the number of connections and length of mains laid by the GDNs. We currently continue to use the assumptions set in GDPCR1 which includes assumptions on regional factors and allowed unit costs.

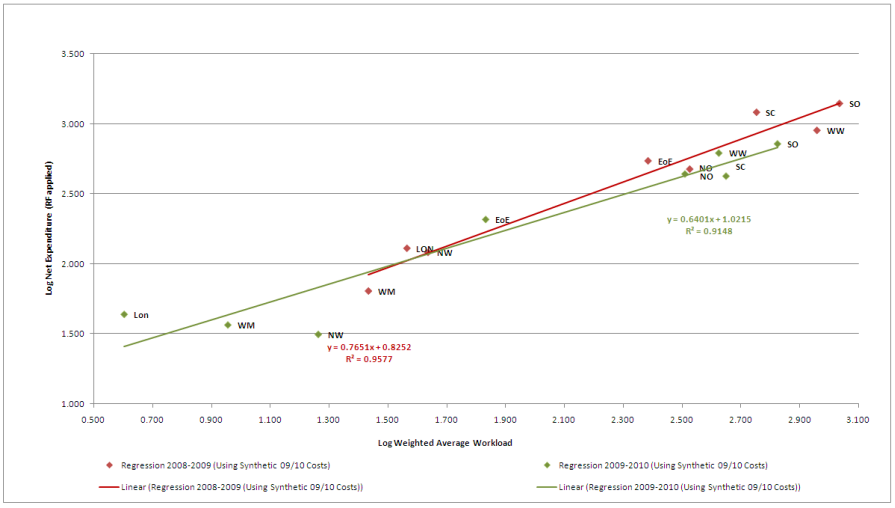
7.41. Figure 7.9 presents the regression results for 2008-09 and 2009-10. As can be seen from the results there have been significant movements for the majority of the GDNs between 2008-09 and 2009-10. NGG in particular has seen a material reduction in workload and costs for all four of its GDNs. NGN is the only GDN that has not experienced a significant reduction in the volume of connections completed in 2009-10.

7.42. There have been some significant swings in the relative efficiency of the GDNs between 2008-09 and 2009-10 with WWU moving from most efficient in 2008-09 to sixth in 2009-10. NGG's North West GDN has experienced the biggest swing in the opposite direction moving from fifth to be the most efficient GDN in 2009-10.

7.43. The results of the regression are very sensitive due to the relatively small volumes of workload and costs for Connections.

Figure 7.9 GDN Connections regression 2008-09 and 2009-10 (2009-10 prices)

	Ranking	
GDN	2008/2009	2009/2010
EoE	6	7
Lon	7	8
No	3	4
NW	5	1
Sc	8	2
So	4	5
WM	2	3
WW	1	6



7.44. Connections performance is measured using the total length of pipe laid and the number of services connected. As can be seen from the regression fixed costs are increasing year on year, however a one per cent increase in workload equates to a 0.64 per cent increase in 2009-10 compared to 0.76 per cent in 2008-9.

7.45. 115.2km of main was laid in 2009-10, some 48.1 per cent below the 2008-09 level (221.8km). Unit costs were 32.5 per cent higher at £139.80 than the 2008-09 level of £105.50. 53,053 service connections were made in 2009-10, 27.3 per cent below the previous year of 73,018.

7.46. North West GDN ranked highest performer benchmarked amongst its peers followed by Scotland GDN and West Midlands GDN.

7.47. We have identified a number of ways of improving the regression analysis at RIIO-GD1 through discussions in the industry working group.

7.48. The GDNs have all identified one-off high cost projects that can distort the comparisons and we are looking at options to address this issue. We could use a historical average of costs and workloads which smoothes out variation within the data and give a better regression fit. We are also considering analysing medium pressure and intermediate pressure connections separately due to the higher costs of these types of connections. Alternatively we could exclude large one off atypical costs from the regression analysis. We could do this by requesting the GDNs to identify atypical costs based either on the most expensive ten per cent of connections or all connections above £50k (project specific expenditure). We would then look to assess these on a project by project basis.

7.49. We are considering the use of a volume driver for connections. However the GDNs have highlighted that they do not consider the uncertainty to be sufficiently material. They have also suggested that a significant proportion of costs are fixed costs associated with back office functions. These are more directly driven by the number of quotations the GDNs has to provide rather than the total connections actually made to the network. As such we are considering developing separate analysis for assessing GDNs costs of providing a design and quotation service.

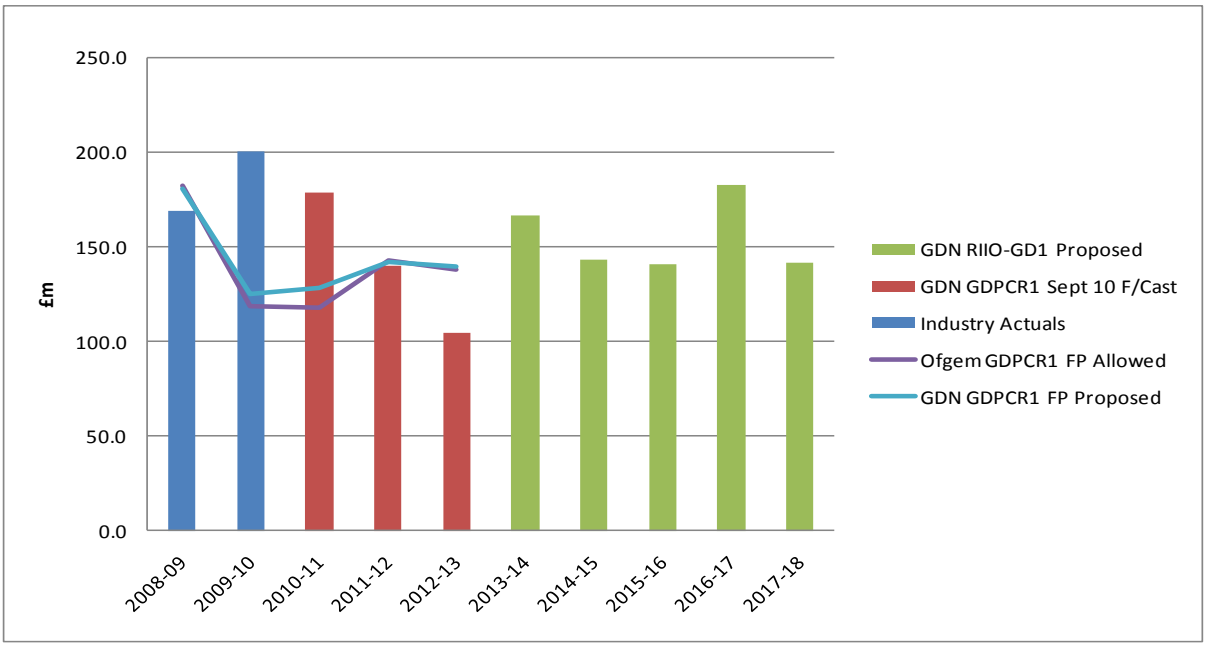
Other capex

7.50. This category of capital investment covers both other operational and non-operational capex. Major items of expenditure in this category include investment in IT to support the operation of the networks, along with pressure profiling and leakage control equipment, tools and vehicles for operational staff, and other associated network plant.

7.51. Figure 7.10 presents the total GDN expenditure on other operational for 2008-09 and 2009-10 along with the high level initial forecasts provided for the first five years of RIIO-GD1.

7.52. A breakdown of the 2008-09 and 2009-10 expenditure by GDN is presented in Appendix 5.

Figure 7.10 GDN other operational capex 2008-09 to 2017-18 (2009-10 prices)



7.53. At a high level it can be seen that for the first two years of GDPCR1 the total GDN expenditure is significantly higher than that both proposed by the GDNs and allowed by us. IT capex is a high cost item in this area and where GDNs change strategies or look to drive out further efficiencies in their businesses IT projects are often seen as an enabler. NGG in particular are proposing to spend significantly more on IT capex in GDPCR1 replacing a number of core systems which were not included in the forecast at the time of GDPCR1.

7.54. In addition, significant one-off items of plant such as gas conditioning equipment and LNG facilities are included in this area of investment.

7.55. The total expenditure forecast for the first five years of RIIO-GD1 is at a similar level to the total expenditure for GDPCR1. Other operational capex is therefore an important area for consideration as we develop our thinking for RIIO-GD1. Historically we have engaged specialist consultants to review the GDNs' proposals for operational and non-operational capex. Where feasible we have looked to identify opex cost savings which the companies expect to achieve from significant relevant projects. These were then considered as part of our assessment for setting opex allowances in GDPCR1. Where GDNs have identified external drivers for investment such as environmental issues we have always looked to benchmark the levels of activity as well as costs historically.

7.56. Other operational capex is another area of investment where the development of output measures and asset health criteria to measure the overall improvements in both network safety and resilience, security of supply or environmental performance is essential for the GDNs to be able to set out a well-justified business plan. Investment in pressure management schemes, for example, and gas conditioning equipment are expected to be directly correlated to some of the network outputs, for example leakage. Although the asset health metrics will not cover all areas of investment, IT systems and management information are seen as a key enabler for making investment decisions. As such we would expect the investments in IT to be linked to delivery of network outputs.

7.57. In addition to the network health benefits we will be looking to carry out benchmarking of cost areas where appropriate. We will be considering longer term historical expenditure levels and comparing GDNs' forecast levels of expenditure, especially where the GDNs highlight external drivers or legislation as a reason for their proposed investment.

7.58. Having recently completed the GDN cost visits we are also aware of additional workload drivers associated with Energy Emergency Executive Committee (E3C) work. All energy networks are being asked to consider network improvements that increase resilience of the networks to external environmental factors in particular, including flooding. As discussed in Chapter 8 in the Outputs and Incentives Background Paper, we expect the GDNs to show in their business plans how expenditure on resilience such as that related to flooding, will affect their projections for the level of asset risk on their network.

8. Replacement expenditure

Chapter Summary
This chapter sets out the nature of replacement expenditure (repex), the historical performance of the GDNs for the first two years of GDPCR1 and the high level industry forecast for the first five years of RIIO-GD1. We set out our proposed approach for assessing the repex element of the companies' RIIO-GD1 business plan submissions in line with the RIIO framework.

Question 1: Do you agree with our approach for assessing repex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs repex expenditure plans?
Question 3: In light of our proposals, do you agree with our selection of risk removed as the primary output of the mains replacement programme?

Overview

8.1. Natural gas is distributed through a network of around 275,000 km of pipes constructed mainly of cast iron, ductile iron, steel and polyethylene. Iron pipes (which include cast iron, spun iron and ductile iron) fail through fracture and corrosion or as a result of accidental damage and have resulted in serious gas explosions. Under certain circumstances, these leaks can result in a fire or explosion, and although the number of major incidents has been low, there are each year a number of gas releases which occur as a result of mains failures. Iron mains within 30m of buildings present the greatest hazard and are referred to as 'at-risk' pipelines.

8.2. Since the early 1970s, GDNs have undertaken a series of asset replacement programmes to replace elements of the iron mains network and hence reduce the associated risk of incidents by removing the potential source of gas escapes.

8.3. In 2002, following discussions with Ofgem and the GDNs, the Health and Safety Executive (HSE) published an enforcement policy, aimed at the major GDNs, requiring all 'at-risk' iron mains in Great Britain to be replaced ('decommissioned') with pipes made of safer materials (usually polyethylene) within 30 years. At that time there were approximately 110,000 km of iron mains and the timeframe for replacing them was that which could practicably be achieved given the length of mains involved. The policy consisted of an agreed rate of replacement each year such that the remaining pipes could be replaced within 30 years.

8.4. The repex programme constitutes the largest single expenditure item for the GDNs. At GDPCR1, we allowed funding of £3.9 billion of repex funding, equal to around 70 per cent of GDNs' total capital expenditure baseline and around one-quarter of the total GDN revenue requirement.[6]

8.5. We have put a mechanism in place through the price control reviews, in accordance with the HSE's workload targets, to incentivise GDNs to carry out the mains replacement work efficiently. The mechanism includes a mains replacement allowance with a supplementary incentive which adjusts allowed GDN revenue depending on the volume and diameter mix of the mains replaced. The supplementary incentive provides the GDNs with the flexibility to vary the annual spend in line with their need to replace a

[6] This is based on 2009/10 revenues: total regulated revenues were £2.8bn, of which £0.7 bn was repex.

different diameter mix of pipes from that originally forecast, but avoids the possibility of disproportionate costs being passed through to customers if there is a major rebalancing of workload between diameter. The adjustment of allowed repex revenue based on adjustment to volume is capped at the total baseline for the five year period. Beyond this, the normal cost incentive rate applies as determined under the IQI for volume as well as unit cost changes.

Historical performance

8.6. Figure 8.1 presents the actual repex for the first two years of GDPCR1, the forecasts until 2017-18, the repex baselines for GDPCR1 and the workload adjusted baselines which reflects the mix of diameters of pipes actually replaced by the GDNs.

Figure 8.1 Total GDN net replacement expenditure (2009-10 prices)

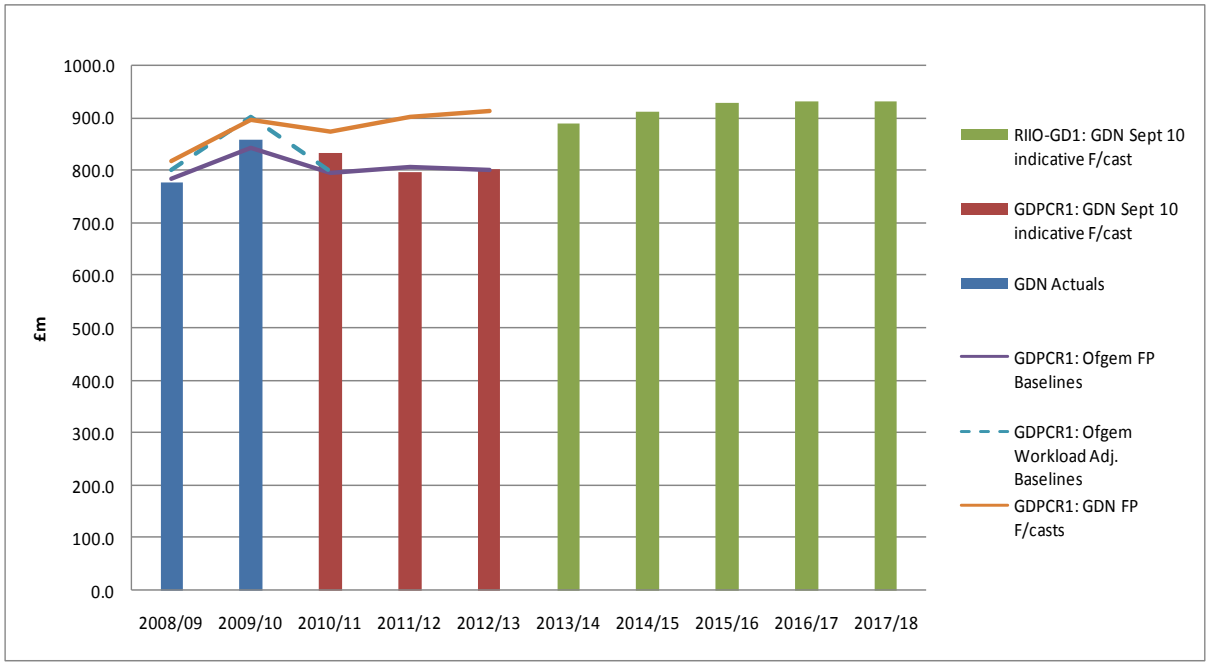
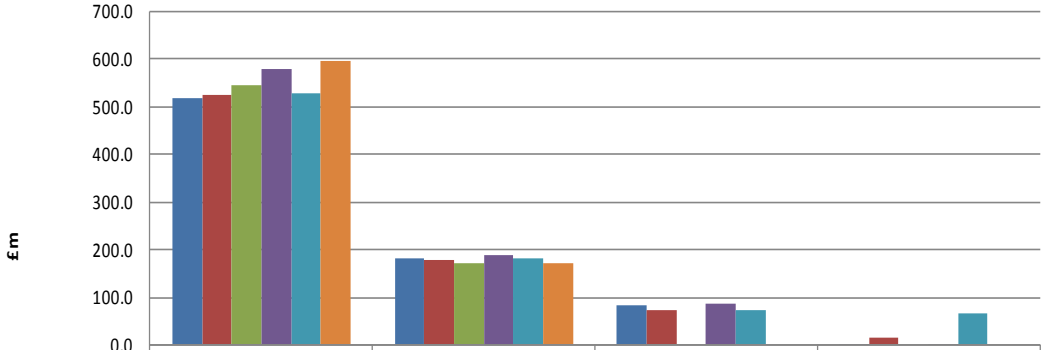
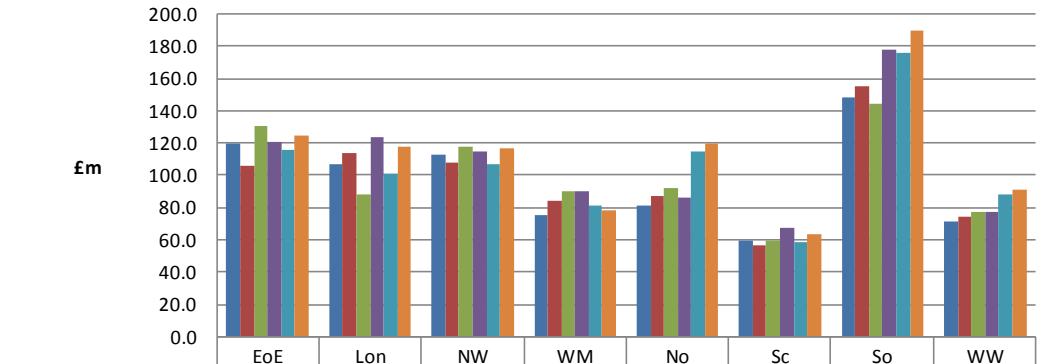


Figure 8.2 Industry net replacement expenditure by category (2009-10 prices)



	Actual Mains	Actual Services (Incentivised)	Actual Services (Non-Incentivised)	Actual Other Repex
2008-09 Actuals	516.3	180.2	81.8	1.5
2008-09 Allowances	524.0	176.7	70.7	14.4
2008-09 Adj Workload Allowance	545.4	169.7		
2009-10 Actuals	578.6	188.9	88.2	2.6
2009-10 Allowances	525.9	179.3	72.0	65.9
2009-10 Adj Workload Allowance	594.0	170.7		

Figure 8.3 Total replacement expenditure by GDN (2009-10 prices)



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	120.2	107.3	113.0	75.6	81.4	59.7	148.8	71.5
2008-09 Allowances	105.9	113.5	108.0	84.5	87.5	56.7	155.5	74.0
2008_09 Adj Workload Allowances	131.1	88.1	117.6	90.3	91.8	59.6	144.5	77.1
2009-10 Actuals	120.5	123.7	115.0	90.0	86.6	67.5	178.3	76.7
2009-10 Allowances	116.2	101.1	107.4	81.6	114.5	58.5	176.3	87.7
2009-10 Adj Workload Allowances	125.2	117.9	117.0	78.0	119.7	63.4	190.3	91.3

8.7. The reported total length of mains decommissioned in 2009-10 was 4,323km compared to 4,252km in 2008-09, some 240km and 221km respectively more than was assumed for the Five Year Price Control. Within these two years, all GDNs have decommissioned more mains than originally planned. In 2007-08 3,954km of mains were decommissioned.

8.8. The observed annual increase in workload has also been accompanied by a shift towards higher diameter mains. An additional 37km of >12inch mains and 103km of 8-12 inch mains were decommissioned in 2009/10 compared to the previous year. A considerable increase is also observed in the ratio of mains abandoned to mains installed, which stands at 1.08 for 2009-10, compared to 1.04 in 2008-09, and the 1.05 assumed during the Price Control. This varies among GDNs from as much as 0.99 for the West Midlands GDN to 1.27 for the Scotland GDN.

8.9. The industry's replacement expenditure (repex) is dominated by the requirement for all cast iron mains within 30 metres of premises to be replaced progressively over thirty years from 2002. Based on the total cost baselines for GDPCR1, repex related activities represent 41 per cent of the industry's total costs. Figure 8.1 shows that total net replacement expenditure reached nearly £845m in 2009-10. This represents an 11.3 per cent annual rise since 2007-08, and a marginal overspend of 1.8 per cent relative to the Final Proposal baselines prior to any workload adjustments. By contrast, the actual expenditure for 2008-09 was 1.1 per cent less than the respective baselines. For both years, the industry managed to deliver replacement works at lower unit costs than we allowed. This is highlighted by the lower total costs recorded relative to the workload adjusted baselines.

8.10. The industry is forecasting an annual drop in expenditure until the end of GDPCR1, which will bring overall expenditure for the period in line with our baselines. However, preliminary high level forecasts point towards a repex increase for the RIIO-GD1 period that will see annual costs rising up to £933m by the end of 2017-18. This rise is expected to be closely associated with a shift to larger diameter mains replacement.

8.11. The expenditure relative to our baselines in 2008-09 and 2009-10 also varied significantly by GDN. Figure 8.2 shows that replacement expenditure by GDNs was on average higher than the Final Proposal baselines. However, five of the GDNs in each of the years recorded expenditure lower than the workload adjusted allowances. This points towards a more efficient delivery of the workload, which is either related with an increased replacement volume or a shift towards higher diameter mains compared to what was originally forecasted. The number of the better performing GDNs drops down to three when the forecast under-spend in LTS projects are considered.

Services replacement

8.12. As part of the replacement programme, GDNs are required to carry out replacement, or transfer, of any associated service pipes connected from the mains to be abandoned to consumers' premises. During the One Year Price Control, the service replacement allowance was a fixed allowance and was not adjusted, or incentivised. By contrast, under the refined incentive for GDPCR1 service costs related to mains replacement are fully incentivised. The mechanism works in a similar way as the mains replacement incentive, providing the GDNs with a base allowance as well as a supplementary incentive that adjusts their revenue based on the actual volume of services replaced. This only refers to re-laid services associated with mains replacement, service test and transfer to new or others mains, and non-domestic service replacement. The remaining service replacement activities, eg services relaid after escape, and purge and re-light, are not incentivised and a fixed allowance was given for these activities in GRCPR1.

8.13. As Figure 8.2 shows, the total services expenditures (incentivised plus non-incentivised) in 2009-10 were £277.1m, some 5.8 per cent higher than in 2008-09 and 9.6 per cent higher than in 2007/08. With regards to the allowances set in GDPCR1 the

total expenditures were higher by 10.2 per cent in 2009-10 and 11.2 per cent in 2008-09. The fact that the workload adjusted allowances were significantly lower than the GDPCR1 allowances highlights that the GDNs delivered less incentivised services workload than originally planned and at higher unit cost. The same stands for the non-incentivised services with the industry's expenditures being considerably higher than the allowances.

Riser replacement

8.14. During GDPCR1, the GDNs were still carrying out surveys of risers and laterals supplying high-rise buildings within their networks. We concluded at the time that based on the available information a fully schedule programme of riser renewal was not a material option. Instead we opted for a more reactive approach that would allow the collection of the necessary data in the early years of the control period.

8.15. Our expenditure baselines were set mid-way between the GDNs and the view of PB Power, Ofgem's repex consultant for GDPCR1. We set a total baseline of £14.9m for 2008-09 and £16.8m for 2009-10. The actual expenditure for the two years was £20.1m and £18.4m, respectively. The volume of workload undertaken and costs incurred by individual GDNs varies significantly. According to the GDNs this over-spend is related to the highly unpredictable cost associated with riser replacement that depends on the height of the building (eg scaffolding) and engineering complexity (eg pipe replacement) among other factors.

8.16. We are expecting the GDNs to provide further evidence on the rates of deterioration that will allow us to decide on the appropriate methodology for a prioritised replacement programme and the associated allowances. This is anticipated to be covered by the GDNs development of outputs where we are expecting the GDNs to collect asset volumes, condition indicators and forecast deterioration over the price control period. We will then assess the GDNs' expenditure forecasts together with the relevant asset health. We expect this investment along with all others to be fully documented in the GDNs' business plans.

Local transmission system (LTS) projects

8.17. The LTS transports gas from NTS offtakes to distribution systems and directly to some large users. The LTS is also the primary source of additional diurnal storage related to demand growth, and is required to transmit diurnal storage where this is procured from the NTS. At GDPCR1 the GDNs identified a number of LTS projects requiring complete pipeline replacement. These were included as part of our baseline assumptions for repex, whereas previously any allowances for LTS projects were included as part of capex. An industry baseline of £65.9m was provided for LTS projects in 2009-10, out of which only £4m was actually spent.

8.18. The initial allowance was primarily allocated across three GDNs. Increased inspection has led NGN to defer the Catton to Wetheral project (£30.9m) on the basis that no further deterioration has been observed since the original submission. NGN are still awaiting the results of recent inspections before re-forecasting the timing of any proposed works. Reduced network demand has allowed SGN to defer indefinitely the Barton Stacey to Stoneham Lane pipeline project (£18m). WWU reported the deferral of three linked LTS projects, with a combined allowance of £16.6m, due to issues in obtaining consent from landowners on the proposed pipeline route. Construction is planned to start in February 2011.

8.19. As all LTS repex projects formed part of our baselines for GDPCR1 we will not provide further funding for them in RIIO-GD1 as the GDNs will have already received the benefit from deferral.

8.20. In their business plans we will be looking for the GDNs to provide robust evidence for all LTS repex projects planned during RIIO-GD1 with evidence to support both the timing and the need for a particular project.

Efficiency assessment of replacement expenditure

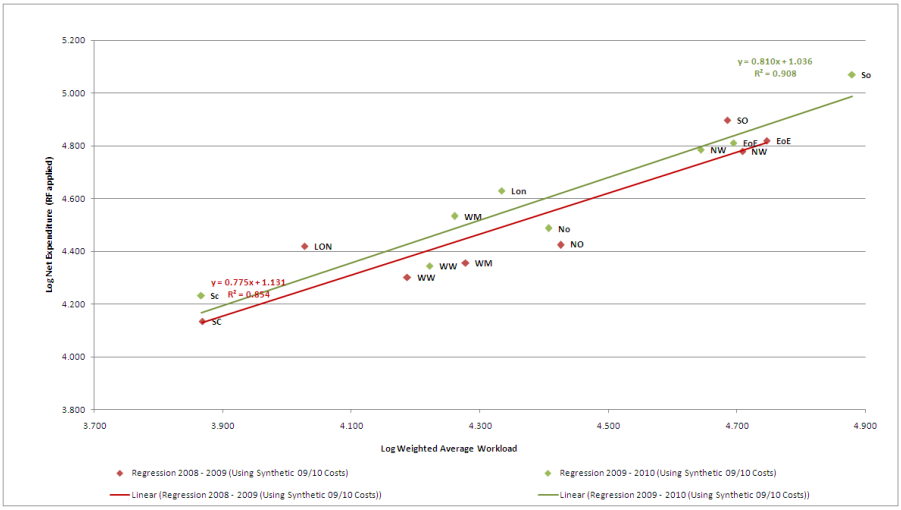
8.21. We set the baselines for replacement expenditure at GDPCR1 based on regression analysis of 2006-07 expenditure against a weighted average workload. A regional adjustment was applied to the repex expenditures for London and Southern GDNs to reflect the unavoidable costs of working within the M25.

8.22. Figure 8.4 presents the regression results for 2008-09 and 2009-10. All expenditures and the unit costs used to produce the weighted average workload are in 2009-10 prices. The upwards shift of the regression line from year to year shows a general increase in costs relative to workload. Consistently with previous years NGN and WWU are continuing to show the lowest costs of delivery relative to workload. Similarly, Southern and London GDNs show the highest costs.

8.23. During the assessment process inconsistencies were identified across the GDNs in relation to the way that costs and workload information were captured for the Service Relay Domestic Meterwork activity. We are looking to resolve these inconsistencies for our March document that might potentially impact on the outcome of the regression analysis.

Figure 8.4 Regression of replacement expenditure

	Rankings	
GDN	2008/2009	2009/2010
EoE	6	3
Lon	8	8
No	1	1
NW	4	4
Sc	5	6
So	7	7
WM	2	5
WW	3	2



Next steps

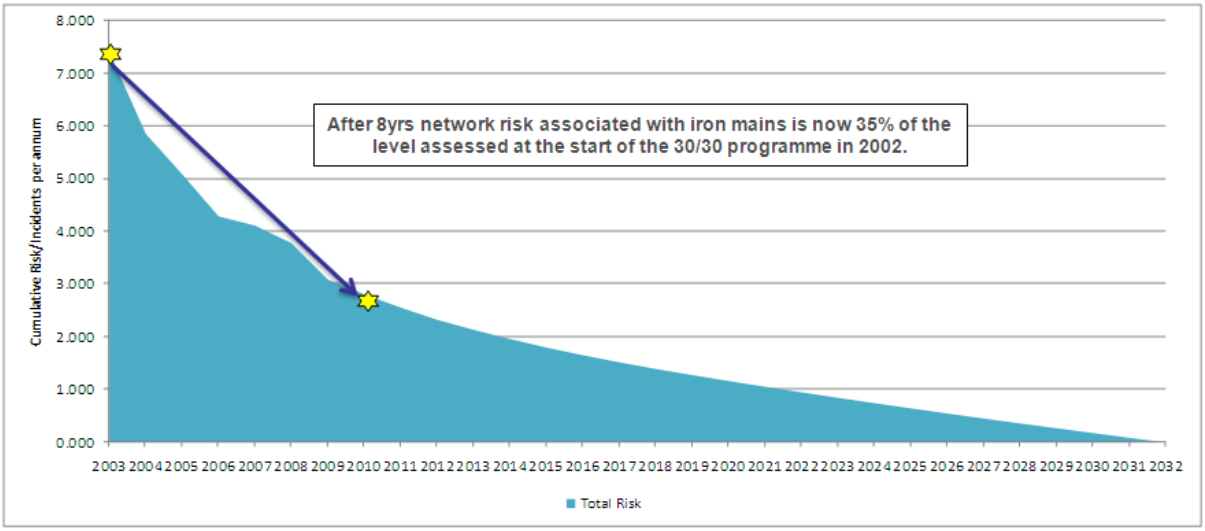
8.24. The introduction of the 30/30 mains replacement programme in 2002 required each GDN to prepare a plan setting out the length of iron pipes to be decommissioned annually for the duration of the programme, subject to approval by the HSE. The view was that the risks these types of pipes present cannot be mitigated through maintenance

and the operators at the time were exposed to legal action and the consequences of any incident.

8.25. In previous publications we mentioned that we were planning to review our approach on the mains replacement programme. We have now agreed with the HSE for a joint review of the repex programme, and in particular its effectiveness so far in delivering the planned risk removal alongside its cost.

8.26. We are proposing to move from a revenue driver based on mains abandoned to a driver based on mains installed. Figure 8.5 presents the total GDN iron mains risk profile since the start of the programme. As can be seen from the graph the risk associated with iron mains failure in 2010 is 2.7 incidents per annum, indicating approximately 65 per cent of the risk associated with iron mains has been removed from the network between 2003-10. Given the substantial reduction in the risk related to iron mains over the last eight years it is critical to explore what will be the most efficient way in removing the remaining risk, and whether appropriate to consider a more holistic approach that will consider a wider range of pipe types. This is discussed further in the safety and reliability section of the outputs and incentives document.[7]

Figure 8.5 - GDN iron mains risk profile 2003 to 2032



[7] Consultation on strategy for the next gas distribution price control - RIIO-GD1 Outputs and incentives – http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20outputs%20and%20incent.pdf

Appendices

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Appendix 1 – Summary of questions

CHAPTER: Two

Question 1: Do you agree with our approach for assessing the companies' business plans?
Question 2: Have we proposed an optimum range of techniques
(a) Are there better techniques that we have not included?
(b) Are we applying the appropriate techniques in the appropriate areas?

CHAPTER: Three

Question 1: Are there any additional analytical techniques that we should consider beyond those we have used at past price control reviews to assess these factors?
Question 2: Are there any additional data sources that we should be aware of to assist with our analysis in these areas? In particular, are there specialist labour indices that would be relevant for the gas distribution sector?
Question 3: Of the data sources presented in this chapter, are there some that you think we should rely more on than others?

CHAPTER: Four

Question 1: Do you agree with our approach for assessing the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs expenditure plans?

CHAPTER: Five

Question 1: Do you agree with our approach for assessing opex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs opex expenditure plans?

CHAPTER: Six

Question 1: Are there any comments on the proposed assessment for business support costs?
Question 2: Are the costs drivers proposed the most appropriate ones?

CHAPTER: Seven

Question 1: Do you agree with our approach for assessing capex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs' capex expenditure plans?

CHAPTER: Eight
Question 1: Do you agree with our approach for assessing repex in the companies' business plans?
Question 2: Are our tools and techniques adequate for assessing the GDNs repex expenditure plans?
Question 3: In light of our proposals, do you agree with our selection of risk removed as the primary output of the mains replacement programme?

Appendix 2 – Advantages and disadvantages of different approaches to total cost benchmarking

1.1. The advantages and disadvantages of the two approaches to total cost benchmarking are set out in Table A2.1.

1.2. Practical implementation of total cost benchmarking is hampered by the absence of a well defined asset value. The regulatory asset value (RAV) that we use is a regulatory construct, which does not reflect the yearly profile of physical asset values of the network operators. It would be inappropriate in determining capital consumption because:

- we have applied accelerated depreciation policies for some assets
- some assets' values are part or fully paid for by connecting customers and these values are not reflected in RAV
- as part of the work on the separation of LDZ price controls were made the transportation charges more consistent for a transitional period by adjusting the RAV
- some non-capital atypicals have been written-off to RAV

1.3. Importantly, capital consumption and in particular RAV and rates of depreciation are not determined in a consistent manner across jurisdictions.

1.4. Modern equivalent asset value (MEAV) is another measure of capital value used by us. MEAV is a measure of the replacement value of the network assets. As this measure does not take into account their condition/age, it does not enable us to determine the current value of the network assets, and therefore makes it more difficult to build a profile of how the network assets evolve over time to enable year on year differences to be interpreted as consumption.

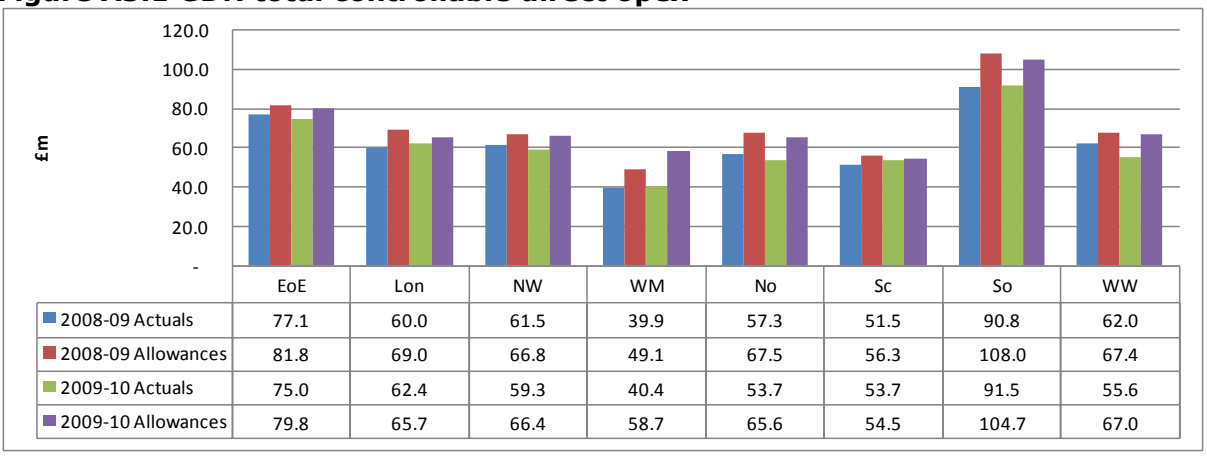
Table A2.1 Advantages and disadvantages of total costs and totex

	Total costs	Total expenditure
Advantages	• Does not distort inter-temporal investment decisions • Less sensitive to cyclical and atypical expenditure. • Results in an annualised measure of costs which if calculated accurately allows an assessment of efficiency in terms of the inputs being used by the business.	• Simple, no assumptions and easy to understand • Costs are relevant in that they relate to the current state of technology, government regulation and environmental concerns • Capex expenditures relating to previous periods are not reassessed along with current period expenditures. • Useful in the context of international benchmarking as differences in depreciation and cost of capital do not affect this measure of cost.
Disadvantages	• The amount attributed to any particular year is subject to discretion over the choice of depreciation profile and cost of capital. • The cost of capital is set in a regulatory context every price control period. The approach is subjective – it is unlikely that the cost of capital is constant over time during these periods. • If used in the context of international benchmarking, its sensitivity to different depreciation methods and cost of capital will likely render the cost measure non-comparable. • Some costs relate to earlier periods when the state of technology and operational rules, environmental concerns, and the level of efficiency of the operator are different from what they are now..	• Can distort inter-temporal investment decisions by setting artificial. investment boundaries or horizons. • Can be sensitive to cyclical/atypical expenditures. • The number of years for capex data is subjectively determined and normally dictated by data availability.

Appendix 3 – Controllable direct operational expenditure (Opex)

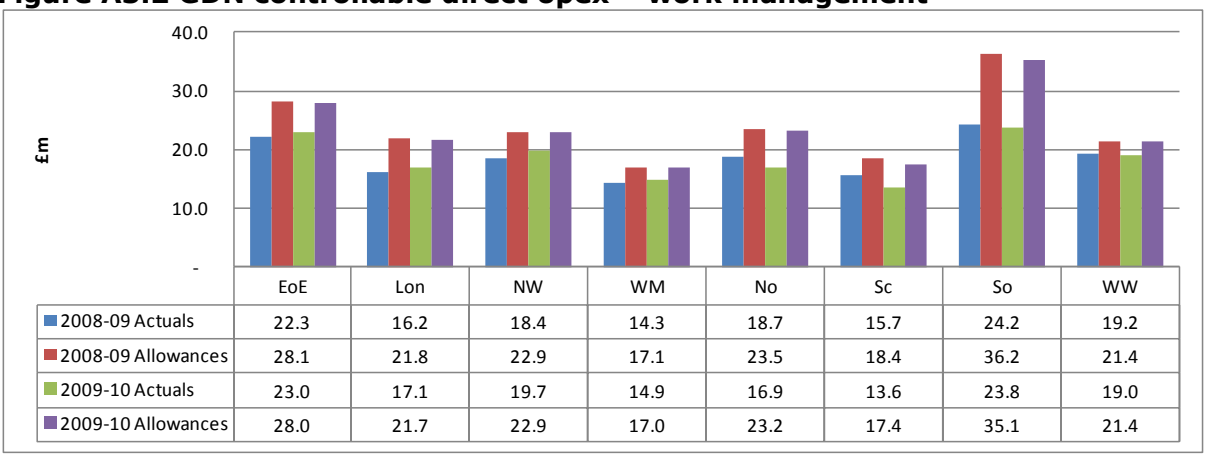
1.1. This appendix sets out the controllable direct operational expenditure (opex) by GDN and activity in (2009-10 prices) for the first two years of GDPCR1.

Figure A3.1 GDN total controllable direct opex



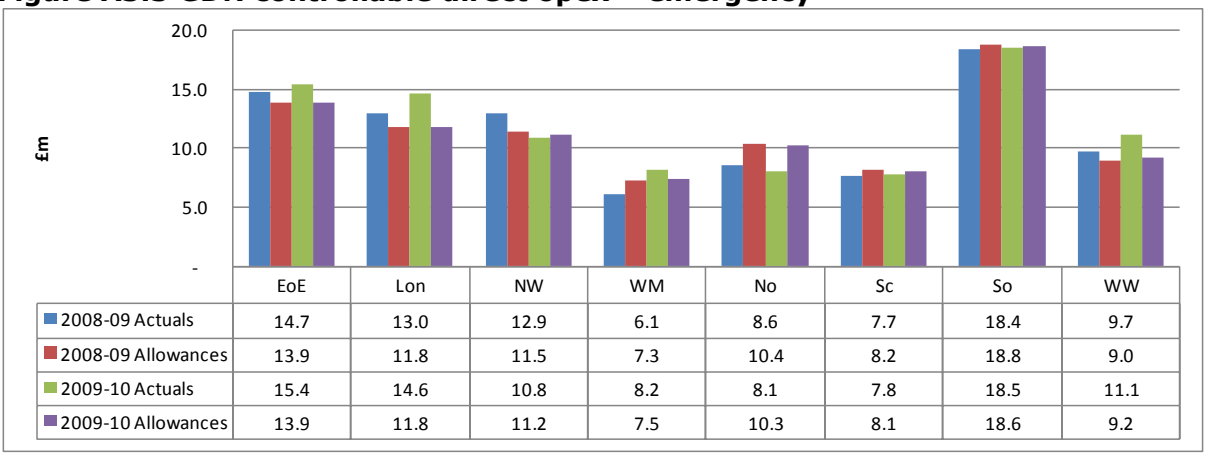
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	77.1	60.0	61.5	39.9	57.3	51.5	90.8	62.0
2008-09 Allowances	81.8	69.0	66.8	49.1	67.5	56.3	108.0	67.4
2009-10 Actuals	75.0	62.4	59.3	40.4	53.7	53.7	91.5	55.6
2009-10 Allowances	79.8	65.7	66.4	58.7	65.6	54.5	104.7	67.0

Figure A3.2 GDN controllable direct opex – work management



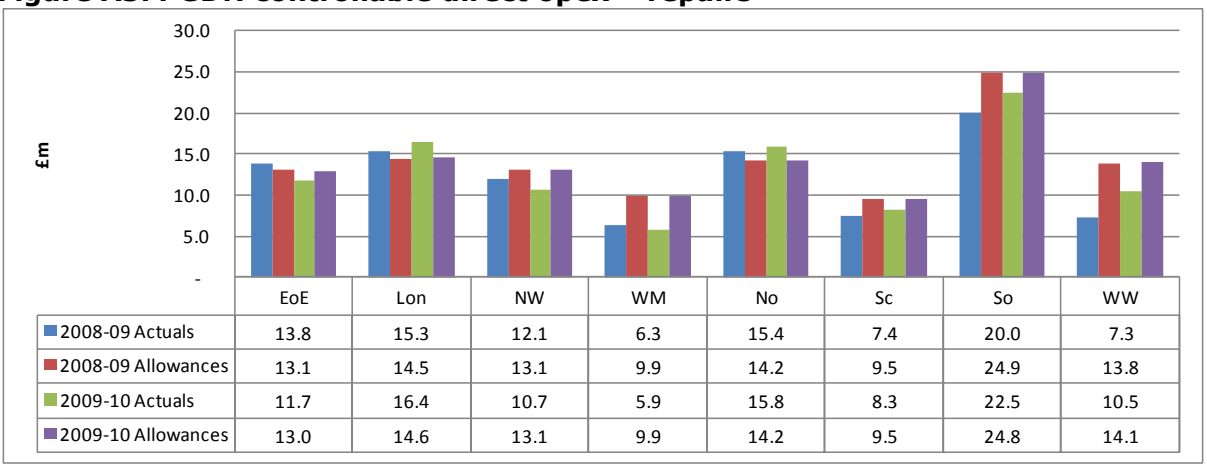
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	22.3	16.2	18.4	14.3	18.7	15.7	24.2	19.2
2008-09 Allowances	28.1	21.8	22.9	17.1	23.5	18.4	36.2	21.4
2009-10 Actuals	23.0	17.1	19.7	14.9	16.9	13.6	23.8	19.0
2009-10 Allowances	28.0	21.7	22.9	17.0	23.2	17.4	35.1	21.4

Figure A3.3 GDN controllable direct opex – emergency



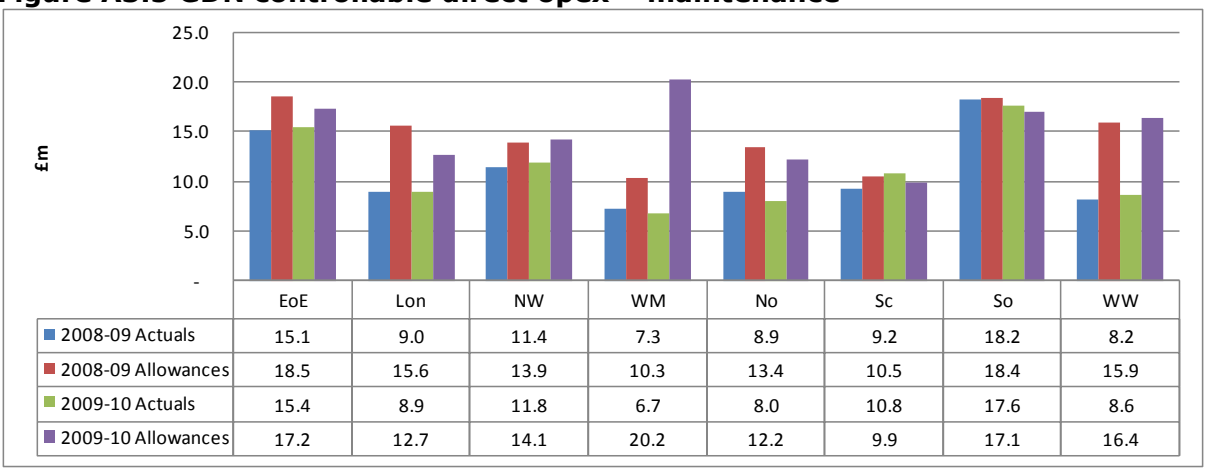
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	14.7	13.0	12.9	6.1	8.6	7.7	18.4	9.7
2008-09 Allowances	13.9	11.8	11.5	7.3	10.4	8.2	18.8	9.0
2009-10 Actuals	15.4	14.6	10.8	8.2	8.1	7.8	18.5	11.1
2009-10 Allowances	13.9	11.8	11.2	7.5	10.3	8.1	18.6	9.2

Figure A3.4 GDN controllable direct opex – repairs



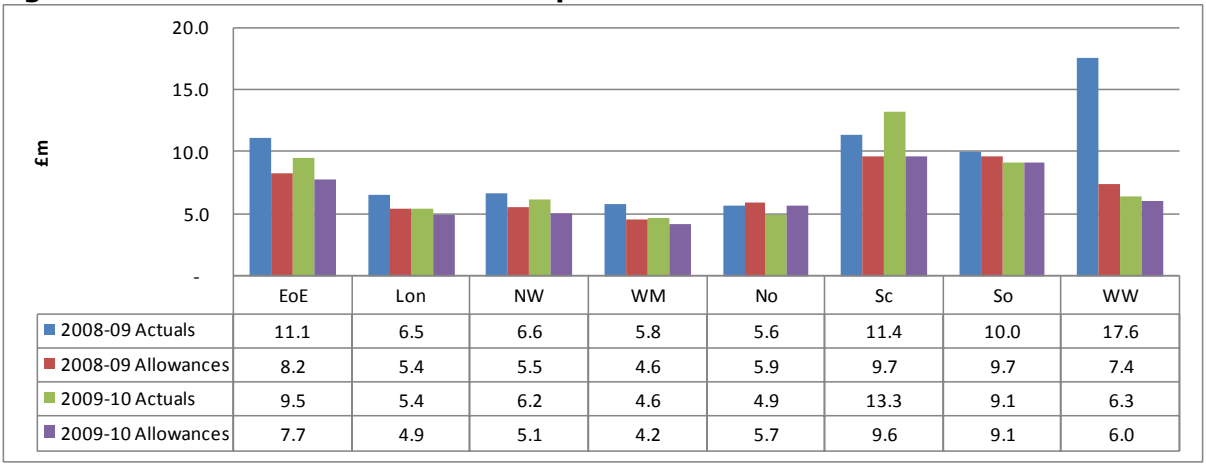
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	13.8	15.3	12.1	6.3	15.4	7.4	20.0	7.3
2008-09 Allowances	13.1	14.5	13.1	9.9	14.2	9.5	24.9	13.8
2009-10 Actuals	11.7	16.4	10.7	5.9	15.8	8.3	22.5	10.5
2009-10 Allowances	13.0	14.6	13.1	9.9	14.2	9.5	24.8	14.1

Figure A3.5 GDN controllable direct opex – maintenance



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	15.1	9.0	11.4	7.3	8.9	9.2	18.2	8.2
2008-09 Allowances	18.5	15.6	13.9	10.3	13.4	10.5	18.4	15.9
2009-10 Actuals	15.4	8.9	11.8	6.7	8.0	10.8	17.6	8.6
2009-10 Allowances	17.2	12.7	14.1	20.2	12.2	9.9	17.1	16.4

Figure A3.6 GDN controllable direct opex – other direct activities



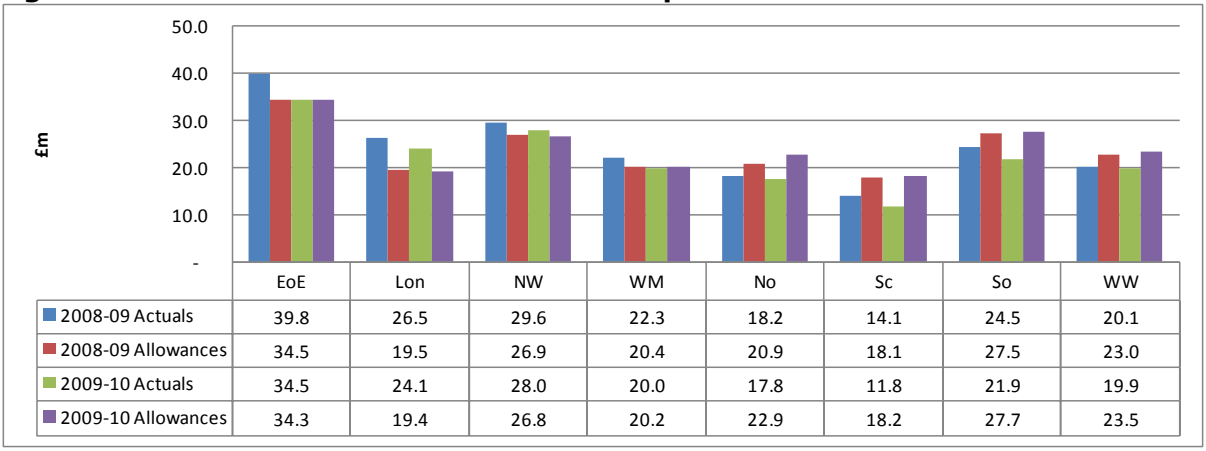
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	11.1	6.5	6.6	5.8	5.6	11.4	10.0	17.6
2008-09 Allowances	8.2	5.4	5.5	4.6	5.9	9.7	9.7	7.4
2009-10 Actuals	9.5	5.4	6.2	4.6	4.9	13.3	9.1	6.3
2009-10 Allowances	7.7	4.9	5.1	4.2	5.7	9.6	9.1	6.0

1.2. The other direct activities for Scotland include an additional allowance and cost in Scotland for independent undertakings (SIU). The 2008-09 allowance is £5.9m and the actual costs £6.9m. The 2009-10 allowance £5.9m and the actual costs are £6.9m (2009-10 prices).

Appendix 4 – Controllable indirect operational expenditure (Opex)

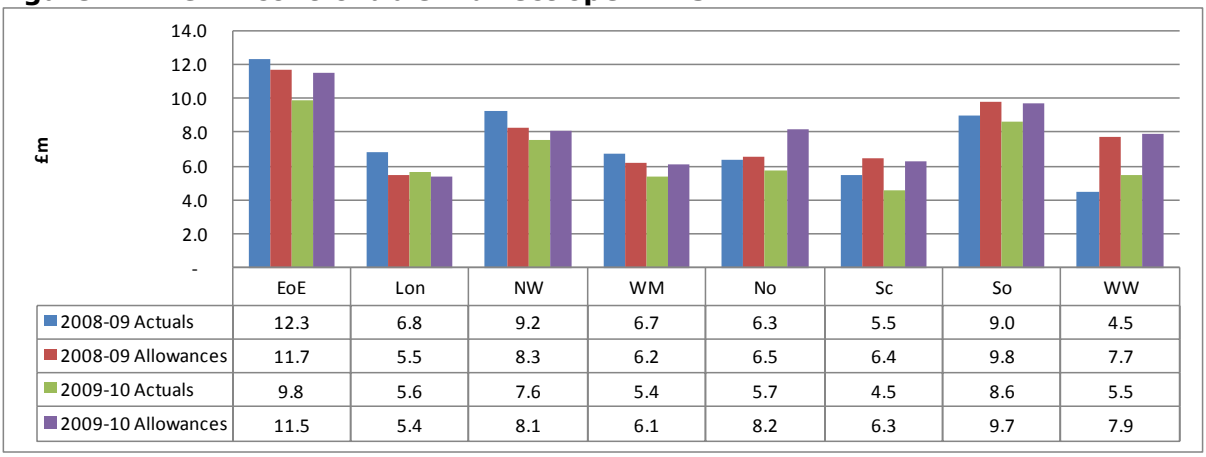
1.1. This appendix sets out the controllable indirect operational expenditure (opex) by GDN and activity (in 2009-10 prices) for the first two years of GDPCR1.

Figure A4.1 GDN total controllable indirect opex



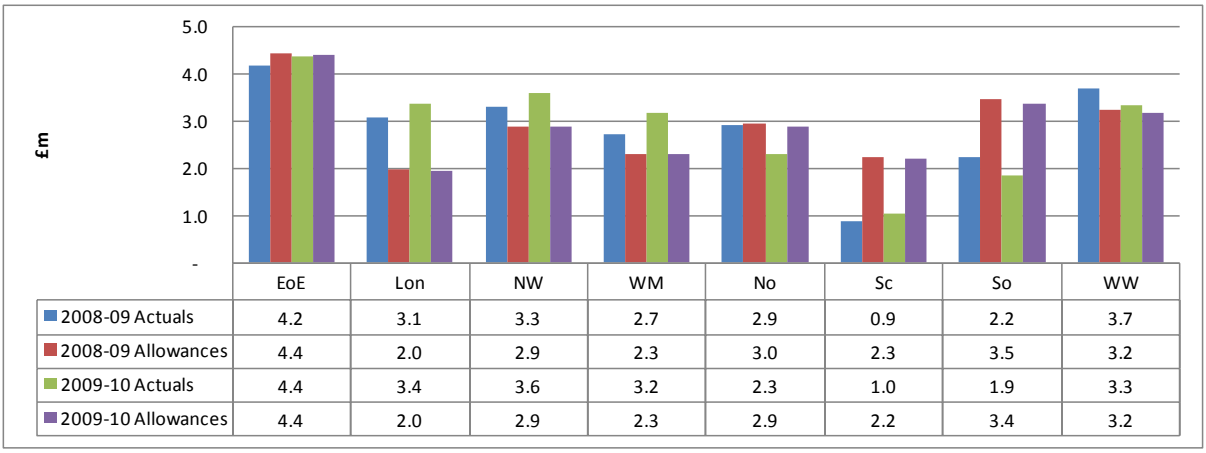
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	39.8	26.5	29.6	22.3	18.2	14.1	24.5	20.1
2008-09 Allowances	34.5	19.5	26.9	20.4	20.9	18.1	27.5	23.0
2009-10 Actuals	34.5	24.1	28.0	20.0	17.8	11.8	21.9	19.9
2009-10 Allowances	34.3	19.4	26.8	20.2	22.9	18.2	27.7	23.5

Figure A4.2 GDN controllable indirect opex – IS



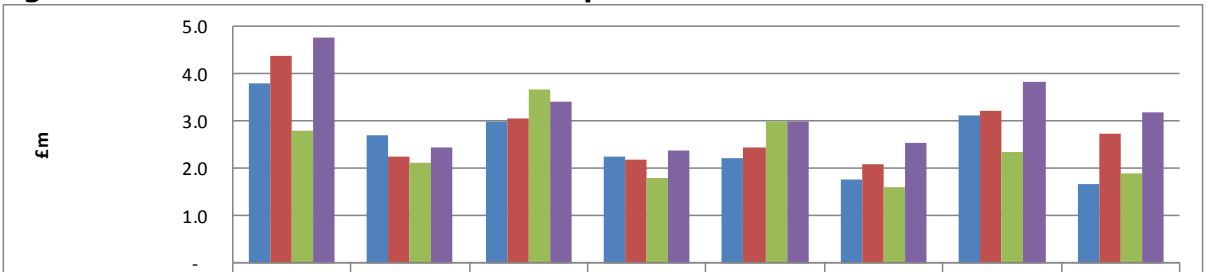
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	12.3	6.8	9.2	6.7	6.3	5.5	9.0	4.5
2008-09 Allowances	11.7	5.5	8.3	6.2	6.5	6.4	9.8	7.7
2009-10 Actuals	9.8	5.6	7.6	5.4	5.7	4.5	8.6	5.5
2009-10 Allowances	11.5	5.4	8.1	6.1	8.2	6.3	9.7	7.9

Figure A4.3 GDN controllable indirect opex – finance



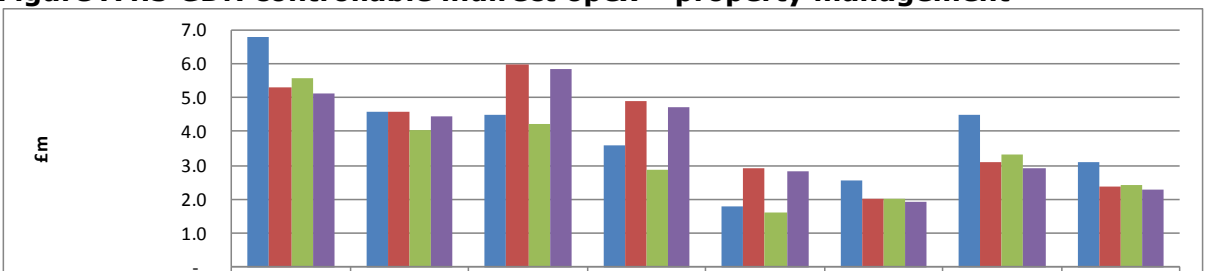
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	4.2	3.1	3.3	2.7	2.9	0.9	2.2	3.7
2008-09 Allowances	4.4	2.0	2.9	2.3	3.0	2.3	3.5	3.2
2009-10 Actuals	4.4	3.4	3.6	3.2	2.3	1.0	1.9	3.3
2009-10 Allowances	4.4	2.0	2.9	2.3	2.9	2.2	3.4	3.2

Figure A4.4 GDN controllable indirect opex – insurance



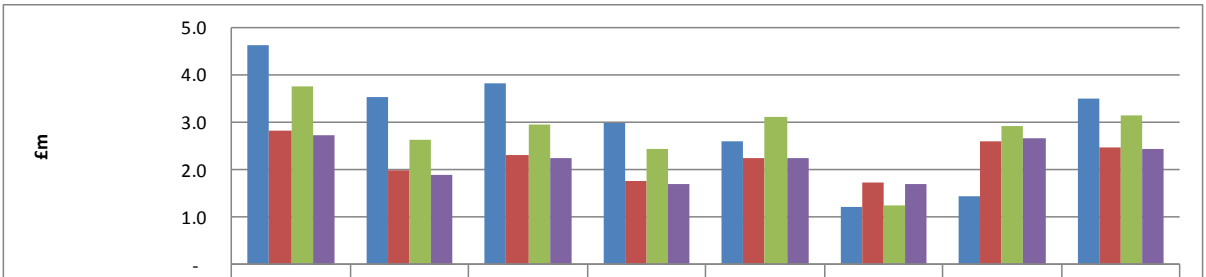
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	3.8	2.7	3.0	2.3	2.2	1.8	3.1	1.7
2008-09 Allowances	4.4	2.3	3.1	2.2	2.5	2.1	3.2	2.7
2009-10 Actuals	2.8	2.1	3.7	1.8	3.0	1.6	2.3	1.9
2009-10 Allowances	4.8	2.4	3.4	2.4	3.0	2.5	3.8	3.2

Figure A4.5 GDN controllable indirect opex – property management



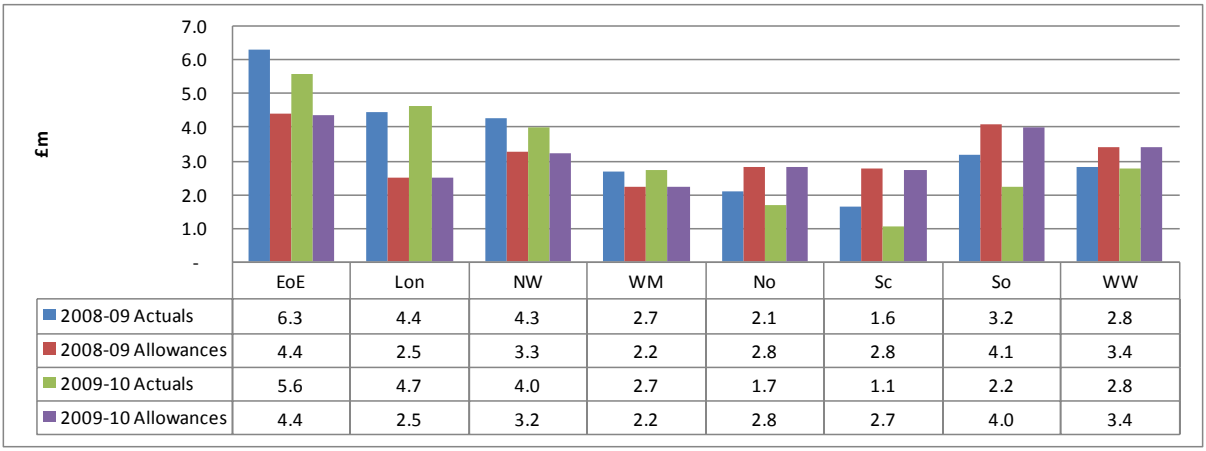
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	6.8	4.6	4.5	3.6	1.8	2.6	4.5	3.1
2008-09 Allowances	5.3	4.6	6.0	4.9	2.9	2.0	3.1	2.4
2009-10 Actuals	5.6	4.1	4.2	2.9	1.6	2.0	3.3	2.4
2009-10 Allowances	5.1	4.4	5.9	4.7	2.8	1.9	2.9	2.3

Figure A4.6 GDN controllable indirect opex – CEO



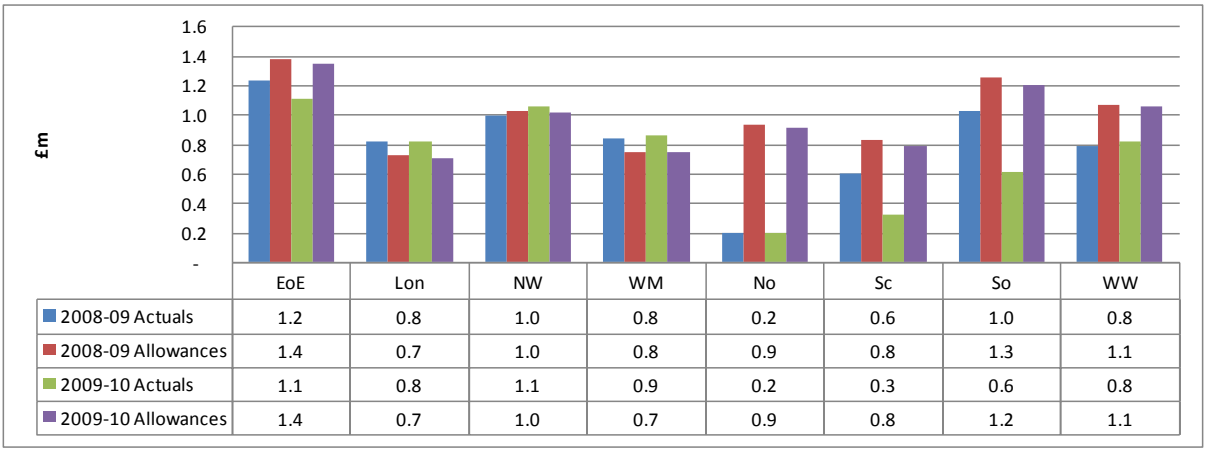
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	4.6	3.5	3.8	3.0	2.6	1.2	1.4	3.5
2008-09 Allowances	2.8	2.0	2.3	1.8	2.2	1.7	2.6	2.5
2009-10 Actuals	3.8	2.6	3.0	2.4	3.1	1.2	2.9	3.1
2009-10 Allowances	2.7	1.9	2.2	1.7	2.2	1.7	2.6	2.4

Figure A4.7 GDN controllable indirect opex – HR



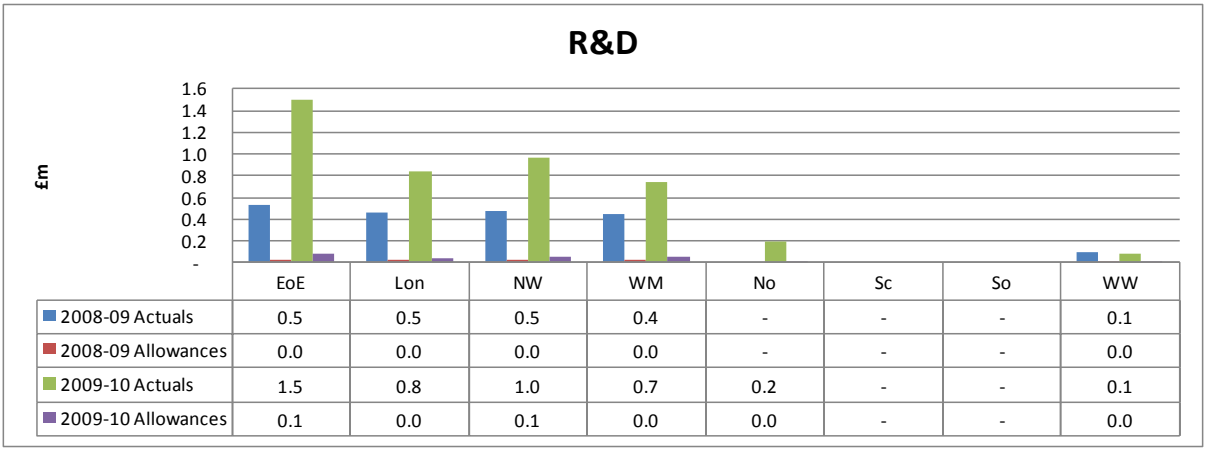
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	6.3	4.4	4.3	2.7	2.1	1.6	3.2	2.8
2008-09 Allowances	4.4	2.5	3.3	2.2	2.8	2.8	4.1	3.4
2009-10 Actuals	5.6	4.7	4.0	2.7	1.7	1.1	2.2	2.8
2009-10 Allowances	4.4	2.5	3.2	2.2	2.8	2.7	4.0	3.4

Figure A4.8 GDN controllable indirect opex – procurement



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	1.2	0.8	1.0	0.8	0.2	0.6	1.0	0.8
2008-09 Allowances	1.4	0.7	1.0	0.8	0.9	0.8	1.3	1.1
2009-10 Actuals	1.1	0.8	1.1	0.9	0.2	0.3	0.6	0.8
2009-10 Allowances	1.4	0.7	1.0	0.7	0.9	0.8	1.2	1.1

Figure A4.9 GDN controllable indirect opex – R&D

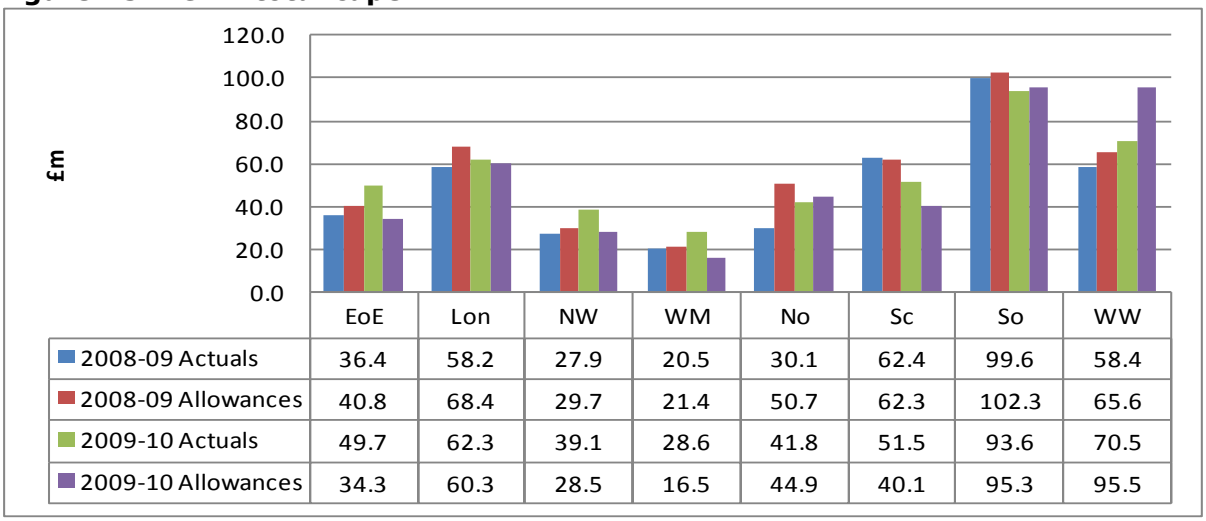


	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	0.5	0.5	0.5	0.4	-	-	-	0.1
2008-09 Allowances	0.0	0.0	0.0	0.0	-	-	-	0.0
2009-10 Actuals	1.5	0.8	1.0	0.7	0.2	-	-	0.1
2009-10 Allowances	0.1	0.0	0.1	0.0	0.0	-	-	0.0

Appendix 5 – Capital expenditure (Capex)

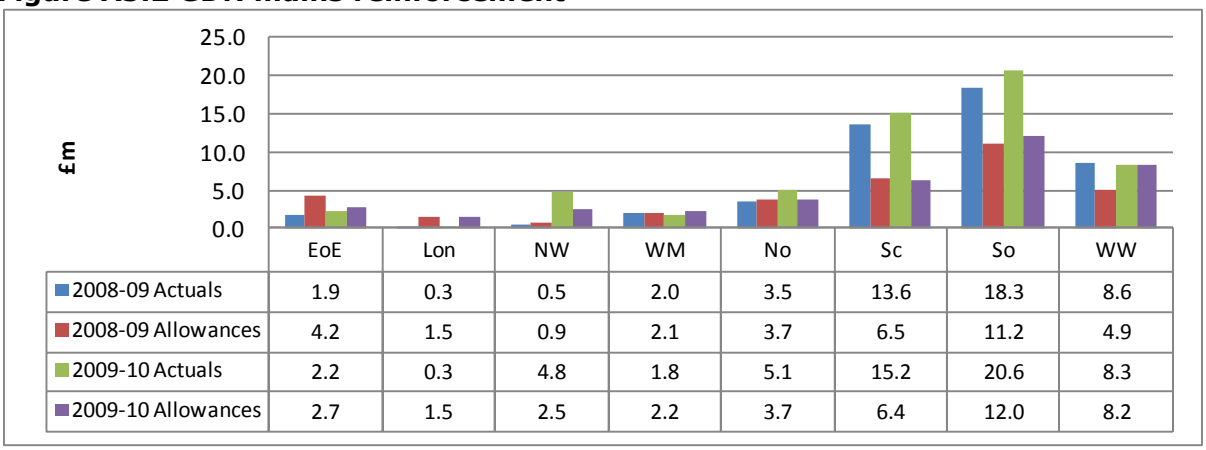
1.1. This appendix sets out net capital expenditure (capex) by GDN and activity (in 2009-10 prices) for the first two years of GDPCR1.

Figure A5.1 GDN total capex



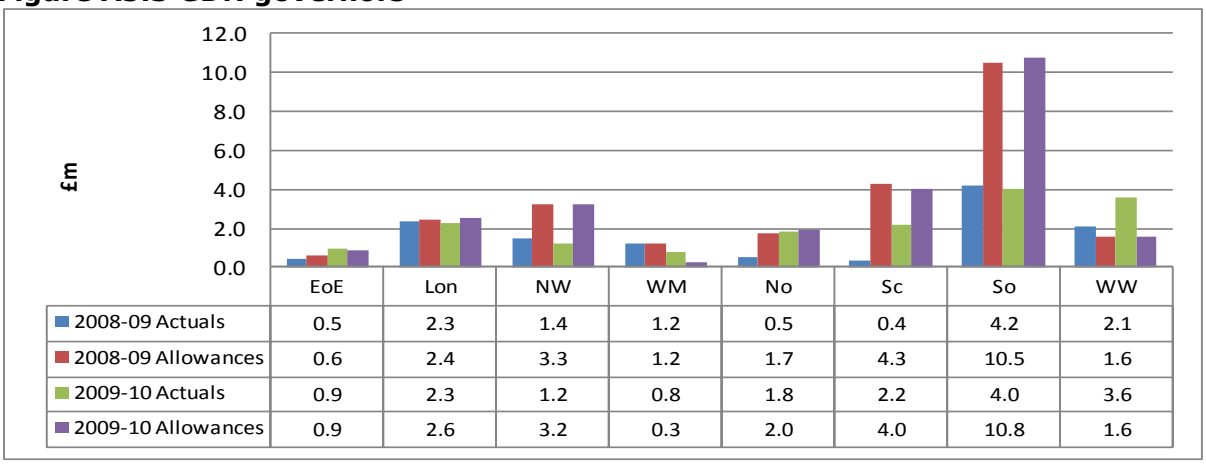
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	36.4	58.2	27.9	20.5	30.1	62.4	99.6	58.4
2008-09 Allowances	40.8	68.4	29.7	21.4	50.7	62.3	102.3	65.6
2009-10 Actuals	49.7	62.3	39.1	28.6	41.8	51.5	93.6	70.5
2009-10 Allowances	34.3	60.3	28.5	16.5	44.9	40.1	95.3	95.5

Figure A5.2 GDN mains reinforcement



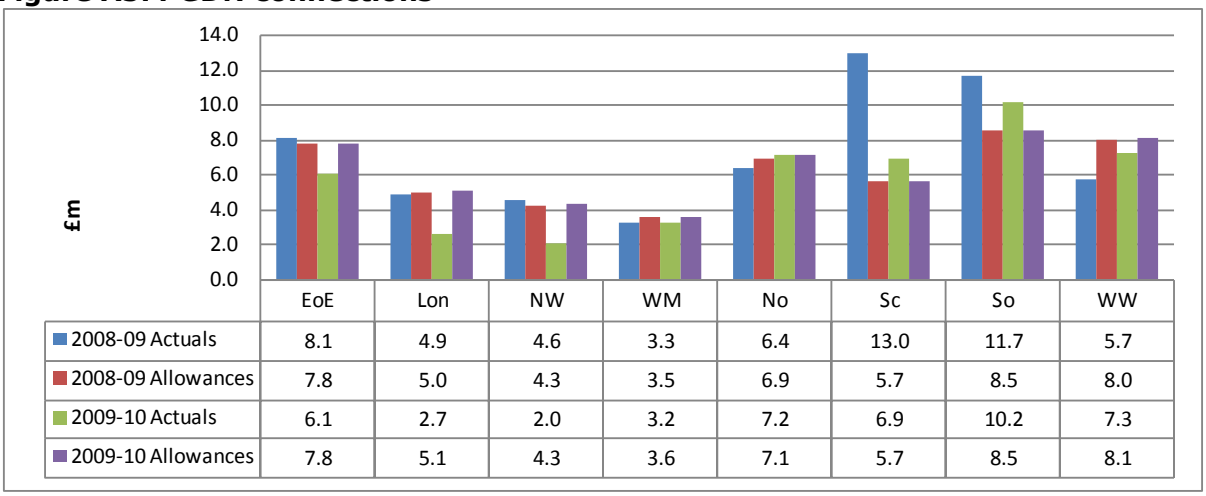
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	1.9	0.3	0.5	2.0	3.5	13.6	18.3	8.6
2008-09 Allowances	4.2	1.5	0.9	2.1	3.7	6.5	11.2	4.9
2009-10 Actuals	2.2	0.3	4.8	1.8	5.1	15.2	20.6	8.3
2009-10 Allowances	2.7	1.5	2.5	2.2	3.7	6.4	12.0	8.2

Figure A5.3 GDN governors



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	0.5	2.3	1.4	1.2	0.5	0.4	4.2	2.1
2008-09 Allowances	0.6	2.4	3.3	1.2	1.7	4.3	10.5	1.6
2009-10 Actuals	0.9	2.3	1.2	0.8	1.8	2.2	4.0	3.6
2009-10 Allowances	0.9	2.6	3.2	0.3	2.0	4.0	10.8	1.6

Figure A5.4 GDN connections

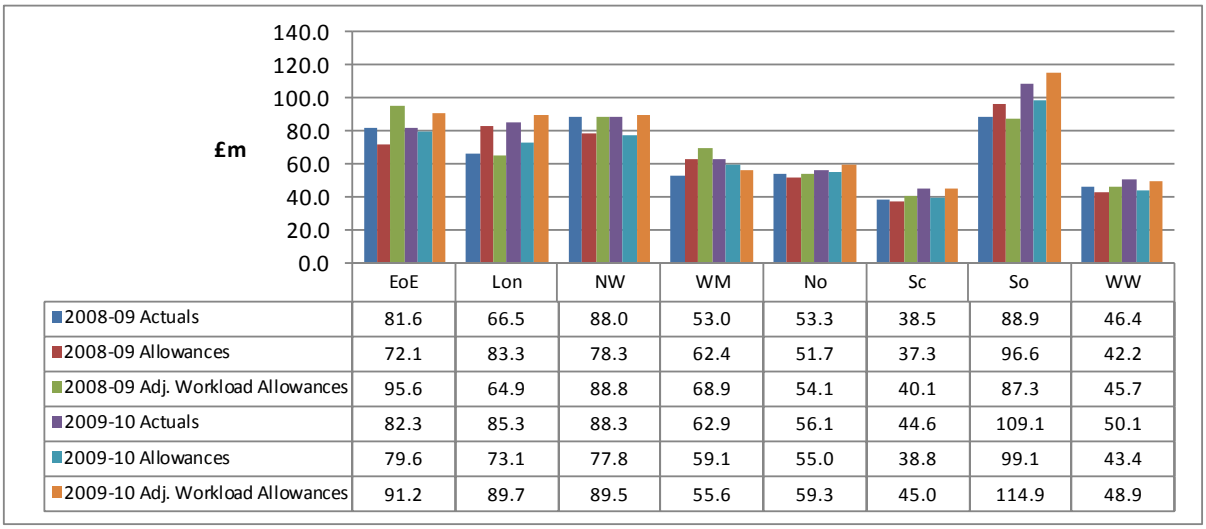


	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	8.1	4.9	4.6	3.3	6.4	13.0	11.7	5.7
2008-09 Allowances	7.8	5.0	4.3	3.5	6.9	5.7	8.5	8.0
2009-10 Actuals	6.1	2.7	2.0	3.2	7.2	6.9	10.2	7.3
2009-10 Allowances	7.8	5.1	4.3	3.6	7.1	5.7	8.5	8.1

Appendix 6 – Replacement expenditure (Repex)

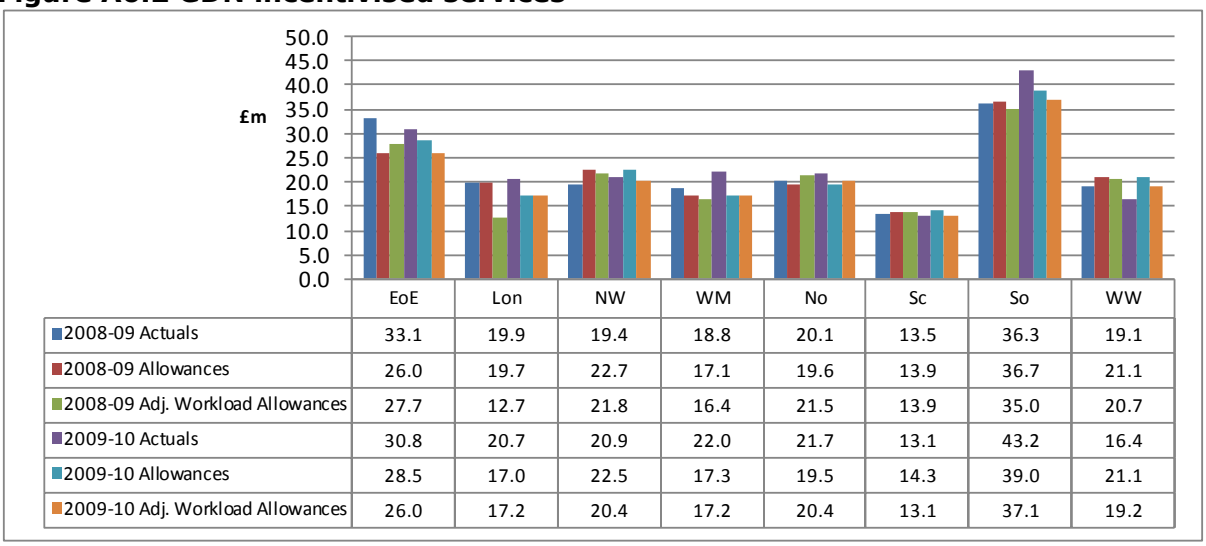
1.1. This appendix sets out the net replacement expenditure (repex) by GDN and activity (in 2009-10 prices) for the first two years of GDPCR1.

Figure A6.1 GDN mains replacement



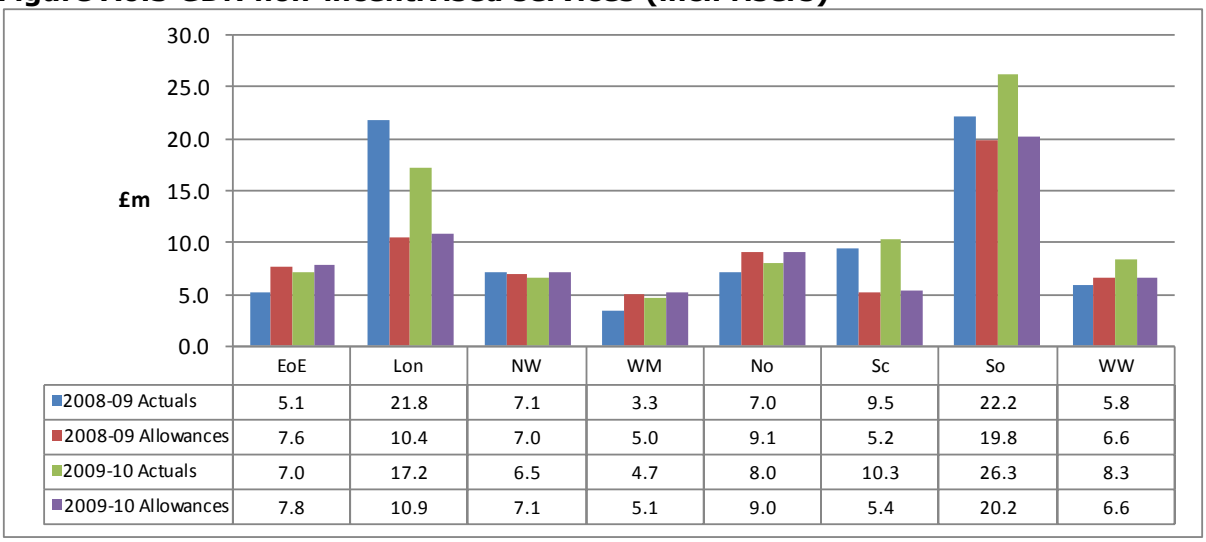
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	81.6	66.5	88.0	53.0	53.3	38.5	88.9	46.4
2008-09 Allowances	72.1	83.3	78.3	62.4	51.7	37.3	96.6	42.2
2008-09 Adj. Workload Allowances	95.6	64.9	88.8	68.9	54.1	40.1	87.3	45.7
2009-10 Actuals	82.3	85.3	88.3	62.9	56.1	44.6	109.1	50.1
2009-10 Allowances	79.6	73.1	77.8	59.1	55.0	38.8	99.1	43.4
2009-10 Adj. Workload Allowances	91.2	89.7	89.5	55.6	59.3	45.0	114.9	48.9

Figure A6.2 GDN incentivised services



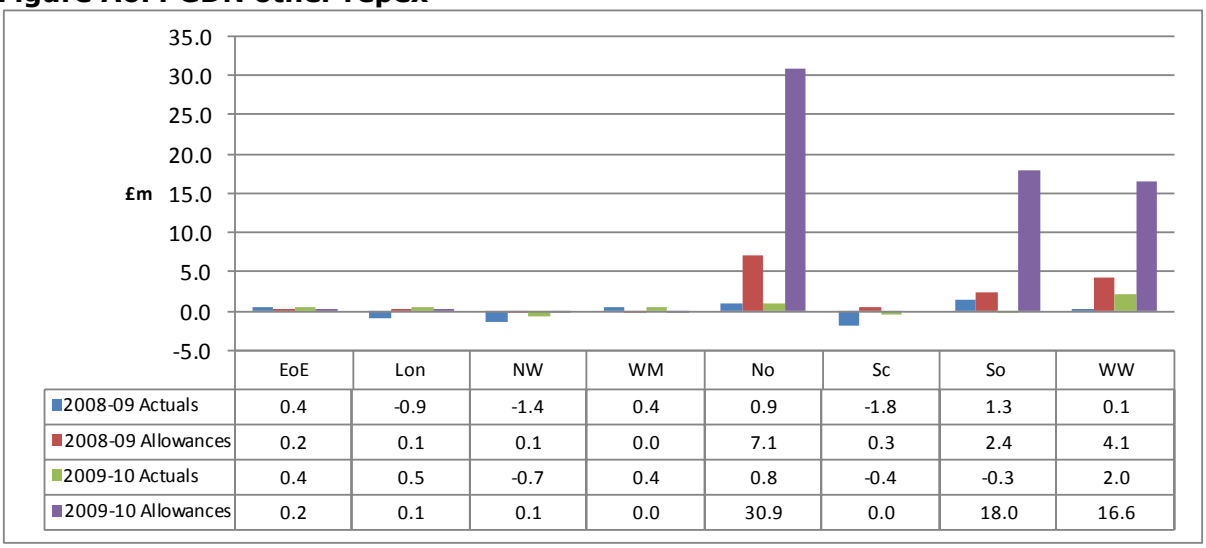
	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	33.1	19.9	19.4	18.8	20.1	13.5	36.3	19.1
2008-09 Allowances	26.0	19.7	22.7	17.1	19.6	13.9	36.7	21.1
2008-09 Adj. Workload Allowances	27.7	12.7	21.8	16.4	21.5	13.9	35.0	20.7
2009-10 Actuals	30.8	20.7	20.9	22.0	21.7	13.1	43.2	16.4
2009-10 Allowances	28.5	17.0	22.5	17.3	19.5	14.3	39.0	21.1
2009-10 Adj. Workload Allowances	26.0	17.2	20.4	17.2	20.4	13.1	37.1	19.2

Figure A6.3 GDN non-incentivised services (incl. risers)



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	5.1	21.8	7.1	3.3	7.0	9.5	22.2	5.8
2008-09 Allowances	7.6	10.4	7.0	5.0	9.1	5.2	19.8	6.6
2009-10 Actuals	7.0	17.2	6.5	4.7	8.0	10.3	26.3	8.3
2009-10 Allowances	7.8	10.9	7.1	5.1	9.0	5.4	20.2	6.6

Figure A6.4 GDN other repex



	EoE	Lon	NW	WM	No	Sc	So	WW
2008-09 Actuals	0.4	-0.9	-1.4	0.4	0.9	-1.8	1.3	0.1
2008-09 Allowances	0.2	0.1	0.1	0.0	7.1	0.3	2.4	4.1
2009-10 Actuals	0.4	0.5	-0.7	0.4	0.8	-0.4	-0.3	2.0
2009-10 Allowances	0.2	0.1	0.1	0.0	30.9	0.0	18.0	16.6