Promoting choice and value
for all gas and electricity customers

RIIO-GD1: Final Proposals - Supporting document - Cost efficiency

Final decision - supplementary appendices

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Overview:

This Supporting Document to the RIIO-GD1 Final Proposals sets out our cost allowances for GDNs to enable them to deliver the required outputs over RIIO-GD1. This document is aimed at those seeking a detailed understanding of our cost efficiency assessment. Stakeholders wanting a more accessible overview should refer to the Overview consultation document.

Associated documents

Main Document

RIIO-GD1: Final Proposals – Overview

Supporting Documents

RIIO-GD1: Final Proposals Supporting Document – Outputs, incentives and innovation

RIIO-GD1: Final Proposals Supporting Document – Finance and uncertainty

Associated Documents

RIIO-GD1: Final Proposals Financial Model

RIIO-GD1: Final Proposals – Real price effects and ongoing efficiency appendix

Consultants report: PKF Audit letter on the financial models

Consultants report: RIIO Reviews Financeability Study (Imrecon working with ECA)

Other Relevant Documents

RIIO-GD1: Initial Proposals

Decision on strategy for the next gas distribution price control – RIIO-GD1

Handbook for implementing the RIIO model - Ofgem, October 2010

Glossary for all the RIIO-T1 and RIIO-GD1 documents

Contents

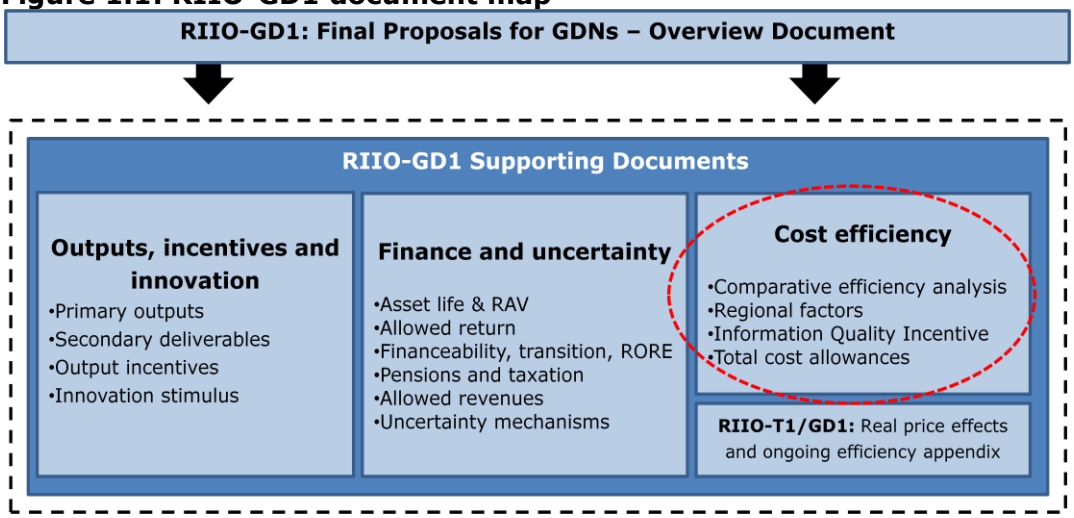
1. Overview of our cost assessment methodology

Chapter Summary
This chapter provides an overview of our final proposals for the total expenditure allowances for the eight gas distribution networks (GDNs) for RIIO-GD1. It explains our Initial Proposals, the key issues raised by the companies and other stakeholders and our Final Proposals. We also set out the structure of the remainder of this document.

Introduction

1.1. This is one of a suite of documents we are publishing as part of Final Proposals (FP). Figure 1.1 provides a map of the RIIO-GD1 documents.

Figure 1.1: RIIO-GD1 document map



1.2. Under the RIIO framework we stated that we would draw on a variety of evidence, including the companies' forecasts and our own benchmarking analysis, as a means of informing our assessment of companies' efficient costs.

1.3. In order to establish an efficient level of costs, we distinguish between the level of outputs that GDNs need to deliver over RIIO-GD1 (eg in terms of safety, reliability), and the efficient unit costs required to deliver those outputs.

1.4. In the RIIO-GD1 Outputs, Incentives and Innovation Supporting Document we set our Final Proposals for the Outputs and Secondary Deliverables that we will require GDNs to deliver in RIIO-GD1. In this document we set out our Final Proposals for the total expenditure allowances for each of the GDNs in RIIO-GD1, consistent

with delivering those Outputs and Secondary Deliverables. We explain how we have updated our analysis to take into account new data for 2011-12, additional evidence from the GDNs and comments on our methodology from the GDNs and other stakeholders.

Summary of Initial Proposals

1.5. In Initial Proposals (IP), we used a wide-range of techniques to assess GDNs' cost efficiency. In terms of econometric models we used total expenditure (totex) models, models based on individual expenditure areas (ie capex, repex, opex), as well as more disaggregated models, eg at the activity level (repairs, emergency service etc). For each approach, we developed econometric models estimated using three years of historical data (2008-09 to 2010-11), as well as models estimated using GDNs' forecast data using 2-year forecast costs and the full 8 year forecasts.

1.6. The different modelling approaches provide useful information in assessing GDNs' comparative efficiency. For example, totex models ensure that we consider GDNs' opex-capex trade-offs in our comparative efficiency assessment, ie that we can identify those GDNs that have minimised total costs. Activity level analysis enables a richer model specification, ie we can take into account a greater number of potential factors that explain costs. Our models based on the principal expenditure lines, opex, capex, and repex, strike a balance between ensuring that we consider trade-offs between cost areas while allowing a richer model specification than the high-level totex model.

1.7. We applied a conservative approach in setting IP for totex allowances for the 8 GDNs. We base our totex allowances on the average of our four preferred models, ie totex and activity level models based on both historical and 2-year forecast data. As set out above, we consider that each modelling approach has its merits, and we consider that drawing on a wide set of models ensures that we do not over emphasise any one modelling approach. For the costs subject to econometric analysis, we estimate the efficient level of costs for a base year.

1.8. We did not use the econometric models using the full 8 year RIIO-GD1 period in setting IP. This was because we considered the underlying data was of poorer quality and most of the 8 year forecast regression models failed our regression diagnostics[1].

1.9. We also did not use the middle up models (based on total opex, total capex and total repex). This is not because we had specific concerns with the models' diagnostics; instead we noted that the model specifications were similar to the totex models and gave broadly the same comparative efficiency scores. Placing weight on the middle-up models would have been broadly equivalent to placing greater weight on totex.

[1] See paragraphs 1.9 to 1.11 of Appendix 1 of IP cost efficiency doc at: http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20Cost%20Efficiency%20Initial%20proposals%20270712.pdf

1.10. We defined efficient costs equal to the upper quartile (UQ) GDNs' costs rather than the frontier allowing for other factors that may influence the companies' costs. We also assumed that GDNs would close only 75 per cent of the assessed gap between their forecasts and the UQ. The use of the UQ is identical to previous price reviews (eg GDPCR1, and more recently the electricity distribution price review, DPCR5). Our proposed approach to closing the gap and the use of the UQ rather than the frontier acknowledges that a part of the difference in costs across the GDNs relates to factors other than GDNs' relative efficiency (eg statistical errors). In setting our allowances for Initial Proposals we highlighted that we had set out an interim position for repex for National Grid's four GDNs (NGGD), both of Scotia Gas Network's GDNs (SGN) and WWU as they had not provided sufficient evidence to demonstrate that this work would give a positive benefit to consumers over a 24 year payback period (by 2037).

1.11. Similarly for SGN's Scotland and Southern GDNs we set a capex allowance for integrity capex based on historical spend given we stated better outputs information would be required to support the proposed increase in spending.

1.12. We stated in IP that we would update our benchmarking to take into account any errors we identified post IP as well as taking into account an extra year of actual costs for 2011-12 which were received at the end of July.

1.13. We highlighted that where respondents had convincingly demonstrated there was an issue with our proposed approach to cost assessment we would consider changing elements of our methodology.

Summary of respondents' views

1.14. NGN, WWU, three DNOs and one gas supplier support our overall benchmarking approach including the use of the toolkit, the use of historical and forecast benchmarks assessed using both top-down and bottom-up approaches, and the modelling techniques.

1.15. However, NGGD and SGN do not consider our IP approach to cost assessment to be appropriate and robust. NGGD has concerns mainly with model specification issues, the adequacy of the allowance for a London productivity effect, and our rejection of the 8 year totex model. SGN lists a number of cost driver related factors which it considers create significant gaps in the bottom-up assessment process and detrimentally affects the validity of our conclusions

1.16. Although NGGD and SGN do not support our overall benchmarking approach, they recognise the value of certain aspects of our methodology. NGGD recognises the progress made in developing regression drivers, the application of statistical tests, the use of panel data, the use of forecast data, the London pay uplift, and the application of a sparsity factor for the emergency activity. SGN welcomes totex benchmarking as part of the toolkit which gives an overall view of efficient costs. Detailed responses are presented in Chapters 2, 4 and 5.

Our decision

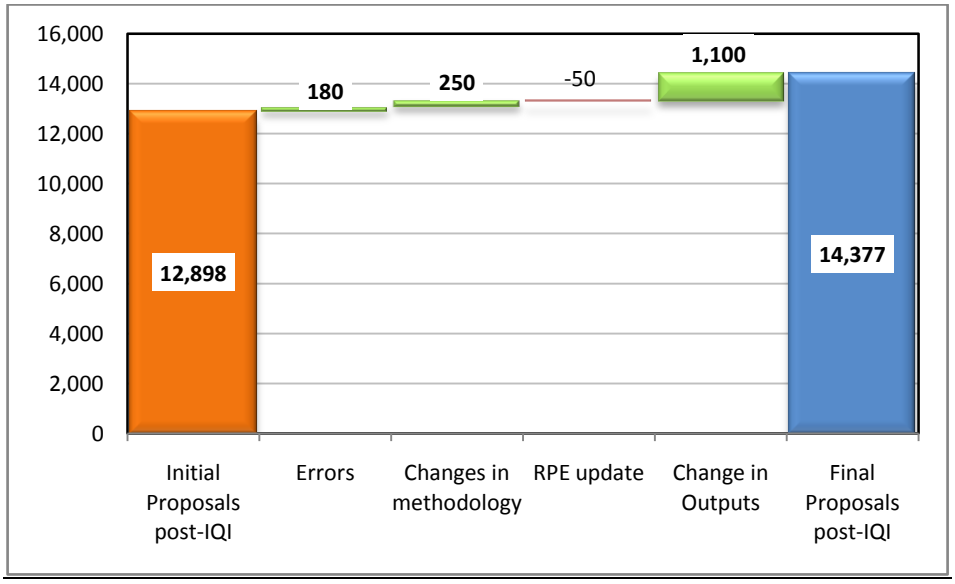
1.17. In developing FP for total expenditure allowances for each of the GDNs we have continued to apply the same overall approach that we used in IP. This means that, in line with our RIIO principles, we have used a combination of econometric and engineering based approaches, totex and disaggregated data as well as using historical and GDN forecast data.

1.18. We have updated our analysis in a number of areas as we stated we would at IP:

- where either we or the GDNs identified an error in the analysis at the time of publishing IP;
- where the GDNs have provided further granularity or evidence, particularly for cost-benefit justified repex and integrity capex;
- refinements to our benchmarking or comparative analysis which have been justified by the GDNs or we considered to be necessary to take into account comments from the GDNs and other stakeholders; and
- updating all of our analysis for the additional year's cost reporting for 2011-12.

1.19. The overall impact of these changes is presented in Figure 1.2, which shows that at a total industry level our totex allowance for RIIO-GD1 has increased by £1.5bn (11 per cent) since IP. £1.1bn of the £1.5bn increase is due to the additional evidence and justifications the GDNs have provided supporting an increased level outputs associated with asset integrity and replacement of iron mains and services.

Figure 1.2: Allowance movements in post-IQI totex since IP (£m, 2009-10 prices)



1.20. We noted a number of small calculation errors in our workbooks after publishing IP, which we identified prior to sharing the detailed analysis with the GDNs. The impact of us correcting these errors was additional £180m being added to our proposed IP allowance (after the application of our IQI mechanism).

1.21. We stated in IP we would update our analysis to take into account the latest reported data by the GDNs. The combined effect of us using the 2011-12 actual data along with us refining our approach on a number of issues that were raised following our IP, increased allowed revenues for the GDNs by an additional £250m. The main methodology changes we have applied, taking into account the responses to our IP are:

- amending the assessment of maintenance opex and LTS pipeline capex so the efficiency assessment further considered the capex-opex interactions between the two.
- our assessment of emergency costs was updated to reflect further information on the impact of loss of meter work on the GDNs and the impact this has on the emergency costs.
- our business support assessment was changed to a top-down assessment rather than the disaggregated (bottom-up) approach used at IP.
- we have allowed incremental costs associated with the Section 74 (S74) streetworks costs based on updated information from the GDNs.

1.22. We have also reviewed and updated our assessment of real price effects (RPEs) affecting the GDNs over RIIO-GD1. This has reduced allowed revenues by £50m for the RIIO-GD1 period.

1.23. The main change since IP has been the change in outputs. We indicated at IP that we had not allowed some of the significant asset integrity capex proposals, and iron mains and service repex proposed by the GDNs under CBA since the business plans had not demonstrated a positive NPV for this work. The GDNs concerned resubmitted elements of their plan that enabled us to identify a positive benefit to customers over the assessment.

1.24. Over 80 per cent of the additional £1.1bn allowed for outputs is due to updated repex analysis.

1.25. We have also made increases to capex to reflect the further information SGN and WWU have provided to support their proposals for integrity related capex. Further detail on the adjustments we have made to our analysis since IP are set out in the subsequent chapters with further detail provided in the accompanying appendices.

1.26. Our Final Proposals for totex expenditure by GDN are presented in table 1.1. In setting out our Final Proposals we consider them final and we do not intend to make further corrections for points that are identified by the GDNs. We consider our approach to applying the upper quartile and closing of the 75 per cent gap accounts for the possibility of some inaccuracies.

Table 1.1: RIIO-GD1 Final Proposals controllable cost allowances (£m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	SC	SO	WWU	Total
Submitted costs (April 2012)	2,433	2,335	1,867	1,381	1,884	1,530	3,093	1,998	16,521
Submitted costs (output adjusted)	2,279	2,210	1,718	1,315	1,753	1,420	2,899	1,817	15,412
Initial Proposals (post-IQI)	1,935	1,648	1,451	1,165	1,595	1,182	2,465	1,457	12,898
Final Proposals (pre-IQI)	2,063	1,876	1,556	1,235	1,652	1,321	2,693	1,637	14,033
Final Proposals (post-IQI)	**2,117**	**1,959**	**1,597**	**1,255**	**1,677**	**1,345**	**2,745**	**1,682**	**14,377**
Change on IP	182	311	146	89	83	164	280	226	1,480
% increase to IP	9%	19%	10%	8%	5%	14%	11%	16%	11%
Disallowance as % of submitted costs	-13%	-16%	-14%	-9%	-11%	-12%	-11%	-16%	-13%
Disallowance as % of submitted costs (output adjusted)	-7%	-11%	-7%	-5%	-4%	-5%	-5%	-7%	-7%

1.27. Further detail on the adjustments we have made to our analysis since IP are set out in the subsequent chapters and the accompanying appendices.

1.28. Chapter 10 of this document sets out how we have applied the information quality incentive (IQI) to our proposed cost allowances. We have set allowances based on the expectation that GDNs could close 75 per cent of the assessed gap between their forecasts and the upper quartile performing GDN.

1.29. Table 1.2 sets out our proposed IQI scores for each GDN. This shows a range of scores from 106 (for NGN) to 118 (for London GDN). We have calculated the income reward/penalty based on each individual GDN. However, we have set a single sharing factor for each of NGGD and SGN based on the average score for their respective GDNs.

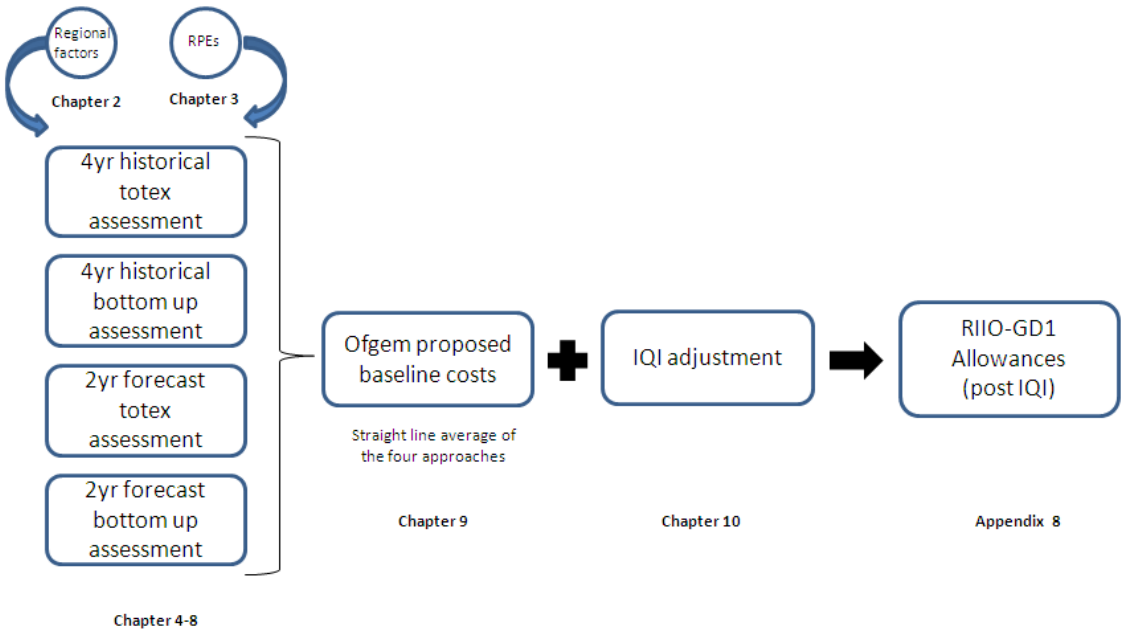
Table 1.2: Proposed IQI scores, income reward/penalty and sharing factor

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
IQI score (change from IP)	110.5 (-3.3)	117.8 (-3.9)	110.4 (-2.1)	106.5 (-2.2)	106.1 (-0.7)	107.5 (-3.1)	107.7 (-3.5)	111.0 (-8.5)
Reduction to totex for cost efficiency	7.9%	13.3%	7.8%	4.9%	4.6%	5.7%	5.7%	8.2%
Income reward/penalty (% of totex)	0.7%	-0.5%	0.8%	1.4%	1.5%	1.3%	1.2%	0.7%
Sharing factor	63%	62%	63%	64%	64%	64%	64%	63%

Structure of the document

1.30. Figure 1.3 sets out the process we have followed in determining our cost allowances for each of the GDNs for RIIO-GD1 and how this maps onto each of the chapters in this document. Each chapter sets out our position for IP, the responses we received and our final proposals decision.

Figure 1.3 – RIIO-GD1 Cost Efficiency document chapter map



1.31. In applying our toolkit approach we have used a wide-range of techniques to assess GDNs' cost efficiency. In terms of econometric models we have used total expenditure (totex) models (as presented in Chapter 4), as well as models based on more disaggregated models, eg at the activity level repairs, emergency service etc (as presented in Chapters 6-8). For each approach, we have also developed

econometric models estimated using four years' historical data (2008-09 to 2011-12), as well as models estimated using GDNs' forecast data using 2-year forecast data.

1.32. In each chapter we present Ofgem adjusted costs which includes adjustments for re-classified costs, costs deferred to an uncertainty mechanism and outputs disallowances.

1.33. Given the merits of each of the models Chapter 9 sets out how we have interpreted the results and combined them using a straight line average of the four approaches to determine our baseline costs. The application of the IQI to determine our final cost allowances, additional income rewards or penalties and the efficiency incentive rate is explained in Chapter 10.

1.34. We then present the more granular activity allowances post IQI in appendix 8.

1.35. In IP we previously had a chapter covering our assessment of costs excluded from regression analysis. This included our assessment of streetworks, smart metering and holders. Given the issues and responses were closely aligned to specific activities these sections are now included in the relevant chapters.

Presentation of costs

1.36. In the following chapters and appendices we set out tables which summarise the GDNs cost submissions and our baseline cost allowances. The table format is set out in Table 1.3 and explains the contents of the tables presented in the individual chapters. This example relates to regressed costs, for non regressed costs the tables show only one Ofgem baseline cost.

Table 1.3: Explanation of table contents

(a)	GDN submitted cost	Total forecast expenditure as submitted by the GDNs in the BPDT for the RIIO period, including their assumptions for Real Price Effects (RPEs)
(b)	Ofgem adjusted cost	As above, normalised for reclassified costs and adjusted for costs deferred to an uncertainty mechanism and our outputs disallowances
(c)	Ofgem cost baseline (4 year historical prior to averaging or IQI)	Our baseline cost allowance based on our historical modelling approach, including our RPE and ongoing productivity assumptions
(d)	Gap to Ofgem adjusted costs	The percentage difference between (c) and (b): (d) = (c) / (b) -1
(e)	Ofgem cost baseline (2 year forecast prior to averaging or IQI)	Our baseline cost allowance based on our forecast modelling approach, including our RPE and ongoing productivity assumptions
(f)	Gap to Ofgem adjusted costs	The percentage difference between (e) and (b): (f) = (e) / (b) -1

2. Regional labour factors and company specific effects

Chapter Summary
This chapter presents the responses we received to our Initial Proposals on regional direct and contract labour adjustments and company specific adjustments and explains any changes we have made for Final Proposals.

Summary of Initial Proposals

2.1. At IP we recognised the need to make certain adjustments to ensure that we benchmark GDNs on a comparable basis. We applied adjustments for regional labour cost differences, for sparsity and urbanity effects[2], and for salt cavity costs for each historical year in our analysis and for the RIIO-GD1 forecasts. We also made adjustments to remove xoserve costs for all GDNs and Scottish Independent Undertakings (SIU) costs from SGN's opex and totex on the understanding that DECC intend to issue a further direction to Ofgem to maintain the NTS cross-subsidy arrangements currently set out National Grid Transmission's and SGN's licences.

- We recognised labour cost differentials between London, the South-East and elsewhere in Great Britain. We calculated labour indices using the Office of National Statistics' (ONS) Annual Survey of Hourly Earnings (ASHE) data. We took into account the additional costs associated with working in London and the South-East and considered the proportion of work that is done in these areas and elsewhere. We also applied an additional adjustment for East of England to recognise areas such as Tottenham which are located inside the M25.
- We accepted the differences in costs associated with working in relatively sparse areas for the emergency and repair cost activities. We calculated sparsity indices based on district level area and population data and then made adjustments to the GDNs' cost data.
- We recognised the reduced labour productivity associated with working inside the M25. We applied a 15 per cent productivity adjustment to the labour cost element of repex and capex mains reinforcement and connections based on the proportion of work that is carried out within the M25.
- We accepted the reduced labour productivity associated with reinstatement costs for the repairs and maintenance activities inside the M25. We applied the contract labour indices to the GDNs' repairs and maintenance reinstatement cost data.

Summary of respondents' views

2.2. With the exception of SGN, the GDNs support our regional labour factors. SGN and one DNO consider there should be company-specific contract labour indices.

[2] Sparsity effects relate to additional costs of working in sparsely populated areas including poorer critical infrastructure than the rest of the UK that impacts on operational activity. Urbanity effects relate to the reduced labour productivity associated with working inside the M25 due to higher underground and above ground congestion than outside the M25.

Another DNO argues that regional salary distortions do not occur outside central London due to the companies' related history, similar specialist skills, and equal competition to attract staff, often from each other. SGN proposes the use of average instead of year specific direct labour indices to reflect the effects of direct labour pay settlements which last longer than one year. One DNO recognises the logic of using the area inside the M25 to proxy the London region, but another DNO believes adopting that definition risks inappropriately disadvantaging other network operators.

2.3. The GDNs support our use of sparsity adjustments, but express mixed concerns on the methodology for calculating the sparsity indices and on their application. NGN and WWU question the appropriateness of calculating the sparsity factor with reference to GDPCR1. WWU queries the justification for capping the sparsity factor when the urbanity factor is not capped. NGGD argues that the absolute size of the sparsity adjustment is too large. WWU considered the sparsity adjustment should be applied across all cost activities, while NGGD argues that the sparsity adjustment should be applied only to the emergency activity. NGN criticises our analysis for focusing on relative population sparsity, but not considering whether specific areas have a gas supply network or not.

2.4. The GDNs support the urbanity adjustments, but NGGD and SGN express concerns about the scale of the adjustment which they consider does not fully take into account inner London productivity. NGGD requests that we consider a 20 per cent productivity uplift for London GDN's repex, emergency and repair activities. One DNO welcomes Ofgem's recognition that certain supporting activities, such as reinstatement and transport, which are subject to the similar urban impacts.

2.5. SGN, NGN and NGGD ask Ofgem to consider severe weather, salt cavity, and London property and medium pressure repex costs. SGN requests that we consider the above average weather costs in their Scotland GDN compared to the rest of GB. NGN requests Ofgem to exclude its newly submitted salt cavity maintenance costs from the regression analysis. NGGD urges Ofgem to consider additional London property costs and London medium pressure repex costs.

Our decision

2.6. We have not changed our overall approach to regional labour factors and company specific effects but have made a number of adjustments to take into account responses to IP and further work we have carried out to consider how such adjustments are applied. These include an adjustment to exclude salt cavity costs for NGN from our benchmarking, and refinements to how we calculate our sparsity indices and how we quantify the labour elements of costs to which such adjustments are applied (see Appendix 4).

2.7. Table 2.1 presents the labour and sparsity indices we have used in the FP analysis. East of England's indices are adjusted for the London region effect to account for its operational areas which are located inside the M25.

Table 2.1: Labour and sparsity indices

GDN	Contract labour			Direct labour			Sparsity
	2009	2010	2011-21	2009	2010	2011-21	2009-21
EoE	0.97	0.97	0.97	0.98	0.98	0.98	1.04
Lon	1.18	1.16	1.18	1.15	1.14	1.16	0.96
NW	0.96	0.96	0.96	0.96	0.97	0.97	0.97
WM	0.96	0.96	0.96	0.96	0.97	0.97	0.99
NGN	0.96	0.96	0.96	0.96	0.97	0.97	1.03
Sc	0.96	0.96	0.96	0.96	0.97	0.97	1.11
So	1.10	1.09	1.09	1.10	1.08	1.07	0.99
WWU	0.96	0.96	0.96	0.96	0.97	0.97	1.15

2.8. Table 2.2 presents the annual average regional labour and company specific factors adjustments we have made in our FP.

Table 2.2: Annual average RIIO-GD1 regional labour and company specific factors adjustments, £m

Adjustment factor	EoE	Lon	NW	WM	NGN[1]	Sc	So	WWU	Industry
Labour	4.31	-25.1	4.42	3.47	4.89	3.61	-17.5	4.89	-17.0
Sparsity	-0.8	0.72	0.50	0.07	-0.5	-1.3	0.44	-2.6	-3.5
Urbanity	-0.5	-14.0	0.13	0.09	0.19	0.10	-5.5	0.09	-19.4
Salt cavity			-0.6						-0.6
Total	3.01	-38.4	4.47	3.63	4.58	2.38	-22.5	2.34	-40.5

[1]NGN's salt cavity adjustments is applicable only to the GDPCR1 period

Regional labour costs adjustments

2.9. We have not changed our overall approach to regional labour indices. We do not accept SGN's arguments for GDN-specific contract labour indices. We consider that most contract workers are flexible to work anywhere in GB for a fixed wage, but ask for a higher wage to work in London because of the associated productivity and cost of living factors. Frontier Economics' statistical correlations do not prove causation between the GDNs' efficiency scores and the labour factors.

2.10. We do not agree with SGN's proposal to use an average index for direct labour. SGN has not provided any supporting evidence to justify its proposal for direct labour pay settlements which last longer than one year.

2.11. We have adopted the area inside the M25 as the proxy for our London region analysis because it is the ONS's official definition for London region and acts as a good proxy for the areas that are likely to incur additional costs.

Sparsity adjustments

2.12. We have not changed our views about the sparsity indices and their application. We do not accept NGN and WWU's concerns about capping the sparsity factor and/or referencing it to GDPCR1. We consider that the level of sparsity impact has not changed since GDPCR1. We have accounted for annual increases in labour costs, by converting all costs into 2009-10 prices. We consider our sparsity indices to be reasonable as they are comparable with the direct labour indices.

2.13. We consider sparsity effects to impact only on emergency and repair activities. When First Call Operatives (FCOs) attend an emergency call to classify a reported escape they sometimes cannot leave the site until a repair team arrives to hand over the work. The repair staff has to be located strategically to enable them to assist the GDNs in meeting the emergency standard requirements. The sparsity productivity impacts on both emergency and repair, but does not extend to other cost activities.

2.14. We have removed all the areas which we identified as having no gas networks from our analysis. We then consulted the GDNs on the methodology and shared our work files with them. The GDNs neither identified nor reported areas without gas networks that are included in our analysis.

Urbanity adjustments

2.15. We have not changed our overall approach to the urbanity adjustments. In IP we asked NGGD to provide better justification for a higher productivity adjustment for London. It proposed a productivity adjustment of 20.3 per cent, down from its pre-IP figure of 25 per cent. We have re-examined SGN's evidence, re-assessed our own evidence and decided to retain the urbanity productivity factor at the IP' level (ie at 15 per cent). We believe additional productivity costs are reflected in overtime and shift premium pay and captured by the ASHE data and hence the labour indices[3].

2.16. We have rejected NGGD's argument for extending the urban productivity adjustments to emergency and repair activities. Unlike areas outside London where emergency and repairs staff may have to wait to be deployed, impacting on productivity, the high workload for emergency and repairs in London leads to no time-related productivity losses.

2.17. We have instead recognised productivity losses associated with reinstatement and transport activities. We treat reinstatement costs as 100 per cent contract labour to compensate for the transport costs which we have excluded from the adjustments. We then apply contract labour indices to reinstatement costs for the repairs and maintenance activities leading to a reduction of costs for London and Southern GDNs and an increase in costs for the other GDNs.

[3] See questions 6b and 4b of the 2011 Annual Survey of Hours and Earnings questionnaire at: http://www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/ashe-results-2011/2011-ashe-questionnaire.pdf

Other adjustments

2.18. We accept NGN's argument that costs associated with the maintenance of a salt cavity need to be excluded for their area. We do not consider that SGN need an additional adjustment for their Scotland GDN associated with severe weather. They have not provided sufficient evidence to demonstrate significant weather differences which impact significantly on the costs of running their network compared to other GDNs. The companies are funded to meet the 1 in 20 winter standard, and any excess is accounted for through our other mechanisms. This includes where GDNs provide the emergency service and the weather impacts on travel and the transport system, we consider that this has been addressed through the adjustment we have made for sparsity. The emergency standard requires them to attend 97 per cent of uncontrollable (controllable) gas escapes within 1 hour (2 hours) over the course of a year. The remaining 3 per cent margin allows for circumstances outside the companies' control such as severe weather.

2.19. London medium pressure repex is included in both our top-down and bottom-up regressions. We have made two pre-regression adjustments, London labour adjustments and productivity adjustments to 97 per cent of repex costs including medium pressure repex. The medium pressure repex workloads and unit costs are also reflected in the workload driver in the bottom-up repex regression and in the totex composed scale variable (CSV). We consider the pre-regression adjustments and the inclusion of medium pressure repex workloads and unit costs in both the top-down and bottom-up regression costs drivers to sufficiently account for any cost differences caused by London medium pressure works. We also consider that London GDN can reduce its non-operational property costs if it locates most of its properties outside London region.

3. RPEs and ongoing efficiency

Chapter Summary

This chapter summarises the real price effect (RPE) and ongoing efficiency assumptions used to set cost allowances for the GDNs.

3.1. The real price effect (RPE) assumption, and associated ex ante allowance, reflects the expectation that there will be a difference between the change in the retail prices index (RPI) measure of inflation and the change in the price of inputs that the GDNs purchase, most notably labour. The ongoing efficiency assumption reflects the expectation that even the most efficient network company can make productivity improvements, for example by employing new technologies. This assumption represents the potential reduction in input volumes that can be achieved whilst delivering the same outputs.

3.2. As we explained in IP, we identify upper quartile (UQ) costs for 2010-11 for our econometric models estimated using historical costs, and for 2013-14 for models estimated using two-year forecast data. To identify UQ costs over the RIIO-GD1 period, we roll-forward these benchmark costs from the base year for RPEs and ongoing efficiency. This requires us to identify RPEs and ongoing efficiency over the period 2011-12 to 2020-21.

3.3. We summarise our decision on assumptions for RPEs and ongoing efficiency in this chapter. For further details of our decision and the reasons for the decision see the supplementary appendix 'RIIO-T1/GD1 Real price effects and ongoing efficiency appendix'.

Summary of Initial Proposals

3.4. At IP we proposed an RPE assumption of 0.5 per cent per year on average for totex and an ongoing efficiency assumption of 0.8 per cent per year for totex. We therefore proposed that GDNs could more than absorb real input price increases through productivity improvements. Overall, our RPE assumption net of ongoing productivity was equal to -0.3 per cent per year for totex over the period.

3.5. For our RPE assumptions, we used outturn data for 2011-12, and an independent forecast of real wage growth for 2012-13 and 2013-14, ie the years when the chosen independent forecast was available. For all other inputs, and for our labour RPE beyond the forecast period, we based our RPE assumptions on the historical long-term real average for the relevant input price indices.

3.6. In IP, our assumptions for ongoing productivity were based on historical growth rates in total and partial factor productivity over a thirty year period, drawn from evidence for comparator sectors from the EU KLEMS dataset.[4]

Summary of respondents' views

Real price effects

3.7. The majority of respondents broadly accepted our RPE assumptions. Of the respondents who challenged our assumptions, the principal points they contested were in relation to our real wage assumptions. In particular, they considered that we should use labour indices specific to the energy sector, and that our use of comparator sectors understated wage growth in an industry experiencing skills shortages. They also considered that we should use, as the basis for our short-term forecast, a private sector wage growth forecast, as opposed to the HM Treasury consensus forecast for the whole economy.

3.8. Respondents also proposed alternative approaches to setting RPEs. One respondent proposed that we take an average of the expert views put forward in companies' business plans. Another proposed that we review our RPE assumptions at the mid-period.

3.9. Some responses also noted the recent announcement by the Office of National Statistics (ONS) of its intention to review the calculation of the RPI. Respondents noted the impact that this may have on our proposed RPE assumptions.

Ongoing efficiency

3.10. Most respondents accepted our ongoing efficiency assumptions. However, NGGD considered that we had failed to take into account the decline in the gas industry, the impact of investment efficiency on opex, the reduction for ongoing productivity incorporated into our benchmarking analysis, and regulatory precedent in drawing conclusions. It considered that all these factors suggested lower productivity improvements.

3.11. SGN stated that we should not apply our productivity assumptions to certain cost areas, such as emergency services where GDNs face considerable cost pressures. WWU contested our application of productivity assumptions to the years relating to the current price control period, GDPCR1.

3.12. By contrast, one supplier considered that our assumptions understated the prospects for improvement in productivity.

[4] EU KLEMS dataset: http://www.euklems.net/index.html

Our decision

Real price effects

3.13. Overall, we consider that the approach taken to estimate RPEs remains valid. We have not made any methodological changes relative to IP. As we explain below, we have updated our analysis for latest available data.

3.14. We have updated our real wage assumption for 2011-12 to be consistent with our approach to setting allowances beyond the forecast period, based on historical real wage growth in a range of comparator sectors. The updated outturn real wage growth for the comparator sectors is still -2.9 per cent, ie the change since IP is minimal.

3.15. We have updated our short-term real wage forecast for the latest available forecasts published by the HM Treasury.[5] We have also incorporated outturn data for 2012-13 for materials and equipment input prices. Our approach is consistent with the principle that we use outturn or independent forecast data where available, and beyond use historical real averages.

3.16. Updating the above results in a marginally lower totex RPE assumption for GDNs relative to IP of around 0.07 per cent. Our RPE assumptions are summarised in Table 3.1.[6]

Table 3.1: Average annual RPE assumptions (2011-12 to 2020-21)

	Opex	Capex	Repex	Totex
GDN RPEs	0.4%	0.5%	0.6%	0.5%

Ongoing efficiency

3.17. We do not consider that the responses to IP raised any material issues to support a change to our overall conclusions. We examined NGGD's arguments in relation to the prospective decline in gas distribution networks, capital substitution effects, and the potential for the double-count of catch-up, which it considered supported a lower productivity assumption. However, for the reasons we set out in supplementary appendix 'RIIO-T1/GD1 Real price effects and ongoing efficiency appendix', we do not consider that we need to change our assumptions.

3.18. We note that for GDNs we excluded any expected improvements in productivity arising from the introduction of comparative competition, following

[5] HM Treasury, Forecasts for the UK Economy (October 2012), Table 2 and 5: http://www.hm-treasury.gov.uk/d/201210forcomp.pdf

[6] Annual RPE assumptions can be found in supplementary appendix 'RIIO-T1/GD1 Real price effects and ongoing efficiency appendix'.

distribution network (DN) sales in 2005, which could support a higher assumption.[7] However, we also acknowledge that there is also an element of uncertainty in interpreting the evidence for expected improvements in ongoing productivity. On balance, we have decided to retain an ongoing productivity assumption of 1 per cent per year for opex, and 0.7 per cent for capex and repex as at IP.

3.19. Our ongoing efficiency assumptions for FP remain at 1 per cent per year for opex and 0.7 per cent per year for capex and repex.

3.20. Overall, our approach results in a RPE net of ongoing efficiency of -0.3 per cent per year on average, marginally lower than our assumption at IP. As set out in table 3.2, this implies that GDNs should more than off-set input price increases through ongoing efficiency.

Table 3.2: Average annual RPE, ongoing efficiency, and net impact

	Opex	Capex	Repex	Totex
RPEs	0.4%	0.5%	0.6%	0.5%
Ongoing efficiency	1%	0.7%	0.7%	0.8%
Net impact	-0.6%	-0.2%	-0.1%	-0.3%

[7] For example, productivity could be higher going-forward as a consequence of competition from the market for corporate control; ability to benchmark against peers etc. In IP, we did not make an upward adjustment for such factors.

4. Total expenditure and total opex, capex and repex analysis

Chapter Summary
This chapter explains our final proposals for the totex benchmarking approach, taking into account responses from the GDNs and other stakeholders.

Summary of Initial Proposals

4.1. As part of IP we used totex benchmarking as an important part of our overall toolkit, together with more disaggregated benchmarking and qualitative assessments including technical analysis. We considered the totex approach which used a single regression measure of overall expenditure and the middle-up approach which combined regressions for three separate regressions for opex, capex and repex.

4.2. We rejected the models using the full eight-year data as most of the regression models failed our data quality and regression diagnostics model selection criteria. We evaluated the robustness of the models by comparing the number of models that failed our criteria in each data set. We considered the data set with the least failure models to be the most reliable. We did not think it would be safe to use totex analysis for 8 year forecast data without using an equivalent bottom-up assessment.

4.3. We also did not use the middle up models because the model specifications were similar to the totex models and gave broadly the same comparative efficiency scores. Including the middle-up models would be the equivalent to placing greater weight on totex.

4.4. Our IP totex approach:

- adopted total controllable expenditure (totex) as our measure of total costs.
- defined totex as controllable opex plus shrinkage plus capex plus repex, and used a seven-year moving average to smooth the capex.
- applied regional cost adjustments and normalisation adjustments to ensure that we benchmark GDNs on a comparable cost basis.
- used a Cobb-Douglas functional form and estimated a time fixed-effects panel data model using ordinary least squares.
- estimated models using three years' (2008-09 to 2010-11) historical data, two years' forecasts (2013-14 to 2014-15) and eight years' (2013-14 to 2020-21) forecast data for RIIO-GD1.
- used a composite scale variable which combines network scale based on MEAV with workload drivers based on our bottom-up regressions.
- defined efficient costs at the upper quartile (UQ) level.
- rolled forward efficient base year costs for changes in outputs and workload volumes, applied our view of growth in input prices and ongoing efficiency, and added back costs that we assessed separately.

4.5. The middle-up approach was similar to the totex approach except for using a common efficiency score for the three regressions, and using cost activity specific drivers. We used weighted average repex workload as the repex regression cost driver; a CSV of MEAV, connections workload and mains reinforcement workload as the capex cost driver; and a CSV of MEAV, external condition reports, maintenance MEAV, and the emergency CSV as a cost driver for opex in the middle-up approach.

Summary of respondents' views

4.6. With the exception of NGGD, the GDNs and one DNO support the totex approach but express concerns on certain specific factors. For example, NGN supports the philosophy underlying our move to greater use of totex analysis within the regulatory framework. However, it questions the logic for discounting the 8 year forecasts model and the use of one year's data to determine upper quartiles. WWU considers ouroverall approach to totex to be appropriate, and SGN and one DNO support totex benchmarking as part of the toolkit which gives an overall view of efficient expenditure. However, both WWU and SGN suggest a number of specific changes to cost drivers (in the bottom-up approach and hence totex). One DNO is concerned that using totex workload drivers may reduce the extent to which the totex analysis captures differences in workload efficiency.

4.7. NGGD does not consider the IP totex approach to be robust, and proposes a significant number of changes including the use of the 8 year forecast model, using additional outputs in the assessment and making additional network specific adjustments. NGGD urges Ofgem not to discard the 8 year totex model because the RIIO framework emphasises benchmarking forecasts and outputs, the RIIO Handbook[8] emphasises total costs as the basis of assessment, and the 8 year totex model results (ie R-squared) 'look credible'.

4.8. NGGD undertakes its regression analysis using an average for the 8 year forecasts rather than regressing data for individual years to minimise expenditure volatility between individual years, particularly for capex. NGGD includes additional adjustments (ie London repex urbanity increase to 20.3 per cent, London and Southern emergency productivity, London and Southern Repair productivity, and London additional property costs) which we did not include in our IP. It justifies the robustness of its results by a good R-squared data fit of 0.98.

Our decision

4.9. We have rejected the use of 8 year forecasts models because most these models fail our data quality and regression diagnostics selection criteria. We have evaluated the robustness of the models by comparing the number of models that failed our criteria in each data set. We have considered the data set with the least failure models (ie the historical and 2 year forecasts models) to be the most reliable. We do not think it would be safe to use totex analysis for 8 year forecast data

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

without using the equivalent bottom-up assessment. See Appendix 4 for further detail.

4.10. Our sensitivity analysis reveals that all GDNs would get lower allowances if we adopted the 8 years forecast totex model. For example, the industry would get £148m less if we used it instead of the 2 years forecasts totex model, and £212m less if we used it instead of the historical costs totex model. However, this did not influence our decision to reject the 8 year forecasts model. We did not use the middle up models because the model specifications were similar to the totex models and gave broadly the same comparative efficiency scores. Including them would add more weight to totex.

4.11. We have not changed our overall approach to our totex assessment for FP. However, we have made some changes based on additional data, responses to IP and a further review of our own analysis including:

- using the additional year's data that became available in July 2012 (ie 2011-12) in our historical regression models.
- using 2011-12 instead of 2010-11 as a base year for calculating the upper quartile efficiency costs for historical-based analysis.
- an adjustment to exclude historical salt cavity costs for NGN from our benchmarking and
- adopting a similar assessment of all non-regressed costs across the top-down and the bottom-up approaches.

4.12. We have presented our detailed response to the respondents' methodological concerns in Appendix 4.

Results of the top-down analysis

4.13. The totex efficiency scores and rankings are presented in Table 4.1. They show an improvement in efficiency rankings from the 2011-12 historical base year to 2013-14 forecasts for East of England, North West, West Midlands and Southern, and a worsening in efficiency rankings for Northern, Scotland and Wales & West. London's efficiency rankings do not change.

Table 4.1: Top-down efficiency scores and rankings

	Efficiency rankings		Standardised efficiency scores	
GDN	2012	2014	2012	2014
EoE	5	2	1.01	0.96
Lon	8	8	1.06	1.07
NW	6	5	1.02	1.01
WM	4	1	1.01	0.94
NGN	1	3	0.89	0.97
Sc	3	4	1.00	0.98
So	7	6	1.05	1.01
WWU	2	7	0.96	1.04

Figure 4.1: Historical top-down regression and upper quartile

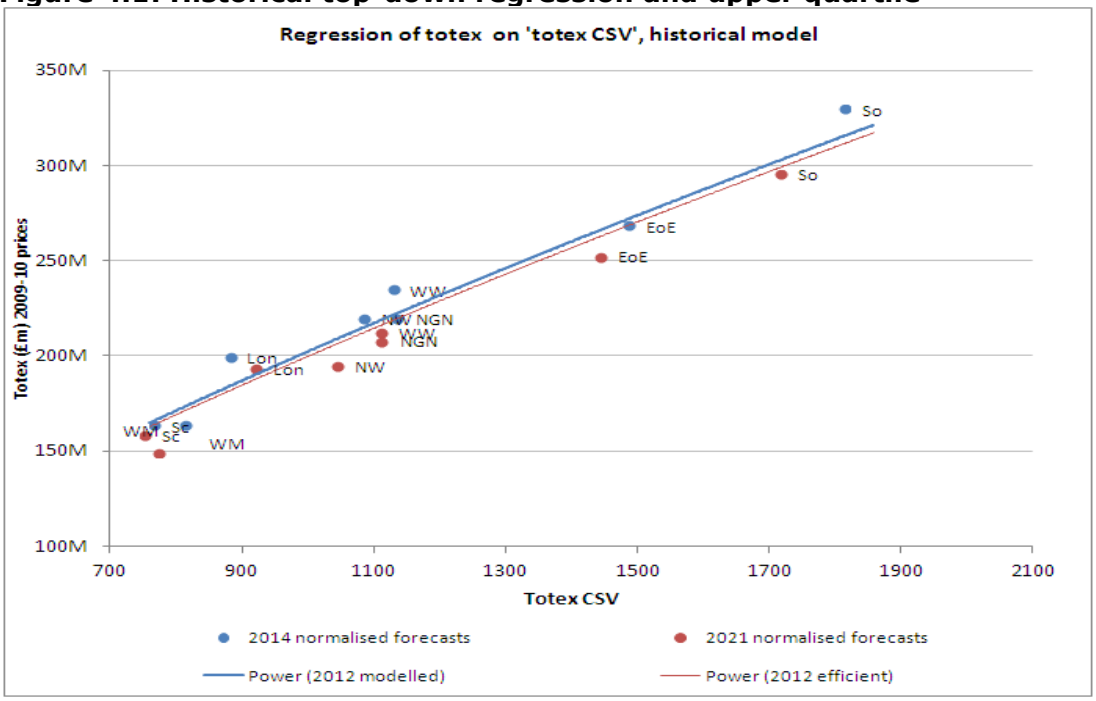
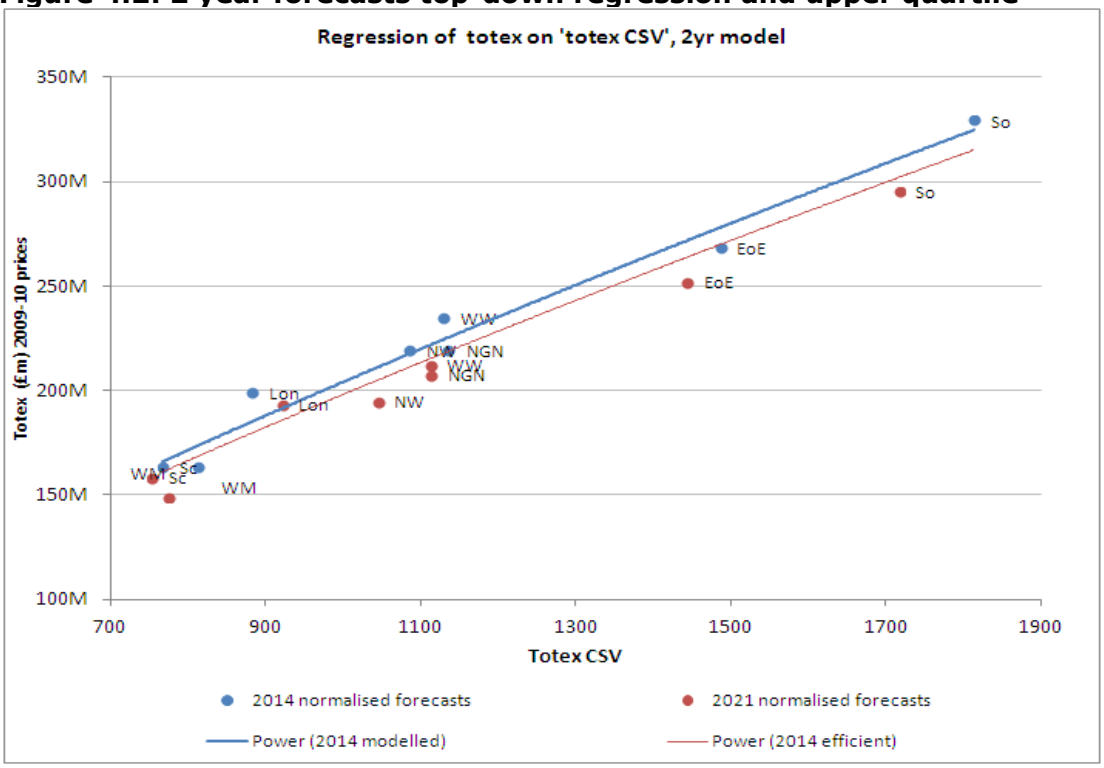


Figure 4.2: 2 year forecasts top-down regression and upper quartile



4.14. Table 4.2 summarises the baselines from our totex approach relative to the GDNs' submitted costs adjusted for differences in outputs. We calculate the gap as a

percentage difference between Ofgem adjusted cost and the cost baseline. The gap for the historical model ranges from a negative 1 per cent for West Midlands to a negative 13 per cent for London. The gap for the forecast ranges from a negative 3 per cent to a negative 14 per cent for the same GDNs. The average industry catch-up gap is negative 7 per cent.

Table 4.2: GDN submitted costs versus Ofgem baseline costs for Totex (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	2,432.9	2,334.8	1,866.8	1,380.7	1,883.7	1,530.4	3,093.1	1,998.4	16,520.9
Ofgem adjusted cost	2,279.2	2,209.5	1,717.6	1,315.1	1,753.2	1,420.2	2,899.4	1,817.4	15,411.6
Ofgem cost baseline (4 year historical prior to averaging for IQI)	2,127.3	1,923.0	1,607.4	1,301.1	1,651.9	1,372.9	2,717.1	1,675.7	14,376.3
Gap to Ofgem adjusted cost	-7%	-13%	-6%	-1%	-6%	-3%	-6%	-8%	-7%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	2,134.4	1,904.2	1,596.1	1,280.5	1,641.8	1,350.2	2,738.7	1,666.5	14,312.4
Gap to Ofgem adjusted cost	-6%	-14%	-7%	-3%	-6%	-5%	-6%	-8%	-7%

5. Overview of bottom-up assessment

Chapter summary:
This chapter presents our final proposals on the overall approach to the detailed activity-level benchmarking, which combines our assessment of a number of activities through regression analysis with our qualitative assessment for other activities where regressions were not suitable. It also sets out the key responses to initial proposals and how we have taken them into account.

Summary of Initial Proposals

5.1. At IP our bottom-up analysis was a key part of our overall assessment. We used regression analysis for seven activities: work management, the emergency service, repairs, maintenance, mains reinforcement, connections, and tier 1 repex.

5.2. We applied the same regression methodology we used for the totex model but used the activity specific drivers set out in Table 5.1. We aggregated both actual/forecast costs and modelled costs before applying the upper quartile benchmarks. This avoided the risk of cherry-picking between regression activities.

Table 5.1: Costs drivers used in the IP bottom-up approach regressions

Cost activity	Cost driver(s)
Work management	MEAV
Emergency	A CSV of external condition reports (20%) and number of customers (80%)
Repairs	External condition reports
Maintenance	Maintenance MEAV
Mains reinforcement	Mains reinforcement workload
Connections	Connections workload
Repex tier 1	Repex tier 1 workload

5.3. For non-regressed cost activities we carried out qualitative and technical assessments and determined our view of efficient costs. For example, we reviewed evidence on gas holder decommissioning costs and calculated an average unit cost which we applied across the GDNs. We based each GDNs' cost of vehicles on its historical average vehicle spend. For each non-regressed cost activity, we applied our view of real price effects, but did not apply ongoing efficiencies as the analysis was based on the GDNs' forecast costs.

5.4. We then combined the analysis of the regression cost activities with the assessment of the non-regression cost activities to determine the bottom-up historical and forecast baselines. This aggregation captures the capex and opex trade offs.

Summary of respondents' views

5.5. The GDNs and one DNO expressed mixed views about our bottom-up assessment approach. NGN, WWU and one DNO support it, while NGGD and SGN do not consider it to be appropriate. NGN considers the inclusion of bottom-up and top-down assessments of both historical and forecast expenditure removes any bias and specific issues that may exist within a less comprehensive approach. WWU agrees with our approach of using bottom-up analysis combined with top-down analysis to derive cost allowances but considers the approach fails to take into account opex-capex trade-offs.

5.6. One DNO supports the selection of cost drivers, which it believes are inherently more intuitive than those used in DPCR5, but suggests that explaining the logic behind the choice of each driver would have improved clarity. However, NGGD and SGN raise concerns with cost driver selection. NGGD argues that the report figures, used to determine emergency and repair costs, are distorted by unrealistic assumptions on network deterioration and that additional outputs such as CO_2 monitoring should be included in our approach.

5.7. SGN lists a number of issues with the cost drivers in our analysiswhich it considers creates significant gaps in our bottom-up assessment process and affects the validity of the conclusions reached. These include the use of customer numbers and not PREs, the exclusive use of reports without reference to repairs, the inflexibility of MEAV, the complications in setting appropriate drivers for most capex activities, and the absence of quality, service outputs and standards from the cost drivers. SGN considers our workload drivers could incentivise companies to maximise workload volumes. SGN's consultant, Frontier Economics considers our bottom-up regressions is insufficiently robust to be relied upon in isolation because of our choice of costs drivers.

5.8. SGN and its consultants Frontier Economics question the credibility of our capex assessment. They argue that lumpy investment profiles and the potential for GDNs to be on different points in the investment cycle cast doubt on the application of our capex analysis in setting allowances.

5.9. Both NGGD and SGN consider the absence of a published report from our business support costs consultants, Hackett Group, undermines the authenticity of the bottom-up methodology. In addition, SGN argues that mechanistic regression models are being relied on too much, while NGGD considers the regression models to be unstable because they use one year's data to determine the upper quartiles.

5.10. NGGD considers that our technical assessment, which were carried out on 25 per cent of its business plans, to be flawed. NGGD gave an example of training and apprentices where it believes we are re-opening the present price control to claw-back apprentice and training costs thereby weakening the regulatory regime, and contradicting RIIO commitments. NGGD considers the bottom-up approach fails to correctly model the capex-opex trade-offs.

Our decision

5.11. We have not changed our broad approach to the bottom-up cost assessment. However, we have made some detailed changes to reflect new data and to take into account responses to IP including:

- replacing the repex tier 1 regression with a total repex regression
- amending the maintenance regression to include integrity related pipeline capex t to account for capex-opex tradeoffs
- using an additional year's actual data for 2011-12 in our historical regression models
- using 2011-12 instead of 2010-11 as a base year for calculating the upper quartile efficiency costs for our historical analysis.
- revising the methodology for assessing business support cost activities.
- excluding NGN's salt cavity costs from our benchmarking and
- allowing identical pass through costs in the bottom-up approach and topdown approaches.

5.12. We present further detail on these changes in Chapters 6 to 8, and our detailed response to the respondents' methodological concerns in Appendix 4.

Results of the bottom-up analysis

5.13. Table 5.2 presents the efficiency rankings for the base years for our historical cost and 2 year forecast regression models. Further details of our bottom-up results are set out in Chapters 6 to 8.

Table 5.2: Efficiency rankings for historical costs and 2 year forecasts' base years

	NGGD				NGN	SGN		WWU
	EOE	Lon	NW	WM	NGN	Sc	So	WWU
Cost activity	**2012 rankings - historical costs model**							
Work management	8	4	7	6	2	3	1	5
Emergency	6	8	7	3	2	4	5	1
Repairs	4	5	3	1	7	6	8	2
Maintenance	6	3	7	1	2	8	4	5
Mains reinforcement	1	2	8	5	6	4	3	7
Connections	8	7	2	6	1	5	3	4
Repex	6	3	5	8	1	2	7	4
	2014 rankings - 2 year forecasts model							
Work management	7	5	6	3	4	2	1	8
Emergency	3	4	8	2	5	7	6	1
Repairs	3	7	2	1	6	8	4	5
Maintenance	4	1	7	2	5	8	3	6
Mains reinforcement	8	5	3	2	7	4	1	6
Connections	5	8	1	6	4	2	7	3
Repex	3	8	5	6	2	1	4	7

6. Operating expenditure

Chapter summary
This chapter sets out our decision in relation to how we assess the relative efficiency of forecast operating expenditure submitted by the GDNs and sets out our efficient costs baselines from our disaggregated modelling.

Summary of Initial Proposals

6.1. In IP we set out how we assessed the efficiency of each operational cost activity using a range of techniques. We used regression analysis for work management, emergency, repairs and maintenance activities. For other activities we carried out technical assessments. We explained the drivers we used in our regression analyses, how we carried out our benchmarking of business support costs and training and apprentices (T&A) costs, and the rationale for our adjustments to GDNs' forecast number of reports, which we used to benchmark emergency and repairs costs.

Work management

6.2. We proposed to assess the relative efficiency of work management costs (excluding the costs of gasholder demolition and environmental remediation) using a regression analysis with MEAV as a cost driver.

Gasholder decommissioning

6.3. All the GDNs put forward proposals to decommission and demolish their entire fleet of low pressure (LP) gasholders over a period of 8 to 12 years starting from 2013-14.

6.4. We proposed to fund these programmes over a 16-year period at an efficient average demolition cost of £0.5m per gasholder. We also made corresponding adjustments to our maintenance cost allowance as a result of adjustments to the pace of gasholder demolition.

Land remediation

6.5. We proposed to disallow environmental costs directly linked with the demolition of gasholders, but otherwise allow remediation costs. We indicated our intention to review the evidence further and to assess our approach to funding in this area.

Emergency

6.6. At IP we assessed the emergency expenditure based on the net costs of running the activity excluding costs associated with loss of meterwork and smart metering. We carried out regression analysis using a composite driver based 80 per cent on customer numbers and 20 per cent on external condition reports. The proposed cost baseline reflected our adjustments in the number of external condition reports.

6.7. We recognised that the loss of meterwork contracts for all GDNs will impact baseline emergency costs. We set an allowance for loss of metering based on NGN's estimated stranded costs in the emergency activity of £0.9m per year. Our total proposed baseline for RIIO-GD1 was £62.2m based on customer numbers in 2010-11. Our approach provides a strong incentive for GDNs to find alternative work for any stranded labour.

6.8. We made an adjustment of +£0.75m to emergency costs in 2010-11 for each GDN (all four NGGD and NGN) that failed the emergency standard in that year. The adjustment reflects our assessment of the additional costs that would have been required to meet the standard.

Repairs

6.9. At IP we carried out regression analysis using external condition reports as the driver. We adjusted the forecast for external condition reports based on the upper quartile (UQ) deterioration rate.

6.10. We identified reported metallic mains lengths, non PE services and external condition reports (mains and services) from 2008-09 to the end of RIIO-GD1 for mains and from 2010-11 to the end of RIIO-GD1 for services. This produced an implied deterioration rate based on the number of condition reports per kilometre of mains or the number of service and from this we identified upper quartile deterioration rates. We then scaled back the implied deterioration rates to the maximum of the UQ rates. We believe that in developing a range of deterioration rates we have recognised the different characteristics of pipes that may exist between GDNs.

Maintenance

6.11. At IP we set out our approach to assessing the relative efficiency of forecast maintenance costs through a regression of total maintenance costs (ie routine and non-routine) on a maintenance MEAV driver.

Other direct activities

6.12. In IP we proposed to replace the GDNs view of RPEs with our view but otherwise allow other direct activities (ODA) costs as submitted (with the exception

of smart metering which is discussed below), as our analysis showed that forecast costs were consistent with historical costs in this category.

Smart metering

6.13. We proposed a one-off allowance of approximately £1m per GDN to recognise start-up costs for smart metering. This was based on an assumption of £0.30 per smart meter forecasted to be installed or the maximum number of customer numbers where the forecast number of installations exceeded customer numbers. We excluded the costs associated with the rollout of smart metering from our costs baselines proposed that they should be addressed through an uncertainty mechanism as explained in our Finance and Uncertainty paper.

Interruptible contracts

6.14. In general, we allowed GDNs planned costs to procure interruptible contracts. Where interruptible contracts defer the need to undertake network reinforcement we set the allowance as the annuity of the avoided reinforcement costs based on a 20-year asset life and a discount rate of 5.8 per cent. As we stated in IP, we think this arrangement strikes a sensible balance between incentivising the GDNs to procure efficient interruptions while limiting the full exposure to the capacity risk.

Scottish independent undertakings

6.15. In IP we proposed to fund SGN's forecast costs of £8.4m per year for supplying the SIUs. These costs were based on a compressed natural gas (CNG) solution for the bulk of gas supply with a residual (c. 25 per cent) supplied as LNG.

Business support

6.16. At IP we assessed business support costs at bottom-up activity level using benchmarking data supplied by the Hackett Group[9] and applied post-benchmark adjustments where we felt these were justified. Some respondents expressed concern over some aspects of our analysis. In particular they felt that some of the benchmarking metrics we used were unsuitable (due to non-comparability of the comparator group) and that some of the cost drivers were inappropriate.

Training and apprentices

6.17. At IP we derived allowed numbers on training and apprentice programmes for each GDN based on their forecast workforce renewal requirements. We then applied

[9] The Hackett Group is a global strategy and operations consulting firm.
Hackett Group website: www.thehackettgroup.com

a unit cost of £35,000 per trainee/apprentice per year to arrive at allowed costs. We also allowed £0.5m per GDN per year to cover other (non-programme) costs.

Summary of respondents' views

Work management

6.18. NGGD pointed out an inconsistency in reporting costs associated with the new RIIO model. Some GDNs reported it under work management while others reported it under ODA. They also argued that MEAV should include non-operational gasholders in the same way as our maintenance.

Gasholder decommissioning

6.19. There was generally little feedback on our approach to setting allowances for gasholder demolition. Respondents were generally supportive of our proposals to allow a phased demolition of gasholders over 16 years. NGGD was concerned about our proposal to allow a uniform unit cost of £0.5m across all GDNs arguing that some GDNs had "holders of the more expensive type and of larger size".

Land remediation

6.20. NGGD did not agree with our disallowance of remediation expenditure associated with gasholder sites. They argued that these were statutory remediation costs unrelated to the gasholder demolition programme. They also pointed out that unlike some other GDNs, they have a record of a proactive land remediation strategy which demonstrates that they deliver the outputs they have been funded for.

Emergency

6.21. SGN considers the proposed allowance for the emergency activity is insufficient to deliver their licence obligation in future without metering filler work. They also believe the adjustment for the networks that failed the emergency standard in 2010-11 should not be just applied to that single year. SGN provided evidence to support a higher level of adjustment for GDNs that failed the standard in 2010-11 (£2.7m for NGN and between £0.4m-£2.7m for the four NGGD GDNs). SGN also argued that this adjustment should apply to all historical and forecast years used for assessment.

6.22. NGGD and SGN believe that Ofgem should be cautious in relying on the reported performance of NGN which has failed to achieve its emergency standard in two of the years post network sales. They believe that our current adjustment results in an unrealistic cut in allowances to all other networks, leaving them at high risk of being unable to achieve the necessary emergency standards. They also consider the proposed allowance does not address the impact of loss of meterwork on overheads.

6.23. NGN believes that their stranded costs are not only £0.9m per year but that we should also include the £3.1m per year marginal increase in repex costs due to the use of stranded direct labour (FCO) instead of contractors to undertake purge and relight work to maximise their productive time. They believe these costs need to be reflected in the cost efficiency benchmarking of NGN and the calibration of allowances for other GDNs. NGN considers their plan represents an efficient benchmark that can be used for the other GDNs.

6.24. SGN believe that in assessing the impact of loss of meterwork that we should not only consider NGN which has operated with the minimal meterwork, but also consider the three GDNs (Scotland, Southern and WWU) which have delivered the emergency standard licence condition under all operating conditions. They propose that emergency costs be analysed at a total level.

6.25. WWU do not agree with our proposals for loss of meterwork and consider it critical that we provide sufficient funding to allow efficient networks to comply with their key emergency licence obligations.

6.26. Most GDNs broadly agreed with our use of customer numbers and external reports as a cost driver for the emergency activity. SGN argued for the use of public reported escapes (PREs) instead. In particular, it argued that internal reports drive emergency costs rather than the number of customers per se.

Repairs

6.27. In general both NGN and WWU support our overall approach and assessment of repairs, although NGN has some specific concerns over the treatment of fixed costs and suggests that we should assess mains and services separately. SGN and NGGD have concerns over the deterioration rates used to adjust the external condition (mains and services) reports workload.

6.28. SGN believes we should use a CSV with equal weight on reports and repairs.

Maintenance

6.29. Some GDNs argued that our disaggregated assessment of the maintenance activity fails to recognise efficient trade-offs with capex activities. The GDNs have highlighted that solutions to potential LTS pipeline problems can be solved via either a capex or opex solution. For example where a pipeline crosses a river and the pipeline becomes exposed the GDN could either consider an opex solution to resolve the situation, reinforcing the riverbank, or a capex solution resulting in physically moving the pipeline. When considering the maintenance costs forecast by the GDNs we also need to consider the costs associated with capex solutions for mitigating the risks associated with existing assets.

6.30. NGGD provided evidence to suggest that there was inconsistent classification of costs, mainly between non-routine maintenance activities and costs associated with LTS pipelines.

6.31. NGGD welcomed the development of the maintenance MEAV driver. It points to some limitations, in particular a relatively low goodness of fit of the maintenance regression, but accepts it as "being the best available".

Other direct activities

Smart metering

6.32. The GDNs broadly agree with our approach for smart metering of allowing start-up costs in the core allowance, however most GDNs think the ex-ante allowance proposed is too low. NGN believes the additional allowance should include some allowance for future operating costs not just start-up costs.

6.33. NGGD believes the allowance should be based on the 2021 forecast of customer numbers for all networks and irrespective of the different phasing assumptions made by networks.

Business support and T&A

6.34. NGGD, NGN and SGN were concerned about our assessment of business support and training & apprentices.

6.35. NGGD was the only respondent to comment on training and apprentices. It felt that a cost per qualifier unit cost should be used rather than cost per apprentice/trainee per year. They suggested that the allowance for non-programme costs was insufficient and that no adjustments should be made for under-recruitment in GDPCR1.

Our decision

Work management

6.36. We have re-classified WWU's costs associated with RIIO from ODA to work management for consistency. Otherwise we have retained our approach set out in IP.

Gasholder decommissioning

6.37. We confirm our proposal as set out in IP to fund GDNs for the phased demolition of gas holders over a 16 year period at a rate of £0.5m per gasholder. We reviewed additional evidence which suggested that demolition costs vary by size and type of gasholder. We did not find a great variation in the range of holders owned by GDN. We consider the average allowance of £0.5m per gasholder, which is based on a GDN's submission in April 2012, is still robust. Table 6.1 sets out the number and cost of the gasholder demolition programmes as proposed by the GDNs. The table also sets out our allowances and the approximate number of gasholders to be

demolished. See also the reliability chapter of the Outputs supporting document for a discussion of the associated reliability outputs.

Table 6.1: Gasholder demolition programme (2009-10 prices)

GDN	No. of holders at 2012-13	No. to be demolished[1]		Demolition cost (£m)	
		GDN proposal	Ofgem IP/ FP decision	GDN proposal	Ofgem allowance
EoE	59	44	c. 29-30	16.9	14.2
Lon	65	37	c. 32-33	27.6	21.4
NW	70	43	c. 35	21.2	16.8
WM	9	6	c. 4-5	4.8	2.2
NGN	47	23	c. 23-24	11.5	11.3
SC	22	19	c. 11	13.1	5.3
SO	89	67	c. 44-45	54.3	25.1
WWU	15	15	c. 7-8	6.3	3.6
Total	**376**	**254**	**c. 188**	**155.8**	**99.8**

[1] Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost.

Land remediation

6.38. Based on clarifications we received from the GDNs we decided to assess all environmental remediation costs on the same basis irrespective of the link to gasholder demolition.

6.39. Our assessment of costs relied on actual environmental costs incurred in 2008-09 to 2011-12. Where historical costs were substantially below forecast costs (ie 85 per cent or less), we made a 15 per cent adjustment to forecast costs. Where historical costs were 85-100 per cent of forecast costs, we constrained the forecast to the average annual environmental cost in 2008-09 to 2011-12. We did not make an adjustment where the average annual forecast was lower than the average annual historical cost.

6.40. We also made an adjustment for environmental costs that we had allowed in GDPCR1 where the GDN has not completed the remediation work (and does not expect to complete clean up of the site in the final year of GDPCR1). We had previously stated that where under-spend results from delivery of fewer outputs, it would be offset against the cost of delivering the shortfall in future periods. This resulted in an adjustment for SGN (-£4.4m) and NGN (-£5.6m). Table 6.2 sets out our allowance for environmental land remediation.

Table 6.2: Environmental land remediation proposals for RIIO-GD1 (£m, 2009-10 prices)

GDN	GDN submitted costs	Benchmark adjustment to historical costs	Adjustment for undelivered outputs in GDPCR1	Ofgem allowance
EoE	17.5	-2.6		14.9
Lon	11.6	-1.7		9.8
NW	10.8			10.8
WM	7.2	-1.1		6.1
NGN	12.0	-1.8	-5.6	4.6
SC	18.5	-2.8	-2.2	13.5
SO	16.2	-2.4	-2.2	11.6
WWU	13.1			13.1
Total	**106.9**	-12.4	-10.1	**84.4**

Emergency and repairs

Loss of meterwork

6.41. Based on the responses to IP we have decided to include the full costs associated with the impact of loss of meterwork as part of the emergency baseline cost, as without this there would an inconsistent assessment of the emergency activity costs.

6.42. Historically GDNs have faced different levels of loss of meterwork, with some GDNs losing all of their legacy meterwork contracts at the start of GDPCR1, whilst other GDNs continue to carry out this work, albeit on different scales. The GDNs' forecasts assumptions for the volume of meterwork also vary significantly.

6.43. To ensure comparability between the GDNs' historical costs, we have adjusted the GDNs' reported costs as if loss of meterwork had fully occurred. This adjustment was derived from their reported meterwork against the GDPCR1 loss of meterwork trigger point. We recognised that not all meterwork would be lost and GDNs will be committed to carry out a minimum level of work. We used NGN to benchmark this minimum level of commitment as they had already lost all of their meterwork contracts. This minimum level of work is 93 per cent below their trigger point. We therefore made an adjustment based on the difference between the actual percentage of meterwork lost and the minimum level of work.

6.44. We agree that we did not include the full impact of the loss of meterwork in our IP assessment. We accept that we need to take into £3.1m p.a. incremental costs of NGN using repex purge and relight work as alternative infill work following their loss of metering contracts. We have made this change in our FP analysis.

Cost adjustments for failure to meet the emergency service standard

6.45. We shared the additional evidence from SGN for the impact for failure to meet the emergency standards with the other GDNs. No other GDN agreed with applying the adjustment to all historical and forecast years and only NGGD agreed that the adjustment should be at a higher amount. WWU recognised the difficulty in setting the right cost adjustment.

6.46. We decided to retain our adjustment for failure of standards from IP. We consider that it is only appropriate to make an adjustment for the year where the failure occurred and that no adjustment should be made in years where the standard was achieved. We do not believe a company would propose in their business plan a plan that would lead to a failure of a primary output. We consider that the penalty imposed has driven a change in approach by all companies in delivering this key safety standard, which again should be reflected in their business plans.

6.47. When we gave notice to impose a penalty against the companies that failed to meet the emergency standard those companies recognised that the failure could have been mitigated through more effective planning and resourcing ahead of winter 2010-11. We did not consider that the failure was driven by having an insufficient level of FCOs.

Adjustment of external condition reports

6.48. We continue to use external condition reports (mains and services) as a driver for the emergency and repair regressions (for emergency this 20 per cent of the CSV). We think the use of customer numbers as opposed to internal reports more adequately captures the significant fixed cost element of the emergency activity. We consider that customer numbers reflects the way GDNs set up their emergency activity.

6.49. We have not changed our overall methodology for FP in relation to the adjustment of external reports. However, we have updated our analysis taking into account revised submissions for external condition reports and non-polyethylene (PE) services and using 2011-12 data. The deterioration rate, and therefore the adjustment to the number of reports have changed. Table 6.3 sets out the revised implied GDN deterioration rates and Ofgem proposed rates for mains and services. The upper quartile rates for mains and services has moved from 3.1 percent and 4.0 per cent in IP to 2.9 and 5.0 per cent in FP respectively.

Table 6.3: Deterioration rates

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
Mains								
Implied GDN rates	2.5%	4.9%	3.4%	3.5%	3.9%	6.4%	2.0%	3.1%
Ofgem proposal - FP	2.1%	2.6%	2.3%	2.3%	2.4%	2.9%	2.0%	2.3%
Ofgem proposal - IP	1.6%	2.5%	2.1%	2.1%	2.2%	3.1%	2.1%	2.6%
Services								
Implied GDN rates	3.2%	5.4%	7.4%	3.8%	10.3%	10.2%	6.0%	12.3%
Ofgem proposal - FP	3.2%	3.6%	4.0%	3.3%	4.6%	4.6%	3.8%	5.0%
Ofgem proposal - IP	2.6%	3.1%	3.5%	2.7%	4.0%	3.0%	3.2%	4.0%

6.50. We have also made an adjustment to reflect our disallowance of repex workload, which we outline in chapter 8. Where we have adjusted a GDN's planned repex workloads we have made a subsequent adjustment to its remaining length of metallic mains and hence forecast number of external condition reports.

6.51. Tables 6.4 and 6.5 show the proposed adjustments to external condition reports for repex and the net impact of the two workload adjustments.

Table 6.4: Total RIIO-GD1 mains condition reports

	GDN submitted workload		Ofgem adjustment for deterioration rate	Ofgem adjustment for reduced repex workload	Ofgem proposed workload - FP		Ofgem proposed workload - IP
EoE	72,325		(5,994)	453	66,785		70,706
Lon	62,764		(10,781)	993	52,976		54,792
NW	59,558		(6,577)	624	53,605		54,102
WM	42,318		(4,389)	102	38,031		39,160
NGN	64,366		(6,201)	1,433	59,598		60,452
Sc	39,252		(10,161)	268	29,360		31,491
So	81,993		(2,275)	271	79,989		79,001
WWU	74,540		(2,788)	(59)	71,694		77,708
Industry	**497,116**		**(49,165)**	**4,086**	**452,037**		**467,412**

Table 6.5: Total RIIO-GD1 service condition reports

			Ofgem adjustment for deterioration rate	Ofgem adjustment for reduced repex workload	**Ofgem proposed workload - FP**		Ofgem proposed workload - IP
EoE	66,007		1,833	2,557	70,397		66,599
Lon	67,039		(2,034)	2,367	67,373		61,191
NW	69,670		(8,338)	4,240	65,572		59,049
WM	41,404		2,210	3,974	47,589		42,250
NGN	113,300		(30,395)	6,189	89,095		91,118
Sc	42,852		(10,443)	1,299	33,708		49,309
So	143,613		(24,350)	1,312	120,575		159,827
WWU	52,101		(18,118)	3,535	37,518		27,153
Industry	**595,987**		**(89,635)**	**25,473**	**531,826**		**556,496**

Maintenance

6.52. We have updated our regression model for maintenance costs to take into account the capex-opex tradeoffs. The revised modelling aggregates maintenance costs with LTS pipeline capex costs and uses a CSV which combines maintenance MEAV and LTS pipelines MEAV with weights based on their respective costs. The combined regression also includes regional factors adjusted for the new aggregation.

6.53. We consider that this model captures important trade-offs between the cost activities as well as inconsistent classification of costs across these activities. We set the maintenance allowance on the basis of the combined maintenance plus LTS pipelines regression, net of our technical assessment of efficient LTS pipelines costs.

6.54. Table 6.6 sets out the adjustments to our baseline maintenance allowance as a result of our capex-opex tradeoffs modelling.

Table 6.6: Capex opex tradeoffs (£m, 2009-10 prices)

EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
12.4	13.8	12.8	15.8	-14.3	-27.2	4.7	-29.8	-11.7

6.55. We have made an additional adjustment of £1.6m for WWU to reflect efficient trade-offs between PRI refurbishment costs under maintenance and PRI capex costs.

6.56. In IP we explained the adjustments we made to maintenance costs as a result of our decision to phase the gasholder demolition program. We also made additional allowances for surveying non-mandatory iron mains as a consequence of changes to the repex programme and NGGD's costs for surveying medium rise multi-occupancy buildings. We decided to retain our IP methodology in respect of all these.

Other direct activities (ODA)

6.57. We retain our IP position to allow ODA costs, net of interruptible contracts costs, as submitted, with the exception that for WWU the allowance does not include the "costs of RIIO" as these have been re-classified to asset management (see Work management in this chapter).

Smart metering

6.58. The smart metering programme is supplier led and it is widely accepted that there is uncertainty over the impact on the GDNs and timing of the roll-out of the smart metering programme. We accept that despite this uncertainty there is an element of start-up that is required in anticipation of any roll-out and believe that the one-off allowance in 2013-14 of approximately £6.3m for all GDNs proposed in IP is sufficient to address this and enable the GDNs to be able to fully capture the information required to quantify the impact of the smart meter rollout on their activities. The uncertainty mechanism set out in the Finance and Uncertainty paper will deal will any future rollout and impact of the smart metering programme on the GDNs.

6.59. We agree that the set-up allowance should be based on customer numbers and also the number of meter installations forecasted during the RIIO-GD1. Therefore, we have based the allowance on the GDN forecast for smart meter installations or 95 per cent[10] of forecasted customer numbers at the end of 2013-14 where the GDN forecast for installations exceeds customer numbers. Any movement in customer numbers over the RIIO-GD1 period and its effect on meters is considered business as usual.

Interruptible contracts

6.60. As in IP, we allow the costs of interruptible contracts. Where these contracts defer network reinforcement, we base our allowance on a 20-year based annuity of the avoided reinforcement costs.

6.61. As a consequence of our decision to allow full funding for two of Scotland's capacity related projects (under the LTS capex allowance) and subject one project to an uncertainty mechanism, Scotland's ODA allowance includes an annuity in respect of only one capacity related project (project Foundland). This is in contrast to IP where we proposed to fund the four projects via an annuity. For more detail on our decision in relation to Scotland's capacity investment see supporting document – Outputs, incentives and innovation, Chapter 7: Reliability)

[10] 95% recognises that some smart meters have already been installed prior to the start of RIIO-GD1.

Business support

6.62. Following consideration of the responses we have revised our assessment methodology by moving from bottom-up to top-down benchmarking. This means that we are now benchmarking business support costs only at a total business support level rather than at individual activity level. We have also applied additional post benchmark adjustments to take account of higher regulation costs of network companies relative to the comparator group. A full explanation of business support costs is given in Appendix 6.

Training and apprentices

6.63. We have amended our methodology for calculating training and apprentice programme unit costs to one that utilises multiple unit costs based on cost per qualifier. We have also revised our assessment of non-programme costs. A full explanation of training and apprentices costs is given in Appendix 7.

Scottish independent undertakings (SIU)

6.64. SGN has revised its plan to adopt an interim solution for its SIUs, which involves 100 per cent supply from a LNG storage facility in Avonmouth. As a consequence it has revised its forecast operational costs for supplying the SIU to £11.6m per year, from £8.4m before. The revised forecast primarily reflects an increase in LNG facility access charge ("C3" charge).

6.65. SGN's forecast SIU cost included £1.6m per year of overhead costs. In a response to our supplementary question SGN argued that these costs include, among other things, costs associated with business support, network, and operational management. We consider that these costs are partly covered in our work management and business support allowances. This is because our benchmarking approach to setting allowances in these areas utilises a scale variable including SIU costs, and therefore SIU costs in these areas have already been accounted for. We decided to allow half of the planned overhead costs.

6.66. With the exception of 50 per cent of overhead costs, we decided to allow SGN's forecast operational cost associated with SIUs. That amounts to £10.8m per year before RPEs.

6.67. In the accompanying Finance and Uncertainty Supporting Document we set out our decision to incorporate a reopener for SGN to allow it to recover the efficient costs associated with the enduring solution in relation to the future supply for SIUs.

Opex baseline allowance

6.68. Table 6.7 summarises our baseline cost assessment relative to our adjustment of the GDNs submitted costs. The disaggregated opex cost activity tables can be found in Appendix 1.

Table 6.7: GDN submitted costs versus Ofgem baseline costs for Opex (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN [1] [2]	Sc	So	WWU	Total
GDN submitted cost	1,018.1	755.3	762.1	533.4	708.3	635.1	1,088.9	817.5	6,318.6
Ofgem adjusted cost	1,013.8	742.7	749.5	534.5	734.9	652.9	1,060.6	754.1	6,242.9
Ofgem cost baseline (4 year historical prior to averaging or IQI)	862.7	639.8	642.4	492.1	643.8	542.1	962.2	639.5	5,424.5
Gap to Ofgem adjusted cost	-15%	-14%	-14%	-8%	-12%	-17%	-9%	-15%	-13%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	880.0	627.1	636.2	479.9	636.7	530.5	983.6	644.9	5,418.8
Gap to Ofgem adjusted cost	**-13%**	**-16%**	**-15%**	**-10%**	**-13%**	**-19%**	**-7%**	**-14%**	**-13%**

[1] £12m land remediation costs reallocated from Other Capex

[2] £24.8m incremental costs of using direct labour (FCOs) compared to contractors reallocated from repex to emergency

7. Capital expenditure

Chapter summary
This chapter sets out our decision in relation to how we assess the relative efficiency of forecast capital expenditure submitted by the GDNs and sets out our efficient costs allowances from our disaggregated modelling. Further detail is set out in Appendix 2.

Summary of Initial Proposals

7.1. In IP we used a range of techniques to assess efficient capital expenditure and determine our bottom-up view of capex. We explained that we used regression analysis for high-volume, low unit-costs activities of mains reinforcement and connections and that we have carried out technical and qualitative assessments for the other capex activities.

Summary of respondents' views

LTS & storage

7.2. GDNs expressed concern with the adjustments proposed for activities associated with LTS & storage. The most significant concerns were from WWU, NGGD and SGN. WWU queried the disallowance of all of its integrity expenditure for LTS pipelines. NGGD questioned the inconsistent treatment of costs allocated between LTS & storage capex and maintenance opex, failing to take adequate account of opex/capex trade-offs. SGN disagreed with our disallowance of its LTS PRS activities.

Mains reinforcement and connections

7.3. GDNs raised a number of comments in relation to mains reinforcement and connections. The most significant concerns were from WWU who queried whether it was appropriate to carry out the regression analysis on mains reinforcement given the low level of workload, and use of mains data assigned within only two diameter bands. For connections, WWU queried the validity of the gross connections model which they believed failed a statistical specification test. Other responses and our decisions are detailed in Appendix 2.

Governors

7.4. In IP we benchmarked GDNs' workload and cost forecasts to derive efficient workloads and costs. SGN expressed concern surrounding the benchmarking of their governor replacement strategy against a lower cost refurbishment strategy, expressing a preference for replacement over refurbishment. SGN clarified that the holder governors that were disallowed in IP were unconnected with the holder demolition programme and therefore should not be disallowed. SGN also commented that they were unable to reconcile the figures presented in IP because the

calculations were not transparent. Other responses and our decision are set out in Appendix 2.

IT

7.5. We received a number of comments from NGGD in relation to the adjustment we applied to their capital IT allowance. They believe that the disallowance we applied in IP is not well justified and challenge our assumptions. They state that the proposed allowance disadvantages them when compared to the allowance given to other GDNs.

Vehicles

7.6. Three of the GDNs were concerned that our assessment of vehicle allowances were based on historical costs over a five year period, which they believe did not reflect the full cycle of their vehicle expenditure which extends beyond 5 years, providing an insufficient level of allowance.

Security

7.7. NGGD expressed concern with the benchmarking of their forecast discretionary site security costs against other GDNs. It believes this to be inappropriate owing to costs being driven by network specific issues.

Our decision

LTS & storage

7.8. In response to NGGD's concern regarding the capex/opex trade-offs, we have updated our regression model for maintenance costs to take into account the capex-opex trade-offs. The revised modelling aggregates elements of maintenance costs with elements of LTS pipeline capex costs. Further details can be found in chapter 6.

7.9. In IP we explained that we disallowed WWU's investment request of £62.5m in LTS pipelines because we were unable to determine the need and efficiency of the investment from the information submitted. WWU has subsequently reviewed their proposed intervention plan and resubmitted a revised LTS pipeline capital expenditure programme, reducing their forecast expenditure from £62.5m to £34.9m. We have reviewed their additional supporting information and concluded that there is now sufficient evidence to justify allowing this expenditure in full.

7.10. In IP we disallowed £38.4m and £25.7m for Scotland and Southern networks' PRS expenditure respectively. SGN has submitted a revised plan requesting an allowance of £14.9m and £23.9m for Scotland and Southern networks respectively. Our IP position remains unchanged. We believe SGN have been allowed sufficient capital allowances for integrity related spend, and we note that historical spend does not support their case for further funding on LTS and Storage.

Mains reinforcement and connections

7.11. Mains reinforcement was one of the cost activities assessed using regression analysis at GDPCR1. We consulted the GDNs about its continued use in our RIIO assessment and the majority have not expressed concerns, and we have therefore continued to use this assessment methodology.

7.12. We have run our regression analysis based on an average of workload and expenditure over four years from 2008-09 to 2011-12, reducing the impact of misaligned costs and workload during the reporting period.

7.13. We have checked the gross connections regression model and can confirm that we have no concerns with the statistical diagnostics.

Governors

7.14. In IP we explained our approach to benchmarking GDNs both in terms of unit costs of governors and lowest cost solution strategies for governor replacement. Our methodology remains unchanged since IP.

7.15. We accept SGN's clarification with regards to the replacement of holder governors and have now allowed £6.0m (£2.0m and £4.0m for Scotland and Southern networks respectively) for the replacement of 30 holder governors.

7.16. We recognise that the calculations presented in IP to support our cost adjustment for governors were not sufficiently clear. We have refined our worksheet and this has resulted in minor changes to the allowance for governors from IP. Further explanation of our calculations along with our responses to other GDNS queries are in Appendix 2.

IT

7.17. We recognise that the evidence presented in IP supporting our conclusions and the associated cost adjustment for NGGD's IT allowance could have benefited from further detail. As a result of this and other responses, we have reviewed our methodology used to derive efficient costs.

7.18. For the purposes of benchmarking between GDNs, we apply assumptions for fixed development costs and variable implementation costs and calculate what the GDN submitted expenditure for each of the network owners would be if the companies were of a similar size. The results shown in Table 7.1 demonstrate that NGGD's submitted forecast costs are significantly higher than the other GDNs when adjusted for comparability.

Table 7.1: Normalised IT cost for each of the GDNs based on ownership of four networks[1]

	IT normalised costs based on 4 network ownership (RIIO- GD1 total, 2009-10 prices, £m)				Average non NGGD GDN costs
	NGGD	NGN	SGN	WWU	
Normalised costs	156.7	60.4	91.6	74.7	75.6

[1]These costs normalise GDNs expenditure using a calculation to adjust their network expenditure for a scenario where they had to implement IT projects in four networks, thereby making their submitted forecast expenditure comparable. Assumes costs for an eight network company are 30 per cent development and 70 per cent implementation.

7.19. Having reviewed our IT analysis we are still of the opinion that NGGD's expenditure is high compared with other GDNs. We have allowed NGGD the comparable average cost of the non-NGGD networks of £75.6m, therefore disallowing £81.2m from their submitted costs.

7.20. We have validated this methodology using a range of alternative drivers which provide broadly similar allowances for NGGD. Of all the alternative drivers tested, the number of networks provides NGGD with a comparatively high allowed cost. We have reviewed the base assumptions for development and implementation costs, and continue to use those provided in IP. Further detail is provided in Appendix 2.

Vehicles

7.21. We have reviewed our methodology for deriving efficient vehicle costs and continue to base our assessment on historical expenditure. However, having considered GDNs' responses we have extended the cost base from 5 to 7 years, capturing four years of actual expenditure from 2009 to 2012 and three years' forecast expenditure from 2013 to 2015.

7.22. Our change to the period from which costs that have been subjected to averaging has resulted in increased allowances for all GDNs from IP.

Security

7.23. In IP we challenged the discretionary physical site security costs for NGGD because of their relative high expenditure when compared to other GDNs. We set the total allowed costs for NGGD equal to the total forecast costs for the remaining four networks. We have not received any evidence suggesting security issues such as metal, tools and equipment theft and terrorism are geographically specific. We have therefore allowed expenditure on the same basis as in IP.

7.24. We have reviewed the sub-activities within GDNs security proposals and identified that NGGD had included costs for flood protection which other GDNs had been allowed separately. In FP we have allowed, in full, their forecast cost for flood protection and removed it from the benchmarking. This has resulted in an increased allowance for NGGD of £5.3m over that proposed in IP.

Capex baseline allowance

7.25. Table 7.2 summarises our baseline cost assessment relative to our adjustment of the GDNs submitted costs. A more detailed explanation of our FP is in Appendix 2.

Table 7.2: GDN submitted costs versus Ofgem baseline costs for Capex (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon[1]	NW	WM	NGN	Sc[2]	So[3]	WWU	Total
GDN submitted cost	384.0	217.3	240.3	188.5	374.8	419.5	586.0	445.8	2,856.2
Ofgem adjusted cost	354.6	212.2	232.1	180.8	349.3	345.0	520.8	398.8	2,593.5
Ofgem cost baseline (4 year historical prior to averaging or IQI)	292.1	162.4	206.3	159.2	329.4	282.0	390.9	355.7	2,178.1
Gap to Ofgem adjusted cost	-18%	-23%	-11%	-12%	-6%	-18%	-25%	-11%	-16%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	290.9	154.6	199.3	151.0	333.6	284.7	399.4	370.3	2,184.0
Gap to Ofgem adjusted cost	-18%	-27%	-14%	-16%	-4%	-17%	-23%	-7%	-16%

1 £19.3m capitalised replacement is reclassified from capex to repex as shown in Ofgem adjusted costs

2 £32.9m capitalised replacement is reclassified from capex to repex as shown in Ofgem adjusted costs

3 £83.5m capitalised replacement is reclassified from capex to repex as shown in Ofgem adjusted costs

8. Replacement expenditure

Chapter summary
This chapter sets out our decision in relation to how we assess the relative efficiency of forecast, non-discretionary[11] and discretionary[12] repex submitted by the GDNs and sets out our efficient costs allowances from our disaggregated modelling. Further detail is set out in Appendix 3.

8.1. Repex activities are those activities which are associated with the replacement of old pipes which potentially cause a safety risk from the ignition of escaping of gas. Pipes are in one of two major categories; mains which serve a number of consumers and services which typically connect the mains to a consumer's meter. The Health and Safety Executive (HSE) iron mains replacement programme has introduced three tiers based on pipe diameter sizes.[13]

Summary of Initial Proposals

8.2. In IP we used two assessment methods to set bottom-up repex allowances. We assessed the efficiency of tier 1 repex costs through regression modelling using a weighted average of tier 1 workloads as the cost driver; this was a combination of the kilometres of mains and number of services decommissioned.

8.3. We set relatively constant annual tier 1 workloads between April 2012 and March 2032 without an uplift in early years to allow a declining workload towards the end of the mandated period. All other non-discretionary mains workloads were allowed without adjustment.

8.4. A revenue driver was proposed for work in tier 2 that was above the risk threshold due to uncertainty of tier 2A (T2A) workloads over the RIIO-GD1 period. We proposed a unit rate driver for the length of mains abandoned and a separate unit cost of the number of T2A services replaced.

8.5. We applied a technical review - which included cost benefit analysis (CBA) - to discretionary repex activity.

[11] Non-discretionary repex - tier 1, tier 2A (above risk threshold), other non-standard mains and services (renew after escape and non-mains and emergency related services).

[12] Discretionary repex - tier 2B (below risk threshold), tier 3, iron mains greater than 30 metres from property, other mains, associated services, and multi-occupancy buildings (MOBs).

[13] Further details of the specific tier definitions are given in the Technical issues and normalisations section of Appendix 3.

8.6. For IP we had to impose an interim proposal for discretionary repex for NGGD, SGN and WWU. These companies did not provide the disaggregated information required in order to assess and propose an efficient workload. We also considered the information provided by these companies was inconsistent with our CBA guidance.[14]

8.7. For NGN we allowed all discretionary repex workload as we considered they had provided robust evidence and the proposed volumes were justified by CBA.

Summary of respondents' views

Changes to our cost drivers and regression approach

8.8. Concerns were raised regarding the use of the tier 1 bottom-up repex regression model and inconsistent reporting of indirect costs between tier 1 and other repex activities, potentially making benchmarking only tier 1 activities less reliable.

8.9. NGN also raised concerns regarding benchmarking historical tier 1 repex costs suggesting that arrangements and therefore drivers for the repex programme during GDPCR1 are significantly different from those presented during RIIO-GD1. They state that any attempt to artificially separate individual elements of the GDPCR1 programme ignores the differences in drivers and suggest that the repex programme during GDPCR1 cannot be retrospectively split into different elements based on an arbitrary split of diameter bands.

8.10. NGGD believed our approach to assessing repex multi-occupancy buildings (MOBs) was inconsistent between the bottom-up and totex assessment of repex costs. It was also highlighted that costs for MOBs were included in the totex regression without an appropriate cost driver.

Business case justification

8.11. NGN and SGN supported our cost benefit approach of a 24 year payback period to assess discretionary investment decisions, with NGGD and WWU maintaining that a longer period is more appropriate.

8.12. NGGD raised concerns that we did not give separate consideration to asset integrity condition workloads arguing that the CBA approach we applied does not effectively assess these categories. They also believe our assessment of the London medium pressure (MP) scheme was not robust and we failed to consider the integrated nature of the programme.

[14] Appendix 9 to http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20Outputs%20and%20Incentives%20Initial%20proposals%20270712.pdf

Workload and costs adjustments

8.13. Overall, NGN supports our approach of the assessment of non-discretionary repex. The remaining GDNs highlighted issues with our approach.

8.14. All GDNs made reference to how we calculated tier 1 workloads which resulted in not allowing all tier 1 condition mains including small diameter steel.[15] NGN agreed with our proposal to remove the tier 1 workload ramp-down[16], although NGGD considered that a ramp-down should be allowed.

8.15. A number of GDNs challenged how we apportioned any disallowance of repex workload across the workload mix[17]. They suggested that our method led to a mismatch between workload and cost allowances and recommended apportioning workload more accurately in terms of diameter mix.

8.16. SGN and NGGD stated that our proposed unit costs for tier 2 above the threshold were inadequate.

8.17. All GDNs questioned our workload allowances for services not related to a mains replacement or emergency.

Our decision

Overview

8.18. Since the publication of IP we have worked closely with and received updated information from all of the GDNs to ensure we have assessed their costs in a consistent manner. Following the restatement of proposed workloads by the GDNs at a disaggregated repex level, we have made a fundamental change in how we have presented allowed expenditure and workload, and where necessary a change in how we have assessed proposed workload.

Revision of repex cost and workload information

8.19. Following IP we recognised that there was not a full understanding of proposed repex workload broken down at a disaggregated level. This was largely due to the inconsistency in reporting. The main difficulty was for non-standard non-discretionary workload and all discretionary workload eg steel, mains greater than 30 metres, non-standard materials.

[15] We recognised this issue at the time of IP publication and communicated with GDNs that this would be corrected as part of FP.
[16] The annual tier 1 workload between April 2013 – March 2032 should be relatively constant without an uplift in early years to allow a declining workload towards the end of the mandated period.
[17] Our proposed disallowance was calculated as being proportional to the workload the GDNs had submitted.

8.20. We asked GDNs to confirm populations of mains and forecast repex workloads/costs using a new repex data template. The objective was not to invite the networks to change their submitted numbers but to provide a consistent breakdown of the repex data already submitted as part of their April 2012 Business Plan.

8.21. Following IP we issued further clarification of the CBA principles to support the guidance we had previously issued to assess discretionary repex workloads. All networks with the exception of NGN resubmitted their CBA models. These networks also resubmitted repex workload and expenditure data in October to ensure repex information was consistent with resubmitted CBA models.

Changes to our cost drivers and regression approach

8.22. Following the responses we received from GDNs we have reviewed our approach to assessing bottom-up repex. For FP, the unit cost efficiency of all repex mains and services are assessed using regression techniques.

8.23. In IP two assessment methods were used to set bottom-up repex allowances. tier 1 activity was benchmarked using regression modelling. A technical review - which included cost benefit analysis (CBA) - was applied to discretionary repex activity.

8.24. We have reviewed all costs included in the modelling analysis and have excluded repex items where no reliable costs driver exists. These items include rechargeable diversions and MOB risers both of which have been excluded from benchmarking assessment and added back in to baseline costs as a post regression adjustment.

Business case justification

8.25. At IP we set out our view on how we would assess investment for discretionary workload and we published the CBA guidance we provided the companies when submitting their business plans.

8.26. As part of IP we proposed that low pressure mains should payback within 24 years from the start of RIIO-GD1 (by 2037). We have not changed our view on this and have also used this approach when assessing medium pressure mains.

8.27. However, since IP we have worked with the companies to ensure that we have a consistent approach to what has been presented by the companies and how we have assessed discretionary workload using their CBA models.

Workload and costs assessment: Non-discretionary workload

Tier 1 mains and associated services

8.28. Our method of assessing appropriate workload for tier 1 remains fundamentally unchanged since IP. However as part of the revised data collection process carried out in October we have ensured that only iron main populations and forecast workloads are included in the assessment.

8.29. Our view remains that annual workloads between April 2013 and March 2032 should be relatively constant without uplift in early years to allow a declining workload towards the end of the mandated period. The workload is assessed on the remaining tier 1 population over the remaining programme (by 2032) including an allowance for growth of this population due to the encroachment of buildings and discovered unknown mains as per IP.

8.30. The length of mains allowed in the category tier 1 mains includes both non-rechargeable diversions and associated small diameter steel mains. However, the associated small diameter small steel mains are not included in the annual workload assessment.

Other non-discretionary mains and associated services workload

8.31. We have allowed in full all other non-discretionary mains and associated service workload including tier 2 work above the threshold.

8.32. We have set a revenue driver to recognise there is uncertainty as to the exact workload that may be generated by mains passing beyond the risk action threshold. This is as a result of the dynamic nature of the iron pipe network and risk model enhancements[18].

Non- Polyethylene (*PE) services – not related to replaced mains or emergency*

8.33. We have considered the comments to IP on allowed non-PE service volumes. It was recognised there was inconsistent reporting of workloads by NGN. NGN have provided updated information on the number of non mains and emergency related service replacements. As a benchmark, we used an average between information submitted by SGN and the updated NGN information to inform our revised recommendation for these workload volumes.

8.34. Our initial proposals were based on the amount of work being proportional to the number of customers in each network. Since IP we have reconfirmed the service populations and have adjusted our approach so the workload is now proportional to

[18] Further details of T2A revenue driver can be found in Appendix 3.

the number of non-PE services for each GDN which more correctly reflects the likely volume of work.

8.35. We have not allowed NGGD any additional workload for their proposal that all non-PE services are replaced by 2037, in line with the original HSE iron mains replacement programme. We do not believe that this target is appropriate or required by the HSE.

8.36. The HSE requires networks to proactively monitor and deal with potential hot spots of services where information on escapes in a locality would suggest services are at higher risk. We would expect that for services connected to tier 1 mains such services are addressed targeting the mains and services for replacement together. This strategy deals with appropriately 80 per cent of services. Where hotspot services are identified which are connected to other mains. We would expect a CBA justification for this work. We expect only a small number of mains would be replaced without the mains and believe that the volume of allowed non mains or emergency related service work will accommodate such services.

Non-PE services – replaced after escape

8.37. Our methodology for determining workload is the same as IP. We adjusted the number of renewals after escapes in proportion to the adjustment in the number of recommended service reports.

Workload and costs assessment: discretionary workload

8.38. Discretionary workload is not mandated by the HSE and we expect the GDNs to support any proposed workload with a business case, normally through CBA. This includes tier 2 iron mains below the threshold, tier 3 iron mains, steel greater than 2 inch, mains greater than 30 metres from a property and mains with inadequate integrity.

8.39. Although this work is discretionary in that it must have a demonstrated business case, for iron pipes of 9 inches or above, GDNs are mandated by the HSE to consider these cases, including the threat to life and property, and where a case is made on this basis to propose a suitable workload to address these pipes.

NGGD's London medium pressure strategy

8.40. We have considered NGGD's London medium pressure strategy and believe that this should be justified in the same way as all other replacement of discretionary mains. Based on the approach submitted by NGGD, their overall strategy has not demonstrated that it will provide a payback over 24 years that will benefit customers. However, some higher risk elements of the strategy do yield a positive net benefit to customers. We have therefore allowed 70 per cent of their proposed workload for London medium pressure based on allowing the elements which have been CBA justified. This is consistent with our overall approach for other replacement of discretionary mains.

Other discretionary workload

8.41. Further details of our assessment, baseline costs and workloads can be found in Appendix 3.

Multi-occupancy buildings (MOBs)

8.42. We have set out our assessment and decision for MOBs in Appendix 3.

Sub-deducts

8.43. In Chapter 6 of our Outputs document we set out our approach to dealing with sub-deducts. We have provided a total additional allowance to the GDNs of £32m for the RIIO-GD1 period, details of this can be found in Appendix 3. We have treated this as 50 per cent repex and 50 per cent opex and these costs are included in the opex and repex cost baselines.

Repex baseline and workload summary

8.44. Table 8.1 summarises our repex historical and forecast baseline costs and shows the percentage gap against Ofgem adjusted costs. A more detailed explanation of our final proposals for repex is set out in Appendix 3.

Table 8.1: Repex baseline summary (£m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	995.5	1,340.3	840.9	640.6	776.6	461.0	1,369.6	733.4	7,157.8
Ofgem adjusted cost[1]	910.8	1,274.0	736.0	599.7	669.0	455.2	1,401.7	664.5	6,710.9
Ofgem cost baseline (4 year historical)[2]	827.7	1,051.6	670.6	541.3	686.6	470.8	1,276.4	603.0	6,128.0
Gap to Ofgem adjusted cost	-9%	-17%	-9%	-10%	3%	3%	-9%	-9%	-9%
Ofgem cost baseline (2 year forecast)[2]	831.9	1,036.1	663.5	523.7	678.8	448.4	1,301.4	589.6	6,073.5
Gap to Ofgem adjusted cost	-9%	-19%	-10%	-13%	1%	-1%	-7%	-11%	-9%

[1]Includes adjustments for re-classified costs, costs deferred to an uncertainty mechanism and outputs disallowances.

[2]Baseline Prior to averaging our four approaches and the application of the IQI.

8.45. Tables 8.2 and 8.3 show our allowed repex workload for mains and services. More disaggregated information is set out in Appendix 3.

Table 8.2: RIIO-GD1 Repex mains abandoned workloads

Total repex abandon lengths (km)									
	EoE	**Lon**	**NW**	**WM**	**NGN**	**Sc**	**So**	**WWU**	**Industry**
Submitted (April 2012)[1]	5,171.8	3,350.2	4,313.4	3,080.2	4,816.2	2,260.4	5,436.4	3,757.8	32,186.5
Submitted (October 2012)	5,180.0	3,218.8	4,065.0	2,882.8	4,816.2	2,323.0	5,610.1	3,493.8	31,589.7
Submitted adjusted[2]	5,180.0	3,225.8	4,065.0	2,882.8	4,816.2	2,498.4	5,988.3	3,493.8	32,150.2
Allowed workload	5,043.6	3,039.7	3,913.3	2,852.2	4,381.7	2,448.5	5,935.5	3,502.5	31,117.1
Disallowed workload[3]	-136.4	-186.1	-151.6	-30.5	-434.4	-49.9	-52.7	8.7	-1,033.2
% Disallowed	-3%	-6%	-4%	-1%	-9%	-2%	-1%	0%	-3%

[1]Shown to evidence change in workload since April 2012 submission.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

Table 8.3: RIIO-GD1 service workloads

Domestic service workload (no. of services)									
	EoE	**Lon**	**NW**	**WM**	**NGN**	**Sc**	**So**	**WWU**	**Industry**
Submitted	61,947	52,496	71,212	58,258	77,451	27,834	83,547	95,562	528,308
Allowed	39,294	38,927	44,059	31,372	53,896	16,157	70,447	39,050	333,200
Targeted Services	*10,077*	*6,261*	*7,589*	*6,223*	*8,889*	*1,481*	*9,729*	*8,142*	*58,391*
Relaid after Escape	*29,217*	*32,666*	*36,470*	*25,148*	*45,006*	*14,675*	*60,718*	*30,908*	*274,809*
Disallowed workload	-22,654	-13,570	-27,153	-26,886	-23,556	-11,678	-13,100	-56,512	-195,108
% Disallowed	-37%	-26%	-38%	-46%	-30%	-42%	-16%	-59%	-37%

9. Combining the elements of our cost assessment

Chapter summary
This chapter sets out our decision in relation to how we combine our different benchmarking methods to calculate GDNs' efficient costs, and sets out our baseline cost allowances.

9.1. Under the RIIO framework we use a range of different tools to assess the efficiency of the costs submitted by the GDNs in their business plans. We have used aggregated and disaggregated econometric models, historical and forecast data and technical assessment to set our baseline allowances.

Summary of Initial Proposals

9.2. In IP, we set out our intention to set cost allowances based on the results of our four preferred modelling approaches: aggregated (totex) and disaggregated (bottom-up) econometric models estimated using both historical data (2009-10 to 2011-12 in IP, and extended by one year for FP) and forecast data (2013-2014 and 2014-15).

9.3. We considered that each modelling approach provides useful information in assessing GDNs' comparative efficiency. Totex models ensure that we consider GDNs' opex-capex trade-offs in our comparative efficiency assessment, ie that we can identify those GDNs that have minimised total costs. On the other hand, activity level analysis enables a less constrained model specification, ie we can more accurately estimate a relationship between a disaggregated cost and a given cost driver.

9.4. Likewise, econometric models estimated using historical data have the benefit of being anchored on actual (as opposed to forecast) data. By contrast, estimating models using forecast data allows us to take into account GDNs' views on how costs will change over RIIO-GD1.

9.5. We proposed to calculate our efficient totex allowances (pre-IQI) based on an unweighted average of the different approaches. Using a wide set of models reflects our view that there is no one correct model for assessing comparative efficiency but a number of plausible ones.

Summary of respondents' views

9.6. Respondents did not respond specifically to our proposal to calculate GDNs pre-IQI cost allowance on the basis of an unweighted average of all four modelling approaches.

9.7. However, as set out in earlier chapters, some GDNs considered that we should place greater weight on our totex models rather than disaggregated models, and on forecast data rather than historical data. By contrast, NGN broadly supported our proposed approach to combining elements of our cost assessment.

Our decision

9.8. In earlier chapters, we have set out our responses to the issues in relation to our benchmarking approach. As we have set out in subsequent chapters, we have made a number of changes to both our totex and disaggregated modelling approaches to address respondents' comments.

9.9. We considered alternative weighting schemes of the historical and forecast models. In contrast to some respondents' views, which argued for more weight on forecast data, we considered that the availability of an additional year of data between IP and FP could lend support to putting more weight on results based on historical data. We tested alternative weighting schemes between our historical and forecast regression results but there was no material difference in outcome.

9.10. Similarly, given the respective merits of the totex and the disaggregated approach, we did not find strong justification to favour one approach over the other. We note that we took steps to address capex-opex trade-offs in our disaggregated modelling (see Chapter 6 under Maintenance) and that as a consequence of that and other measures (Appendix 4) the difference between allowances based on our totex model and the disaggregated model has narrowed significantly.

9.11. In terms of setting overall cost allowances, we have decided to calculate GDNs' pre-IQI cost allowances based on an unweighted average of the results from our preferred modelling approaches, ie, as in IP. We consider that approach acknowledges that there is no single correct specification for modelling efficient costs.

9.12. Table 9.1 sets out the GDNs' pre-IQI controllable cost allowances for each of the four models, and the average pre-IQI allowance used for the setting post-IQI allowances. Relative to IP, allowances have increased for all GDNs as a consequence of our changes to our econometric modelling and qualitative assessment (as outlined in previous chapters), as well as allowed changes to outputs.[19]

9.13. As set out, allowances obtained from the totex models are generally higher than the disaggregated models. One of the reasons for the GDNs' lower allowances on the disaggregated models is the greater use of technical or qualitative assessment which often draws on benchmark data wider than the set of GDNs, eg in relation to business support costs. By contrast, the totex modelling approach includes a number of such cost areas subject to qualitative assessment under the disaggregated

[19] For example, relative to IP, we have allowed substantively higher levels of mains replacement (see Outputs Supporting Document).

approach within the econometric modelling, with the benchmark defined as the UQ GDN.

Table 9.1: GDNs controllable cost allowances for the four modelling approaches (2009-10 prices, RIIO-GD1 period)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
Totex – historical	2,127.3	1,923.0	1,607.4	1,301.1	1,651.9	1,372.9	2,717.1	1,675.7
Disaggregated – historical	1,984.1	1,856.0	1,520.7	1,197.3	1,662.8	1,295.3	2,631.4	1,600.6
Totex – forecast	2,134.4	1,904.2	1,596.1	1,280.5	1,641.8	1,350.2	2,738.7	1,666.5
Disaggregated – historical	2,004.5	1,819.9	1,500.5	1,159.2	1,652.1	1,264.1	2,686.3	1,607.2
Average (pre-IQI)	**2,062.6**	**1,875.8**	**1,556.2**	**1,234.5**	**1,652.1**	**1,320.6**	**2,693.4**	**1,637.5**

10. Applying the IQI

Chapter summary
This chapter sets out our proposed information quality incentive (IQI) matrix, and our decision in relation to income reward/penalties and IQI efficiency incentive rate.

10.1. The information quality incentive (IQI) matrix provides incentives for GDNs to reveal their efficient level of costs by providing a reward (or penalty) according to their cost submission relative to our assessment. The mechanism also sets the efficiency incentive rate which sets out the proportion of underspend (or overspend) during the price control period incurred by shareholders.

Summary of Initial Proposals

10.2. At IP, we calibrated the IQI mechanism such that each GDN faced an IQI efficiency incentive rate of between 60-65 per cent, ie shareholders would retain 60-65 per cent of the benefit (or cost) of underspend (overspend), and an income reward/penalty of broadly between zero and 1.5 per cent of totex.

Setting final (post-IQI) cost allowances

10.3. We defined the benchmark as the upper quartile (UQ) cost for the respective base year (2011/12 for historical models, and 2013-14 for forecast models), and required GDNs to close 75 per cent of our assessment of their relative inefficiency. We considered that such an approach acknowledges that an element of the models' results represents statistical error as opposed to relative efficiency.

10.4. For the purpose of calculating final, post-IQI, cost allowances, we consider GDNs submitted costs net of:

- costs which we propose to fund through uncertainty mechanisms, such as smart metering costs
- cost associated with disallowed outputs
- uncontrollable costs (eg NTS Exit Capacity charges, shrinkage allowances, business rates etc).

10.5. We have calibrated the IQI matrix to ensure that it is incentive compatible with our calculation of post-IQI cost allowances, which are a weighted average of our baseline allowances and submitted costs with weights of 75 per cent and 25 per cent respectively.

Summary of respondents' views

10.6. A number of the GDNs considered that the matrix provided insufficient reward relative to GDPCR1. NGN stated that the income reward and sharing factor are not sufficiently different for the least cost GDN compared to other GDNs. It considers that we should increase the income reward for the least cost company to 2.5 per cent of totex (compared to around 1.4 per cent in IP).

10.7. All of the GDNs considered that we should increase the maximum incentive rate to 70 per cent, with the exception of NGGD for its London GDN. In general, the GDNs noted that this would increase the expected variation in returns on regulated equity (RORE), and thus enable the best performing GDNs to earn double-digit returns.

10.8. NGGD continue to state that our use of GDN's second business plans to calculate the IQI benchmark (instead of the first business plans) has resulted in a lower absolute reward for NGGD.

10.9. British Gas noted that the proposed efficiency catch-up rate of 75 per cent was a positive aspect of our Initial Proposals.

Our decision

10.10. In summary, we have decided to retain the matrix used at IP to calculate GDNs' income reward/penalty and efficiency incentive rate. As set out in the previous chapter, we have updated our calculation of GDNs' IQI scores to reflect changes to our cost efficiency assessment, and the changes to GDNs' outputs.

10.11. We decided not to increase the maximum incentive efficiency rate from 65 to 70 per cent. The incentive rates of 60-65 per cent provide (marginally) greater incentives to GDNs to minimise costs than under the current price control, ie by allowing GDNs to retain a higher proportion of any outperformance.[20] We consider that the incentive rates provide a correct balance of incentives for shareholders, as well as benefit (or increased cost) to consumers from any outperformance (underperformance).

10.12. In relation to NGGD's statement that we need to consider a lower incentive rate for its London GDN, we note that our incentive rate is only marginally above the upper end of its requested incentive rate of 50-60 per cent for its London GDN as set out in its business plan submission. In addition, we do not propose to set different IQI scores by GDNs within a group, as this could distort cost allocation, ie it would

[20] As set out in IP, the efficiency incentive rate for GDNs during the current review is 100 per cent for opex, and between 33 and 36 per cent for capex. Taking a weighted average, the incentive rate is in the low 60 decile. However, we note that these figures reflect the proportion of costs retained by shareholders on a pre tax basis. As set out in IP, the efficiency incentive rate for RIIO-GD1 is defined on a post-tax basis.

provide an incentive to allocate costs to the GDN with the lowest incentive rate. We set out our views on the IQI incentive rate and financeability in Chapter 4 of the Finance and Uncertainty Supporting Document.

10.13. We also disagree with NGGD's statement that it has received a lower income reward as a consequence of our decision to base our IQI score on GDNs' second business plan submission. NGGD states that the benchmark would have been higher under the forecast models if we had used GDNs' (higher) first business plan submissions, and as a consequence NGGD (and presumably other GDNs) would have received a higher reward.

10.14. We disagree with NGGD's assertion. We always intended to use GDN's second business plan submissions to set benchmark costs (ie the denominator in the IQI score). The issue was whether to use GDNs' first or second submissions in determining the numerator in the IQI score, and as set out in IP we decided to use GDNs' second business plan submissions. Thus, all GDNs receive a higher absolute reward (or lower penalty) as a result of our decision to use GDNs' second business plan submissions.

10.15. We also decided not to increase the maximum available reward/penalty. Our IQI matrix provides for a reward of 2.5 per cent of totex for those companies that provide efficient cost forecasts, ie equivalent to our assessment of the efficient level of costs. However, in our assessment of GDNs' cost efficiency no GDN has submitted cost forecasts equivalent to our assessment. Therefore the reward for the least cost GDN is below 2.5 per cent.

10.16. Tables 10.1 to 10.3 set out our IQI matrix, IQI score and associated income reward/penalty and sharing factor for the individual GDNs and the groups.

10.17. The tables show that NGN submitted the least cost forecast compared to our cost assessment, and earns a corresponding reward of 1.5 per cent, and NGGD's London GDN submitted the highest cost forecast with an associated penalty of 0.5 per cent.

Table 10.1: IQI matrix

1. NWO bid: benchmark ratio	90.0	95.0	100.0	105.0	107.0	110.0	115.0	118.0	122.0
2. Efficiency Incentive	67%	66%	65%	64%	64%	63%	63%	62%	61%
3. Allowed expenditure	97.5	98.8	100.0	101.3	101.8	102.5	103.8	104.5	105.5
4. Additional income	4.1	3.3	2.5	1.7	1.3	0.8	0.0	-0.6	-1.3
Actual expenditure	**Total Reward**								
85	12.4	12.4	12.3	12.1	12.0	11.9	11.7	11.5	11.3
90	9.1	9.1	9.0	8.9	8.8	8.8	8.6	8.4	8.2
95	5.8	5.8	5.8	5.7	5.7	5.6	5.4	5.3	5.2
100	2.4	2.5	2.5	2.5	2.5	2.4	2.3	2.2	2.1
105	-0.9	-0.8	-0.7	-0.7	-0.7	-0.7	-0.8	-0.9	-1.0
107	-2.3	-2.1	-2.1	-2.0	-2.0	-2.0	-2.1	-2.1	-2.2
110	-4.3	-4.1	-4.0	-3.9	-3.9	-3.9	-3.9	-4.0	-4.0
115	-7.6	-7.4	-7.3	-7.1	-7.1	-7.1	-7.1	-7.1	-7.1
118	-9.6	-9.4	-9.2	-9.1	-9.0	-9.0	-8.9	-8.9	-8.9
122	-12.3	-12.0	-11.8	-11.6	-11.6	-11.5	-11.4	-11.4	-11.4

Table 10.2: IQI income reward/ penalty and incentive rate by GDN

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
IQI score (change from IP)	110.5 (-3.3)	117.8 (-3.9)	110.4 (-2.1)	106.5 (-2.2)	106.1 (-0.7)	107.5 (-3.1)	107.7 (-3.5)	111.0 (-8.5)
Reduction to totex for cost efficiency	7.9%	13.3%	7.8%	4.9%	4.6%	5.7%	5.7%	8.2%
Income reward/penalty (% of totex)	0.7%	-0.5%	0.8%	1.4%	1.5%	1.3%	1.2%	0.7%
Sharing factor	63%	62%	63%	64%	64%	64%	64%	63%

Table 10.3: IQI income reward/penalty and sharing factor by group

	NGGD	NGN	SGN	WWU
IQI score (change from IP)	111.8 (-2.5)	106.1 (-0.7)	107.6 (-3.3)	111.0 (-8.4)
Reduction for unit costs	8.8%	4.6%	5.7%	8.2%
Income reward/penalty	0.5%	1.5%	1.2%	0.7%
Sharing factor	63%	64%	64%	63%

Setting final (post-IQI) cost allowances

10.18. As in IP, we calculate post-IQI allowances as a weighted average of our baseline cost assessment and the GDNs' adjusted submitted costs. Table 10.4 sets out our calculation of the GDNs post-IQI controllable cost allowances.

Table 10.4: Post-IQI cost allowances (2009-10 prices, RIIO-GD1 period)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
Submitted costs (a)	2,432.9	2,334.8	1,866.8	1,380.7	1,883.7	1,530.4	3,093.1	1,998.4
Submitted costs (Ofgem adjusted) (b)	2,279.2	2,209.5	1,717.6	1,315.1	1,753.2	1,420.2	2,899.4	1,817.4
Pre-IQI allowance (c)	2,062.6	1,875.8	1,556.2	1,234.5	1,652.1	1,320.6	2,693.4	1,637.5
Post-IQI allowance (d)=0.75(c)+0.25(b)	2,116.7	1,959.2	1,596.5	1,254.7	1,677.4	1,345.5	2,744.9	1,682.5
% gap to submitted costs (e)=1-(d)/(a)	13%	16%	14%	9%	11%	12%	11%	16%
% gap to Ofgem adjusted submitted costs (f)=1-(d)/(b)	7%	11%	7%	5%	4%	5%	5%	7%

Appendix 1 – Further detail of our opex analysis

Introduction

1.1 The activities included under operating expenditure are:

- Direct activities -Work management, Emergency, Repairs, Maintenance, Other direct activities (ODA)
- Indirect activities -Business support, Training and apprentices

1.2 This appendix sets out further detail on our assessment of direct operating costs. For further detail on our assessment of business support and training and apprentices refer to appendices 6 and 7 respectively.

Work management

1.3 Table A1.1 sets out our assessed efficient costs relative to GDNs submitted costs for work management.

Table A1.1: GDN submitted costs versus Ofgem baseline costs for Work Management (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN[1]	Sc	So	WWU[2]	Total
GDN submitted cost	234.6	182.4	189.3	132.1	144.4	146.1	262.5	169.2	1,460.5
Ofgem adjusted cost	225.1	175.0	176.6	129.3	156.1	135.7	227.8	169.9	1,395.6
Ofgem cost baseline (4 year historical prior to averaging or IQI)	184.1	153.0	151.8	116.9	138.2	126.0	209.5	149.4	1,229.0
Gap to Ofgem adjusted cost	-18%	-13%	-14%	-10%	-11%	-7%	-8%	-12%	-12%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	198.3	153.8	156.7	117.4	142.4	126.2	224.9	156.5	1,276.1
Gap to Ofgem adjusted cost	-12%	-12%	-11%	-9%	-9%	-7%	-1%	-8%	-9%

[1] £12m land remediation costs reallocated from Other Capex

[2] £3.4m WWU costs for RIIO reallocated from ODA to Work Management

Emergency

1.4 As for IP, we assess emergency costs using a regression analysis on a composite driver which includes customer numbers and external condition reports at

80 per cent and 20 per cent weight respectively. We base our allowance on an adjusted number of external condition reports (see Chapter 6).

1.5 Table A1.2 sets out our assessment of baseline emergency costs relative to the GDNs submitted costs.

Table A1.2: GDN submitted costs versus Ofgem baseline costs for Emergency (RIIO-GD1 total, £m, 2009-10 prices)

	EoE[1]	Lon[1]	NW[1]	WM[1]	NGN[2]	Sc	So	WWU	Total
GDN submitted cost	158.0	134.0	114.3	78.7	85.82	91.0	199.9	96.1	957.8
Ofgem adjusted cost	142.0	110.8	105.9	70.7	100.6	87.5	193.4	96.1	907.2
Ofgem cost baseline (4 year historical prior to averaging or IQI)	148.8	101.3	100.3	75.9	105.3	72.1	169.8	107.3	880.8
Gap to Ofgem adjusted cost	5%	-9%	-5%	7%	5%	-18%	-12%	12%	-3%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	133.9	90.7	88.5	66.6	93.6	63.8	153.9	96.2	787.1
Gap to Ofgem adjusted cost	-6%	-18%	-16%	-6%	-7%	-27%	-20%	0%	-13%

[1] £55m NGGD costs for MOBs reallocated from emergency to maintenance
[2] £24.8m incremental costs of using direct labour (FCOs) compared to contractors reallocated from repex to emergency

Repairs

1.6 We assess repairs costs using a regression analysis on external condition reports. RIIO-GD1 forecast data shows that North West and West Midlands are efficient relative to the historical cost, mainly because of their significant reduction in forecast expenditure for RIIO-GD1. Our allowance is based on an adjusted number of external condition reports (see Chapter 6).

1.7 Table A1.3 sets out are baseline cost assessments relative to our adjustment of the GDNs submitted costs.

Table A1.3: GDN submitted costs versus Ofgem baseline costs for Repairs (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	102.2	141.6	86.6	53.1	139.1	76.4	184.8	101.5	885.3
Ofgem adjusted cost	95.4	131.1	80.7	52.4	135.7	75.2	180.6	101.5	852.6
Ofgem cost baseline (4 year historical prior to averaging or IQI)	94.9	95.9	81.4	59.3	98.7	46.6	143.4	80.3	700.4
Gap to Ofgem adjusted cost	-1%	-27%	1%	13%	-27%	-38%	-21%	-21%	-18%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	90.2	90.5	76.0	53.1	94.5	40.4	142.5	74.5	661.7
Gap to Ofgem adjusted cost	-5%	-31%	-6%	1%	-30%	-46%	-21%	-27%	-22%

Maintenance

1.8 We assess the relative efficiency of maintenance expenditure using regression analysis. Our assessment has two steps. In the first we regress total maintenance costs (ie routine and non-routine maintenance) on maintenance MEAV. The maintenance MEAV driver is a subset of the MEAV metric which includes only those assets that are maintained under this activity, plus non-operational holders (included at half the replacement value of operational holder). In the second step we assess trade-offs with capex spend on LTS pipelines. We discuss our assessment of opex-capex trade-offs in Chapter 6.

1.9 Table A1.4 sets out our allowances versus submitted costs for maintenance.

Table A1.4: GDN submitted costs versus Ofgem baseline costs for Maintenance (RIIO-GD1 total, £m, 2009-10 prices)

	EoE[1]	Lon[1]	NW[1]	WM[1]	NGN	Sc	So	WWU	Total
GDN submitted cost	159.0	72.2	103.4	66.7	73.1	85.5	134.8	121.4	816.1
Ofgem adjusted cost	185.8	100.0	117.0	78.6	75.9	91.2	149.2	129.8	927.5
Ofgem cost baseline (4 year historical prior to averaging or IQI)	140.3	108.2	96.7	84.8	53.1	38.4	133.9	69.7	725.1
Gap to Ofgem adjusted cost	-25%	8%	-17%	8%	-30%	-58%	-10%	-46%	-22%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	163.0	110.7	102.9	87.6	57.7	41.2	156.7	84.9	804.7
Gap to Ofgem adjusted cost	-12%	11%	-12%	11%	-24%	-55%	5%	-35%	-13%

[1] £55m NGGD costs for MOBs reallocated from emergency to maintenance

Other direct activities

1.10 Table A1.5 sets out our baseline cost allowances versus submitted costs for ODA. We note that the allowance for ODA includes smart metering set up costs, a re-phased schedule of xoserve charges[21]. The allowance does not include NTS exit charges which are included under non-controllable opex.

[21] Our proposed approach to dealing with the expected change to xoserve's funding arrangements is discussed in the Finance and Uncertainty Supporting Document (uncertainty chapter).

Table A1.5: GDN submitted costs versus Ofgem baseline costs for Other Direct Activities[1] (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU[2]	Total
GDN submitted cost	81.2	52.1	54.8	42.0	86.3	48.7	85.5	134.1	584.7
Ofgem adjusted cost	82.2	52.7	55.5	42.5	87.0	49.9	88.3	61.7	519.8
Ofgem baseline	81.0	51.7	54.7	42.6	87.4	51.9	89.1	52.0	510.3
Gap to Ofgem adjusted cost	-2%	-2%	-1%	0%	1%	4%	1%	-16%	-2%

[1] inclusive of xoserve costs

[2] £3.4m WWU costs for RIIO reallocated from ODA to Work Management

Appendix 2 – Further detail of our capex analysis

Introduction

1.1 This appendix expands on the information in Chapter 7, providing further detail on responses to our IP, explains what we have done in FP having taken them into account and what this means in terms of allowances.

1.2 At the end of each category we summarise the Ofgem final proposals baseline costs for our bottom-up analysis and compare them with GDN's submitted forecast costs.

1.3 The appendix focuses on the five categories of Capex; LTS and storage, reinforcement, connections, governor replacement, and other capex, and their principle sub activities.

LTS & storage

LTS pipelines

Initial proposals

1.4 In IP we explained that we disallowed WWU's requested investment of £62.5m in LTS pipelines, because we were unable to determine whether all or some of this forecast workload and expenditure was necessary and efficient from the information submitted.

Respondent's views

1.5 In WWU's responses to IP, they disagreed with our decision to disallow their forecast LTS pipeline integrity expenditure because it failed to recognise the unique circumstances that exist in their LTS pipeline assets and was not consistent with our stated intention to broadly allow RIIO-GD1 integrity allowances that reflect current expenditure levels.

1.6 WWU subsequently reviewed their proposed intervention plan following further discussion with the HSE, and submitted a revised LTS pipeline capital expenditure strategy reflecting a more targeted risk management approach. It extended the period of investment and reduced submitted forecast expenditure for the RIIO-GD1 period from £62.5m to £34.9m. This expenditure includes pipeline diversion and replacement (£17.6m), non-rechargeable diversions (£10.9m), sleeves (£4.7m), refurbishment of ancillary block valves (£0.2m) and completion of a project in progress (£1.5m).

Our decision

1.7 WWU's supporting information in their revised proposal provides sufficient detail of forecast workload and costs, including a pipeline by pipeline specific summary of issues, to justify their proposed expenditure. We have included this expenditure in our baselines.

LTS diversions

Initial proposals

1.8 In IP we noted that non-rechargeable diversions for NGGD networks were high in comparison with other GDNs. We proposed to allow costs for this activity based on their average historical cost.

1.9 We disallowed NGN's £4.4m over the RIIO-GD1 period for an unspecified LTS pipeline diversion project because of the inherent uncertainty surrounding the need for this expenditure.

Respondent's views

1.10 NGGD responded to IP with two main issues:

- It is argued that increased workload resulting from the economic upturn justified the need for increased funding over historic levels. It provided details of work requests received for the RIIO-GD1 period to support its requests.

- It challenged the accuracy of the historical costs on which its allowance was based.

1.11 NGN reasserted its need for funding of a pipeline diversion activity because of its concerns that at least one potential project would be realised in the RIIO-GD1 period, requiring the £4.4m forecasted in their April Business Plan.

Our decision

1.12 Our decision to allow NGGD the average of their historical expenditure remains as proposed in IP.

1.13 We noted the points raised by NGGD regarding a forecast increase in future workload. However we did not observe this level of increased forecast costs in other GDNs' business plans. We are not in receipt of sufficient evidence from NGGD to suggest that the work enquiries it has received for the RIIO-GD1 period translate to an increased level of committed workload over historical levels.

1.14 We used our proposed methodology to calculate NGGD's allowance. We calculated the average of reported costs for the four years between 2009 and 2012. The submitted costs, historical spend and our adjustments summarised in Table A2.1.

Table A2.1: GDN Submitted costs for LTS diversions and Ofgem adjustment (RIIO-GD1, £m, 2009-10 prices, excludes RPEs)

	EoE	Lon	NW	WM
GDN forecast costs RIIO-GD1 (£m)	15.4	4.7	5.8	5.4
GDN forecast average annual cost (£m)	1.9	0.6	0.7	0.7
Historic annual average (2009-2012) (£m)	0.5	0.3	0.4	0.4
Average annual cost adjustment applied (£m)	-1.4	-0.3	-0.4	-0.3
Cost adjustment over RIIO-GD1 (£m)	-11.1	-2.2	-2.9	-2.5

1.15 The revised allowed costs for NGGD are higher in FP than IP by £6.8m over the RIIO-GD1 period.

1.16 NGGD's additional forecast expenditure of £10.4m for pipeline diversions to remedy integrity issues (vulnerability due to insufficient depth of cover) is allowed in full, consistent with IP.

1.17 Following further discussion with NGN over the need for their forecast pipeline diversion expenditure, NGN submitted an updated justification for a specific pipeline requiring diversionary work within the RIIO-GD1 period, at a cost of £2.9m. We believe this request is sufficiently justified and this expenditure has been allowed in FP. The disallowance has therefore been reduced from £4.4m to £1.5m.

Local Transmission System PRS's

Initial proposals

1.18 In IP we noted that forecast PRS expenditure for the two SGN networks was very high when compared with the other GDNs. An allowance was made for the specifically identified projects, however for unspecified PRS projects allowances were reduced to average historical actual spend. This led to a disallowance of £38.4m and £25.7 for Scotland and Southern respectively.

Respondents' views

1.19 SGN sought an ex-ante allowance for the unspecified element of this work; £14.9m and £23.9m for Scotland and Southern respectively. Their response implies

we have discounted costs for PRSs and offtakes. However our disallowance applies only to PRS expenditure.

1.20 SGN also requested a trigger mechanism for pre-heaters, pressure regulating systems and telemetry systems as an alternative to a mid-period review, but they did not articulate their reasons for their lack of support for a mid-period review.

Our decision

1.21 Whilst we acknowledge SGN's proposed funding for a trigger mechanism we did not have the opportunity to fully consider the implications of the fault trigger methodology across the industry and the level at which the trigger should be set.

1.22 We expect GDNs to consider both the health of an asset and any consequence of failure on the network in deciding their asset management intervention. Hence some core elements of their proposal are covered by the asset health and criticality work which we will review again at the mid-period based on the additional data captured by the GDNs. Further details are in Chapter 8 of the Finance and Uncertainty Supporting Document.

1.23 We have not changed our position from IP on SGN's PRS expenditure. Both SGN's networks requested the highest levels of PRS expenditure of all networks, and we note that actual PRS expenditure reported for 2012 was approximately 75 per cent lower than the level forecast in their April business plan. We believe SGN have been allowed sufficient capital allowances for integrity related PRS investment.Table A2.2 shows the allowed costs for LTS PRS compared with GDN submitted.

Table A2.2: GDN submitted costs for LTS PRS's and Ofgem adjustment (RIIO GD1, £m, 2009-10 prices, excludes RPEs)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
GDN forecast costs RIIO- GD1 (£m)	39.0	20.2	27.3	22.6	47.9	75.7	100.6	57.6
GDN forecast average annual costs (£m)	4.9	2.5	3.4	2.8	6.0	9.5	12.6	7.2
Average annual cost adjustment (£m)	0.0	0.0	0.0	0.0	0.0	-6.2	-5.3	0.0
Cost adjustment over RIIO GD1 (£m)	0.0	0.0	0.0	0.0	0.0	-49.9	-42.4	0.0
RIIO GD1 allowance after cost adjustment (£m)	39.0	20.2	27.3	22.6	47.9	25.8	58.2	57.6

Note numbers may not total due to rounding

Local Transmission System Reinforcement

Initial proposals

1.24 In IP, we disallowed £12.9m from NGN for capacity related PRS upgrades, on the basis that offtake and PRS expenditure was forecast to increase substantially from GDPCR1 while demand was forecast to reduce.

1.25 In IP we disallowed £25.2m from SGN for four LTS reinforcement projects to maintain the 1 in 20 supply standard, because it was considered these projects may not be necessary if interruption arrangements could be made. We allowed additional opex to fund the interruption contracts.

Respondents' views

1.26 NGN stressed that this work was driven by interruption reform and constraints presented by off-take reform (i.e. less flexibility between off-take sites) and was not driven by overall network demand.

1.27 SGN confirmed the need for three of their four proposed reinforcement projects in Scotland, one being reprogrammed due to the deferral of new housing development construction.

Our decision

1.28 We have considered and accept NGN's clarification with regards PRS capacity upgrades and have allowed their requested forecast expenditure of £12.9m in FP.

1.29 We have considered each of SGN's proposed projects separately.

1.30 We have disallowed the costs (£4.25m) for SGN's Foudland project owing to SGN securing interruptible contracts, but we have introduced an alternative opex annuity, calculated over 20 years, to fund the interruption contracts. This measure provides a suitable balance of risk between the consumer and SGN, given the two potential outcomes in seeking interruptible contracts beyond 2016.

1.31 SGN provided an update for the Pathhead project, explaining that the need for reinforcement has been reprogrammed as a result of the deferral of the development of large housing sites. The Pathhead project will be subject to a reopener mechanism for the connection of new large loads, which will enable funding to be considered in the event that development becomes necessary within the RIIO-GD1 period. Further details are in Chapter 8 of the Finance and Uncertainty Supporting Document.

1.32 We have allowed the requested funding for the two remaining projects, Moray and Logierait (£11.7m and £3.9m respectively), for which SGN's supporting evidence demonstrates that there are insufficient eligible network supply points to provide the required interruption capacity.

1.33 Allowances for LTS & storage are based on bottom-up qualitative assessment plus our view of RPEs and ongoing efficiencies. Our proposed baseline allowance for the LTS & storage activity are shown in Table A2.3.

Table A2.3: GDN submitted costs versus Ofgem baseline costs for LTS & Storage (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	69.3	28.4	43.1	32.5	105.6	166.2	161.1	115.6	722.0
Ofgem adjusted cost[1]	58.3	26.2	40.2	30.1	104.0	98.8	118.7	98.7	575.0
Ofgem baseline	54.8	25.0	38.4	28.5	101.0	98.7	115.7	94.0	556.1
Gap to Ofgem adjusted cost	-6%	-5%	-4%	-5%	-3%	-0%	-3%	-5%	-3%

1 Note Ofgem adjusted costs includes uncertainty mechanism and output disallowance

Distribution system reinforcement

Initial proposals

1.34 In IP we explained our methodology for determining an efficient level of GDN expenditure for reinforcement based on regression analysis for the mains element and separate technical assessment for the governor element. We transferred workload and costs associated with upsized mains replacement to repex for separate assessment as mains replacement, setting out our assumptions for doing so, and removed streetworks expenditure which we added back an efficient level of costs post assessment.

1.35 We did not propose any workload adjustments for this activity, and GDNs' requested mains and governor workloads were allowed except for WWU who had mains workload disallowed associated with construction of security of supply governors.

Respondents' views

1.36 We received individual responses surrounding the validity and methodology of regression analysis for this activity. WWU questioned the use of regression analysis given the low level of workload and the application of mains data assigned within only two diameter bands. WWU also questioned the use of net expenditure, as opposed to a gross expenditure in the regression.

1.37 London disagreed with our assumptions which were applied when transferring upsized replacement workload.

1.38 WWU explained that we had apparently disallowed the cost of 25km of mains associated with 30 new governors twice; once under pre-regression mains workload adjustment for 2014 and 2015 and once under workload adjustments in the governor capital expenditure. They explained that the costs for mains were an integral element of their submitted governor costs.

Our decision

1.39 Mains reinforcement was assessed using regression analysis at GDPCR1. We consulted the GDNs about its continued use and the majority have not expressed concerns, and we have therefore continued with this assessment methodology.

1.40 We have run our regression analysis based on an average of workload and expenditure over four years from 2008-09 to 2010-11, reducing the impact of misaligned costs and workload during reporting periods.

1.41 We confirm that we have used net costs as the basis of our regression analysis when assessing reinforcement costs for both IP and FP.

1.42 London provided further clarification of forecast capitalised replacement activity. Based on resubmitted information we transferred workload and costs from mains reinforcement to large diameter repex rather than tier 1 repex which is how we normalised this activity in IP. We deal with this in Chapter 8, replacement expenditure

1.43 We accept WWU's clarification in respect of our reinforcement workload disallowance in IP and have consequently reinstated WWU's proposed 25 km reinforcement workload in 2014 and 2015.

1.44 Mains reinforcement allowances are based on regression analysis plus our views on RPEs and ongoing efficiencies. Our proposed historical and forecast baseline allowances are shown in Table A2.4.

Table A2.4: GDN submitted costs versus Ofgem baseline costs for mains (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc[1]	So[2]	WWU	Total
GDN submitted cost	37.3	41.1	23.9	14.0	40.2	72.5	140.3	74.9	444.4
Ofgem adjusted cost	37.3	41.1	23.9	14.0	40.2	72.5	139.0	74.9	442.9
Ofgem cost baseline (4 year historical prior to averaging or IQI)	30.1	20.3	21.0	14.7	29.6	36.2	57.9	57.6	267.4
Gap to Ofgem adjusted cost	-19%	-51%	-12%	5%	-26%	-50%	-58%	-23%	-40%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	31.0	19.6	20.8	14.1	30.6	38.1	61.4	63.1	278.7
Gap to Ofgem adjusted cost	-17%	-52%	-13%	1%	-24%	-47%	-56%	-16%	-37%

[1] £32.9m capitalised replacement mains transferred from capex to repex
2 £83.5m capitalised replacement mains transferred from capex to repex

Connections

1.45 In IP we explained our methodology for determining an efficient level of expenditure for connections using regression analysis for gross expenditure. We applied individual GDNs figures for net capex as a percentage of gross capex to convert the result to net allowances. We excluded streetworks costs and fuel poor connections from the regression analysis and an efficient level of this expenditure was added back post-regression.

Respondents' views

1.46 WWU GDN raised a query on the validity of the gross connections model which they believed failed a statistical specification test, and queried the use of regression analysis on a gross as opposed to a net basis.

Our decision

1.47 Our position on connections remains unchanged from that set out IP. We accept there are some benefits from using net as opposed to gross costs in benchmarking GDNs connections expenditure, which would take into account the efficiency in recovering customer contributions. However, assessing gross costs provides a measure of the efficient delivery of all workload and not solely the rechargeable element. We believe use of this method is in the best interest of the customer. We have checked the gross connections regression model and can confirm that we have no concerns with the statistical diagnostics.

1.48 We base connections' allowances on our benchmark (regression) analysis plus our view of RPEs and ongoing efficiencies. Our proposed annual baseline historical and forecast allowance for the connections activity are shown in Table A2.5.

Table A2.5: GDN submitted costs versus Ofgem baseline costs for Connections (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	63.5	33.5	32.8	36.0	50.2	57.9	62.6	72.0	408.6
Ofgem adjusted cost	60.4	31.0	29.5	35.8	47.7	57.3	60.4	68.7	390.9
Ofgem cost baseline (4 year historical prior to averaging or IQI)	56.3	31.3	41.8	37.8	42.4	55.2	45.7	55.4	365.9
Gap to Ofgem adjusted cost	-7%	1%	41%	6%	-11%	-4%	-24%	-19%	-6%
Ofgem cost baseline (2 year forecast prior to averaging or IQI)	54.2	24.2	34.9	30.2	45.5	56.1	50.7	64.7	360.5
Gap to Ofgem adjusted cost	-10%	-22%	18%	-16%	-5%	-2%	-16%	-6%	-0.1

Governor replacement

Initial proposals

1.49 In IP we set out workload and cost adjustments to those forecast by the GDNs as a result of benchmarking a range of sub-activities.

1.50 In IP NGGD were allowed the full cost of replacing their governors, this is because we considered that they had submitted an efficient strategy for governor replacement. We explained that we adjusted WWU's workload because their submitted number of above ground governors that needed replacement as a proportion of their total stock of governors was significantly higher than that of the other GDNs.

1.51 We also explained that we had made adjustments to exploit opportunities used in another GDN for governor refurbishment as opposed to wholesale replacement. We made further workload disallowances where we believed the need for intervention for certain governors was not needed or could be abandoned rather than replaced where technically feasible.

1.52 We assessed and compared the unit costs for ERS module replacement and made appropriate allowance adjustments for the less efficient GDNs.

1.53 We explained that we disallowed the construction of 30 new governors for WWU which were proposed for the purposes of supply security, but were not justified.

Respondents' views

1.54 SGN commented that they were unable to reconcile figures in supporting tables because the values were insufficiently transparent to enable an understanding of how the adjustments were calculated.

1.55 SGN also queried the unit costs we applied for the refurbishment of governors and expressed concern surrounding the benchmarking of costs against a lower cost refurbishment strategy proposed by another company. They proposed a mechanism for funding governor replacement based on a fault trigger mechanism.

1.56 SGN explained that the replacement of 30 holder governors was unconnected with the holder demolition programme and should therefore not be disallowed as a result of any perceived link between these two activities.

1.57 WWU agreed with the logic in deriving their governor allowance but expressed concern over the phasing of allowed costs following cost disallowances, resulting in a distorted investment profile.

Our decision

1.58 The methodology applied in IP remains unchanged. We have used benchmarking of networks both in terms of workload and unit costs in our assessment to drive the efficient network integrity investment.

1.59 We have enhanced our supporting table to improve transparency of the methods used in deriving efficient allowances. We continue to apply the same overall approach as in IP, but with minor adjustments that take into account GDNs' responses. The changes are:

- In IP we calculated the replacement costs of governors by summing the cost of medium pressure and commercial governor modules and then dividing by two to calculate the cost of replacing 50 per cent of these governors. We recognise that this approach weighted the costs of different governor modules equally. For FP we have calculated the replacement costs for different governor modules separately;

- In response to SGN's comments, we have removed the 30 holder governor costs and workload prior to deriving the replacement unit costs for medium pressure governor modules;

- We have allowed Scotland and Southern the cost of replacing 30 holder governors using an efficient unit cost allowance of £0.2m per governor (as opposed to SGN's requested unit cost of £0.3m);

- For WWU we have adjusted the MEAV to reflect the 30 disallowed governors. This adjustment would affect work management, maintenance and totex allowance, since they use MEAV as a cost driver;

- For Southern we have set the unit cost of refurbishment from £8k to £10k to reflect the higher costs in the South East.

1.60 Table A2.6 below shows the changes to governor disallowance in light of the changes stated above.

Table A2.6: GDN submitted costs for intermediate, medium pressure and commercial governors (total for RIIO-GD1, £m, 2009-10 prices, excludes RPEs) and Ofgem disallowance

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
Submitted costs[1]	14.0	13.6	10.5	4.1	11.8	19.8	52.6	51.5
IP disallowance	-	-	-	-	-3.2	-10.5	-27.1	-37.8
FP disallowance	-	-	-	-	-2.9	-6.6	-19.3	-38.6

1 We have not made any adjustment to NGGD submitted costs. We have also excluded the cost of domestic service governors from the submitted costs.

1.61 We expect GDNs to consider both the health of an asset and any consequence of failure on the network in deciding their asset management intervention. Hence some core elements of their proposal are covered by the asset health and criticality work which we will review again at the mid-period based on the additional data captured by the GDNs. Further details are in Chapter 8 of the Finance and Uncertainty Supporting Document.

1.62 We accept SGN's clarification with regards to the replacement of holder governors and have now allowed £6.0m (£2.0m and £4.0m for Scotland and Southern respectively) for the replacement of 30 holder governors, using an efficient unit cost allowance of £0.2m per governor (as opposed to SGN's requested unit cost of £0.3m). Information contained in the business plan indicates that governor units with a unit cost of £0.2m are capable of fulfilling the duty required of a holder governor.

1.63 With regards to the profile of WWU's allowed cost, we recognise that the profile was distorted because we had profiled the disallowance incorrectly. We have now corrected for this.

1.64 Allowances for governors are based on bottom-up qualitative assessment. Our proposed annual baseline allowance for governor activity is shown in Table A2.7 below.

Table A2.7: GDN submitted costs versus Ofgem baseline costs for Governors (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost[1]	16.5	15.7	11.5	4.6	14.1	21.0	58.8	61.2	203.5
Ofgem adjusted cost	16.5	15.7	11.5	4.6	11.2	14.4	39.5	22.6	136.1
Ofgem baseline	15.6	14.8	10.8	4.4	10.8	14.1	37.5	20.6	128.7
Gap to Ofgem adjusted cost	-6%	-6%	-6%	-6%	-4%	-2%	-5%	-9%	-5%

1 Note for NGGD we have not made any adjustment to submitted costs

Other Capex

IT systems and Infrastructure

Initial proposals

1.65 In IP we explained how we compared GDNs' IT capex expenditure based on assumptions for fixed development costs and variable implementation costs. We noted high comparative costs for NGGD as a result of that assessment, and we disallowed £3m per year per NGGD network, a total NGGD disallowance of £96m, from their proposed IT expenditure.

Respondents' views

1.66 NGGD challenged this disallowance in their response to IP , for the following reasons:

- the disallowance is not well justified;
- there are arithmetical/formulae errors in Ofgem's model;
- the underlying methodology is contrary to network sale policy when Ofgem has stated that diseconomies of scale will not be funded by customers;
- NGGD's consultants suggest that on an eight network GDN model the ratio between fixed development costs and variable implementation costs are 21 per cent and 79 per respectively, as opposed to the 30 percent and 70 percent used in Ofgem's analysis;
- it is unfair that a two network GDN should receive a greater allowance than NGGD; and
- A proposed alternative MEAV based approach is more appropriate

Our decision

1.67 Our attention was drawn to NGGD's IT costs when comparing the raw submitted costs between NGGD and the other GDNs. The table A2.8 highlights the magnitude of the difference in forecast expenditure.

1.68 In response to NGGD's comment on diseconomies of scale, the approach we have taken is consistent with our approach in deriving the efficient business support costs and our position remains unchanged.

Table A2.8: Forecast GDN IT total capital expenditure RIIO-GD1 (£m, 2009-10 prices, excludes RPEs)

	NGGD	NGN	SGN	WWU
RIIO-GD1 GDN IT submitted expenditure £m	156.7	36.0	66.9	44.5

1.69 We recognise that the evidence presented in IP to fully support our conclusions and the associated cost adjustment for NGGD's IT allowance may have benefited from further detail. As a result of this and other responses, we have reviewed our methodology to derive efficient costs.

1.70 We recognise that emphasis was placed on planned expenditure for the remaining years of GDPCR1 (2012-2013) and in our revised analysis we have removed this emphasis by assessing only the planned expenditure over RIIO-GD1.

1.71 The 30 per cent and 70 per cent ratio for fixed development and variable implementation costs was recommended and applied by PB Rune, Ofgem's consultants in 2010, when reviewing NGGD's IT capex costs associated with their Gas Distribution Front Office system. We note that in response to a supplementary question NGGD proposed a ratio of 72 per cent 28 per cent respectively (for an eight network company). This put more weight of IT expenditure on IT development than implementation. Their views on the ratio of IT fixed development and variable implementation costs are significantly inconsistent.

1.72 We do not have definitive information available which suggests the actual percentage split between development costs and implementation costs for benchmarking between owners with different numbers of networks. However, we believe the appropriate split lies between 30-70 and 60-40. We have analysed the results for both extremes and as in IP continue to believe that a reasonable approach is to use the 30-70 split which places NGGD in the most favourable position.

1.73 We have validated our FP methodology by testing our use of the number of networks as an implementation cost driver against a range of alternatives, such as the number of local distribution zones (LDZ) within each GDN (12 LDZ and 13 LDZ model), MEAV, customer numbers and GDN throughput. Our model demonstrates a consistent picture of disproportionately high forecast expenditure for NGGD irrespective of which of these drivers is used. The selected driver (number of networks) provides NGGD with a comparatively high allowed cost.

1.74 In our modelling, we have normalised GDNs' expenditure by adjusting the variable element making them all equivalent to a four network company. This enables non-NGGD companies' costs to be directly compared with NGGD's costs. The results are shown below, demonstrating the submitted costs from NGGD are disproportionately higher than the remaining companies.

1.75 We do not consider that NGGD's alternative methodology based on MEAV provides a more robust assessment and their analysis fails to take into account the economies of scale NGGD are able to achieve.

1.76 Table A2.9 below shows that we have allowed NGGD the equivalent cost of the average comparative cost of the remaining companies, which is £75.6m, and therefore disallow £81.2m from NGGD's submitted costs.

Table A2.9: Modelled cost for IT based on 4 network ownership companies[1] (RIIO-GD1, £m, 2009-10 prices, excludes RPEs)

	IT normalised costs based on 4 network ownership (RIIO- GD1 total, 2009-10 prices, £m)				Average non NGGD GDN costs
	NGGD	NGN	SGN	WWU	
Normalised IT costs	156.7	60.4	91.6	74.7	75.6

1 These costs normalise GDNs expenditure using a calculation to adjust their network expenditure for a scenario where they had to implement IT projects in four networks, thereby making their submitted forecast expenditure comparable. Assumes costs for an eight network company are 30% development and 70% implementation.

Vehicle expenditure

Initial proposals

1.77 In IP we allowed vehicle costs for all GDNs based on the three years of average historical spend and two years of forecast spend (2009-2013).

Respondents' views

1.78 NGGD explained that their vehicle replacement cycle period was longer than the five years (2009-2013) that we had used to set allowances in IP. WWU explained that the five year period did not take into account historical years of relatively high levels of expenditure.

1.79 NGGD expressed concern over the benchmarking of capital costs independently of vehicle opex. NGGD explained that their lower capital expenditure over GDPCR1 period was coupled with a corresponding increase in opex to maintain these assets.

1.80 SGN commented that there was inconsistency in our methodology between a bottom up analysis and the totex analysis. In setting allowances for vehicles only 3 years historical data had been used as average spend. This is not in line with the use of average capex of a 7 year historical period used in totex.

Our decision

1.81 We have considered GDN's responses to the vehicle replacement cycle period and have adjusted the cycle from five to seven years. The seven year cycle covers four years of actual expenditure (2009-2012) and three years of forecast expenditure (2013 to 2015). The change to the assessment of the replacement cycle period has resulted in higher allowances for all GDNs.

1.82 We are unable to verify NGGD's statement that their low capex expenditure was associated with an increase in opex. We have previously requested opex data from NGGD for vehicles, however they were unable to provide this informaiton.

1.83 Lumpy capex can skew the regression results and impact on all the GDNs. We use the seven-year moving average in the totex approach to smooth out the lumpy capex for regression analysis purposes. We are assessing vehicle spend in the bottom up approach using qualitative assessment on a GDN specific basis. We do not need to smooth the expenditure in the bottom-up qualitative assessment order to come to what we consider to be an efficient cost.

1.84 The change to the length of the replacement cycle has increased allowances for all GDNs from that set out in the IP. The table A2.10 below shows the increased allowance.

Table A2.10 GDN Submitted costs for vehicles and Ofgem adjustment in IP and FP (RIIO GD1, £m, 2009- 10 prices, excludes RPEs)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU[1]
GND forecast costs RIIO- GD1 (£m)	32.1	14.0	21.7	14.5	18.7	19.7	36.6	29.0
IP cost adjustment over RIIO GD1 (£m)	- 11.4	- 2.1	- 6.4	- 3.5	- 2.5	- 7.6	- 1.9	- 15.4
FP cost adjustment over RIIO GD1 (£m)	- 5.0	- 1.8	- 3.0	- 0.0	- 0.6	-	-	- 2.2
Allowance over RIIO GD1 (£m)	27.1	12.2	18.6	14.5	18.1	19.7	36.6	26.8

1 WWU included £4.8m cost of smart metering into their vehicle submitted costs. We have excluded this cost before making the cost adjustment. Note in IP an adjustment for WWU's vehicle costs relating to smart metering has been incorrectly added to the allowed cost (which had already been subject to a correct downward adjustment), resulting in a higher vehicle cost adjustment.

Security

Initial proposals

1.85 In IP we explained our intention to fund physical security expenditure costs through the uncertainty mechanism. We confirm this is also our position in FP. In order to provide ex-ante funding for the activity, we will need to be in receipt of a Value for Money (VFM1) audit report from GDNs.

1.86 In IP we benchmarked GDNs' forecasts costs and applied a subsequent adjustment to NGGD's cost for discretionary security.

Respondent's views

1.87 NGGD expressed concern that the disallowance was unreasonable. They believe discretionary security is a network specific issue and it was inappropriate to benchmark their forecast expenditure against other GDNs.

Our decision

1.88 We are not in receipt of any evidence that security issues are a network specific issue and it is therefore appropriate to directly compare GDNs forecast costs. We have reviewed the costs for sub level activities that were assigned to discretionary security and identified that NGGD had included the cost of flood protection, which we had allowed other GDNs separately in FP. We have allowed NGGD's flood protection costs in full and benchmarked their remaining discretionary security costs as previously done in IP. The allowed funding for flood protection has resulted in reduced disallowance for NGGD from £17.8m in IP to £12.5m.

1.89 The allowed funding for flood protection has increased NGGDs discretionary security spend from that set out in IP. Table A2.11 summarises the new allowances.

Table A2.11: NGGD Submitted costs for discretionary security spend and Ofgem adjustment (RIIO GD1, £m, 2009-10 prices, excludes RPEs)

	EoE	Lon	NW	WM
GND forecast costs RIIO- GD1 (£m)	10.9	10.5	7.9	7.7
FP cost adjustment over RIIO GD1 (£m)	-3.1	-3.1	-3.1	-3.1
FP allowance over RIIO GD1 (£m)	7.8	7.4	4.7	4.5

Land and buildings

Initial proposals

1.90 In IP, we disallowed NGGD's submitted expenditure of £2.9m for the construction of a new training centre to accommodate the training of apprentices. We explained that this was part of the overall disallowance of costs associated with their requested opex for training and apprentices.

1.91 SGN's submitted expenditure for land and buildings was high in comparison to other GDNs. In IP we disallowed £15.6m from SGN's costs; £8.6m for Scotland and £6.9m for Southern.

Respondents' views

1.92 NGGD stated that whilst they understand the rationale for disallowing costs for the training centre, they believe the case they made in their business plan submission justifies this expenditure.

Our decision

1.93 Our position with regards submitted costs for the training centre remains unchanged from IP.

1.94 Our decision with regards to SGNS expenditure for land and building remains unchanged since IP. However, we have changed the profiling of their allowance to accurately reflect the profile of their submitted expenditure for each of the RIIO-GD1 year.

Other Capex

Initial proposals

1.95 In IP SGN's submitted forecasts for tools and equipment were high in comparison to other GDNs and SGN's own historical figures. We made an adjustment to SGN's costs to bring it in line with other GDNs. We used MEAV to make the adjustment to submitted expenditure. There has been a slight change to the MEAV since IP and consequently this has resulted in a lower allowance for SGN by £0.4m; £0.2m for Scotland and £0.2m for Southern.

1.96 Allowances for 'other capex' are based on bottom-up qualitative assessment plus our view of RPEs and ongoing efficiencies. Our proposed annual baseline allowance for the 'other capex' activity is shown Table A2.12.

Table A2.12: GDN submitted costs versus Ofgem baseline costs for Other Capex (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN[1]	Sc	So	WWU[2]	Total
GDN submitted cost	197.3	98.6	128.9	101.3	164.6	101.8	163.1	122.1	1,077.8
Ofgem adjusted cost	182.1	98.1	126.9	96.3	146.1	101.9	163.2	133.9	1,048.6
Ofgem baseline	135.3	71.0	94.4	73.8	145.7	77.7	134.0	128.1	860.0
Gap to Ofgem adjusted cost	-26%	-28%	-26%	-23%	-0%	-24%	-18%	-4%	-18%

[1]£12m land remediation costs reallocated to Work Management
[2]£9.1m pressure management costs and £7.2m cathodic protection costs for distribution mains transferred from LTS and Storage to Other Capex

Appendix 3 - Further detail of our repex analysis

Initial proposals

1.1 This appendix expands on the information in Chapter 8, providing further detail on GDN responses to IP and sets out in detail our repex assessment methodology.

1.2 Activities included under replacement expenditure are:

- Non discretionary repex
  - Tier 1[22]
  - Tier 2A (above risk threshold)
  - Other non-standard mains
  - Services
    - Renewal after escape
    - Non-mains and emergency related services
- Discretionary repex
  - Mains and associated services (tier 2B below risk threshold, tier 3, iron mains >30 metres from a property, other mains), multi occupancy buildings (MOBs)

1.3 In IP two assessment methods were used to set bottom-up repex allowances. We assessed the efficiency of tier 1 repex costs using regression modelling. A technical review which included cost benefit analysis (CBA) was carried out to assess discretionary repex.

1.4 We set relatively consistent annual tier 1 workloads between April 2012 and March 2032. We did not include an uplift in early years to allow a declining workload towards the end of the mandated period, which NGGD and NGN had included in their forecast business plans. All other non-discretionary mains workloads were allowed without adjustment.

1.5 An assessment of non-mains or emergency related service volumes was made using comparative analysis based on figures provided by SGN and scaled proportionally for other GDNs based on customer numbers. We scaled volumes of services after escape based on our determination of the number of service reports.

1.6 A revenue driver was proposed for work in tier 2 that was above the risk threshold due to the uncertainty of T2A workloads that would be generated during

[22] The HSE iron mains replacement programme has introduced 3 tiers based on pipe diameter sizes. Further details of the specific tier definitions are given in the Technical issues and normalisations section of this appendix.

RIIO-GD1. We proposed a unit rate driver for the length of mains abandoned and a separate unit cost for the number of services replaced.

1.7 We did not accept many of the business justifications for discretionary repex at IP. We imposed an interim assessment based on the submitted information from NGGD, SGN WWU with the expectation that these companies would provide improved information in response to IP. The primary reasons for us not accepting these justifications were; insufficient disaggregation of information and inconsistency with our CBA guidance.

1.8 Discretionary repex workload was allowed in full for NGN as we considered the proposed volumes were justified by CBA.

Detailed Respondents' views

Changes to our cost drivers and regression approach

1.9 WWU raised concerns over our approach to assessing bottom-up repex. Specifically tier 1 activity was assessed using regression modelling and remaining repex allowances were established based on a technical assessment rather than modelling techniques.

1.10 They suggested that GDNs report indirect overheads differently depending on the precision of their cost allocation/reporting methods. WWU point out they report a higher proportion of costs in tier 1 as they have more granular reporting systems and can accurately report indirect costs associated specifically with tier 1 projects, whereas other networks are likely to split indirect costs between tier 1 and tiers 2/3 using less precise estimation techniques.

1.11 They claim that the bottom-up assessment methodology used in IP penalises WWU as they look to have higher costs in tier 1 regressed repex - where costs are assessed for efficiency - compared to other GDNs who will have reported the equivalent indirect costs in tiers 2/3 repex.

1.12 Concerns were raised regarding benchmarking historical tier 1 repex costs. NGN pointed out that arrangements and therefore drivers for the repex programme during GDPCR1 are significantly different from those presented during RIIO-GD1. They suggest that any attempt to artificially separate individual elements of the GDPCR1 programme ignores the differences in drivers and state that the repex programme during GDPCR1 cannot be retrospectively split into different elements based on a split by diameter band.

1.13 NGGD highlighted an inconsistency in our approach to assessing repex multi-occupancy buildings (MOBs). MOBs expenditure was included in the totex regression analysis without an appropriate cost driver and as such networks with high MOBs expenditure would be assessed as inefficient as part of totex modelling. In contrast MOBs expenditure was passed through the non-regressed bottom-up assessment.

1.14 NGGD highlighted that a number of other services not related to mains replacement, including Permali boxes for West Midlands, were included in the totex repex regression but did not have a corresponding cost driver.

1.15 NGN highlighted that as part of our loss of meter work normalisation we excluded additional/stranded costs associated with emergency activity but no exclusion was made for repex. They suggest for consistency an equivalent adjustment needs to be made for repex benchmarking analysis.

Business Case Justification

1.16 NGN and SGN fully support our cost benefit approach based on a 24 year payback. NGN's proposal used a payback period of 16 years. They strongly believe a period of between 16 and 24 years is an appropriate timescale to consider discretionary investment decisions.

1.17 NGGD claim that use of a 24 year payback threshold is too simplistic and results in the disallowance of workload through deferral of cost beneficial investments beyond the established payback period.

1.18 WWU could see no credible scenario where 24 year payback should be used in CBA assessment. They suggest a 45 year payback period is more appropriate.

1.19 WWU welcomed the calculation of deterioration rates but were concerned that applying a further efficiency challenge was not mathematically robust and not supported by engineering knowledge.

1.20 NGGD highlighted that we did not give separate consideration to asset integrity condition workloads which included steel, asbestos, other non-standard materials and non-policy work. They argued that the CBA approach we applied to these workloads does not effectively assess these categories, resulting in underfunding of essential work under Pipeline Safety (Amendment) Regulations (PSR) 2003 obligations.

1.21 NGGD claim that our assessment of the London medium pressure (MP) scheme was not robust and led to a piecemeal approach in setting allowances for this particular investment project.

Workload and costs adjustments

1.22 Overall, NGN supports our approach to bottom-up workload and cost assessment of repex. The remaining GDNs highlighted issues with our approach.

1.23 All GDNs made reference to how we calculated tier 1 workloads which resulted in a disallowance of all tier 1 condition mains including small diameter steel. We recognised this issue at the time of IP publication and communicated with GDNs that this would be corrected as part of FP.

1.24 SGN highlighted an inconsistency in our approach to setting allowed workload for tier 1 mains where it combined decommission lengths and installation lay lengths to set tier 1 workload.

1.25 NGGD did not agree with our proposals to disallow the taper of tier 1 workload at the end of their mains replacement programme. They suggested that by not allowing the tapered workload it will result in a higher cost to the consumer over the course of the HSE replacement programme and a reduction in outputs over the RIIO-GD1 period.

1.26 All GDNs except NGN raised concerns with our approach to assessing discretionary repex workload.

1.27 NGGD questioned the pro rata adjustment methodology applied to discretionary workload adjustments suggesting our methodology leads to a mismatch between costs and workload and suggest that we should consider apportioning allowed workload more accurately in terms of diameter mix.

1.28 SGN and NGGD stated that our proposed unit costs for dynamic growth tier 2 above the threshold were inadequate. SGN suggest this is partly due to the small volumes of work proposed for their networks which do not fully represent the range of pipe diameters for the tier 2 work.

1.29 NGGD highlighted a number of issues relating to our workload assessment of other services not related to mains replacement:

- No recognition was given to statutory obligations to replace services not associated with a mains replacement programme, specifically the need to complete work on targeted services (bulk renewals) during RIIO-GD1.

- Disagree with the benchmarking ratio we applied to customer driven service replacement which was based on data from only one network.

- Disagree with how we set re-laid services after escape volumes by benchmarking deterioration rates. They claim that a comparison based on deterioration rates has limitations as companies do not report data on a consistent basis.

1.30 SGN claim that proposed workloads for service relays (following alteration and escape) are insufficient to meet this reactive workload.

1.31 WWU claim that the allowed workload for replacement of poor condition services was not sufficient to meet compliance with HSE enforcement policy for steel services.

1.32 NGN queried our disallowance of bulk services on the basis that no CBA had been provided to justify bulk replacement. They argue that as their forecast volumes for other services reflect the volume of work they have done historically, they should be allowed in full.

Ofgem decision

1.33 We have included both mains and service costs associated with mains replacement activities within reported total expenditure.

1.34 As in IP a proportional adjustment has been made to services associated with mains replacement activity, based on adjustments made to mains workload.

Revision of Repex cost and workload information

1.35 Following IP we recognised that repex workload was not fully understood at a disaggregated level. This was largely due to inconsistency in reporting from companies. This was a particular issue for non-standard, non-discretionary workload (eg steel below 2 inch, non-rechargeable diversions and asbestos) and all discretionary workload (eg steel greater than 2 inch, tier 2B iron mains, tier 3 iron mains, and mains greater than 30 metres from a property).

1.36 Since the publication of IP we have worked closely with all companies to ensure we present an allowed repex expenditure and workload that is consistent across all GDNs.

Restatement of repex data

1.37 We asked GDNs to confirm populations of mains and forecast repex workloads/costs using a new repex data template. The objective was not to invite the networks to change their submitted numbers at this stage, but to provide a consistent breakdown of the repex data already submitted as part of their April 2012 Business Plan.

Revision of repex data

1.38 Following IP we issued further clarification of the CBA principles to support the guidance we had previously issued to assess discretionary repex workloads. All networks with the exception of NGN resubmitted their CBA models. These networks also resubmitted repex workload and expenditure data (during October 2012) to ensure repex information was consistent with resubmitted CBA models. Data was submitted via the new repex data template as discussed previsouly to obtain a consistent breakdown across all companies.

Changes to our cost drivers and regression approach

1.39 There was concern that reporting of indirect costs between tier 1 and other repex was not consistent between GDNs and therefore benchmarking tier 1 costs alone was not an accurate comparison of efficiency.

1.40 Now the unit cost efficiency of all mains and services repex has been assessed using regression modelling techniques. This approach eliminates a number of the concerns raised in response to our initial proposals and makes our analysis more consistent with that used in GDPCR1.

1.41 We have excluded repex items from regression modelling where no reliable costs driver exists. These items include rechargeable diversions and MOB risers both of which have been excluded from benchmarking assessment and added back to baseline costs as a post regression adjustment.

1.42 We have included appropriate cost drivers for all types of services included in the repex regression models.

1.43 Further detail of the changes we have made to bottom-up repex benchmarking analysis can be found in the technical issues and normalisation section of this appendix.

1.44 Table A3.1 sets out our assessment of baseline repex costs relative to the GDNs submitted costs. Overall our efficiency assessment has reduced repex costs by approximately 10 per cent. This ranges from an approximate reduction in baseline costs of 18 per cent for London to an increase of approximately 1 per cent for NGN.

1.45 Tables A3.2 and A3.3 set out our assessment of repex workload. We have disallowed 3 per cent of repex mains workload for all companies over RIIO-GD1. This ranges from a 9 per cent disallowance for NGN to allowing all mains workload for WWU. Overall we have disallowed 37 per cent of repex service volumes ranging from a 16 per cent reduction for Southern to 59 per cent reduction in services for WWU.

Table A3.1: Total repex expenditure over RIIO-GD1 period (£m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN submitted cost	995.5	1,340.3	840.9	640.6	776.6	461.0	1,369.6	733.4	7,157.8
Ofgem adjusted cost[1]	910.8	1,274.0	736.0	599.7	669.0	455.2	1,401.7	664.5	6,710.9
Ofgem cost baseline (4 year historical)[2]	827.7	1,051.6	670.6	541.3	686.6	470.8	1,276.4	603.0	6,128.0
Gap to Ofgem adjusted cost	-9%	-17%	-9%	-10%	3%	3%	-9%	-9%	-9%
Ofgem cost baseline (2 year forecast)[2]	831.9	1,036.1	663.5	523.7	678.8	448.4	1,301.4	589.6	6,073.5
Gap to Ofgem adjusted cost	-9%	-19%	-10%	-13%	1%	-1%	-7%	-11%	-9%

[1]Includes adjustments for re-classified costs, costs deferred to an uncertainty mechanism and outputs disallowances.

[2]Baseline Prior to averaging our four approaches and the application of the IQI.

Table A3.2: Total mains abandoned workloads over RIIO-GD1 period

Total repex abandon lengths (km)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted (April 2012)[1]	5,171.8	3,350.2	4,313.4	3,080.2	4,816.2	2,260.4	5,436.4	3,757.8	32,186.5
Submitted (October 2012)	5,180.0	3,218.8	4,065.0	2,882.8	4,816.2	2,323.0	5,610.1	3,493.8	31,589.7
Submitted adjusted[2]	5,180.0	3,225.8	4,065.0	2,882.8	4,816.2	2,498.4	5,988.3	3,493.8	32,150.2
Allowed workload	5,043.6	3,039.7	3,913.3	2,852.2	4,381.7	2,448.5	5,935.5	3,502.5	31,117.1
Disallowed workload[3]	-136.4	-186.1	-151.6	-30.5	-434.4	-49.9	-52.7	8.7	-1,033.2
% Disallowed	-3%	-6%	-4%	-1%	-9%	-2%	-1%	0%	-3%

[1]Shown to evidence change in workload since April 2012 submission.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

Table A3.3: Total service workloads over RIIO-GD1 period

Domestic service workload (no. of services)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted	61,947	52,496	71,212	58,258	77,451	27,834	83,547	95,562	528,308
Allowed	39,294	38,927	44,059	31,372	53,896	16,157	70,447	39,050	333,200
Targeted Services	*10,077*	*6,261*	*7,589*	*6,223*	*8,889*	*1,481*	*9,729*	*8,142*	*58,391*
Relaid after Escape	*29,217*	*32,666*	*36,470*	*25,148*	*45,006*	*14,675*	*60,718*	*30,908*	*274,809*
Disallowed workload	-22,654	-13,570	-27,153	-26,886	-23,556	-11,678	-13,100	-56,512	-195,108
% Disallowed	-37%	-26%	-38%	-46%	-30%	-42%	-16%	-59%	-37%

Business case justification

1.46 As part of IP we proposed that low pressure mains should payback within 24 years from the start of RIIO-GD1 (by 2037). We have not changed our views on this and have also used this approach when assessing medium pressure mains.

1.47 At IP we assessed how the companies had approached CBA which included how they had considered benefits. This identified an inconsistency in their approaches and we considered that much or all of the investment by NGGD, SGN and WWU was not justified at that stage.

1.48 We were satisfied with the approach that NGN had taken and subsequently allowed 100 per cent of proposed workload. NGN's approach identified replacement of pipes that could generate the most benefit for the customer, these were pipes that had a history of failure and associated repair costs.

1.49 Since IP we have worked closely with NGGD, SGN and WWU, and they have also consulted with NGN, so that we are able to make a judgement based on better evidence and a more consistent approach.

1.50 Where we disallowed workload, we gave the companies the opportunity to revisit their investment plans and submit revised CBA models which targeted pipes which provided the greatest benefit.

1.51 Since IP all GDNs have taken the opportunity to include the following benefits as part of their submissions where appropriate:

Price controlled benefits	Emergency and repair	• GDNs have used historical information at pipe level to identify the pipes with the highest history of failure where reactive action is required. • If replaced the benefit would be the avoided cost of failure.
	Leakage (shrinkage)	• GDNs have used the information that is derived from the leakage model[23], with the avoided leakage if replaced being the benefit. • For consistency we have used the standard price of gas at 2.1p/Kwh for leakage.

[23] Each GDN is required by licence to maintain a leakage model that enables the accurate calculation and reporting of gas leakage from their system. The model should be consistent with, and where reasonably practicable, identical to leakage models used by other GDN Operators.

Societal benefits	Emissions	• For emissions we have used DECC non-traded carbon values[24] as stated in our CBA guidance.
	Fatalities and injuries	• We have considered benefits from the avoidance of gas incidents which result in fatalities, injuries and property damage. • As for IP we have continued to inflate by a factor of 10 the benefit per life avoided eg benefit applied £16m.
	Property	

Deterioration

1.52 The price controlled and societal benefits are driven by the forecast deterioration rate that the company has applied. For the submitted CBA models we have assessed this ranges between 2.1 per cent and 13.3 per cent. We do not consider there is sufficient evidence to support these submitted deterioration rates. Therefore, as part of our assessment of all companies CBA models we have applied a consistent 2.6 per cent compound deterioration rate.

Treatment of costs and benefits

1.53 To identify the annual cashflow of the investment we have capitalised and depreciated this over 45 years using the sum of digits method. We have then further applied a cost of capital charge to the average annual investment net value, using the rate of 5.42 per cent, as per our CBA guidance. For consistency across all submitted CBA models we have assumed that all investment is delivered evenly across the eight years of the price control.

1.54 We have used the benefits identified by the companies, but adapted for the consistent assumptions we have highlighted, eg deterioration rates, risk, cost of gas. We have only allowed 24 years of benefit, starting from 2013-14 and for the first eight years we have allowed benefits in proportion to the investment, with only 50 per cent of benefits taken in the first year following investment.

1.55 All cost and benefits have been discounted at the social time preference rate of 3.5 per cent[25]

[24] http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/carbon%20valuation/1_20100610131858_e_@@_carbonvalues.pdf

[25] Reduces to 3 per cent from the 31st year (from the base year).

Assessment of the GDNs CBA models

1.56 As part of our assessment of company submitted CBA models we combined all of the projects at a GDN level and where this demonstrated a positive NPV (payback, net present value) over a 24 year period from the start of RIIO-GD1 (by 2037) we allowed the proposed workload. Therefore, some projects with high benefits would offset those with lower benefits.

1.57 Where the overall workload demonstrated a negative NPV we have assessed the proportion of investment which would have been justified and allowed this eg how much investment would not be done to achieve a positive NPV. This methodology ensures that where a network's proposals are considered close to achieving a positive NPV we are allowing part of the investment.

Workload and costs adjustments: non-discretionary repex

1.58 The principle driver of non-discretionary workload is safety with the HSE providing a mandate for certain workloads (mainly iron mains). Other non-discretionary workloads include: diversions where third parties require the networks to undertake the work, the replacement of non-PE services due to escapes, alterations or targeting of services where safety is a concern.

1.59 The following sections set out our assessment and decision for each area of non-discretionary repex.

Tier 1 repex and associated services

1.60 GDNs have proposed a total expenditure of £5.0bn[26] to undertake tier 1 activity over the RIIO-GD1 (table A3.4). Tier 1 is the highest single cost activity area over the review period.

1.61 Our method of assessing appropriate workload for tier 1 remains fundamentally unchanged since our initial proposals. However as part of the revised data collection process carried out in October we have ensured that only iron main populations and forecast workloads are included in the tier 1 assessment. Table A3.5 summarises our assessment of tier 1 workload.

1.62 The length of mains allowed in the tier 1 mains category includes both non-rechargeable diversions (included in the annual workload assessment) and associated small diameter steel mains less than 2 inch (excluded from the annual workload assessment).

[26] Normalised costs, includes RPEs. Includes costs associated with service replacement.

1.63 We have not changed our decision that the annual workload between April 2013 and March 2032 should be relatively constant without uplift in early years to allow a declining workload towards the end of the mandated period.

1.64 For each network, an assessment has been made of the likely change of tier 1 population over the RIIO-GD1 period due to the encroachment of building and discovering unknown mains. This forecast population has been divided by nineteen (the number of years between start of RIIO-GD1 and March 2032 when tier 1 population must be addressed) to give an appropriate annual workload for the RIIO-GD1 period. This workload has then been used to adjust the submitted tier 1 workloads.

Table A3.4: Tier 1 mains expenditure over RIIO-GD1 period (£m, 2009-10 prices)

Tier 1 mains & associated services costs[1] (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost[2]	778.8	739.2	623.6	479.1	588.5	329.5	981.2	504.3	5,024.1
Ofgem adjusted cost[3]	752.5	726.3	591.5	478.7	562.7	357.0	1,038.6	503.0	5,010.4
Output adjusted cost[4]	740.2	716.7	575.1	475.8	514.1	356.5	1,037.9	504.1	4,920.4
Ofgem cost baseline (4 year historical)[5]	689.0	604.2	512.1	423.0	509.3	348.8	917.1	440.7	4,444.2
Gap to output adjusted cost	-7%	-16%	-11%	-11%	-1%	-2%	-12%	-13%	-10%
Ofgem cost baseline (2 year forecast)[5]	692.6	594.7	506.7	409.0	503.5	331.7	937.0	430.9	4,406.0
Gap to output adjusted cost	-6%	-17%	-12%	-14%	-2%	-7%	-10%	-15%	-10%

[1]Costs and allowances include the corresponding costs for replacing/transferring services connected to the mains being replaced.

[2]Costs submitted by companies in October 2012 via repex supplementary question.

[3]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.

[4]Submitted adjusted costs less an adjustment for outputs.

[5]Baseline prior to averaging our four approaches and the application of the IQI.

Table A3.5: Tier 1 mains abandoned workloads over RIIO-GD1 period

Tier 1 abandon lengths (km)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted[1]	4,768.2	2,666.2	3,556.0	2,570.7	4,288.2	2,018.2	5,083.1	3,002.8	27,953.3
Submitted adjusted[2]	4,768.2	2,666.2	3,556.0	2,570.7	4,288.2	2,193.6	5,461.2	3,002.8	28,506.9
Allowed workload	4,668.3	2,595.0	3,426.9	2,550.1	3,853.7	2,190.0	5,455.0	3,011.5	27,750.5
Iron Mains (Tier 1)	*4,557.0*	*2,548.8*	*3,152.8*	*2,484.0*	*3,445.9*	*1,798.3*	*5,131.1*	*2,633.1*	*25,750.9*
Non-Chargeable Diversions	*0.8*	*1.4*	*2.9*	*0.9*	*138.0*	*2.9*	*5.5*	*3.8*	*156.1*
Small Diameter Steel Mains <=2"	*110.5*	*44.9*	*271.3*	*65.2*	*269.8*	*388.9*	*318.5*	*374.6*	*1,843.6*
Disallowed workload[3]	-100	-71	-129	-21	-434	-4	-6	9	-756
% Disallowed	-2%	-3%	-4%	-1%	-10%	-0%	-0%	0%	-3%

[1]Workload submitted by company in October 2012 via repex supplementary question.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

Mains Tier 2 - above the risk threshold (T2A) and associated serivces

1.65 Tier 2 mains falling above an agreed threshold value are mandated for replacement under the HSE's revised iron mains risk management programme.

1.66 Tables A3.6 - A3.7 set out the costs and workload proposed by the GDNs for above tier 2 threshold activity. These costs and workloads have now been included in the full regression of all repex activities.

1.67 WWU has recently provided new information which suggests that risks for larger diameters have been potentially understated in the risk models being used. We have reviewed the information and concluded that much of the additional workload have been allowed in the CBA allowance in our final proposals therefore this information should be considered as part of the wider review of the risk model already planned to be carried prior to the mid-term review.

Table A3.6: Expenditure on tier 2A iron mains over RIIO-GD1 period (£m, 2009-10 prices)

Tier 2 above risk threshold mains & associated services costs[1] (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost[2]	10.6	31.3	32.0	19.0	18.6	1.6	13.5	9.0	135.7
Ofgem adjusted cost[3]	10.3	30.8	30.4	19.0	17.8	1.5	13.2	9.0	132.0
Output adjusted cost[4]	10.3	30.8	30.4	19.0	17.8	1.5	13.2	9.0	132.0
Ofgem cost baseline (4 year historical)[5]	6.4	23.2	21.9	13.1	29.4	2.6	17.4	13.4	127.5
Gap to output adjusted cost	-38%	-25%	-28%	-31%	65%	72%	32%	49%	-3%
Ofgem cost baseline (2 year forecast)[5]	6.4	22.9	21.6	12.7	29.1	2.5	17.8	13.1	126.1
Gap to output adjusted cost	-37%	-26%	-29%	-33%	63%	64%	35%	45%	-4%

[1]Costs and allowances include the corresponding costs for replacing/transferring services connected to the mains being replaced.

[2]Costs submitted by companies in October 2012 via repex supplementary question.

[3]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.

[4]Submitted adjusted costs less an adjustment for outputs.

[5]Baseline prior to averaging our four approaches and the application of the IQI.

Table A3.7: Tier 2A iron mains workload over RIIO-GD1 period

Tier 2 above risk threshold abandon lengths (km)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted[1]	16.6	40.0	51.6	28.9	81.5	5.2	32.3	37.5	293.8
Submitted adjusted[2]	16.6	40.0	51.6	28.9	81.5	5.2	32.3	37.5	293.8
Allowed workload	16.6	40.0	51.6	28.9	81.5	5.2	32.3	37.5	293.8
Disallowed workload[3]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Disallowed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1]Workload submitted by company in October 2012 via repex supplementary question.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

1.68 We recognise there is uncertainty as to the exact workload that may be generated by mains passing beyond the risk action threshold as a result of the dynamic nature of the iron pipe network and risk model enhancements. We have set a revenue driver based on the unit costs in table A3.8.

Table A3.8: Tier 2A allowed unit costs

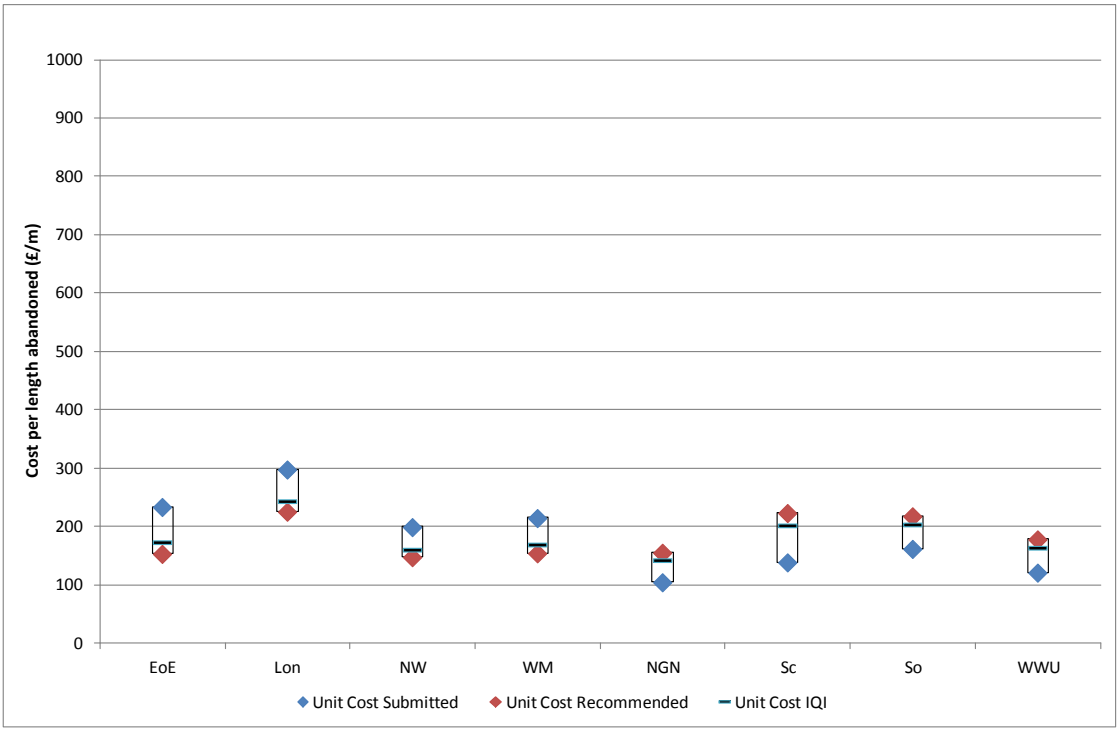
Mains abandonment unit cost (£/m)	EoE	Lon	NW	WM	NGN	Sc	So	WWU
9" or less	174	244	161	170	143	202	204	164
10"-12"	340	473	312	329	259	374	389	306
13"-17"	569	788	520	548	419	608	636	501

1.69 In order to minimise the complexity of cost reporting and application of the revenue driver, the revenue driver is set out as a cost per length of main abandoned which includes costs for associated services. This continues to provide the right incentive to the GDNs to look to abandon the assets in the most efficient way. Figures A3.1a-c display proposed T2A unit costs for each GDN.

1.70 If the GDN abandons more or less main than was proposed in the RIIO-GD1 submissions the allowance set in the price control will be adjusted accordingly[27].

1.71 The allowances set are based on the declared threshold levels and proposed workloads developed by the GDNs using the existing Mains Replacement Prioritisation System (MRPS), which assists the GDNs in selecting the highest risk mains on their networks. The GDNs are shortly to embark on a review of the MPRS. If the review results in adjustments to the threshold levels we will need to consider any impact on these revenue drivers.

Figure A3.1a: Tier 2A unit costs - 9 inches or less



[27] Each GDN is required by licence to maintain a leakage model that enables the accurate calculation and reporting of gas leakage from their system. The model should be consistent with, and where reasonably practicable, identical to leakage models used by other GDN Operators.

Figure A3.1b: Tier 2A unit costs – 10 inches to 12 inches

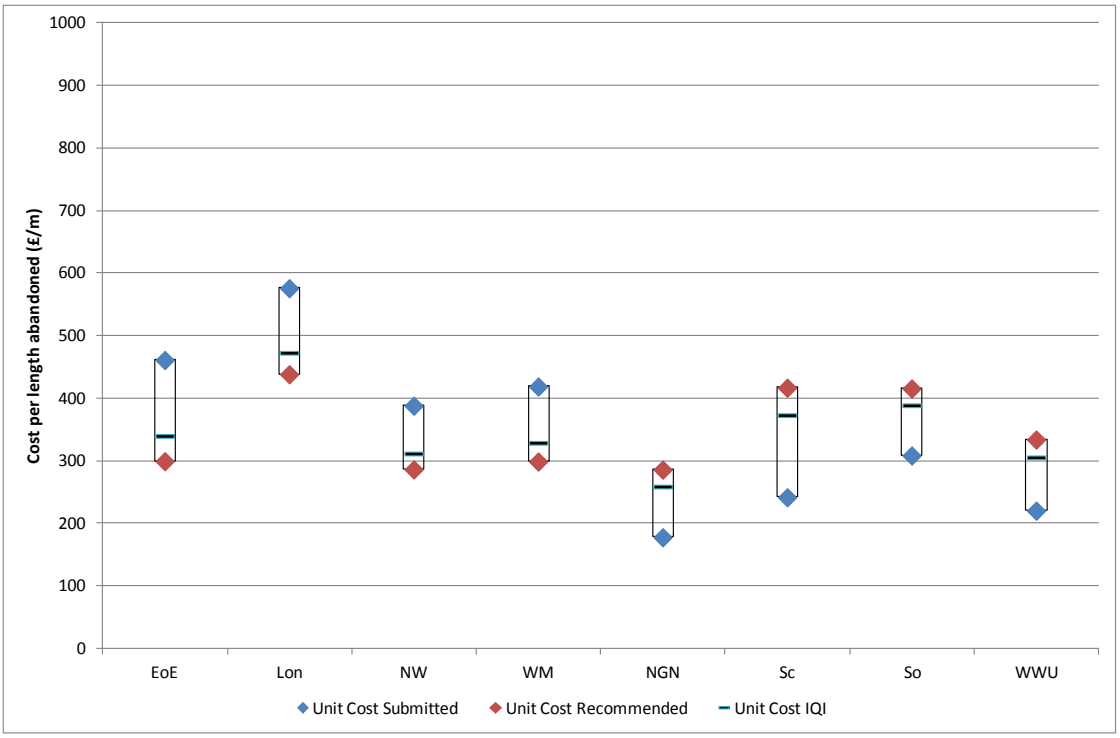
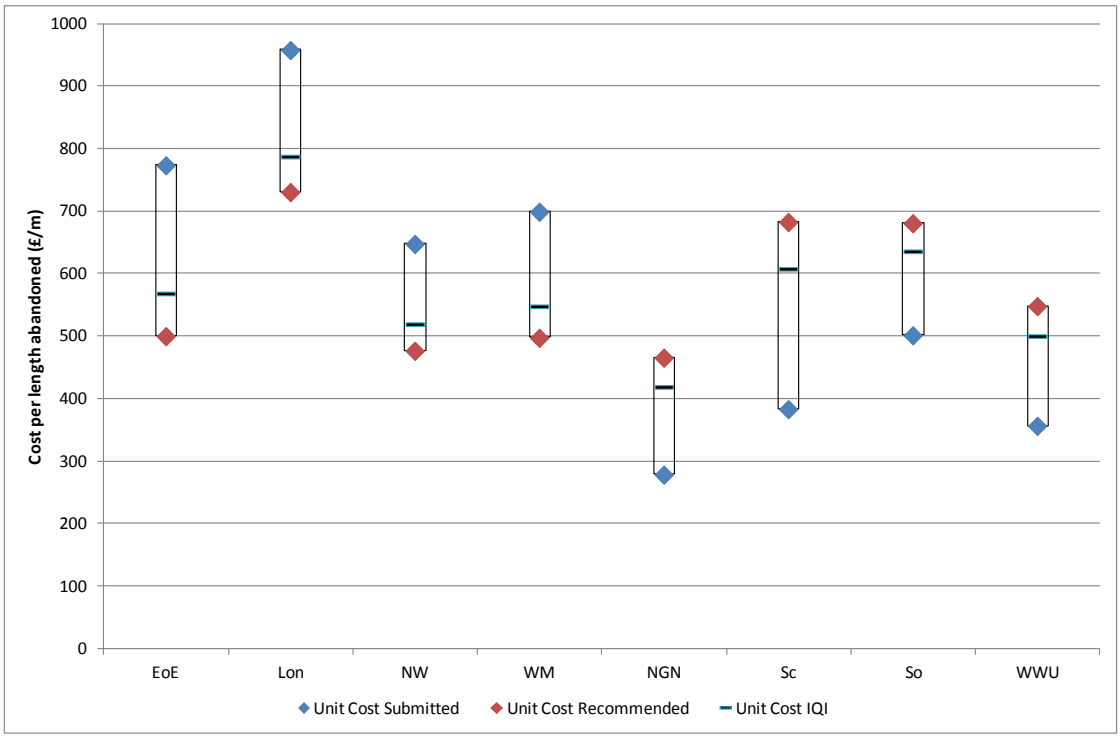


Figure A3.1c: Tier 2A unit costs – 13 inches to 17 inches



Other non-discretionary mains and associated services

1.72 There are certain types of main which the HSE has deemed unsuitable and pose a current safety risk. These mains include materials which are no longer in widespread use such as asbestos pipes. Networks have an obligation to replace these pipes and therefore such proposals have been allowed in full in our assessment. Only two networks have declared pipes in this category for the price control period, North West (62.5km) and WWU (2.4km).

1.73 Non-rechargeable diversions are those which involve the replacement of mains which would ordinarily fall for replacement in the planning horizon and therefore the costs are met by gas consumers.

1.74 For mains within the tier 1 category, the estimates for non-rechargeable diversion workload have been counted towards the annual tier 1 volume which is required to complete the replacement of all tier 1 mains by 2032 as required by the HSE.

1.75 Rechargeable diversions provide the opportunity for the network to recover the majority of the costs for the work from the third party requesting the main to be diverted. The need for this work is not determined by the network. As such the costs for this work are comparatively small and have been allowed.

1.76 The costs and workloads for other non-discretionary mains (excluding rechargeable diversions) have now been included in the full regression of all repex activities[28].

Non-PE Services - connected to replaced mains

1.77 As in IP a corresponding adjustment has been made to the volume of service replacement and service transfer workload associated with each mains replacement activity. This has been applied in the same proportion as the reduction in allowed mains workload.

Small Diameter mains connected to replaced mains

1.78 We accept that it is cost effective to replace small diameter steel mains pipes at the same time as replacing the parent iron mains to which they are connected. This aims to ensure such pipes are replaced at least cost and disruption to the consumer.

1.79 Tables A3.9 and A3.10 set out GDN submitted costs and workload and our baseline costs and workload adjustments for other non-discretionary repex.

[28] See section on technical issues and normalisations for further detail on changes to our repex regression modelling.

Table A3.9: Expenditure on other non-discretionary repex mains (£m, 2009-10 prices)

Other non-discretionary mains & associated services costs[1] (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost[2]	2.1	4.7	7.0	4.1	6.4	2.1	2.4	10.8	39.7
Ofgem adjusted cost[3]	2.1	4.6	6.6	4.1	6.1	2.0	2.4	10.8	38.8
Output adjusted cost[4]	2.1	4.6	6.6	4.1	6.1	2.0	2.4	10.8	38.8
Ofgem cost baseline (4 year historical)[5]	1.2	3.1	7.6	3.3	6.1	5.2	5.6	12.3	44.3
Gap to output adjusted cost	-39%	-33%	14%	-21%	-1%	153%	135%	13%	14%
Ofgem cost baseline (2 year forecast)[5]	1.3	3.0	7.5	3.2	6.0	4.9	5.7	12.0	43.6
Gap to output adjusted cost	-38%	-34%	13%	-23%	-2%	141%	140%	11%	12%

[1]Costs and allowances include the corresponding costs for replacing/transferring services connected to the mains being replaced.

[2]Costs submitted by companies in October 2012 via repex supplementary question.

[3]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.

[4]Submitted adjusted costs less an adjustment for outputs.

[5]Baseline prior to averaging our four approaches and the application of the IQI.

Table A3.10: RIIO-GD1 other non-discretionary mains

Other non-discretionary abandon lengths (km)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted[1]	94.2	78.5	240.3	92.2	128.0	60.3	62.9	3.4	759.9
Submitted adjusted[2]	94.2	78.5	240.3	92.2	128.0	60.3	62.9	3.4	759.9
Allowed workload	94.2	78.5	240.3	92.2	128.0	60.3	62.9	3.4	759.9
Non-standard Materials	*0.0*	*0.0*	*62.5*	*0.0*	*0.0*	*0.0*	*0.0*	*2.4*	*64.9*
Non-chargeable Diversions	*0.5*	*0.5*	*2.0*	*0.4*	*0.0*	*5.1*	*2.5*	*0.9*	*12.0*
Rechargeable Diversions	*93.7*	*78.1*	*175.8*	*91.8*	*128.0*	*55.2*	*60.4*	*0.0*	*682.9*
Disallowed workload[3]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% Disallowed	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

[1]Workload submitted by company in October 2012 via repex supplementary question.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

Non-PE services - not related to replaced mains or emergency

1.80 A number of networks commented on our methodology for assessing volumes of services not related to mains replacement or emergency. NGN provided a further breakdown of work actually carried out in this area. We recognised that there was inconsistent reporting of the services workload and NGN provided an adjustment to resolve this issue.

1.81 The revised NGN figures provided further information to that obtained from SGN. We have therefore used an average of the information from SGN and NGN to inform our revised recommendation.

1.82 At IP our workload adjustments were based on the amount of work being proportional to the number of customers in each network. Since IP we have asked all networks to confirm the number of services and the proportion of these which remain a non-PE material. Using the reconfirmed populations we have adjusted our approach so the workload in this category is now proportional to the number of non-PE services in each network. We believe this more correctly reflects the likely volume of work.

1.83 NGGD have submitted higher workloads on the basis that they wish to ensure that all non-PE services are replaced by 2037 in line with the original HSE iron mains replacement programme. We do not believe that this target is appropriate or required by the HSE. We have not therefore made any allowance for the objective.

8.36. The HSE requires networks to proactively monitor and deal with potential hot spots of services where information on escapes in a locality would suggest services are at higher risk. We would expect that for services connected to tier 1 mains such services are addressed targeting the mains and services for replacement together. This strategy deals with appropriately 80 per cent of services. Where hotspot services are identified which are connected to other mains. We would expect a CBA justification for this work. We expect only a small number of mains would be replaced without the mains and believe that the volume of allowed non mains or emergency related service work will accommodate such services.

Non-PE services – replaced after escape

1.84 Our methodology for determining the volume of services replaced after escape remains the same as our initial proposals. We have continued to adjust the number of renewals after escapes in proportion to the adjustment made to the number of recommended service reports

1.85 Tables A3.11 and 3.12 set out our baseline costs and workload adjustments for non-discretionary services not related to mains replacement.

Table A3.11: Expenditure on non-discretionary services not related to mains replacement (£m, 2009-10 prices)

Non-discretionary service costs (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost	62.1	98.0	65.1	44.3	85.7	39.0	120.9	83.8	598.9
Ofgem adjusted cost[1]	60.0	96.3	61.7	44.3	81.9	38.4	118.0	83.6	584.2
Output adjusted cost[2]	49.5	89.3	46.9	31.0	65.2	30.6	108.4	49.9	470.9
Ofgem cost baseline (4 year historical)[3]	32.9	51.0	38.6	28.4	47.6	15.9	69.2	34.5	318.2
Gap to output adjusted cost	-33%	-43%	-18%	-8%	-27%	-48%	-36%	-31%	-32%
Ofgem cost baseline (2 year forecast)[3]	33.1	50.2	38.2	27.5	47.1	15.1	70.7	33.8	315.6
Gap to output adjusted cost	-33%	-44%	-19%	-11%	-28%	-51%	-35%	-32%	-33%

[1]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.
[2]Submitted adjusted costs less an adjustment for outputs.
[3]Baseline prior to averaging our four approaches and the application of the IQI.

Table A3.12: Service workload not related to mains replacement over RIIO-GD1 period

Domestic service workload (no. of services)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted	61,947	52,496	71,212	58,258	77,451	27,834	83,547	95,562	528,308
Allowed	39,294	38,927	44,059	31,372	53,896	16,157	70,447	39,050	333,200
Targeted Services	*10,077*	*6,261*	*7,589*	*6,223*	*8,889*	*1,481*	*9,729*	*8,142*	*58,391*
Relaid after Escape	*29,217*	*32,666*	*36,470*	*25,148*	*45,006*	*14,675*	*60,718*	*30,908*	*274,809*
Disallowed workload	-22,654	-13,570	-27,153	-26,886	-23,556	-11,678	-13,100	-56,512	-195,108
% Disallowed	-37%	-26%	-38%	-46%	-30%	-42%	-16%	-59%	-37%

Workload and costs adjustments: discretionary repex

1.86 We would expect workload in this category to be supported by a business case justification.

NGGD London medium pressure strategy

1.87 NGGD's proposals for replacement of medium pressure mains in London are derived from a replacement strategy that was originally conceived in response to the 30:30 policy. The NGGD assessment for medium pressure was unique in that the major benefit was derived from their assessment of the risks to lives and property

using a bottom-up approach. We recognise the amount of work put into this bottom-up approach but believe a top down validation of the proposal is required, particularly their assessment of risk to lives (number of lives lost per gas incident) and property.

1.88 Our concerns result from our calculations (derived from the information NGGD submitted rather than an explicit assumption) from the CBA analysis that over the period 2014-2037 that assuming no replacement of the proposed pipes;

- each incident would result in 17.9 fatalities (almost 40 times the national average of 0.45 used by all networks in the tier 2 risk assessment)
- a total of 25 fatalities 2014-2037
- 192 people injured over the same period

1.89 We are not in a position to determine what correct assumptions to use; however, we have carried out a revised CBA assumption on a figure of 4.5 fatalities per incident (ten times the national figure). Even at this level the CBA does not provide a positive net present value (NPV) (payback[29]) over a 24 year period from the start of RIIO-GD1 (by 2037).

1.90 Additionally we are also concerned that NGG have not provided robust evidence that the benefits from the avoidance of property costs are appropriate.

1.91 Using our revised calculations the London projects in total (low and medium pressure) have a total investment cost of £340.9m and a year 2037 NPV of £-69.4m. Our baseline therefore allows £249.5m and a total replacement of 326km out of a requested 441km (includes an allowance of 10.5 km for mains of inadequate integrity).

Other discretionary mains

1.92 Following revised submission of repex data by GDNs, we can clearly identify all categories of discretionary repex work as set out in table A3.13. Proposals for the replacement of these mains types have now been considered as part of our CBA assessment:

[29] For the assessment we have carried out on all CBA model the point at which NPV is neutral is the same as payback, as there in no investment beyond the RIIO-GD1 price control period.

Table A3.13: Description of other mains which are to be subjected to business case justification

Type	Description
Iron Pipes outside 30 metres	Pipes located > 30 metres from a building are considered to have lower risk than pipe within 30 metres and these pipes are not therefore formally allocated a risk value in the risk modelling tool. Outside of the scope of the HSE enforcement policy for iron mains and therefore it is not possible to attribute benefits of safety which would help justify their replacement. Escapes from these pipes do require urgent attention to prevent the escape of gas. The costs for such repairs can be used to justify a benefit in operational expenditure and gas leakage considerations. Justification: subject to CBA assessment process.
Steel mains	Steel mains within 30 metres of a building have a risk of incident and therefore can be proposed for replacement on grounds of both safety and operational savings. Justification: subject to CBA assessment process.
Main with Inadequate Integrity	We have had representations from networks about the replacement of a small population of mains which are found with inadequate integrity. Such mains cannot usually be permanently repaired either because the pipes are badly corroded over much of their length, or have insufficient strength. In the case of back rails, pipes may be vulnerable to damage and difficult to access, due to their location. Justification: see table A3.14.

Table A3.14: Summary of replacement status for each material

Material	Requirements	Basis for allowance
Steel back rails	Replace in association with mandatory iron mains replacement	Allow Workload associated with mandatory iron mains replacement
Tier 1 Iron mains with inadequate integrity	Replace affected length of main	Include workload in as part of total Tier 1 submission
Asbestos mains	Replace when found	Allow justified workload forecast
PVC mains	Replace when found	
Steel mains with inadequate integrity	Replace affected length of main	Consideration of Network Policies for a small allowance outside of CBA allowances
<=8" >30m Iron mains with inadequate integrity	Replace affected length of main	
>8" Iron mains with inadequate integrity	Replace affected length of main	

1.93 Table A3.15 sets out GDN submitted costs and our baseline costs for discretionary repex. Table A3.16 shows the corresponding workload adjustments.

Table A3.15: Expenditure on discretionary mains and services over RIIO-GD1 period (£m, 2009-10 prices)

Discretionary mains & associated services costs[1] (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost[2]	104.4	342.4	81.8	64.9	59.6	63.8	158.9	84.9	960.7
Ofgem adjusted cost[3]	100.8	355.4	77.6	64.9	57.0	62.9	155.0	84.7	958.2
Output adjusted cost[4]	91.1	306.0	70.2	61.6	57.0	46.0	139.9	84.7	856.5
Ofgem cost baseline (4 year historical)[5]	83.1	251.5	85.9	67.9	84.4	81.0	171.4	96.5	921.7
Gap to output adjusted cost	-9%	-18%	22%	10%	48%	76%	23%	14%	8%
Ofgem cost baseline (2 year forecast)[5]	83.6	247.5	85.0	65.6	83.4	77.1	175.1	94.3	911.7
Gap to output adjusted cost	-8%	-19%	21%	7%	46%	67%	25%	11%	6%

[1]Costs and allowances include the corresponding costs for replacing/transferring services connected to the mains being replaced.

[2]Costs submitted by companies in October 2012 via repex supplementary question.

[3]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.

[4]Submitted adjusted costs less an adjustment for outputs.

[5]Baseline prior to averaging our four approaches and the application of the IQI.

Table A3.16: Workload for discretionary mains over RIIO-GD1 period

Discretionary mains abandon lengths (km)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
Submitted[1]	300.9	434.0	217.1	191.0	318.5	239.3	431.8	450.2	2,582.7
Submitted adjusted[2]	300.9	441.0	217.1	191.0	318.5	239.3	431.8	450.2	2,589.7
Allowed workload	264.4	326.0	194.5	181.0	318.5	193.0	385.3	450.2	2,312.9
Iron Mains (Tier 2 below Risk Threshold)	*78.7*	*48.3*	*49.4*	*32.5*	*158.5*	*87.5*	*147.2*	*198.7*	*800.7*
Iron Mains (Tier 3)	*32.8*	*174.2*	*70.7*	*23.4*	*40.0*	*30.0*	*66.8*	*1.0*	*438.8*
Iron Mains >30 m	*65.5*	*46.0*	*32.7*	*48.6*	*0.0*	*24.6*	*7.1*	*53.2*	*277.8*
Steel	*45.4*	*42.0*	*24.6*	*43.7*	*120.0*	*29.0*	*59.5*	*196.1*	*560.3*
Other	*0.0*	*5.0*	*0.0*	*0.0*	*0.0*	*3.0*	*48.5*	*0.0*	*56.4*
Inadequate Integrity	*42.0*	*10.5*	*17.2*	*32.8*	*0.0*	*18.9*	*56.3*	*1.2*	*178.9*
Disallowed workload[3]	-37	-115	-23	-10	0	-46	-47	0	-277
% Disallowed	-12%	-26%	-10%	-5%	0%	-19%	-11%	0%	-11%

[1]Workload submitted by company in October 2012 via repex supplementary question.
[2]Includes workload transfers between activities eg transfer of capitalised replacement from capex to repex.
[3]Difference between submitted adjusted workload and Ofgem allowed workload.

Workload and costs adjustments: Multiple Occupation Buildings (MOBs)

1.94 In Initial Proposals, GDNs forecast workload and costs for multi-occupancy buildings were allowed in full to replace risers and associated laterals and branches.

1.95 NGGD proposed a volume driver in their business plan enabling £161m to be funded through an uncertainty mechanism, enabling replacement work to be carried out as surveys are completed and the scope and scale of necessary workload has become understood. Surveys are funded through an ex-ante opex allowance.

1.96 We have concerns with the difficulty involved in setting an efficient unit cost to apply to the uncertainty mechanism because of the large variance in costs between individual projects.

1.97 Other GDNs are funding this activity through their baseline allowance, and we have decided to provide NGGD with an ex-ante allowance, removing the need for an uncertainty mechanism.

1.98 NGGD updated their business plan submission in November 2012 requesting a reduced cost of £114m to specifically address what they describe as medium rise multi-occupancy buildings, defined as having three to five storeys. This falls in to the category of low rise multi-occupancy buildings (less than 20 metres high) within our business plan definitions.

1.99 The total forecast cost for MOBs for NGGD, including the resubmitted values, is £198m over the RIIO-GD1 period. This is in contrast to the total £30m forecast by the remaining GDNs. We have carried out a review of MOB costs in light of this disparity.

1.100 We note that NGGD's higher forecast costs for MOBs is to some extent supported by their historical costs which tend to be higher than the other GDNs. The networks which cover London, NGGD (Lon) and SGN (So) have significantly higher historical; MOB investment than other networks.

1.101 Our methodology for assessing costs is based on comparing the level of the increase in individual network's forecast costs over the RIIO-GD1 period from historical GDPCR1 levels.

1.102 NGN have reported very low MOB expenditure during GDPCR1, the highest annual actual spend being less than £0.2m. We believe it would be unfair to very significantly disallow reasonable RIIO-GD1 forecast expenditure as a result of this, and we have therefore used the average actual spend for the other networks (with the exception of NGGD (Lon) and SGN (So) that have higher level of historical investment to serve the London area) for the purposes of this assessment.

1.103 Five GDNs (EoE, NW,WM, NGN and WWU) have forecast increased expenditure for RIIO-GD1 at levels greater than 100 per cent compared against GDPCR1 which we consider excessive. The remaining three GDNs have identified an average increase of 38 per cent (ranges between 21 – 58 per cent) which we consider reasonable. We have used the average and applied this to all GDNs historical average annual expenditure.

1.104 Table A3.17 shows the allowed expenditure using this methodology and the resulting cost adjustment.

Table A3.17: Expenditure on multi-occupancy buildings over RIIO-GD1 period (£m, 2009-10 prices)

Multiple Occupancy Buildings (MOBs) costs (£m)									
	EoE	Lon	NW	WM	NGN	Sc	So	WWU	Total
GDN Submitted cost	35.4	122.0	29.6	23.3	11.8	20.8	86.4	5.4	334.7
Ofgem adjusted cost[1]	35.4	122.0	29.6	23.3	11.8	20.8	86.4	5.4	334.7
Output adjusted cost[2]	15.6	123.9	5.0	2.4	8.2	18.3	98.4	3.5	275.3
Ofgem cost baseline (4 year historical)[3]	13.3	116.5	3.1	1.0	7.6	17.1	94.1	3.3	256.1
Gap to output adjusted cost	-14%	-6%	-37%	-57%	-8%	-7%	-4%	-8%	-7%
Ofgem cost baseline (2 year forecast)[3]	13.2	115.8	3.1	1.0	7.5	17.0	93.5	3.2	254.4
Gap to output adjusted cost	-15%	-7%	-37%	-57%	-8%	-7%	-5%	-8%	-8%

[1]Includes adjustments for re-classified costs and costs deferred to an uncertainty mechanism.
[2]Submitted adjusted costs less an adjustment for outputs.
[3]Baseline prior to averaging our four approaches and the application of the IQI.

Workload and costs adjustments: Sub-deducts

1.105 We have provided a total allowance to the GDNs of £32m over the RIIO-GD1 period to cover sub-deducts. We have treated this as 50 per cent repex and 50 per cent opex and these costs are included in the opex and repex cost baselines. Full details of cost allowances by GDNs can be found in table A3.18.

1.106 More detail on our approach to assessing sub-deduct allowances can be found in Chapter 6 of our Outputs document[30].

[30] http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/2_RIIOGD1_FP_OutputsIncentives_dec12.pdf

Table A3.18: Sub-deduct allowance over RIIO-GD1 period (2009-10 prices)

GDN	Approx no. of sites	Allowed remediation cost (£m)
EoE	452	9.2
Lon	144	2.9
NW	202	4.1
WM	165	3.4
NGGD total	*963*	*19.6*
NGN	132	4.4
Sc	7	0.2
So	190	3.1
WWU	127	4.7
Total	**1,419**	**32.0**

Technical issues and normalisations

Background

1.107 Repex activities are those activities which are associated with the replacement of old pipes which potentially cause a safety risk from the ignition of escaping of gas. Pipes are in one of two major categories; mains which serve a number of consumers and services which typically connect the mains to a consumer's meter.

Mains Pipe Replacement

1.108 As explained in IP, the Health and Safety Executive (HSE) announced a change in the approach to managing risk on the iron distribution mains network. The new enforcement policy includes three tiers[31] for pipe replacement. The three tier approach allows a greater focus on risk and larger diameter at risk iron pipes will only be subject to decommissioning if either condition or risk assessment indicates that this is justified.

1.109 The HSE enforcement policy deals exclusively with iron mains within 30 metres of a building as these pipes are considered to have considerably higher risk than mains greater than 30 metres from a building.

1.110 In addition to iron mains, benefits have been identified by networks to replace other types of main pipe including steel where the condition gives rise to safety issues or high operational cost of repairs. In some case this category will also include iron pipes greater than 30 metres from a building.

[31] The HSE three tier approach covers all iron mains within 30 metres of a property; tier 1 - mains less than or equal to 8 inches in diameter, tier 2 - mains greater than 8 inches and less than 18 inches in diameter, tier 3 - mains equal to and greater than 18 inches in diameter.

Service pipe replacement

1.111 Service pipes are typically now installed using Polyethylene (PE) materials. Depending on the age and condition non-PE services can provide a risk to safety and operational costs for repair of leaks. Where these non PE service pipes are connected to mains pipes which are being replaced it is considered cost effective to use the opportunity to replace all non-PE services at the same time that the main is replaced.

1.112 In other cases services need to be replaced independently from the replacement of the mains. For example, if the network is called to a leak on a non-PE service, work is required on the service such as a move of the meter position at the customer's request or where information is available to suggest a locality or street is at high risk from poor service condition. In such cases an assessment of the appropriate costs for such work has been carried out and they are reported separately to mains costs.

Discretionary repex

1.113 Discretionary workload is not mandated by the HSE however they expect the GDNs to support any proposed workload with a business case, normally through cost benefit analysis (CBA). This includes tier 2 iron mains below the threshold, tier 3 iron mains, steel greater than 2 inch, mains greater than 30 metres from a property and mains with inadequate integrity.

Detailed changes to assessment methodology

Capitalised replacement

1.114 London, Southern and Scotland networks reported upsizing of mains replacement. In IP we transferred this workload and expenditure from capex mains to tier 1 repex. This assumption still stands for SGN, however following receipt of further detail from NGGD upsized replacement for London has been transferred to non-discretionary repex (greater than 630mm diameter band) instead of tier 1 repex.

Street works

1.115 For benchmarking purposes street works expenditure was excluded from repex regression modelling. Street works has been assessed separately and efficient street works expenditure associated with repex activity has been added back to repex baseline. Further detail on street works can be found in Appendix 5.

MOBs

1.116 Following responses to IP we have removed repex expenditure associated with MOBs from all repex regression analysis - both bottom-up and totex modelling.

Removal of this expenditure from both models, for all GDNs ensures a consistent approach for assessment and benchmarking purposes.

Rechargeable diversions

1.117 Rechargeable diversions represent a small cost area and were included in regression modelling for IP but without an appropriate cost driver. For consistency we have excluded rechargeable diversions from the repex regression models.

Loss of metering

1.118 In response to IP comments we agree that we did not include the full impact of the loss of meterwork for NGN and have included £3.1m per year marginal increase in costs incurred in their repex activity in any assessment of loss of meterwork (further detail can be found in Chapter 6).

Additional costs allowed after regression analysis

1.119 We have added back an efficient view of street works expenditure, including Section 74 costs where applicable, associated with repex activity.

1.120 Forecast MOB expenditure has been assessed outside the regression modelling and we have added back an efficient view of MOB risers to repex baseline costs as a post regression adjustment.

1.121 We have treated costs associated with rechargeable diversions as pass through costs, added back post regression analysis.

Appendix 4 –Response to concerns over our methodology

Introduction

1.1 This appendix presents a more detailed response to a number of the key concerns raised by the GDNs and other stakeholders in response to IP. We also explain the changes we have made to the calculation of our sparsity indices, and our revised methodology for calculating a new set of labour ratios. A summary our of statistical tests results and model diagnostics for our econometrics models are presented in the final section.

Methodology issues

Basis of assessment

1.2 NGGD urges Ofgem not to discard the 8 year totex model because the Ofgem RIIO framework emphasises benchmarking forecast expenditure and outputs, and the RIIO Handbook[32] suggests total costs as the basis of assessment. NGGD's views are broadly shared by NGN.

Our response

1.3 The RIIO Handbook presents high level guidelines on the RIIO process and sets the basis under which detailed analysis is likely to be used. After the publication of the RIIO Handbook, we developed our methodology further, consulted extensively and refined it to incorporate the views of our stakeholders.

1.4 While the RIIO Handbook suggested that totex should be the basis of analysis, the mixed views from the consultation emphasised the need to take a balanced approach across both totex assessment and disaggregated cost assessment approaches and not rely solely on one of them. This has been a key factor in our decision to apply a toolkit approach to cost assessment, which takes into account a mixture of high level and more disaggregated cost analysis; a mixture of historical costs and forecast assessment; and a mixture of regression and qualitative analysis. We communicated this decision in our March 2011 strategy decision documents[33].

1.5 It is worth noting that we use the totex and bottom-up models in our toolkit approach to cross-check each other. We do not think it would be robust to use only the 8 year forecast totex model with no equivalent bottom-up results to provide a

[32] See http://www.ofgem.gov.uk/Networks/rpix20/ConsultDocs/Documents1/RIIO%20handbook.pdf
[33] See paragraphs 1.11 and 1.19 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1decisioncosts.pdf

cross-check. This is an additional reason why we use the 2 years' forecasts for both totex and the bottom-up approaches, which our model selection criteria demonstrate to be more robust.

1.6 NGGD expressed concerns with the use of totex benchmarking in its 14th June 2010 letter. It considered the totex approach to be new and untried, and believed that the totex results were unlikely to be sufficiently robust to determine the future level of spend for the price control period.

Reasons for rejecting the 8 year forecasts models

1.7 Both NGN and NGGD have questioned our logic for discounting the 8 year forecasts model. They argue that we should have developed econometric models based on the 8 year RIIO-GD1 forecasts instead of the 2 year forecasts, and consequently placed less weight on models estimated using historical data. NGGD argues that despite the model diagnostics identified by Ofgem, the 8 year totex model results (ie R-squared) look credible. NGN notes that our decision to consider only the first two years of forecasts ignores NGN's more dynamic approach under which the higher costs in early years of the plan deliver longer term benefits and minimise totex across the RIIO period. NGGD notes that the potential reasons why we abandoned the 8 year model are:

- that it's the first RIIO price control review
- because of the regression diagnostics, and
- that business plans forecasts were inflated.

1.8 It does not consider these arguments to be sufficiently robust.

Our response

1.9 We decided to reject the 8 year forecast models because most of these models performed poorly in respect of data quality and regression diagnostics relative to our historical and 2 year forecast models[34] (the criteria we use to evaluate regression models in RIIO-GD1 are listed in our step-by-step guide for cost assessment[35]). In particular, more 8 year forecast models failed our statistical tests than historical or 2 year forecast models. We shared the statistical diagnostics with the GDNs in Chris Watts' June 22nd letter to the GDNs.

1.10 We explored the reasons for poor regression diagnostics for models based on the 8 year forecasts data and considered that they were linked to data quality issues. The GDNs made different assumptions in relation to some cost items and workload

[34] See Initial Proposals, Cost Efficiency Supporting Document, Appendix 1, paragraphs 1.9 to 1.11.
[35] See Paragraph 1.15 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1_Initial_Proposals_Step_by_Step_Guide_for%20Cost_%20Efficiency.pdf

drivers[36], which in turn, impart different compounding effects on each GDNs' costs and workloads.

1.11 It is difficult to accurately normalise for the different assumptions[37] used in the forecasts data, and therefore it is difficult to conduct a regression-based comparative assessment on a like for like basis.

1.12 We consider that it is most appropriate to assess a consistent base year level of costs and then apply common assumptions to roll these forwards for changes in workload, real price effects and ongoing efficiency. We also carry out qualitative/technical assessment on the non-regressed cost activities. This approach is able to capture some of the forecast changes highlighted by NGN because it applies the regression parameters to the RIIO (ie. 2014-2021) year-specific adjusted workloads.

1.13 Our analysis reveals that the GDNs would actually get lower allowances if we adopt the 8 year' forecasts totex model (see Table A4.1). For example, the industry would get £148m less if we used the 8 year forecast model instead of the 2 years forecast totex model; and £212m less if we used it instead of the historical costs totex model. However, for the reasons noted above we consider it to be safer to focus on the historical models and the 2 year forecast models.

Table A4.1: RIIO-GD1 allowances differences if 8-year forecasts are used (£m)

Company	Historical costs model	2 year forecasts model
NGGD	-114	-71
SGN	-42	-41
WWU	-28	-19
NGN	-28	-18
Industry	-212	-148

Calculation of upper quartile efficiency factor

1.14 NGGD and NGN express concerns over the instability implied by using only one year's data to determine the upper quartile in our econometric models.

Our response

1.15 Our rationale for using one year's data to determine the upper quartile (UQ) efficiency score is that, in the case of the historical models, we consider the most

[36] See paragraphs 1.10 to 1.11 of Appendix 1 at: http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20Cost%20Efficiency%20Initial%20proposals%20270712.pdf

[37] Equalising the assumptions so that their impacts are identical across the industry to enable cost assessment on a comparable basis.

recent data (ie for 2011-12) to better reflect current relative performance of each GDN, and in the case of the forecast models we consider the nearest forecasts (ie for 2013-14) to be the most reliable. However, we recognise that the UQ score in a single year is vulnerable to year specific effects. We examined the UQ score in our base years relative to that of adjacent years and concluded that they were practically the same. Using more years to determine the UQ score would make virtually no difference in our models.

Cherry picking

1.16 NGGD argues that the summation of bottom-up regression activities does not avoid cherry picking between regressed and non-regressed activities, as 50 per cent of costs are non-regressed.

Our response

1.17 In our disaggregated model we calculate a GDN's efficiency score as the ratio of its aggregated regressed costs to it aggregated modelled costs. We use the upper quartile of these scores as the benchmark. We consider that this approach removes concerns of cherry picking across regressed activities. We recognise the potential for cherry picking between regressed and non-regressed activities. To mitigate these concerns we:

- developed an econometric model to capture trade-offs (and mitigate cost allocation issues) between maintenance and the non-regressed activity LTS capex (see Chapter 6 under Maintenance).

- considered compensating adjustments to other activities where we made output or workload disallowances (eg shrinkage and MOB surveys compensation for repex workload disallowance)

1.18 We note also that the proportion of regressed costs has increased from about 50 per cent in IP to about 65 per cent in FP due to changes to our assessment of repex (see Chapter 8). This reduces the scope for cherry picking across regressed and non-regressed activities.

Capex assessment

1.19 SGN and its consultants, Frontier Economics question the credibility of the capex activities' assessment. They argue that the simple cost drivers cannot be expected to capture fully the causes of capex, and note that capex is often required to serve future rather than present outputs. They argue that the issues of 'lumpy' investment profiles and the potential for GDNs to be on different points in the investment cycle cast doubt on the strict application of capex results in setting allowances.

Our response

1.20 We acknowledged the potential effects of the lumpy and investment cycle-oriented nature of some capex cost activities during the early stages of our methodology development. We consulted the GDNs, including SGN in December 2010[38], and received their responses[39], which we took into account in making a decision to implement a moving average. We communicated this decision to the GDNs in our March 2011 document[40].

1.21 We developed capex cost drivers within the above consultation-decision framework. We adopted cost drivers for capex connections and capex mains reinforcement cost activities from GDPCR1. With the support of the GDNs, we developed and consulted on a new scale variable, MEAV, and have used it as a cost driver for all the non-regression cost activities included in totex, including those in capex.

1.22 In our bottom-up approach, we assess the non-regression capex using a technical review technique. This approach provides us with an alternative view. Frontier Economics criticises our capex assessment approach, but does not suggest any alternative approach including the cost drivers we could use.

Mechanistic use of regression results

1.23 SGN argues that our analysis is relies too much on mechanistic regression models.

Our response

1.24 As we explained in IP and again in this document, we use a toolbox of techniques for our cost assessment. Econometric models are an important part of our toolbox. We note, however, that we do not apply our econometric models mechanistically. We make numerous qualitative, out-of-model, normalisations and adjustments, both before and after the regression, and both to the regressed cost and to the workload.

1.25 We emphasise that within each and every cost activity we apply a qualitative analysis where appropriate. Some activities, as well as cost items within activities, are assessed only qualitatively (eg T&A, gasholder decommissioning, street works and others). Other activities are assessed both through a regression and through our

[38] See for example paragraph 4.13 of the December 2010 consultation at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1%20costs%20assess.pdf
[39] See paragraph 4.11 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1decisioncosts.pdf
[40] See paragraph 4.25 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1decisioncosts.pdf

totex regression model (eg governors). Finally, our workload adjustments rely on technical assessment as well as our RPEs and ongoing productivity assumptions.

Model diagnostics failure

1.26 NGGD considers that we have not been consistent with its attitude to models passing statistical diagnostics. It observes that seven of the IP models appear to fail statistical diagnostics, but this did not prevent their use.

Our response

1.27 Most of the disaggregated cost activity 8 year forecasts models failed our model selection criteria. We do not think it would be safe to use totex analysis for the 8 year forecast data without using the equivalent bottom-up assessment.

1.28 We evaluated the robustness of the models by comparing the number of models that failed our criteria in each data set. We considered the data set with the least failure models to be the most reliable. We therefore selected used the models from the most reliable data sets. Selecting individual models from different data sets would amount to cherry-picking.

Use of workload drivers

1.29 One DNO argues that the assessment of efficient levels of workloads and costs potentially penalises companies that have robustly justified their business plans. SGN shares the DNO's view and considers our choice of workload drivers could risk incentivising companies to maximise workload volumes. It believes that elements of safety, service standards, quality and stakeholder value should form part of the assessment process. It argues that our approach does not recognise and reward companies which: achieve emergency service standards, deliver a more rapid repair service, remove more mains risk per meter lay, have higher customer satisfaction outcomes, effectively manage opex-capex trade offs, and understand and manage the condition of their assets. Another DNO is concerned that using totex workload drivers may reduce the extent to which the totex analysis captures differences in efficiency that arises from approaches that reduce workload and therefore reduces the benefits of including totex in the toolkit.

Our response

1.30 We recognise SGN's and DNOs' arguments that the use of workload drivers may mean that efficiencies in workload volumes are not adequately captured. However, we are reflecting different elements of scale as suggested by the composite scale variable for the respective cost activities, and we are also carrying out separate analysis to determine whether there should be workload adjustments. This should ensure that any workload inefficiencies are identified.

1.31 We consider combining our scale variable MEAV (when engineering knowledge suggests that the scale of operation drives costs) with workload drivers as an appropriate approach which reflects a balance of fixed and variable costs.

London GDN's poor relative efficiency performance

1.32 NGGD questions our model results given three of its four GDNs are consistently ranked in top five (of eight GDNs) whereas its London GDN is consistently ranked least efficient. It believes this result to be implausible given it operates the four GDNs as a single business. NGGD suggests the results demonstrate flaws in the model specification and an inadequate allowance for a London productivity effect, which it considers to be around 20 per cent (compared to our allowance of 15 per cent).

Our response

1.33 Table A4.2 sets out the efficiency ranking from our different econometric modelling approaches. As the table demonstrates NGGD's argument is correct only for out totex forecast model.

1.34 We also note that the aggregate efficiency score[41] (which we use in our disaggregated models) suggests London is fourth efficient based on our historical models and that North West and West Midlands are not consistently in the top five efficient GDNs. On this basis we think that there is no sufficient evidence to suggest that our econometric models do not adequately capture London specific factors.

[41] The aggregate efficiency score is the ratio of the sum of regressed costs and sum of modelled costs for each GDN.

Table A4.2: GDN's efficiency rankings

	NGGD				NGN	SGN		WWU
	EOE	Lon	NW	WM	NGN	Sc	So	WWU
Cost activity	2012 rankings - historical costs model							
Work management	8	4	7	6	2	3	1	5
Emergency	6	8	7	3	2	4	5	1
Repairs	4	5	3	1	7	6	8	2
Maintenance	6	3	7	1	2	8	4	5
Mains reinforcement	1	2	8	5	6	4	3	7
Connections	8	7	2	6	1	5	3	4
Opex	6	8	7	4	5	2	3	1
Capex	3	7	4	1	2	8	5	6
Repex	6	3	5	8	1	2	7	4
Totex	5	8	6	4	1	3	7	2
	2014 rankings - 2 year forecasts model							
Work management	7	5	6	3	4	2	1	8
Emergency	3	4	8	2	5	7	6	1
Repairs	3	7	2	1	6	8	4	5
Maintenance	4	1	7	2	5	8	3	6
Mains reinforcement	8	5	3	2	7	4	1	6
Connections	5	8	1	6	4	2	7	3
Opex	5	6	7	1	8	4	2	3
Capex	3	7	4	1	2	6	5	8
Repex	3	8	5	6	2	1	4	7
Totex	2	8	5	1	3	4	6	7

NGGD's 8 year regression methodology and results

1.35 NGGD undertook a regression analysis using an average of the 8 year forecasts rather than regressing data for individual years. It believes its averaging approach is able to minimise expenditure volatility between individual years, particularly for capex, and commends it for being transparent and straightforward. NGGD includes additional adjustments (ie London repex urbanity increase to 20.3 per cent, London and Southern emergency productivity, London and Southern repair productivity, and London additional property costs) which we did not include in IP. It justifies the robustness of its results with reference to an R-squared of 0.98. It then compares its results with our IP results.

Our comments on NGGD's estimation approach

1.36 NGGD's approach is based on the assumption that there is useful information in the full 8 year forecasts. However, it then uses averaging to manage data issues. A straight average transformation gives equal weight to observations 1 year ahead and 8 years, which is counter to what one would expect with uncertainty increasing in the forecast horizon. The analysis is then based upon a single cross-section of 8 GDNs.

1.37 In contrast to NGGD's averaging approach, we have used a panel data approach, which makes better use of the data by considering the information provided by each year of data, rather than the information provided by the average alone. Such approach increases the degrees of freedom of the model and hence the robustness of the estimates. Given the small number of comparators in our sample (eight GDNs) any improvement in the model's degrees of freedom is important for the accuracy of the estimates. Finally, our panel approach isolates year-specific effects rather than estimating a single intercept. We consider that NGGD did not provide convincing arguments to justify a simple average over the more robust panel data approach.

Our comments on NGGD's model evaluation

1.38 Although NGGD bases a large part of its argument on the issue of model diagnostics, it relies only on R-squared in its own analysis.

1.39 We highlighted in IP several limitations of relying significantly on the R-squared to evaluate models, including the fact that the R-squared tells how well an estimated model fits the actual data, but does not indicate whether a model is well specified or not[42]. While it is desirable to explain cost differences between companies that are not attributable to differences in efficiency, the model evaluation process should not rely on only maximising the goodness of fit.

Our comments on NGGD's results comparison

1.40 We do not consider that NGGD's analysis is sufficiently robust to draw any firm conclusions. NGGD's 8 year forecast models are not comparable with the IP models because they include four additional adjustments for London and Southern GDNs which were not applied in IP and which we have not adopted in FP (see Chapter 2).

Regional and company specific factors

Changes in the sparsity calculation

1.41 We have refined the formula for our sparsity indices to take into account the respondents' views. Our IP sparsity methodology made an additional adjustment to ensure that the maximum absolute adjustment of £2.23m for 2010-11 applies only to the GDN with the highest sparsity index. We halved the deviations (from the

[42] See paragraph 1.13 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1_Initial_Proposals_Step_by_Step_Guide_for%20Cost_%20Efficiency.pdf

industry median of 1) of sparsity indices that are less than 1. For example if the index is 0.80, we recalculated it as 1-[(1-0.8)/2] = 1-0.1 = 0.90.[43]

1.42 Our refined formula divides the deviations by the number of GDNs that are less sparse than the industry average (ie 4 in this instance) instead of halving them as was the case in the IP. For example if the index is 0.80, we recalculate it as 1-[(1-0.8)/4] = 1-0.05 = 0.95.

Methodology for labour ratios

1.43 There were significant inconsistencies in the proportion of labour costs within opex, capex, repex and totex between the GDNs. It is this element of costs to which we apply our regional labour, sparsity and urbanity indices as illustrated below.

1.44 Table A4.2 presents the GDNs' submitted repex contract labour ratios, ie the percentage of repex costs that is paid as contract labour. The table demonstrates that East of England, Scotland and Wales & West historical ratios are lower than the industry average, while those for the remaining GDNs are higher than the industry average. It also shows NGGD's forecasts ratio to be significantly lower than the industry average, while the remaining GDNs' ratios are higher than industry average. Higher than industry average ratios generally advantage London and Southern, while lower than industry average ratios generally advantage the remaining six GDNs.

1.45 We have therefore developed a uniform set of labour ratios for all cost activities across the industry using historical industry averages to ensure that no GDN is advantaged or disadvantaged. We have then adjusted them to reflect the London region, the South-East and elsewhere (ie the rest of UK) cost effects for individual GDNs as explained below. East of England's indices have been adjusted for the London region effects.

[43] See paragraph 1.93 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1_Initial_Proposals_Step_by_Step_Guide_for%20Cost_%20Efficiency.pdf

Table A4.2: Repex labour ratios and indices (%)

GDN	Historical ratios 2009	2010	2011	2012	Forecasts 2013	2014-21	Historical average
Submitted repex contract labour ratios							
EoE	0.74	0.76	0.74	0.69	0.57	0.57	0.73
Lon	0.83	0.81	0.84	0.80	0.61	0.61	0.82
NW	0.79	0.78	0.81	0.77	0.59	0.59	0.79
WM	0.77	0.79	0.80	0.77	0.58	0.58	0.78
NGN	0.84	0.83	0.72	0.72	0.84	0.84	0.78
Sc	0.63	0.70	0.56	0.55	0.81	0.81	0.61
So	0.80	0.79	0.72	0.73	0.77	0.77	0.76
WWU	0.65	0.66	0.69	0.68	0.72	0.72	0.67
Industry average	0.76	0.77	0.73	0.71	0.69	0.69	0.74
Combined labour indices							
Lon	1.17	1.15	1.18	1.18	1.18	1.18	
So	1.10	1.09	1.08	1.08	1.08	1.08	
EoE	0.97	0.98	0.97	0.97	0.97	0.97	
Elsewhere	0.96	0.97	0.96	0.96	0.96	0.96	
Adjusted repex contract labour ratios							
Lon	0.87	0.85	0.87	0.87	0.87	0.87	
So	0.82	0.81	0.80	0.80	0.80	0.80	
EoE	0.72	0.72	0.72	0.72	0.72	0.72	
Elsewhere	0.71	0.71	0.71	0.71	0.71	0.71	
Combined labour and sparsity indices for emergency and repairs							Sparsity indices
EoE	1.01	1.02	1.02	1.02	1.02	1.02	1.04
Lon	1.13	1.11	1.13	1.13	1.13	1.13	0.96
NW	0.93	0.93	0.93	0.93	0.93	0.93	0.97
WM	0.95	0.96	0.96	0.96	0.96	0.96	0.99
NGN	0.98	0.98	0.98	0.98	0.98	0.98	1.03
Sc	1.07	1.07	1.07	1.07	1.07	1.07	1.11
So	1.09	1.08	1.07	1.07	1.07	1.07	0.99
WWU	1.11	1.11	1.11	1.11	1.11	1.11	1.15

1.46 We first calculate separate direct labour and contract labour industry average historical ratios for each cost activity as illustrated under the submitted repex contract ratios section of Table A4.2.

1.47 We then make an adjustment to each GDN's ratios using regional labour indices to reflect the London region, the South East and elsewhere cost effects for individual GDNs. This adjustment is based on the logic that the London region and the South East's region labour costs are higher than the industry average. Therefore the labour ratios for the GDNs operating in London are higher than industry average. Similarly, the labour costs for regions outside London are lower than the industry average, therefore the labour ratios for the GDNs operating elsewhere are lower than the industry average.

1.48 We use combined regional labour indices as our adjustment factors. We calculate the combined labour indices using the IP methodology for calculating regional direct and contract labour factors[44]. We have only made a change to Table 1.10 of the IP regional labour factors methodology[45]. When estimating the work done locally by London and Southern GDNs (ie paragraphs 1.83 to 1.85), we use combined (ie direct labour plus contract labour) costs in the column for GDNs' normalised labour costs instead of separate direct and contract labour costs.

1.49 Our combined labour indices are reported under combined labour indices' section of Table A4.2. We then make a Tottenham effect adjustment for East of England by applying 95.4 per cent on the elsewhere index (ie 0.96 for 2011) and 4.6 percent on the London region index (ie 1.23 for 2011). For example, the East of England combined labour index for 2011 is calculated as: 0.954*0.96 + 0.046*1.23 = 0.97.

1.50 We calculate an adjusted set of labour ratios by multiplying each GDN's combined labour factor with the industry average historical ratio. For example, London's adjusted repex contract labour index for 2011 is 1.18*0.74 = 0.87.

1.51 We use the above methodology to calculate adjusted contract and labour ratios for all cost activities except emergency and repairs. Emergency and repairs costs activities are impacted upon by both labour and sparsity factors. We therefore, construct another set of adjustment indices which take into account the combined effect of labour and sparsity factors.

1.52 London GDN for example has a combined labour index of 1.18 and a sparsity index of 0.95. We calculate the joint index as [1 + (1.18-1) + (0.95-1)] = 1.13. We adjust East of England's sparsity index for the Tottenham effect as explained earlier, before calculating its joint effect.

1.53 This method generates a set of indices which are presented under the combined labour and sparisty indices for emergency and repairs section of Table A4.2. The indices are then applied to the industry historical average labour ratios for the emergency and repairs costs activities to generate a new adjusted set of labour indices.

[44] See pages 21 to 27 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1_Initial_Proposals_Step_by_Step_Guide_for%20Cost_%20Efficiency.pdf
[45] See pages 21 to 27 at http://www.ofgem.gov.uk/Networks/GasDistr/RIIO-GD1/ConRes/Documents1/GD1_Initial_Proposals_Step_by_Step_Guide_for%20Cost_%20Efficiency.pdf

Statistical tests

Table A4.3: Summarised RIIO-GD1 Statistical tests results

		Goodness of fit	Slope	Intercepts (2011-12) and (2013-14)	Driver test	Equation test	Slope test	Model Specification test	Heteroscadasc ity test	Normality test
Cost Group Model	Model type	R^2	β	Constant	Probability t-statistic (P values)	Probability F-statistic (P values)	Probability F-statistic (P values)	Ramsey RESET (P values)	White test (P values)	Shappiro Wilsky (P values)
Historical costs models										
Totex	log-log	0.93	0.75	0.15	0.00	0.00	0.54	0.01	0.83	0.06
Capex	log-log	0.73	0.79	-2.2	0.00	0.00	0.42	0.53	0.14	0.06
Opex	log-log	0.83	0.72	-2.5	0.00	0.00	0.69	0.17	0.12	0.22
Repex	log-log	0.92	0.83	0.86	0.00	0.00	0.53	0.00	0.38	0.45
Work management	log-log	0.63	0.49	-1.5	0.00	0.00	0.88	0.78	0.00	0.00
Emergency	log-log	0.75	0.95	-10.5	0.00	0.00	0.82	0.76	0.04	0.07
Repairs	log-log	0.75	0.92	-6.5	0.00	0.00	0.91	0.19	0.81	0.30
Maintenance	log-log	0.69	0.68	-2.8	0.00	0.00	0.98	0.00	0.75	0.47
Connections-gross	log-log	0.96	0.69	0.83	0.00	0.00	0.04	0.09	0.79	0.54
Mains reinforcement	log-log	0.94	0.88	0.45	0.00	0.00	1.00	0.00	0.29	0.01
2 years forecasts models										
Totex	log-log	0.96	0.78	-0.1	0.00	0.00	0.93	0.24	0.51	0.32
Capex	log-log	0.75	0.76	-1.9	0.00	0.00	0.98	0.36	0.53	0.12
Opex	log-log	0.96	0.77	-3.0	0.00	0.00	0.87	0.18	0.44	0.40
Repex	log-log	0.95	0.91	0.50	0.00	0.00	0.96	0.00	0.30	0.30
Work management	log-log	0.95	0.60	-2.5	0.00	0.00	0.66	0.00	0.04	0.12
Emergency	log-log	0.88	0.98	-11.0	0.00	0.00	0.60	0.30	0.42	0.82
Repairs	log-log	0.85	1.04	-7.8	0.00	0.00	0.92	0.19	0.02	0.09
Maintenance	log-log	0.85	0.85	-4.1	0.00	0.00	0.88	0.39	0.10	0.64
Connections-gross	log-log	0.95	0.96	0.22	0.00	0.00	0.99	0.05	0.42	0.00
Mains reinforcement	log-log	0.95	0.97	0.41	0.00	0.00	0.95	0.54	0.51	0.56
8 years forecasts models										
Totex	log-log	0.97	0.78	-0.1	0.00	0.00	0.03	0.03	0.43	0.02
Capex	log-log	0.76	0.87	-3.0	0.00	0.00	0.06	0.01	0.35	0.00
Opex	log-log	0.97	0.76	-2.9	0.00	0.00	0.99	0.00	0.27	0.16
Repex	log-log	0.95	0.93	0.39	0.00	0.00	0.97	0.00	0.92	0.05
Work management	log-log	0.95	0.59	-2.5	0.00	0.00	0.83	0.00	0.01	0.00
Emergency	log-log	0.87	0.93	-10.3	0.00	0.00	0.98	0.00	0.64	0.02
Repairs	log-log	0.84	1.04	-7.7	0.00	0.00	0.99	0.41	0.00	0.00
Maintenance	log-log	0.83	0.84	-4.0	0.00	0.00	1.00	0.27	0.82	0.00
Connections-gross	log-log	0.95	0.97	0.22	0.00	0.00	1.00	0.00	0.44	0.00
Mains reinforcement	log-log	0.93	0.97	0.39	0.00	0.00	1.00	0.86	0.98	0.06

Appendix 5 – Assessment of street works costs

Initial Proposals

1.1 Streetworks costs were considered under three categories: lane rental costs; costs associated with the Traffic Management Act 2004 (TMA) / the Transport (Scotland) Act 2005 (T(S)A); and Section 74 costs. We excluded lane rental costs from our normalised costs as we proposed to include them as an uncertainty mechanism.

1.2 Expenditure associated with TMA was assessed in two ways;

1.3 Forecast costs projects within HAs due to implement a new permit scheme during RIIO-GD1 were treated under an uncertainty mechanism. These costs were excluded from company submitted costs.

1.4 An efficiency assessment was applied to forecast TMA costs incurred through projects operating within HAs which already have a permit scheme in place at the start of RIIO-GD1.

1.5 S74 costs were excluded from our IP assessment and we stated we would require further detail to assess these costs as part of our Final Proposals.

Respondents' views

1.6 GDNs broadly agree with our approach for assessing street works expenditure. GDNs agreed that because street works costs vary between networks, it is necessary to exclude street works costs from regression analysis.

1.7 The National Joint Utilities Group Ltd (NJUG)[46] suggests that our reduction in cost allowances for street works is challenging. They point out that cost pressures with regards to street works are significant, and likely to increase further, particularly given the reduction in local authority budgets, which is leading to greater imposition of charges.

1.8 The main challenge to our methodology relates to our assessment of the impact of the TMA on productivity in London during the RIIO-GD1 period.

[46] The National Joint Utilities Group Ltd (NJUG) is the UK's trade association representing utilities and their contractors' solely on street works matters.

1.9 As part of the TMA Income Adjusting Event (IAE) re-opener decision[47] we assessed £18 per metre as an efficient level of spend on productivity based on benchmarking GDN actual spend on TMA. NGGD propose that the TMA productivity impact in London should reflect an average of £37 per metre rather than the £18 per metre and have submitted further evidence to support this.

1.10 SGN did not challenge the use of £18 per metre of pipe abandoned to represent an efficient unit cost for the impact of the TMA on productivity in London.

1.11 NGGD argue that population density and road type mix in North London are different to the national average and this can impact on duration of works and traffic complexities. They submitted data based on a number of projects within and outside central London to identify specific costs in managing streetworks once a TMA permit scheme had been introduced.

1.12 NGGD also suggest that the cost driver used to establish an efficient level of fixed penalty notices should be a ratio of fixed penalty notices (FPNs) to all New Roads and Street Works Act (NRSWA) 1991 notices including permits rather than FPNs to TMA permits.

1.13 SGN wanted further consideration of efficient street works costs for Scotland claiming that we have disallowed costs (as per IAE reopener) due to a limited understanding of the interpretation of T(S)A legislation in Scotland.

1.14 SGN highlight that TMA costs should be normalised historically as well as for forecast years in our benchmarking models.

Our decision

Changes to normalisation of street works cost

1.15 Historical TMA costs were normalised out of the GDN submitted costs for benchmarking purposes. This only applies to the Southern and London GDNs where TMA permit schemes existed in these networks during GDPCR1. Historical TMA costs are based on allowances awarded to these networks following the TMA reopener decision[48].

1.16 At IP S74 daily charge/overstay costs were removed from our analysis because it was unclear whether GDNs reported these costs on a consistent basis. However following receipt of additional information from the GDNs we have included S74 in total submitted costs (whereas before they were excluded) have assessed an efficient level of S74 costs for Final Proposal.

[47] Ofgem decision on TMA/T(S)A GDPCR1 reopener: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=545&refer=Networks/GasDistr/GDPCR7-13
[48] Ofgem decision on TMA/T(S)A GDPCR1 reopener: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=545&refer=Networks/GasDistr/GDPCR7-13

1.17 SGN Southern were the only network not to forecast S74 daily charge rates/overstay costs in their baseline costs. We estimate that the marginal cost of S74 in Southern is approximately £12.8m[49] over the RIIO-GD1 period. This was added to submitted costs for Southern to ensure submitted costs for all GDNs were on a consistent basis.

TMA assessment

1.18 As part of the TMA reopener[50] we said we would require further evidence to support any change to the allowance of £18 per metre of iron main abandoned associated with productivity, this included:

- Evidence that the GDN has worked with the local authorities to influence the efficient application of a TMA permit scheme which is consistent across all local authorities.

- Evidence that the GDN is working collaboratively with other utility operators to influence the efficient and consistent application of a streetworks permit scheme by local authorities and to minimise costs.

1.19 NGGD provided further evidence to demonstrate that productivity costs in London were higher than £18 per metre. They highlight the difference in costs per metre between HAs, these are split into zones. For zone 1 this shows a productivity impact in the range of £20 - £220 per metre. As part of our assessment we have looked at the mix of the types of roads[51] they operate in. The evidence provided by NGGD states that at the lower end of the range of £20, the HA of Islington has the highest proportion of road in type 1-3, whereas the HA of Westminster which has the highest cost of £220 only has 29 per cent of type 1-3 roads.

1.20 Whilst NGGD has presented additional information on its assessment of different costs being incurred in different HAs, it does not demonstrate whether these costs are due to local authorities operating in very different ways or whether the impact is due to differences in efficiency by different teams undertaking the work. We are not convinced that they have demonstrated that they have worked sufficiently with the HAs to influence the efficient and consistent application of a permit scheme. At this stage we do not propose to amend our estimate of the productivity impact of TMA across the whole of London from the £18 per metre proposed in IP.

1.21 We also consider that NGGD has not provided robust evidence to demonstrate that they have worked collaboratively with other networks, utility companies and

[49] This was derived from Southern's supplementary S74 submission, consistent with our overall assessment of S74 charges.
[50] Ofgem decision on TMA/T(S)A GDPCR1 reopener – appendix 2: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=545&refer=Networks/GasDistr/GDPCR7-13
[51] Road category measures how busy a street is, based on commercial vehicle numbers it is designed to serve. Category 0 are the busiest and 4 the least busy.

highways authorities to reduce the impact of productivity costs and to promote a consistent approach from HAs. We are allowing NGGD to apply for a reopener during RIIO-GD1 to adjust the £18 per metre productivity adjustment. They will be required to provide sufficient evidence to demonstrate any additional costs are efficient.

1.22 Following NGGD's response we have also considered extending the allowed efficient level of fixed penalties to all NRSWA notices and not just permits. At IP we set the efficient level of penalties at 3 per cent of TMA permits issued at a unit cost of £80 per fixed penalty notice.

1.23 In reaching our decision we considered the responses we received from HAs as part of the TMA reopener which strongly disagreed with allowing any costs associated with fixed penalties. They believe these are all avoidable and that penalties are only issued due to inefficient planning. As part of our decision on the reopener we stated that for future applications we would require evidence that the GDNs are working with the local authorities to achieve zero fixed penalty notices, and where the GDNs believe this is not possible, evidence that any fixed penalties claimed for in their application have been incurred efficiently and all reasonable and practical efforts have been made to avoid them.

1.24 We have also considered whether we should apply an efficiency to the 3 per cent assumption which would be consistent with targeting zero fixed penalty notices.

1.25 At this stage we do not believe that we have had sufficient robust evidence on the GDNs working with HAs to achieve zero penalties and we are mindful of the HA's opposition to allowing anything for fixed penalties. We have, therefore, maintained a unit cost of £80 per fixed penalty notice and are continuing to set the efficient volume of penalties at 3 per cent of TMA permits issued. No further evidence was provided by Scotland for consideration of T(S)A costs for RIIO-GD1 therefore we have not changed our decision to disallow all T(S)A costs.

1.26 As per the TMA reopener decision the GDNs still have the opportunity come back to us with further evidence as part of GDPCR1 for the productivity impact and for the implementation of T(S)A in Scotland. We have also set out in the Finance and Uncertainty paper our decision for the uncertainty mechanism for streetworks.

1.27 We have continued to scale back TMA costs in line with adjustments we have made to repex workload. Our view on efficient TMA costs are shown in shown in table A5.1. Efficient TMA costs have been apportioned to the relevant activity area; work management, repairs, maintenance, repex, connections and mains reinforcement based on information networks provided on TMA as part of their business plan data templates.

Table A5.1: Efficient TMA allowance by activity area (£m, 2009-10 prices)

	NGGD				NGN	SGN		WWU	Industry
	EoE	Lon	NW	WM		Sc	So		
Opex									
Work management	1.1	4.2	0	0	0	0	5.4	0	**10.7**
Emergency	0.0	0.0	0	0	0	0	0.0	0	**0.0**
Repairs	0.4	2.3	0	0	0	0	1.8	0	**4.5**
Maintenance	0.0	0.0	0	0	0	0	0.0	0	**0.0**
Repex	8.9	41.9	0	0	0	0	36.3	0	**87.1**
Capex									
Connections	0.4	1.9	0	0	0	0	0.9	0	**3.2**
Mains reinforcement	0.0	0.0	0	0	0	0	3.1	0	**3.1**
Total	**10.8**	**50.3**	**0**	**0**	**0**	**0**	**47.5**	**0**	**108.5**

Section 74 daily charges

1.28 At IP there was uncertainty over the impact of the changes to the daily over-run charges and it was not clear that companies had forecast S74 costs on a consistent basis. We stated that we had not allowed costs for the increase in S74 daily charges and that we would gather information from the companies to allow us to carry out further analysis.

1.29 We consider that an efficient company should plan to avoid these overrun charges, but we accept that in some circumstances that this is not always possible. However, we would expect that there should be a continuing improvement with the level of overrun charges and number of overrun days.

1.30 As part of our assessment we received a range in the level of overrun charges against the number of notices and the number of overrun days for each GDN. There was also a difference in these when comparing 2011-12 actuals against forecast as shown in Table A5.2.

Table A5.2: Level of overrun charges and overrun days

	2011-12 Actuals		RIIO-GD1 Forecast	
	GDN submitted % of overrun charges to permits/notices	GDN submitted average over run (days)	Average GDN submitted % of overrun charges to permits/notices	Average GDN submitted average over run (days)
	%	days	%	days
EoE	1.6%	3.4	4.5%	2.8
Lon	2.8%	4.8	6.5%	5.7
NW	1.5%	5.2	1.9%	5.4
WM	1.9%	5.3	2.5%	5.0
NGN	1.8%	3.7	1.8%	3.7
Sc	N/A	N/A	N/A	N/A
So	1.5%	6.3	1.9%	5.2
WWU	1.6%	3.8	2.0%	5.7
GDN Average	**1.8%**	**4.6**	**3.0%**	**4.8**

1.31 We have applied the average level of overrun charges and number of overrun days in 2011-12 and applied this to the 2013-14 forecast for the number of notices/permits. For the remaining seven years of RIIO-GD1 we have applied a 5 per cent per year efficiency to average level of overrun charges and number of overrun days. The allowance we have set is the marginal[52] increase in overrun charges and is shown in Table A5.3.

[52] The difference following changes to the daily over-run charges from October 2012.

Table A5.3: Marginal increase in S74 allowance including efficiency (£m, 2009-10 prices)

	2014	2015	2016	2017	2018	2019	2020	2021	Total over RIIO-GD1
	£m	£m	£m	£m	£m	£m	£m	£m	£m
EoE	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.3	**4.3**
Lon	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	**6.8**
NW	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.4	**5.1**
WM	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	**1.4**
NGN	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	**4.1**
Sc	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
So	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.7	**8.4**
WWU	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	**2.7**
Total	**5.9**	**5.3**	**4.7**	**4.2**	**3.7**	**3.3**	**2.9**	**2.6**	**32.6**

1.32 We have apportioned efficient S74 costs the relevant activity areas based on information the networks provided in their business plan data submissions.

Appendix 6 - Business support costs: bottom-up assessment

1.1 Business support costs cover the following activities: non-operational IT and telecoms; property management; finance, audit and regulation; HR and non operational training; insurance; procurement; stores & logistics (gas distribution only); and CEO and group management[53].

1.2 Please note that, with the exception of table A6.2, this appendix is common to both RIIO-T1 and RIIO-GD1 Final Proposals documents.

Initial Proposals

1.3 For Initial Proposals we assessed transmission and gas distribution network companies' costs and set baseline allowances by reference to external benchmarks developed in collaboration with the Hackett Group and to network benchmarks, which were calculated using data from all UK transmission, gas distribution and electricity distribution companies. We assessed networks within the same ownership group together and allocated allowances to the individual networks in proportion to their forecasts.

1.4 We also carried out qualitative assessments of the efficiency evidence submitted by the companies and made additions to baseline to reflect the results of this assessment.

1.5 Other baseline additions were applied for non-benchmarked activities (insurance) and where companies had justified additional costs not captured in the benchmarking.

1.6 GDNs' insurance costs were allowed at 2010-11 levels, while NGET's and NGGT's were allowed in full.

Respondents' views

1.7 While we received some support for the overall approach taken to assessing business support costs, a number of respondents felt that the external benchmark was unsuitable for comparing network companies against and that some of the chosen activity cost drivers, specifically those used for IT & telecoms and property management, were inappropriate.

[53] Business support does not include R&D. R&D costs are covered under the Network Innovation Allowance (NIA).

1.8 A number of respondents disagreed with the decision to select the lower of the Hackett (external) benchmark and the networks benchmark for individual activities.

1.9 Some respondents expressed concern that the analysis was too focused on the base year 2010-11, did not fully recognise some additional costs that network companies will face over T1 and GD1 (for example increased IT support costs), and did not sufficiently factor in differences between the benchmarking comparator group and network companies.

1.10 One respondent expressed concern that the methodology employed was "cherry-picking" companies' costs for individual activities and suggested that in order to mitigate this problem we should:

- use the networks upper quartile for all activities rather than a mixture of external and networks upper quartiles, and
- either apply the efficiency evidence addition in a way that ensures it results in allowances that are more representative of network companies' position against other industries, or uplift individual activities to the opex allowance (middle up).

1.11 SGN did not agree that it should be treated as part of the SSE group for benchmarking business support costs.

Ofgem Decision

1.12 Our Final Proposals for network company business support costs are set out in Table A6.1 below. The sections after the table provide further detail on the changes we have made from Initial Proposals.

Table A6.1: Business support group final proposals (excluding RPEs unless stated)

£m, 2009-10 Prices	National Grid	NGN	SGN	WWU	Total
RIIO-T1/GD1 Forecasts	1,705.3	141.7	271.9	150.7	2,269.6
Initial Proposals baseline	1,338.8	117.3	220.4	134.0	1,810.6
Total movement from Initial Proposals	+65.9	+15.9	+65.7	+17.1	+164.6
Final Proposals baseline	**1,404.8**	**133.2**	**286.1**	**151.1**	**1,975.1**
Indicative breakdown of movements from Initial Proposals[54]					
Policy decisions					
Move to top-down benchmarking	-33.3	+7.9	+35.5	+18.3	+28.4

[54] All values are the impact of removing the individual change versus the Final Proposals top down benchmarking scenario, ie the figures shown assume that the individual change was the last one applied. If changes are applied in a different order then the individual effects will be different.

£m, 2009-10 Prices	National Grid	NGN	SGN	WWU	Total
SGN-SSE relationship	+1.8	+0.3	-3.8	+0.3	-1.4
Additional baseline adjustments	+63.2	+2.7	+3.6	+2.6	+72.1
Efficiency evidence review	+23.1	-	-	-	+23.1
PPA SO revised assessment	+48.1	-	-	-	+48.1
New data/ error corrections					
Normalisations and activity cost drivers	-20.3	+14.0	+22.2	-1.3	+14.6
Other	-6.0	+1.1	+3.2	+1.1	-0.6
Factor combination effect[55]	-10.7	-10.2	+5.0	-3.9	-19.8
Total movement from Initial Proposals	+65.9	+15.9	+65.7	+17.1	+164.6
Final Proposals baseline (incl. RPEs)	**1,418.5**	**134.6**	**289.1**	**152.7**	**1,994.9**

Table A6.2: Business support gas distribution network final proposals (including RPEs), £m, 2009-10 prices

	+	Lon	NW	WM	NGN	Sc	So	WWU
GDN submitted cost	235.4	151.7	181.8	133.2	146.5	98.6	180.8	161.6
Ofgem adjusted cost	235.4	151.7	181.8	133.2	146.5	98.6	180.8	161.6
Ofgem baseline	179.7	115.6	138.9	101.6	134.6	102.4	186.7	152.7
Gap to Ofgem adjusted cost	-24%	-24%	-24%	-24%	-9%	3%	3%	-6%
National Grid transmission businesses – to reconcile with table A6.1								
	NGET TO	**NGET SO**	**NGGT TO**	**NGGT SO**				
Ofgem baseline	320.5	295.3	114.0	152.7				

Move from bottom-up to top-down benchmarking

1.13 While we consider that our bottom-up benchmarking approach for business support costs in Initial Proposals was robust, we wanted to be more consistent with other activity assessments and to address concerns around cherry-picking. As a result, we have moved to a top-down benchmarking assessment, where network companies are compared against an upper-quartile benchmarking metric only at total business support level. As in Initial Proposals we excluded insurance from this assessment.

1.14 For this top-down assessment we have used a composite cost driver, the value of which was derived from the same bottom-up activity drivers used in Initial

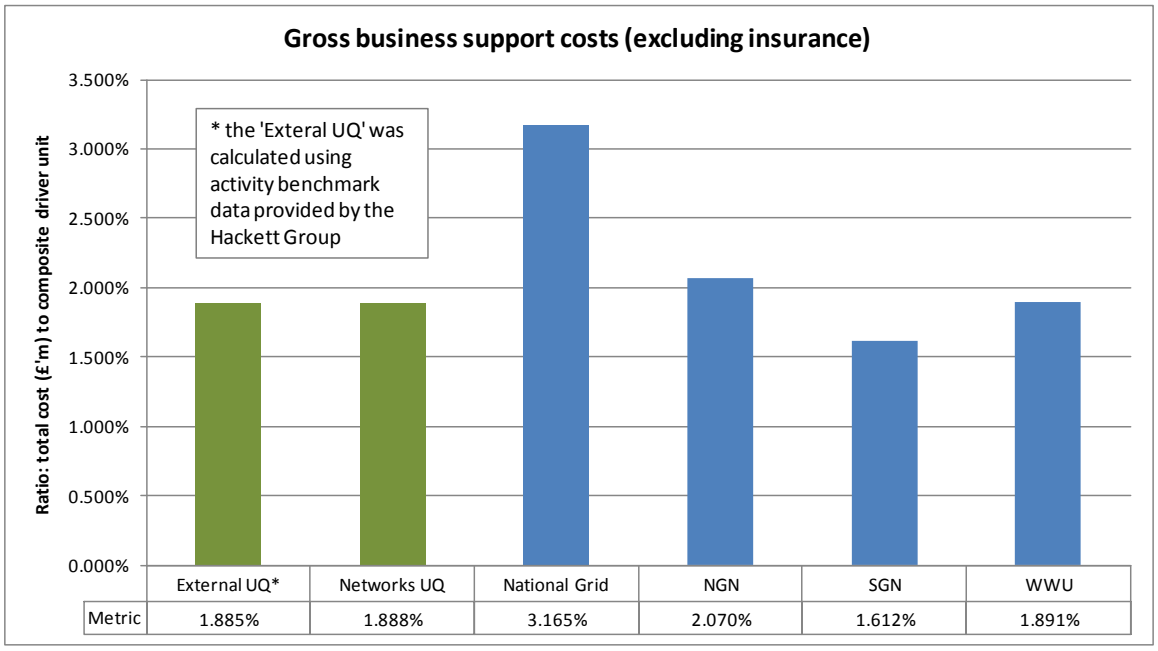
[55] The costs shown in this table are the impact of the individual changes if applied in isolation. 'Factor combination effect' is the residual impact of applying these changes in combination.

Proposals, and taking an average weighted by activity cost of each bottom-up activity driver value[56].

1.15 In order to calculate the comparator metric (ie the equivalent upper-quartile against which the network companies were compared) we took the Hackett upper-quartile metric for each activity except CEO and group management.[57] Then, using the aggregate networks industry58 activity driver values as representing a proxy-company, we calculated the total efficient business support costs of this proxy-company. We also calculated its composite driver value as explained in paragraph 1.14 above.

1.16 The top-down benchmarking methodology results in external and network upper-quartile metric values that are almost identical. This is shown in Figure A5.1 below. We are satisfied that the revised methodology and these results largely resolve respondents' issues over inappropriate drivers and non-comparability of the external comparator group to network companies.

Figure A6.1: Business support top-down benchmarking comparison



[56] The bottom-up activity drivers are: revenue (for finance, audit, and regulation; property management; CEO and group management), end-users (for IT and telecom), employees (for HR and non-operational training), and spend (for procurement).
[57] For CEO and group management, as in Initial Proposals, rather than using the Hackett upper quartile we calculated an Ofgem/Hackett composite upper quartile. The Ofgem/Hackett upper quartile is higher than the raw Hackett value.
[58] transmission, gas distribution, electricity distribution

Change in treatment of SGN's relationship to SSE

1.17 We agreed with SGN that it should not be treated as part of the SSE group for benchmarking purposes as doing so distorts the benchmarking. However, as SGN is 50 per cent owned by SSE and approximately 25 per cent of its business support costs are allocated from SSE, we do not agree that it is appropriate to entirely separate SGN from the SSE group. For this reason we have separated SGN and SSE for initial benchmarking before combining their separate benchmarking results. This means there are ten rather than nine network company/groups (leading to small changes in other companies' assessment as well as SGN's). SGN's baseline allowances were then set by taking a weighted average of SGN's baseline and SSE's baseline (scaled to SGN's level of 2010-11 actual costs). We used a 50:50 baseline weighting to reflect SSE's 50 per cent ownership of SGN. As this ratio is approximately equal to the cost weighting between SGN and SSE used in Initial Proposals the resultant change in SGN's allowances is small.

Additional baseline adjustments

1.18 Additional baseline adjustments, leading to a net increase £72.1m, have been added to the network companies' baselines. These include the following:

- To reflect the operational growth in NGET TO, we added £53.4m (pre-capitalisation adjustment) to National Grid's baseline. This is equivalent to approximately two per cent per year growth on NGET TO's allocation of National Grid's baseline business support allowance.

- To take account of the higher regulation costs of network companies versus the Hackett benchmarking comparator group, we added 15 per cent of network companies' submitted finance, audit and regulation costs to baselines.

- PPA's reassessment of transmission SO costs resulted in an increase of £48.1m in SO business support cost assessment. As in Initial Proposals this was applied to NGET SO and NGGT SO post allocation and not at group level.

1.19 We also reviewed network companies' submitted efficiency evidence, which included some National Grid evidence previously omitted in error. This resulted in National Grid's efficiency evidence factor increasing from 14.5 per cent to 19.9 per cent. Other network companies remained as in Initial Proposals.

1.20 We are satisfied that we have made sufficient baseline adjustments to take account of any non-comparability between network companies and the benchmark comparator group and to reflect any justifiable additional costs that network companies will face over T1 and GD1. No additional adjustments were made for:

- Property: we consider that regional variations in property costs are not a relevant factor as network companies are not tied to a particular geographic

location for their non-operational property, which comprises the majority of their property management costs.

- Additional IT support costs: the benchmark sets efficient levels of costs for all business support activities, including IT and telecoms, and therefore no additional adjustment is required.

- Other forecast cost increases should be managed within network companies' efficient cost levels.

Normalisations and cost driver updates

1.21 National Grid transmission, NGN, and SGN submitted new information in relation to their end-user count. We also corrected double-counting errors relating to SGN's employee numbers and NGET and NGGT's spend. The corrected driver values are given in table A6.3 below.

Table A6.3 – Business support benchmarking costs drivers

	National Grid	NGN	SGN	WWU
Revenue (£m 2009-10 prices)	3,719.3	314.6	746.4	294.0
End-users (number)	10,204.2	1,356.1	3,418.2	1,824.7
Employees (number)	7,922.6	1,070.1	1,808.1	1,363.0
Spend (£m 2009-10 prices)	2,092.8	163.4	474.8	179.4
Composite driver (unit)	**6,191.5**	**744.1**	**1,884.6**	**967.7**

1.22 Normalised costs have been adjusted to remove costs related to non-regulated entities and other non-formula costs. The final normalised 2010-11 costs for benchmarking are shown in table A6.4 below.

Table A6.4 – Business support 2010-11 normalised gross costs

£m, 2009-10 prices	National Grid	NGN	SGN	WWU
Finance, Audit & Regulation	36.1	3.0	5.1	3.1
HR & Non-operational training	12.6	0.6	0.9	0.7
Procurement	7.8	0.2	0.9	0.7
IT & Telecom	68.5	5.9	12.7	7.6
Property Management	35.1	2.4	6.0	3.5
Insurance	21.7	3.5	3.9	2.9
CEO & Group Management	35.8	3.2	4.8	2.6
Business support total	217.7	18.9	34.3	21.2

Appendix 7 – Training and apprentices

1.1 Training and apprentice costs cover expenditure associated with formal training programmes run by or on behalf of GDNs plus other costs associated with training necessary to maintain GDN employee skill and competency at sufficient levels to meet its operational workload. It does not include non-operational training costs, which are included under 'HR and non-operational training'.

Initial Proposals

1.2 For Initial Proposals we accepted GDN's submitted long term estimates of their workforce renewal requirements and derived our view of numbers on training and apprentice programmes based on these submitted estimates. We applied a single unit cost to all training and apprentice programmes of £35k per apprentice/trainee per year.

1.3 For other operational training costs (non-programme operational training costs), we allowed £0.5m per GDN per year.

Respondents' views

1.4 NGGD was the only network respondent to comment on training and apprentice costs.

1.5 NGGD was of the view that its costs should be allowed in full. It queried why, when we agree with its number of qualifiers we do not arrive at the same number of trainees. It identified what it viewed as a number of errors contributing towards this apparent mismatch.

1.6 NGGD disagreed with the decision to adjust trainee and apprentice numbers to take account of under recruitment versus allowed numbers over GDPCR1. Its grounds for disagreement were primarily that the decision constitutes retrospective regulation and that it was applied asymmetrically as credit for over-recruitment was not allowed in the previous price control review.

1.7 NGGD disagreed with our unit cost assessment based on cost per apprentice/trainee and suggested that unit cost based on number of qualifiers would be more appropriate.

1.8 Other respondents were concerned that, given the shortage of specialist skills in the energy sector both in the UK and globally, our initial proposals may not be sufficient to enable network companies to meet their workforce renewal requirements.

Ofgem Decision

Table A7.1 – GDN submitted costs versus Ofgem baseline costs for Training & Apprentices (RIIO-GD1 total, £m, 2009-10 prices)

	EoE	Lon	NW	WM	NGN	Sc	So	WWU
GDN submitted cost	45.6	18.6	30.1	21.8	31.3	21.1	38.9	30.2
Ofgem adjusted cost	45.6	18.6	30.1	21.8	31.3	21.1	38.9	30.2
Ofgem baseline	33.9	14.2	18.6	11.0	27.2	17.7	30.1	28.2
Gap to Ofgem adjusted cost	-26%	-24%	-38%	-49%	-13%	-16%	-23%	-7%
Breakdown of Ofgem Baseline								
Programme costs	21.8	6.7	9.8	4.3	13.6	8.8	15.9	11.8
Non-programme	12.1	7.5	8.8	6.7	13.7	8.8	14.1	16.4

Allowed number of trainees and apprentices

1.9 We have not amended our methodology for calculating GDNs' allowed number of trainees and apprentices. We have corrected a number of errors in our IP numbers and made adjustments to input data to take account of inconsistencies in GDN's submitted figures. As in IP we accepted GDN's workforce renewal forecasts and we are satisfied that our methodology correctly aligns allowed numbers with the GDN's requirements.

1.10 We have not accepted NGGD's arguments in relation to adjustments to take account of under recruitment in GDPCR1. It is our view that as GDN's received specific allowance in GDPCR1 for specified number of apprentices/trainees and where they have trained fewer than their allowed numbers in GDPCR1 then it would inappropriate to award an allowance in GD1 for these again.

1.11 Our final allowed number of trainees and apprentices are shown in table A7.2

Table A7.2 – Final allowed number of trainees and apprentices

	2014	2015	2016	2017	2018	2019	2020	2021	Total	Change from IP
NGGD	177	198	182	202	198	189	183	178	1,508	14.6%
EoE	*100*	*109*	*98*	*104*	*101*	*96*	*88*	*76*	*772*	*17.3%*
Lon	*37*	*38*	*30*	*30*	*22*	*21*	*28*	*33*	*238*	*22.7%*
NW	*30*	*38*	*37*	*47*	*51*	*50*	*47*	*49*	*349*	*8.6%*
WM	*10*	*13*	*17*	*21*	*24*	*22*	*20*	*20*	*149*	*4.9%*
NGN	85	110	107	106	104	105	114	99	831	0.1%
SGN	123	136	145	139	141	145	152	142	1,124	0.3%
Sc	*44*	*48*	*51*	*49*	*51*	*52*	*54*	*51*	*399*	*0.5%*
So	*80*	*88*	*94*	*90*	*90*	*93*	*97*	*91*	*724*	*0.2%*
WWU	35	41	56	59	68	59	59	60	437	17.8%

Allowed number of trainees and apprentices

1.12 In IP we used the same unit cost (cost per trainee or apprentice per year) for each programme. Our methodology has been revised to employ variable unit costs, which are derived from single cost per funded qualifier. A funded qualifier for this assessment is any qualifier who (according to our previous allowed numbers assessment) starts a training or apprentice programme in GD1. Therefore some qualifiers in GD2 are included in the total GD1 funded qualifier count, while any starting in GDPCR1 and qualifying in GD1 are not.

1.13 Each company's average submitted cost per funded qualifier was calculated as follows:

- for each programme we took our assessed number of funded qualifiers total and multiplied it by the company's submitted cost per qualifier to give total programme cost of funded qualifiers,

- all programme funded qualifier costs were summed to give total cost of funded qualifiers, and

- the total cost of funded qualifiers was then divided by our assessed total number of funded qualifiers.

1.14 We took the upper quartile submitted cost of funded qualifiers (£63,886 per funded qualifier) and through iteration set the variable unit costs so that each company has an allowed total cost per funded qualifier equal to the upper quartile value.

1.15 Grouping similar programmes together we derived twelve separate unit costs, ranging from £15,972 to £69,284 (as shown in table A7.3). These replace the single unit cost of £35,000 in IP.

Table A7.3 – Training and apprentice unit costs

Training & apprentice unit costs (£k, 2009/10 prices)					
Craftsperson Apprentice Programmes			**Submitted Average**		**Allowed Unit Cost**
			Length	**Unit Cost**	
Type_A	NGGD	Emergency adult recruit	0.25	69.28	69.28
Type_B	SGN	Depot apprentice	3.00	32.71	21.27
	SGN	Gas network operations	-	-	-
	SGN	Electrical and instr.	-	-	-
	SGN	Pressure control	-	-	-
	WWU	EMS	-	-	-
Type_C	NGGD	Repair adult recruit	0.25	69.28	69.28
Type_D	NGN	Craftsperson apprentice	4.00	21.77	15.97
Engineer Apprentice Programmes			**Submitted Average**		**Allowed Unit Cost**
			Length	**Unit Cost**	
Type_A	NGGD	Emergency 3yr prog.	3.00	27.72	27.95
Type_B	NGGD	Maintenance 4yr prog.	4.00	24.16	23.08
Type_C	NGGD	Repair 2yr prog.	2.00	31.80	30.56
Type_D	NGGD	Maintenance 2yr prog.	2.00	30.01	28.68
Graduate Programmes			**Submitted Average**		**Allowed Unit Cost**
			Length	**Unit Cost**	
Type_A	NGGD	CETP	4.00	16.95	22.45
Type_B	SGN	General eng. mgmt.	2.00	40.00	33.09
Type_C	NGGD	Graduate	1.50	58.01	55.90
Type_D	WWU	Graduate programme	1.00	51.22	47.63

Non-programme operational training costs

1.16 We have revised our methodology for assessment of non-programme costs to allow each GDN costs based on its forecast average number of direct activity employees. We have allowed £1,726 per direct activity employee, which is the calculated upper quartile value of the company's submitted cost per direct activity employee. In IP each GDN received £0.5m per year (£4.0m in total). Our final proposals for non-programme costs are shown in table A7.1 above.

Appendix 8 – RIIO-GD1 cost allowances and workload assumptions

Table A8.1 East of England RIIO-GD1 cost allowances

East of England	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	10.3	7.8	7.7	8.2	5.8	5.9	5.8	5.8	57.3
Connections	7.0	7.1	7.2	7.4	7.6	7.6	7.6	7.5	59.0
Mains Reinforcement	3.7	7.3	5.1	3.4	3.5	3.4	3.3	3.2	32.8
Governors	1.3	1.6	1.8	2.2	2.3	2.4	2.3	2.4	16.3
Other Capex	30.6	20.5	16.1	16.8	21.0	18.6	14.9	12.5	151.0
of which IT	8.8	4.9	5.7	2.8	5.2	3.6	3.6	2.0	36.5
of which Vehicles	5.9	2.6	1.7	4.4	4.5	4.6	2.8	3.5	29.9
Total Capex	**52.8**	**44.3**	**37.9**	**38.0**	**40.1**	**37.9**	**33.8**	**31.5**	**316.4**
Total Repex	**109.4**	**107.4**	**108.5**	**108.5**	**109.1**	**109.6**	**110.1**	**110.6**	**873.0**
Work Management	27.7	25.3	25.1	24.9	24.4	24.0	23.8	24.5	199.8
Emergency	19.2	19.1	19.0	19.0	18.9	18.9	18.8	18.8	151.5
Repair	13.5	13.2	12.8	12.5	12.1	11.7	11.3	10.8	97.9
Maintenance	17.0	18.3	19.4	20.1	20.4	20.3	20.4	20.0	155.8
Other Direct Activities	11.1	9.6	10.5	11.3	9.8	10.3	10.6	10.5	83.7
of which Xoserve	6.8	6.5	7.4	8.1	6.6	7.0	7.3	7.1	56.9
Total Direct Opex	**88.5**	**85.5**	**86.8**	**87.7**	**85.6**	**85.1**	**84.9**	**84.5**	**688.7**
Business support	24.4	24.7	24.7	24.7	24.8	25.1	25.2	25.4	199.0
T&A	4.3	5.0	4.8	5.0	5.0	4.9	4.6	4.2	37.8
Total Indirect Opex	28.7	29.7	29.5	29.6	29.8	30.0	29.9	29.6	**236.8**
Total Opex	**117.4**	**115.4**	**116.6**	**117.6**	**115.6**	**115.3**	**115.0**	**114.3**	**927.3**
Sub-deducts	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.6
Total Totex	**279.7**	**267.1**	**263.0**	**264.2**	**264.8**	**262.8**	**258.9**	**256.3**	**2,116.7**
Licence/Network rate/Other	52.6	52.6	52.6	52.6	52.6	52.6	52.6	52.6	421.1
NTS exit costs	36.1	36.1	36.0	36.0	36.0	36.0	36.0	36.0	288.5
Shrinkage	11.9	11.8	11.7	11.5	11.3	11.2	11.0	10.8	91.2
NTS pensions contributions	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	51.8
Total non controllable opex	107.1	107.0	106.9	106.6	106.5	106.3	106.1	105.9	852.4
Total funded costs	**386.8**	**374.1**	**369.9**	**370.8**	**371.3**	**369.1**	**365.0**	**362.3**	**2,969.2**

Table A8.2 East of England RIIO-GD1 workload assumptions

East of England										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	9,112	8,881	8,655	8,436	8,224	8,020	7,823	7,633	**66,785**
Service condition reports	Number	9,936	9,671	9,374	9,051	8,698	8,315	7,900	7,452	**70,397**
No. of holders removed[1]	Number	c. 3-4	c. 3-4	c. 3-4	c. 3-4	c. 3-4	c. 3-4	c. 3-4	c. 3-4	**c. 29-30**
Capex										
Total mains reinforcement	km	9.86	23.40	14.90	10.30	11.68	12.03	11.20	11.08	**104**
Total reinforcement Governors	Number	22	8	6	6	5	4	4	4	**59**
Total connection services	Number	8,904	9,038	9,238	9,441	9,648	9,684	9,684	-	**65,637**
- New housing services	Number	2,244	2,378	2,568	2,671	2,778	2,834	2,834	2,834	**21,140**
- Existing housing services	Number	5,500	5,500	5,500	5,500	5,500	5,500	5,500	5,500	**44,000**
- Non- domestic services	Number	-	-	-	-	-	-	-	-	**-**
- Fuel poor services		1,160	1,160	1,170	1,270	1,370	1,350	1,350	1,250	**10,080**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	585.68	583.86	583.30	582.41	581.66	580.95	580.26	579.59	**4,658**
T2 length abandoned3	km	13.39	13.38	13.38	13.38	13.38	13.38	13.38	13.38	**107**
T3 length abandoned3	km	7.48	3.73	3.73	3.73	3.73	3.73	3.73	3.73	**34**
Steel length abandoned[3]	km	22.92	22.33	22.44	21.70	21.68	21.66	21.64	21.63	**176**
Other length abandoned[3]	km	8.66	8.65	8.65	8.65	8.65	8.65	8.65	8.65	**69**
No. of services transferred	Number	27,172	27,076	27,056	27,000	26,966	26,933	26,902	26,871	**215,976**
No. of services relaid[4]	Number	31,423	31,181	30,998	30,768	30,546	30,308	30,056	29,789	**245,070**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holder with relatively high unit cost of demolition or more holders with relatively low unit cost.

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.3 London RIIO-GD1 cost allowances

London	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	2.3	4.2	6.9	2.7	1.8	3.5	2.0	2.2	25.5
Connections	3.7	3.8	3.9	4.0	4.0	4.1	4.0	4.0	31.4
Mains Reinforcement	0.8	2.6	5.7	4.4	1.8	1.9	1.8	1.8	20.9
Governors	0.8	1.2	1.8	3.0	2.1	2.0	2.1	2.1	15.2
Other Capex	15.2	10.6	9.1	8.4	11.4	10.9	6.6	6.0	78.4
of which IT	5.0	2.8	3.3	1.6	2.9	2.0	2.0	1.1	20.7
of which Vehicles	2.0	0.8	1.2	1.6	2.4	2.2	1.3	1.7	13.1
Total Capex	**22.9**	**22.4**	**27.3**	**22.5**	**21.1**	**22.4**	**16.5**	**16.2**	**171.4**
Total Repex	**132.7**	**133.8**	**140.5**	**135.8**	**143.2**	**139.5**	**143.6**	**146.4**	**1,115.6**
Work Management	20.4	19.9	19.6	20.6	20.6	19.7	19.7	19.3	159.8
Emergency	13.1	13.3	13.2	13.0	13.0	13.0	12.9	13.0	104.5
Repair	14.6	14.2	13.8	13.4	13.0	12.6	12.2	11.7	105.4
Maintenance	10.3	10.4	12.8	15.2	15.2	15.2	15.1	12.8	107.0
Other Direct Activities	6.8	6.1	6.6	7.0	6.2	6.4	6.6	6.6	52.4
of which Xoserve	3.8	3.7	4.2	4.6	3.7	4.0	4.1	4.0	32.0
Total Direct Opex	**65.3**	**63.9**	**66.0**	**69.2**	**67.9**	**66.9**	**66.5**	**63.3**	**529.0**
Business support	15.4	15.5	15.6	15.6	15.6	15.8	16.0	16.1	125.6
T&A	2.0	2.1	1.9	1.8	1.7	1.7	2.0	2.2	15.4
Total Indirect Opex	17.4	17.6	17.5	17.4	17.3	17.5	18.0	18.3	**141.0**
Total Opex	**83.0**	**81.8**	**83.8**	**86.9**	**85.5**	**84.7**	**84.8**	**81.9**	**672.2**
Sub-deducts	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	4.5
Total Totex	**238.6**	**238.0**	**251.6**	**245.2**	**249.8**	**246.6**	**244.9**	**244.6**	**1,959.2**
Licence/Network rate/Other	24.3	24.3	24.4	24.4	24.4	24.4	24.4	24.4	194.8
NTS exit costs	29.7	29.7	29.6	29.6	29.6	29.6	29.6	29.6	237.0
Shrinkage	6.1	6.0	6.0	5.8	5.7	5.6	5.5	5.3	46.1
NTS pensions contributions	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	30.2
Total non controllable opex	63.9	63.8	63.7	63.6	63.5	63.3	63.2	63.1	508.1
Total funded costs	**302.5**	**301.8**	**315.4**	**308.8**	**313.2**	**309.9**	**308.2**	**307.6**	**2,467.3**

Table A8.4 London RIIO-GD1 workload assumptions

London										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	7,220	7,013	6,838	6,674	6,519	6,373	6,235	6,105	**52,976**
Service condition reports	Number	9,834	9,468	9,109	8,720	8,295	7,832	7,329	6,785	**67,373**
No. of holders removed[1]	Number	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	**c. 32-33**
Capex										
Total mains reinforcement	km	1.66	3.17	4.03	4.33	3.64	4.16	3.79	3.84	**29**
Total reinforcement Governors	Number	2	2	5	3	3	3	3	4	**25**
Total connection services	Number	2,351	2,382	2,425	2,468	2,513	2,525	2,525	2,505	**19,695**
- New housing services	Number	511	542	585	608	633	645	645	645	**4,815**
- Existing housing services	Number	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	**12,000**
- Non- domestic services	Number	-	-	-	-	-	-	-	-	**-**
- Fuel poor services		340	340	340	360	380	380	380	360	**2,880**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	325.24	327.78	327.42	326.93	326.86	326.53	326.48	326.45	**2,614**
T2 length abandoned3	km	12.23	12.23	12.23	12.23	12.23	12.23	12.23	12.24	**98**
T3 length abandoned3	km	22.00	18.96	17.53	17.77	25.36	19.90	24.73	29.93	**176**
Steel length abandoned[3]	km	12.93	12.75	12.23	11.64	12.08	12.09	12.30	12.31	**98**
Other length abandoned[3]	km	5.88	5.69	9.43	8.90	5.61	5.73	5.91	6.41	**54**
No. of services transferred	Number	12,597	12,701	12,683	12,654	12,632	12,641	12,627	12,596	**101,131**
No. of services relaid[4]	Number	22,681	22,623	22,378	22,096	21,799	21,520	21,182	20,794	**175,071**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.5 North West RIIO-GD1 cost allowances

North West	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	10.8	6.5	4.1	3.6	5.2	3.3	3.3	2.6	39.5
Connections	4.9	4.9	4.9	5.0	5.0	5.0	4.9	4.9	39.4
Mains Reinforcement	2.6	2.1	2.4	2.8	3.2	3.1	2.9	2.9	22.1
Governors	0.8	1.0	1.3	1.6	1.6	1.6	1.6	1.7	11.2
Other Capex	20.6	14.5	11.2	11.1	13.0	12.9	11.9	9.0	104.2
of which IT	5.9	3.3	3.8	1.9	3.5	2.4	2.4	1.3	24.4
of which Vehicles	3.9	1.9	1.0	3.0	2.6	3.3	2.8	1.8	20.2
Total Capex	**39.6**	**28.9**	**23.9**	**24.0**	**28.0**	**25.9**	**24.7**	**21.2**	**216.4**
Total Repex	**86.4**	**86.7**	**87.1**	**87.2**	**87.5**	**87.7**	**88.0**	**88.1**	**698.7**
Work Management	20.4	19.9	19.4	20.5	20.7	20.2	19.9	19.7	160.7
Emergency	13.2	13.2	13.1	12.9	12.8	12.8	12.7	12.8	103.4
Repair	11.8	11.4	11.0	10.6	10.2	9.7	9.2	8.7	82.6
Maintenance	11.9	12.0	12.9	13.9	13.6	13.2	13.3	12.6	103.5
Other Direct Activities	7.8	6.7	7.3	7.6	6.3	6.6	6.9	6.7	55.8
of which Xoserve	4.6	4.4	5.0	5.5	4.5	4.8	5.0	4.8	38.6
Total Direct Opex	**65.1**	**63.2**	**63.7**	**65.4**	**63.6**	**62.5**	**62.0**	**60.5**	**506.0**
Business support	18.6	18.9	18.9	18.8	18.9	19.2	19.3	19.4	152.0
T&A	2.1	2.3	2.4	2.8	3.0	3.0	3.0	3.1	21.8
Total Indirect Opex	20.7	21.2	21.3	21.6	21.9	22.2	22.3	22.5	**173.8**
Total Opex	**86.1**	**84.6**	**85.2**	**87.3**	**85.8**	**84.9**	**84.5**	**83.3**	**681.5**
Sub-deducts	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.1
Total Totex	**212.1**	**200.3**	**196.2**	**198.5**	**201.2**	**198.5**	**197.2**	**192.6**	**1,596.5**
Licence/Network rate/Other	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	221.0
NTS exit costs	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	345.6
Shrinkage	9.0	8.9	8.7	8.5	8.4	8.2	8.0	7.8	67.5
NTS pensions contributions	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	35.5
Total non controllable opex	84.3	84.1	84.0	83.8	83.6	83.5	83.3	83.1	669.7
Total funded costs	**296.3**	**284.4**	**280.2**	**282.3**	**284.9**	**282.0**	**280.5**	**275.7**	**2,266.2**

Table A8.6 North West RIIO-GD1 workload assumptions

North West										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	7,563	7,294	7,037	6,791	6,556	6,332	6,118	5,915	**53,605**
Service condition reports	Number	9,727	9,376	8,986	8,552	8,074	7,548	6,970	6,339	**65,572**
No. of holders removed[1]	Number	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	c. 4-5	**c. 35-35**
Capex										
Total mains reinforcement	km	7.30	5.84	7.89	9.01	11.49	10.60	10.29	10.61	**73**
Total reinforcement Governors	Number	6	5	4	5	3	5	4	4	**36**
Total connection services	Number	5,334	5,374	5,440	5,480	5,512	5,508	5,468	5,468	**43,584**
- New housing services	Number	664	704	760	790	822	838	838	838	**6,254**
- Existing housing services	Number	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	**24,000**
- Non- domestic services	Number	-	-	-	-	-	-	-	-	**-**
- Fuel poor services		1,670	1,670	1,680	1,690	1,690	1,670	1,630	1,630	**13,330**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	413.20	412.85	412.51	412.16	411.84	411.54	411.25	410.97	**3,296**
T2 length abandoned3	km	14.64	14.64	14.64	14.63	14.63	14.63	14.63	14.63	**117**
T3 length abandoned3	km	9.76	9.76	9.76	9.76	9.76	9.76	9.76	9.76	**78**
Steel length abandoned[3]	km	40.43	40.40	40.37	39.99	39.96	39.94	39.91	39.89	**321**
Other length abandoned[3]	km	12.62	12.62	12.62	12.62	12.62	12.62	12.62	12.62	**101**
No. of services transferred	Number	16,122	16,109	16,096	16,076	16,064	16,053	16,042	16,031	**128,593**
No. of services relaid[4]	Number	29,965	29,678	29,360	29,000	28,616	28,196	27,736	27,234	**229,784**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.7 West Midlands RIIO-GD1 cost allowances

West Midlands	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	3.3	3.7	4.2	3.4	3.9	4.7	3.4	2.9	29.6
Connections	4.7	4.7	4.8	4.8	4.8	4.8	4.8	4.8	38.2
Mains Reinforcement	1.0	1.8	1.7	1.9	2.3	2.1	2.0	2.1	14.9
Governors	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	4.5
Other Capex	16.0	15.8	8.1	7.2	10.4	8.9	9.2	5.5	81.1
of which IT	4.3	2.4	2.8	1.4	2.5	1.8	1.8	1.0	17.9
of which Vehicles	1.4	3.6	0.9	1.1	2.4	1.9	3.0	0.9	15.2
Total Capex	**25.4**	**26.5**	**19.4**	**17.8**	**22.0**	**21.3**	**20.1**	**16.0**	**168.3**
Total Repex	**70.6**	**70.8**	**71.1**	**70.8**	**71.0**	**71.2**	**71.4**	**71.6**	**568.6**
Work Management	15.5	14.9	15.0	14.7	15.2	15.5	16.5	15.4	122.7
Emergency	9.6	9.6	9.5	9.6	9.6	9.6	9.5	9.4	76.4
Repair	8.2	8.0	7.9	7.5	7.3	7.0	6.7	6.3	58.9
Maintenance	9.7	10.3	10.6	10.7	11.0	11.1	11.0	10.9	85.2
Other Direct Activities	5.7	5.0	5.5	5.9	5.2	5.4	5.5	5.4	43.6
of which Xoserve	3.5	3.4	3.8	4.2	3.4	3.6	3.8	3.7	29.5
Total Direct Opex	**48.7**	**47.8**	**48.6**	**48.4**	**48.3**	**48.5**	**49.1**	**47.4**	**386.9**
Business support	13.7	13.8	13.9	13.9	13.9	14.1	14.2	14.3	111.9
T&A	1.3	1.4	1.6	1.9	2.1	2.0	1.9	1.9	14.0
Total Indirect Opex	15.0	15.3	15.5	15.7	16.0	16.1	16.1	16.2	**125.9**
Total Opex	**64.3**	**63.6**	**64.7**	**64.8**	**64.9**	**65.2**	**65.9**	**64.3**	**517.8**
Sub-deducts	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	10.0
Total Totex	**160.3**	**161.0**	**155.2**	**153.3**	**157.9**	**157.7**	**157.4**	**151.9**	**1,254.7**
Licence/Network rate/Other	22.0	22.1	22.1	22.1	22.1	22.1	22.1	22.1	176.5
NTS exit costs	19.7	19.4	19.1	19.1	19.1	19.1	19.1	19.1	153.7
Shrinkage	7.1	7.0	6.9	6.8	6.7	6.6	6.5	6.4	53.9
NTS pensions contributions	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	25.7
Total non controllable opex	52.0	51.7	51.3	51.2	51.1	51.0	50.9	50.7	409.8
Total funded costs	**212.3**	**212.7**	**206.5**	**204.5**	**208.9**	**208.7**	**208.2**	**202.6**	**1,664.5**

Table A8.8 West Midlands RIIO-GD1 workload assumptions

West Midlands										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	5,213	5,073	4,938	4,807	4,680	4,557	4,438	4,324	**38,031**
Service condition reports	Number	6,873	6,728	6,590	6,257	5,897	5,509	5,091	4,643	**47,589**
No. of holders removed[1]	Number	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	**c. 4-5**
Capex										
Total mains reinforcement	km	3.40	6.90	5.80	6.70	8.01	7.59	7.21	7.09	**53**
Total reinforcement Governors	Number	3	2	3	2	4	3	3	4	**24**
Total connection services	Number	4,045	4,087	4,157	4,199	4,233	4,230	4,230	4,220	**33,401**
- New housing services	Number	705	747	807	839	873	890	890	890	**6,641**
- Existing housing services	Number	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	**18,400**
- Non- domestic services	Number	-	-	-	-	-	-	-	-	**-**
- Fuel poor services		1,040	1,040	1,050	1,060	1,060	1,040	1,040	1,030	**8,360**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	324.01	323.38	322.78	322.06	321.50	320.96	320.43	319.93	**2,575**
T2 length abandoned3	km	9.04	9.04	9.04	9.04	9.04	9.04	9.04	9.04	**72**
T3 length abandoned3	km	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	**27**
Steel length abandoned[3]	km	16.16	16.14	16.13	15.42	15.40	15.39	15.37	15.36	**125**
Other length abandoned[3]	km	6.59	6.59	6.59	6.59	6.59	6.59	6.59	6.59	**53**
No. of services transferred	Number	11,856	11,834	11,812	11,775	11,755	11,736	11,717	11,699	**94,184**
No. of services relaid[4]	Number	22,128	21,914	21,686	21,419	21,158	20,879	20,580	20,263	**170,026**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.9 Northern Gas Network RIIO-GD1 cost allowances

Northern	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	10.5	11.2	18.0	15.0	12.7	13.0	10.2	10.6	101.3
Connections	5.3	5.3	5.4	5.4	5.3	5.5	5.6	5.6	43.5
Mains Reinforcement	4.2	4.2	4.1	4.1	4.0	3.9	3.8	3.7	32.1
Governors	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.4	10.8
Other Capex	22.7	25.5	21.3	20.8	12.2	12.4	15.0	15.2	145.1
of which IT	4.7	4.6	3.3	9.0	3.8	2.8	4.6	3.8	36.5
of which Vehicles	4.4	4.4	6.1	0.4	0.3	2.3	3.2	2.7	23.9
Total Capex	**44.1**	**47.5**	**50.2**	**46.7**	**35.6**	**36.1**	**36.0**	**36.6**	**332.8**
Total Repex	**83.0**	**84.6**	**84.0**	**84.9**	**85.3**	**85.2**	**86.1**	**85.9**	**678.9**
Work Management	17.9	17.9	17.8	17.8	17.8	17.7	17.6	17.6	142.1
Emergency	13.2	13.2	13.1	13.0	12.9	12.8	12.7	12.7	103.6
Repair	14.6	14.4	14.0	13.7	13.3	12.9	12.5	12.0	107.4
Maintenance	7.4	7.4	7.3	7.3	7.3	7.2	7.3	7.3	58.6
Other Direct Activities	9.8	10.4	11.0	11.6	10.7	11.0	11.2	11.2	86.9
of which Xoserve	4.3	4.2	4.8	5.2	4.3	4.5	4.7	4.6	36.5
Total Direct Opex	**63.0**	**63.2**	**63.4**	**63.3**	**61.9**	**61.6**	**61.4**	**60.8**	**498.6**
Business support	16.9	17.0	17.1	17.1	17.2	17.2	17.3	17.3	136.9
T&A	2.9	3.5	3.7	3.8	3.7	3.7	3.7	3.5	28.4
Total Indirect Opex	19.8	20.4	20.7	20.9	20.9	20.9	21.0	20.8	**165.3**
Total Opex	**83.0**	**83.9**	**84.3**	**84.4**	**83.0**	**82.8**	**82.6**	**81.8**	**665.7**
Sub-deducts	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.6
Total Totex	**210.1**	**216.0**	**218.4**	**216.0**	**203.9**	**204.0**	**204.7**	**204.2**	**1,677.4**
Licence/Network rate/Other	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	249.3
NTS exit costs	8.9	8.9	8.8	8.8	8.8	8.8	8.8	8.8	70.4
Shrinkage	9.9	9.7	9.5	9.2	9.0	8.9	8.7	8.6	73.4
NTS pensions contributions	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	33.0
Total non controllable opex	54.1	53.8	53.5	53.2	53.1	53.0	52.8	52.6	426.1
Total funded costs	**264.2**	**269.9**	**272.0**	**269.2**	**257.0**	**257.0**	**257.5**	**256.8**	**2,103.5**

Table A8.10 Northern Gas Networks RIIO-GD1 workload assumptions

Northern										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	8,193	7,959	7,737	7,525	7,323	7,132	6,950	6,779	**59,598**
Service condition reports	Number	12,527	12,228	11,884	11,492	11,050	10,554	9,990	9,369	**89,095**
No. of holders removed[1]	Number	c. 2-3	c. 2-3	c. 2-3	c. 2-3	c. 2-3	c. 2-3	c. 2-3	c. 2-3	**c. 23-24**
Capex										
Total mains reinforcement	km	18.32	18.32	17.94	17.94	17.55	16.83	16.83	16.12	**140**
Total reinforcement Governors	Number	8	8	8	8	8	7	7	6	**60**
Total connection services	Number	8,966	9,173	9,462	9,656	9,911	10,189	10,576	10,990	**78,924**
- New housing services	Number	1,759	1,951	2,009	1,977	1,914	1,852	1,833	1,753	**15,049**
- Existing housing services	Number	5,169	5,095	5,308	5,538	5,840	6,145	6,525	6,973	**46,594**
- Non- domestic services	Number	538	627	645	640	657	692	718	764	**5,281**
- Fuel poor services		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	**12,000**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	461.49	465.41	464.78	464.22	463.57	462.93	462.52	461.95	**3,707**
T2 length abandoned3	km	30.65	30.61	30.61	30.57	30.63	30.72	30.58	30.63	**245**
T3 length abandoned3	km	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	**40**
Steel length abandoned[3]	km	47.45	49.05	49.00	48.96	48.91	48.87	48.83	48.79	**390**
Other length abandoned[3]	km	-	-	-	-	-	-	-	-	**-**
No. of services transferred	Number	16,712	16,890	16,868	16,847	16,827	16,807	16,788	16,770	**134,510**
No. of services relaid[4]	Number	31,622	31,876	31,581	31,248	30,877	30,573	30,489	30,020	**248,285**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.11 Scotland RIIO-GD1 cost allowances

Scotland	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	13.6	13.7	11.0	15.1	12.6	12.3	11.1	10.8	100.2
Connections	7.5	7.3	7.2	7.2	7.0	6.9	6.8	6.6	56.5
Mains Reinforcement	4.3	6.1	5.7	4.9	4.4	4.2	4.0	4.0	37.6
Governors	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	14.4
Other Capex	18.1	8.1	5.5	10.6	16.7	14.8	5.9	5.3	84.9
of which IT	4.8	3.5	1.7	1.9	4.3	3.1	2.3	1.8	23.4
of which Vehicles	7.4	0.0	- 0.5	1.5	2.8	3.0	- 0.1	- 0.3	13.8
Total Capex	**45.2**	**37.0**	**31.2**	**39.5**	**42.5**	**40.0**	**29.7**	**28.6**	**293.7**
Total Repex	**58.5**	**58.7**	**58.9**	**59.2**	**59.3**	**59.5**	**59.7**	**59.9**	**473.8**
Work Management	16.3	16.7	15.9	16.3	16.0	16.5	16.4	16.1	130.3
Emergency	9.3	9.7	9.7	9.7	9.7	9.7	9.7	9.6	77.0
Repair	7.1	7.0	7.0	6.9	6.8	6.7	6.6	6.4	54.4
Maintenance	6.3	6.4	6.5	6.6	6.6	6.6	6.6	6.5	52.2
Other Direct Activities	6.4	6.0	6.6	6.9	6.3	6.5	6.7	6.6	52.2
of which Xoserve	3.0	3.0	3.3	3.7	3.0	3.2	3.3	3.2	25.7
SIU's	11.0	11.1	11.1	11.2	11.3	11.3	11.4	11.5	89.9
Total Direct Opex	**56.4**	**56.9**	**56.9**	**57.6**	**56.7**	**57.4**	**57.3**	**56.8**	**456.0**
Business support	12.7	12.8	12.9	12.9	13.0	13.0	13.0	13.1	103.3
T&A	2.1	2.3	2.4	2.3	2.4	2.4	2.4	2.4	**18.6**
Total Indirect Opex	14.8	15.1	15.2	15.3	15.3	15.4	15.4	15.4	121.9
Total Opex	**71.3**	**72.0**	**72.1**	**72.9**	**72.0**	**72.8**	**72.8**	**72.2**	**578.1**
Sub-deducts	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.2
Total Totex	**175.1**	**167.7**	**162.2**	**171.6**	**173.8**	**172.3**	**162.2**	**160.8**	**1,345.5**
Licence/Network rate/Other	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	183.4
NTS exit costs	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	2.4
Shrinkage	5.2	5.1	5.0	4.9	4.8	4.7	4.5	4.4	38.6
NTS pensions contributions	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	22.8
Total non controllable opex	31.3	31.2	31.1	31.0	30.8	30.7	30.6	30.5	247.1
Total funded costs	**206.3**	**198.8**	**193.2**	**202.6**	**204.6**	**203.0**	**192.8**	**191.2**	**1,592.6**

Table A8.12 Scotland RIIO-GD1 workload assumptions

Scotland										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	3,874	3,812	3,752	3,694	3,637	3,582	3,530	3,479	**29,360**
Service condition reports	Number	4,851	4,716	4,559	4,379	4,175	3,944	3,685	3,397	**33,708**
No. of holders removed[1]	Number	c. 1-2	c. 1-2	c. 1-2	c. 1-2	c. 1-2	c. 1-2	c. 1-2	c. 1-2	**c. 11-11**
Capex										
Total mains reinforcement	km	15.00	22.00	19.70	17.20	15.50	14.60	14.10	14.10	**132**
Total reinforcement Governors	Number	2	3	4	4	4	3	3	3	**26**
Total connection services	Number	7,868	7,903	7,944	8,071	8,170	8,387	8,621	8,780	**65,744**
- New housing services	Number	499	555	617	685	761	828	920	1,000	**5,865**
- Existing housing services	Number	5,515	5,581	5,648	5,716	5,785	5,854	5,924	5,995	**46,018**
- Non- domestic services	Number	254	267	279	270	324	405	477	585	**2,861**
- Fuel poor services		1,600	1,500	1,400	1,400	1,300	1,300	1,300	1,200	**11,000**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	230.85	230.49	230.15	229.81	229.49	229.19	228.89	228.60	**1,837**
T2 length abandoned3	km	14.99	14.99	14.99	14.99	15.00	15.00	15.00	15.00	**120**
T3 length abandoned3	km	4.46	4.46	4.46	4.46	4.46	4.46	4.46	4.46	**36**
Steel length abandoned[3]	km	52.91	52.83	52.76	52.69	52.62	52.55	52.49	52.42	**421**
Other length abandoned[3]	km	4.26	4.26	4.26	4.26	4.26	4.27	4.27	4.27	**34**
No. of services transferred	Number	13,766	13,746	13,727	13,713	13,691	13,674	13,658	13,642	**109,618**
No. of services relaid[4]	Number	13,827	13,717	13,599	13,473	13,340	13,196	13,041	12,873	**107,068**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.13 Southern RIIO-GD1 cost allowances

Southern	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	11.1	9.9	12.6	14.6	17.0	20.2	17.1	16.0	118.5
Connections	5.9	6.2	6.3	6.3	6.3	6.3	6.4	6.5	50.2
Mains Reinforcement	6.2	10.2	9.9	8.7	6.2	5.7	5.7	5.6	58.3
Governors	3.5	4.0	4.5	4.8	5.2	5.4	5.5	5.8	38.7
Other Capex	38.5	17.1	9.3	15.6	23.1	19.7	11.3	9.2	143.7
of which IT	9.1	5.7	3.2	3.6	8.3	6.5	4.9	3.5	44.9
of which Vehicles	14.6	0.8	- 0.2	3.7	6.3	6.6	0.6	0.2	32.7
Total Capex	**65.1**	**47.5**	**42.6**	**49.9**	**57.8**	**57.3**	**46.1**	**43.1**	**409.4**
Total Repex	**166.7**	**165.1**	**165.2**	**166.1**	**166.1**	**166.6**	**167.1**	**167.4**	**1,330.3**
Work Management	27.9	26.9	26.9	27.9	26.9	27.3	27.1	26.8	217.8
Emergency	21.9	22.3	22.4	22.3	22.4	22.4	22.5	22.5	178.7
Repair	20.8	20.5	20.1	19.7	19.3	18.8	18.3	17.7	155.2
Maintenance	17.8	17.7	17.7	17.5	17.5	17.4	17.3	17.1	140.1
Other Direct Activities	11.7	10.4	11.3	12.2	10.7	11.2	11.5	11.4	90.5
of which Xoserve	6.8	6.6	7.5	8.2	6.7	7.1	7.4	7.1	57.3
Total Direct Opex	**100.1**	**97.9**	**98.5**	**99.6**	**96.8**	**97.2**	**96.7**	**95.4**	**782.3**
Business support	23.4	23.5	23.5	23.5	23.5	23.6	23.7	23.8	188.5
T&A	3.7	4.0	4.1	4.1	4.1	4.2	4.3	4.2	32.8
Total Indirect Opex	27.2	27.5	27.6	27.6	27.7	27.8	28.0	28.0	**221.4**
Total Opex	**127.4**	**125.6**	**126.3**	**127.5**	**124.7**	**125.2**	**124.9**	**123.6**	**1,005.2**
Sub-deducts	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.2
Total Totex	**359.3**	**338.2**	**334.1**	**343.5**	**348.7**	**349.1**	**338.1**	**334.0**	**2,744.9**
Licence/Network rate/Other	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	429.4
NTS exit costs	55.9	58.1	58.1	58.1	58.1	58.1	58.1	58.1	462.7
Shrinkage	13.4	13.1	13.0	12.7	12.4	12.2	12.0	11.5	100.2
NTS pensions contributions	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	52.7
Total non controllable opex	129.5	131.5	131.4	131.0	130.8	130.6	130.3	129.8	1,045.0
Total funded costs	**488.8**	**469.7**	**465.4**	**474.5**	**479.5**	**479.7**	**468.4**	**463.9**	**3,789.9**

Table A8.14 Southern RIIO-GD1 workload assumptions

Southern										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	10,798	10,557	10,322	10,094	9,872	9,656	9,447	9,243	**79,989**
Service condition reports	Number	16,506	16,198	15,843	15,438	14,980	14,465	13,891	13,255	**120,575**
No. of holders removed[1]	Number	c. 5-6	c. 5-6	c. 5-6	c. 5-6	c. 5-6	c. 5-6	c. 5-6	c. 5-6	**c. 44-45**
Capex										
Total mains reinforcement	km	16.40	28.80	27.70	24.10	16.40	14.70	14.70	14.70	**158**
Total reinforcement Governors	Number	8	8	8	8	8	8	8	8	**64**
Total connection services	Number	11,692	11,931	12,073	12,690	13,109	13,437	13,822	14,240	**102,993**
- New housing services	Number	4,556	4,505	4,505	4,726	4,896	5,032	5,202	5,406	**38,828**
- Existing housing services	Number	5,669	5,760	5,852	5,946	6,041	6,138	6,236	6,336	**47,978**
- Non- domestic services	Number	572	591	591	893	1,007	1,102	1,159	1,273	**7,187**
- Fuel poor services		895	1,075	1,125	1,125	1,165	1,165	1,225	1,225	**9,000**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	656.21	655.15	654.12	653.13	652.18	651.26	650.38	649.53	**5,222**
T2 length abandoned3	km	24.55	24.55	24.55	24.55	24.55	24.55	24.55	24.55	**196**
T3 length abandoned3	km	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	**73**
Steel length abandoned[3]	km	47.95	47.85	47.79	47.73	47.67	47.61	47.56	47.50	**382**
Other length abandoned[3]	km	7.87	7.87	7.87	7.87	7.87	7.87	7.87	7.87	**63**
No. of services transferred	Number	16,795	15,836	15,812	15,792	15,767	15,746	15,726	15,706	**127,181**
No. of services relaid[4]	Number	53,575	50,767	50,392	50,023	49,655	49,286	48,917	48,545	**401,161**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services

Table A8.15 Wales & West RIIO-GD1 cost allowances

Wales & West	Ofgem Allowance (Post IQI) £m, 2009-10 prices								
Cost activity	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**RIIO Total**
LTS & Storage	13.8	13.3	11.9	11.4	12.8	11.1	10.3	12.1	96.8
Connections	7.1	7.2	7.3	7.5	7.4	7.6	7.7	7.8	59.7
Mains Reinforcement	7.8	7.8	7.8	7.9	7.9	7.9	7.9	7.9	62.9
Governors	2.3	2.4	2.2	3.1	2.8	2.9	2.7	3.1	21.4
Other Capex	23.0	21.9	16.5	13.7	12.5	12.4	16.1	15.6	131.7
of which IT	7.0	6.7	5.2	5.0	6.0	5.7	5.6	5.0	46.2
of which Vehicles	7.6	6.0	4.2	3.8	1.9	2.2	4.7	4.5	34.9
Total Capex	**54.0**	**52.6**	**45.8**	**43.6**	**43.4**	**41.9**	**44.7**	**46.5**	**372.6**
Total Repex	**78.5**	**78.4**	**78.7**	**78.1**	**79.2**	**79.1**	**79.1**	**77.7**	**628.8**
Work Management	19.1	19.2	21.1	19.9	19.0	20.0	20.3	18.6	157.1
Emergency	13.2	13.1	13.2	13.4	13.3	13.3	13.2	13.7	106.3
Repair	11.6	11.3	11.1	10.9	10.7	10.6	10.4	10.2	87.0
Maintenance	10.4	10.6	10.7	11.0	10.8	10.9	10.7	10.8	85.9
Other Direct Activities	7.2	6.5	7.1	7.4	6.5	6.8	7.0	6.8	55.3
of which Xoserve	4.3	4.1	4.7	5.1	4.2	4.4	4.6	4.5	35.8
Total Direct Opex	**61.5**	**60.6**	**63.2**	**62.6**	**60.4**	**61.6**	**61.6**	**60.1**	**491.7**
Business support	19.0	19.2	19.4	19.9	19.9	20.1	20.2	20.0	157.6
T&A	3.2	3.4	3.7	3.7	3.9	3.8	3.8	3.8	29.4
Total Indirect Opex	22.3	22.6	23.1	23.6	23.9	23.8	24.0	23.8	**187.0**
Total Opex	**84.0**	**83.5**	**86.6**	**86.5**	**84.6**	**85.7**	**85.9**	**84.2**	**681.0**
Sub-deducts	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	4.8
Total Totex	**216.5**	**214.5**	**211.1**	**208.2**	**207.2**	**206.8**	**209.6**	**208.5**	**1,682.5**
Licence/Network rate/Other	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	220.9
NTS exit costs	23.0	23.1	23.1	23.1	23.1	23.1	23.1	23.1	184.5
Shrinkage	8.9	8.7	8.7	8.5	8.4	8.3	8.1	7.8	67.5
NTS pensions contributions	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	31.6
Total non controllable opex	63.5	107.0	106.9	106.6	106.5	106.3	106.1	105.9	808.8
Total funded costs	**280.0**	**321.5**	**318.0**	**314.9**	**313.7**	**313.1**	**315.8**	**314.4**	**2,491.3**

Table A8.16 Wales & West RIIO-GD1 workload assumptions

Wales & West										
		Workload								
	Units	2014	2015	2016	2017	2018	2019	2020	2021	Total
Opex										
Mains condition reports	Number	9,725	9,495	9,272	9,054	8,842	8,635	8,433	8,237	**71,694**
Service condition reports	Number	5,054	4,985	4,902	4,801	4,681	4,541	4,373	4,181	**37,518**
No. of holders removed[1]	Number	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	c. 0-1	**c. 7-8**
Capex										
Total mains reinforcement	km	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	**200**
Total reinforcement Governors	Number	16	16	16	16	16	16	16	16	**128**
Total connection services	Number	12,165	12,230	12,305	12,365	12,140	12,215	12,285	12,355	**98,060**
- New housing services	Number	2,485	2,535	2,590	2,640	2,690	2,750	2,805	2,860	**21,355**
- Existing housing services	Number	7,465	7,465	7,465	7,465	7,475	7,475	7,475	7,475	**59,760**
- Non- domestic services	Number	715	730	750	760	775	790	805	820	**6,145**
- Fuel poor services		1,500	1,500	1,500	1,500	1,200	1,200	1,200	1,200	**10,800**
Governor intervention[2]	Number									**202**
Repex										
T1 length abandoned	km	331.51	330.96	330.43	329.93	329.44	328.96	328.51	328.07	**2,638**
T2 length abandoned3	km	30.15	29.83	28.32	28.25	32.30	30.90	28.67	28.74	**237**
T3 length abandoned3	km	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	**1**
Steel length abandoned[3]	km	71.62	71.54	71.47	71.39	71.32	71.25	71.19	71.12	**571**
Other length abandoned[3]	km	7.23	7.14	6.99	7.01	6.82	6.79	6.80	6.86	**56**
No. of services transferred	Number	16,554	16,530	16,539	16,501	16,536	16,477	16,474	16,492	**132,102**
No. of services relaid[4]	Number	26,440	26,524	26,653	26,652	26,389	26,093	25,806	25,772	**210,329**

[1]Numbers are indefinite because our funding is based on an average cost of gasholder demolition. GDNs may demolish fewer holders with relatively high unit cost of demolition or more holders with relatively low unit cost

[2]Governor intervention refers to replacement/refurbishment of governors

[3]Networks may develop other techniques which eliminates or reduces the risk rather than abandoning the main

[4]Domestic and non-domestic services